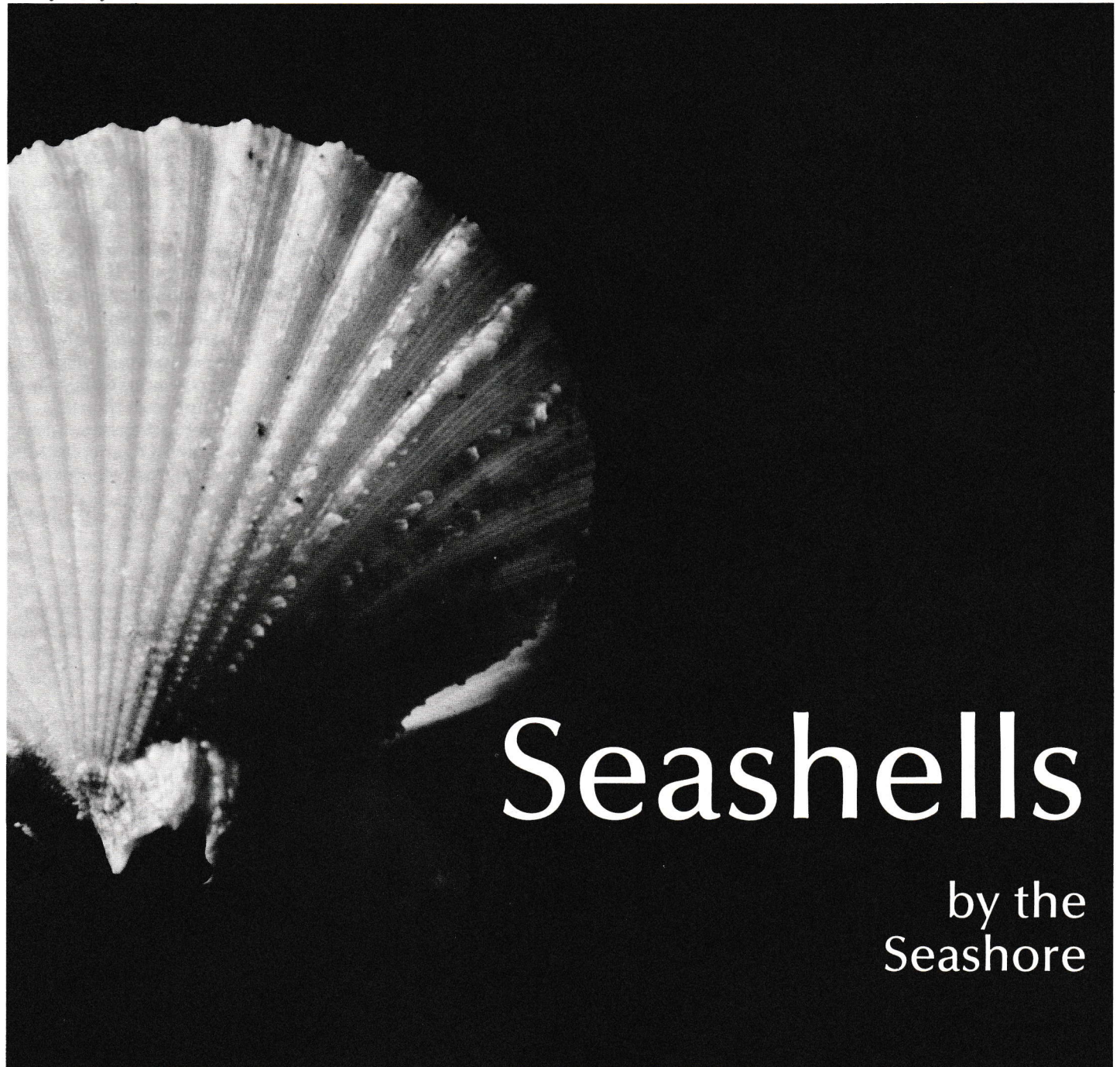


COAST WATCH

Photo by Ken Taylor



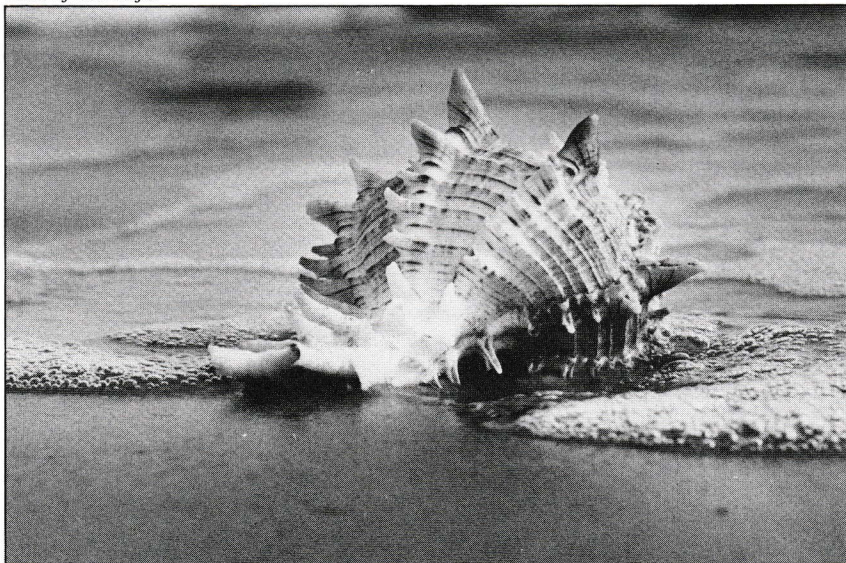
Seashells

by the
Seashore

COMBING the COAST

By Sarah Friday

Photo by Scott Taylor



Meet the Smiths of Durham. Leonard and Carolyn, their son Chris and daughter Tori.

They have a fever, and the condition is serious.

The Smiths belong to that legion of afflicted seekers who can find in a tiny piece of calcium carbonate the joy of great discovery.

They are collectors of seashells—big shells and little shells. Shells perfect and shells impaired. Shells rare and shells common. If there's a mollusk with a nature-made backpack, they want it for their collection.

And in North Carolina, they likely will find it. The coast of North Carolina is home to more than 1,000 different species of mollusks. That's one-hundredth of the catalogued number, but still more than most other states offer. And because North Carolina is centrally located on the East Coast, it offers warm-water and cold-water species.

Almost any time of the year, a variety of

seashells lie on the beach like free candy for children. All you need to become a collector is a touch of the hermit and a stretch of sandy shore.

But watch out, Carolyn Smith warns, beachcombing can be habit-forming. If the habit becomes a fever, professional help is available through the N.C. Shell Club.

The club's 250 members can tell you where to find some of the state's most common shells. Coquinas, scallops, oysters, moon snails, tulips, olives and whelks are common in the state.

Club member Walt Wenzel says one of his favorite spots is Bogue Banks. Other collectors recommend shelling anywhere on the barrier islands.

If you're looking for the state shell, the Scotch bonnet, Portsmouth Island or Hammocks Beach may be worth the trip.

The ideal time to hunt is in the winter or early spring after a severe storm. Then, you can find shells loosened from the deep and thrown onshore.

Always look at low tide when more beach is exposed and you can go out farther.

And go when the moon is new or full, collectors advise. A greater pull from the moon then increases the rise and fall of the waves. Bigger waves mean more shells onshore.

Beachcombing is fun and easy, but it doesn't always yield the best specimens.

The chances of finding a whole shell on the beach are pretty slim in North Carolina, Wenzel says. The craggy ocean floor and fierce waves can easily crush a once-perfect creation. And often the sun, wind or chemicals in the air rob shells of their natural luster.

For showcase specimens, roll up your pants, put on your flippers or drag out a net.

Wenzel dredges to find clams, oysters and snails near his home in Pine Knoll Shores. He

takes a boat out in the sound and rakes or pulls a hand seine through the shallow water.

If you'd rather somebody else do the work, ask a fisherman to search his nets. That's how Carolyn Smith found her 5-inch Northern moon snail shell, a world record.

Or try snorkeling or diving. Going underwater is the best way to find big shells in good condition. But not many collectors are willing to go to such depths in North Carolina, says Tom Van Landingham, president of the Shell Club.

"If you want to find the live shells, you've got to go in the muck," Smith says.

It's not unusual to have to crawl in the mud, wade through the tide or snake among the grasses to find that perfect shell.

In the bays and sounds, you'll find more shells in the morning or late afternoon because mollusks don't like the hot, drying sun, Smith says. Or go out at night, when species such as whelks stalk their prey.

Then seek the hidden clues.

In the mud flats, look for trails. Moon snails and olives, bury in the mud and leave their

"footprints" in the form of tiny tunnels.

Two holes in the mud mean a bivalve is buried beneath the surface. Follow the holes with your fingers to find a clam or scallop.

Whelks make a big lump in the sand. A tiny tip of the shell may stick out and give you a clue to its whereabouts.

Peer under rocks on the jetties where mollusks sometimes attach. Or comb through an oyster bed to find feeding mollusks such as the tulip.

An abundance of tiny shells like periwinkles and dove shells cling to the grasses in the marsh.

To make them even harder to find, most shells are camouflaged with algae, mud, barnacles or sponges.

So why go to all this trouble?

Live shells are more desirable from a collector's standpoint, Smith says. They're new and fresh, and are usually not nicked or broken.

Smith, as most collectors, realizes that taking live specimens raises environmental questions. The best answer she can offer is the understood

Continued on next page

Photo by Scott Taylor



TIPS FROM THE EXPERTS

You've been to the beach. Six bags of souvenirs and 14 buckets of shells give it away.

You know what to do with the souvenirs, but what about the shells?

This year, take a few extra steps to preserve your hand-picked treasures. Well-cleaned shells can be used for art, jewelry, decoration and display.

Carolyn Smith and Walt Wenzel of the N.C. Shell Club offer the following tips for making the most of your finds.

Gathering shells

- When you pick up a shell, record when, where and how you found it. Keep the piece of paper with the shell.
- Keep live mollusks in cold seawater until you get home if you want them to stay alive.
- If you plan to freeze the mollusks, put them on ice.

Cleaning them out

- If you want to eat the mollusk, boil for 2 to 5 minutes, then work the body out of the shell with a needle or ice pick.
- Or freeze the shell. When the mollusk is frozen, take it out of the ice, let it thaw, then pull out the body. The mollusk can be cooked and eaten.
- If you don't want to eat the mollusk, soak it in regular drugstore alcohol. Soaking time varies. Some shells may take 24 hours, Smith says. Then remove the mollusk.

- If the mollusk is a gastropod, like a moon snail or whelk, save the thin "trap-door" at the shell's opening and put it back. This shows the animal was taken alive and makes the shell more valuable.

- Leave the shell as is after this step if you want it to remain natural-looking.

Cleaning them up

- First try cleaning your shell with soapy water and a brush.
- Or soak it in bleach. Dilute the bleach with water, or use it full-strength if the shell is badly encrusted. Watch the shell as it soaks. It could take a few minutes or several hours to clean. Alternately soak and brush the shell if needed. Bleach should not harm the color or luster of the shell and helps remove algae, barnacles and corals.
- Pick the remaining particles off the shell with a small tool such as a dentist's pick.
- Rinse the shell.
- Dry it on a paper towel.

Preserving them

- Rub mineral oil or baby oil on the shell after it dries. This protects it from dust and dirt and helps bring out the color. Smith often rinses her shells, and puts new oil on them every year.
- Catalog the shell. Keep accurate records about it.
- Display and enjoy.

Photo by Sarah Friday



Carolyn Smith

code of ethics shell collectors share.

Don't squander shells. Take only what you need—maybe one to clean and one to show the original state. Leave egg cases and other young mollusks. And if you turn a rock, put it back. Leave the environment as you found it.

"This is what I've come to," Smith says. "To appreciate the animal that makes the shell. The challenge now is learning more about the shell

and being more conservative about my collecting.

"You never learn it all."

Sea Grant has a booklet for more information on collecting native shells. To order Sea Shells Common to North Carolina, write Sea Grant, Box 8605, N.C. State University, Raleigh, N.C. 27695-8605. The cost is 75 cents.

Tales of Broken Shells

By Nancy Davis

The faded chip of a seashell rolls ashore with the waves. Most beachcombers pass it by.

Not Lundie Spence. For her, that castaway shell is even more valuable than a perfect specimen for a showcase collection.

She knows it has a story to tell, and she's detective enough to uncover it.

Spence, Sea Grant's marine education specialist, examines a discarded shell the way she would a deserted house, looking for clues of the inhabitant's past.

She points to a blemish in a whelk. "It sort of looks like a scar. Maybe a blue crab tried to crack the shell when it was much smaller," she says.

Instead of stalking the state's coastal waters for live whelks, snails and clams, Spence is content to gather up their remains or just to observe the animals.

"Some people are only interested in a whole shell," Spence says. "But you can pick up pieces of shells and try to identify what that shell was—by the shape, texture, thickness and curves.

"Then you can say, 'Yeah, at one time, this spiral was part of a whelk,' or 'This purple fragment was a little clam,' or 'This orange cup-like shell is what's left of a giant horse conch,'" Spence says.

Seashells are homes for a phylum of soft-bodied animals called mollusks.

Gastropods and bivalves make up most of the mollusks. Gastropods usually have a single spiral- or cone-shaped shell. Bivalves have two shells hinged tightly together with strong muscles. Other mollusks, such as the squid and octopus, don't have external shells.

Each mollusk builds its own shell. In its larval stage, the animal secretes a material that hardens when combined with minerals from the seawater.

The genetics of each species determines what its shell will look like—whether a whelk shell curves to the left or right and whether a clam shell is smooth or has ridges. The minerals in the water affect the color of the shells.

Sometimes, if you look closely at a shell, you can figure out how the animal died. And more than likely, you'll find evidence of foul play.

For example, a clam shell with a round hole near its hinge met its demise in an encounter with a moon snail. After attaching itself to the clam, the moon snail spit out acids that corroded the shell. Then, it used its digestive enzymes to weaken the clam.

Clams often fall victim to another killer—the whelk. These slow-moving hunters inch along under the sand, their siphons sniffing out unsuspecting clams. The whelk grasps its strong foot around the clam and pries it open.

But even the whelk is not safe. A shell perforated by hundreds of tiny holes was probably the victim of an orange-colored boring sponge. The sponge attaches itself to shells and secretes an acid that eats through the shell.

Box crabs also prey on whelks, opening a hole in the shell with a can opener-like claw.

With predators like that, shells don't stand much of a chance.

If the animal isn't devoured by one of its own kind, it's likely to come up against a human.

That's why Spence urges folks to leave live shells alone. You can learn a lot about the animal's behavior just by watching.

Photo by Scott Taylor



Portrait of a Collector

By Nancy Davis

Photos by Nancy Davis



Renate Skinner with her man-eater clam (above) and her collection (below)

She waited for a year. Timing the ebb and flow of the tides. Watching as her treasure was washed by the waves.

Finally arranging for a special boat and seven people to help her collect the prize.

Then, when the tides were just right, the crew hoisted her discovery aboard, and Renate Skinner claimed another shell—a 400-pound man-eater clam—for her collection.

Now the cumbersome clam from a tiny island in Indonesia is the focal point on the patio of Skinner's Greenville, N.C., home. The rest of her insured collection is stored in seven teak collector cabinets.

In seashell circles, Renate Skinner is known as a rare find, a combination of scientist and

collector. She's combed the beaches of the world, and she's got a treasure of shells to show for it.

Skinner methodically pulls open each drawer and proudly shows off her finds, reeling off scientific names and locations of discovery. She displays her most prestigious find—a new species she discovered—in a small glass dome.

Skinner's fascination with collecting began in her native Germany. Then her search was confined to rocks, insects, wildflowers and land snails.

After World War II, Skinner took a job with an international hotel firm. When she was given her pick of locations, she chose Indonesia—"the land with the most possibility for collecting shells," she says.

Skinner explored the beaches of Indonesia, Thailand, Sri Lanka, Singapore, Pakistan, India and the Philippines.

All that traveling added up to a lot of shells and other artifacts. When she moved in 1976, she shipped about 4 tons of her collection to Greenville.

For her, most of that collection pales in comparison with the 2-inch cone-shaped shell that was the first of its kind to be discovered.

"I have been on the mountain of where every shell collector wants to be. I have found a species that is new to science," Skinner says.

She was diving on a coral reef when she saw the shell in a niche between living corals and fine white sand.

Nearly seven years later, the scientific world recognized her find as a new species. Her reward was the opportunity to name the shell for her father.

But one mountain isn't enough, Skinner says. Even in landlocked Greenville, Skinner isn't ready to call it quits on collecting. For the past year, she and her husband have been planning their next vacation.

They've studied nautical maps to pinpoint when the lowest tides of the year will be in Indonesia. That's when shelling is best, she says.

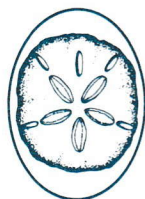
Skinner will pack for the trip with shelling in mind. A large briefcase, complete with glass jars and alcohol, is her luggage. She usually collects live shells, drops them in the alcohol to preserve them, and records her find in a register.

When they arrive in Indonesia, they'll cross a mountain range by jeep, then take a boat to a tiny island. And all the way, they'll watch to see that no one follows them to their sacred shelling grounds.

Skinner keeps the exact location of her finds a secret. "If others found it, they would knock the corals down and destroy everything," she says.

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.



The N.C. Marine Resources Centers are changing their names. This month, they become the N.C. Aquariums on Roanoke Island, at Pine Knoll Shores and at Fort Fisher.

Mark Joyner, of the N.C. Office of Marine Affairs which administers the aquariums, says the new name more accurately reflects what visitors will see there.

Last year, over 1 million visitors peered into tank after tank of marine creatures—sea turtles, eels, lobsters, stingrays, crabs, starfish, sharks and other fish native to North Carolina waters.

And the aquariums will still offer exhibits, programs and field trips on coastal ecology, history and art.

Each aquarium will focus on a different aspect of the coast.

The Roanoke Island aquarium emphasizes the unique aquatic life of northeastern North Carolina freshwater sounds and rivers.

At the Pine Knoll Shores aquarium, learn how creatures survive in the sea through adaptation. There, an aquarium exhibit will show how sea creatures use speed, venom, camouflage, mimicry, electricity, armor, bioluminescence and more to survive.

At Fort Fisher, the emphasis is on sharks. There, several species of native sharks and their relatives, skates and rays, swim in a 20,000-gallon tank—the largest free-standing aquarium in the state.

This year, the aquariums hope to attract even more visitors as they cele-

brate their 10th anniversary and the founding of the N.C. Aquarium Society. The society is a non-profit organization to support the programs and activities at the aquariums.

The aquariums are open year-round Monday through Friday from 9 a.m. to 5 p.m. and Saturday and Sunday from 1 to 5 p.m. Admission is free.

For more information, contact the aquarium on Roanoke Island, P.O. Box 967, Manteo, N.C. 27954 (919/473-3493); the aquarium at Pine Knoll Shores, P.O. Box 580, Atlantic Beach, N.C. 28512 (919/247-4003); the aquarium at Fort Fisher, Box 130, Kure Beach, N.C. 28449 (919/458-8257); or the N.C. Office of Marine Affairs, 417 N. Blount St., Raleigh, N.C. 27601 (919/733-2290).

Your recipe calls for fish fillets, but you've just reeled in a cooler full of whole fish.

If you're used to buying your seafood from the fish market, you may not know how to clean and fillet your catch. But the process isn't difficult. All you need is a sharp knife, an inexpensive scaler, a cutting board and Sea Grant's latest brochure.

Dressing Finfish is an 8-panel brochure that describes how to fillet a dressed fish or whole fish, or how to cut butterfly fillets or steaks.

The publication was prepared by Joyce Taylor, Sea Grant's seafood education specialist at the N.C. State University Seafood Laboratory in Morehead City.

For a free copy of the brochure, write Sea Grant. Ask for UNC-SG-86-10.



Most of the time, Bob Hines works behind the scenes as he puts together the N.C. Commercial Fishing Show. But now Hines is up front as the 1986 recipient of the Southeast Sea Grant Marine Advisory Service award.

Hines, Sea Grant's MAS agent at

Bogue Banks, won the award for coordinating and promoting the Commercial Fishing Show in Morehead City.

Hines competed against agents from nine other states. He is the second MAS agent from North Carolina to win the award in four years.

Sea Grant organized the show in 1983, and continues to sponsor it with local fishing organizations and state agencies. Each year, thousands of fishermen come to see new fisheries products and hear experts discuss topics related to commercial fishing.

This year, more than 5,000 men and women attended what is now one of the region's largest fishing shows. A follow-up survey indicated it generated nearly \$800,000 in sales.



Growth and development on the coast are essential to the state's economy. But at the same time, they increase pressures on the natural resources.

Sea Grant and the N.C. Bar Association will present a coastal law conference to examine these issues Oct. 3 and 4 in Morehead City.

The program will cover the laws and regulations controlling development, especially those relating to water quality, wetlands and public trust areas.

It also will include a case study of a fictitious development project and a thorough look at the Administrative Procedure Act. The speaker for Friday's luncheon will be N.C. Attorney General Lacy Thornburg.

For more information, call Walter Clark at Sea Grant, 919/737-2454.

North Carolina has an adequate water supply and a good climate for aquaculture. But the success of a venture may depend on the site you choose.

To help potential aquaculturists choose a location for raising fish, Sea Grant has revised *Selecting an Aqua-*

Continued on next page

culture Site in North Carolina.

The two-page Blueprint provides a checklist of some items that may influence site selection.

For a free copy, write Sea Grant. Ask for UNC-SG-BP-81-4.

If you want to harvest seafood in Virginia during 1987 but you are not a resident there, you must apply for a non-resident harvester's license. Deadline for application is Sept. 30, 1986. For more information, contact Roy Insley Jr., Virginia Marine Research Resources Commission, P.O. Box 756, 2401 West Avenue, Newport News, Va. 23607, or call 804/247-2238.

The Atlantic and Southeastern Estuarine Research societies will hold a joint meeting at the St. Regis Hotel on North Topsail Island, Oct. 16 to 18.

Scientists will present their latest findings about estuarine biology, physics and chemistry and receive feedback from their peers.

For more information about the meeting, contact Sea Grant researcher Bob Christian, Biology Department, East Carolina University, Greenville, N.C. 27834. Or call 919/757-6722.



Skip Kemp is Sea Grant's new seafood marketing specialist at Bogue Banks.

Kemp comes to Sea Grant from the N.C. Division of Marine Fisheries

where he was a marine biologist. He holds a bachelor's degree in fisheries and a master's in aquaculture from Auburn University.

Kemp will advise fishermen, processors, distributors and restaurant owners on ways to improve their seafood handling practices. And he'll work with the N.C. Department of Agriculture, DMF, university personnel and private industry leaders to develop marketing strategies for North Carolina seafood.

In addition to his experience with DMF, Kemp has operated a private aquaculture firm, taught a wildlife and fisheries class at Wayne Community College, and worked with the Alabama Cooperative Extension Service.

For more information about seafood marketing, contact Kemp at the N.C. Aquarium at Pine Knoll Shores, P.O. Box 896, Atlantic Beach, N.C. 28512. Or call 919/247-4007.

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