



# Coastwatch

UNC SEA GRANT ■ SEPTEMBER 1990



**Shrimping . . .  
A Fishery In Trouble?**



# Shrimp . . . No Longer

More likely than not, the next shrimp that passes between your lips will have a foreign flavor.

According to statistics from the National Marine Fisheries Service, 75 percent of the shrimp that slide down the throats of Americans are harvested outside the United States.

China, Ecuador, Mexico, India and Thailand are the major suppliers of these tasty crustaceans. In these countries, shrimp are raised in ponds year-round, not netted in the wild seasonally.

Although America's hunger is being satiated by foreign shrimp, the imports are causing problems at home. Gulf and South Atlantic fishermen say imports are lowering the dockside prices they are paid, making it harder for them to make a decent profit.

In the last ten years, the total U.S. supply, imported and domestic, has risen from 424 million pounds in 1979 to 767 million pounds in 1988. That's an 80 percent increase in the amount of shrimp available to U.S. consumers.

And most of that increase can be accounted for by imports. In 1988, we bought a record 598 million pounds of shrimp from our foreign friends. And the bill for the purchase totaled more than \$1.7 billion.

"Five years ago, ninety-nine percent of what I sold came from Pamlico Sound," says Becton Hopkins of Hopkins and Son Seafood in Grantsboro. "Now, it's a complete turn-around."

The upside to this foreign flood of shrimp is lower prices for consumers, consistent supplies and, some say, a better product.

With the strides made abroad in culturing the shellfish, American consumers are no longer dependent on the fluctuating seasonal harvests of shrimp caught in the U.S.A.

As a result, shrimp are as readily available at restaurants and seafood markets in December as they are in

July, and at prices that are more affordable.

Although still a luxury food, shrimp prices have dropped enough and disposable income has risen enough to make them a middle-class commodity, says Walter Keithly, an economist with the Center for Wetland Resources at Louisiana State University.

As for quality, imported shrimp are hard to beat, Hopkins says. The farm-raised foreign crustaceans go from the ponds to the processing plant where they are frozen within hours.

"I buy them in five-pound blocks," he says. "They aren't heat-stressed."

"They drag a net until they have 20 or 30 pounds of catch. By then some of the shrimp are crushed and broken. Then they haul them onto a 100-degree deck to sort. And finally they throw 'em in the hold and keep 'em on ice four or five days before they ever bring them to the docks."

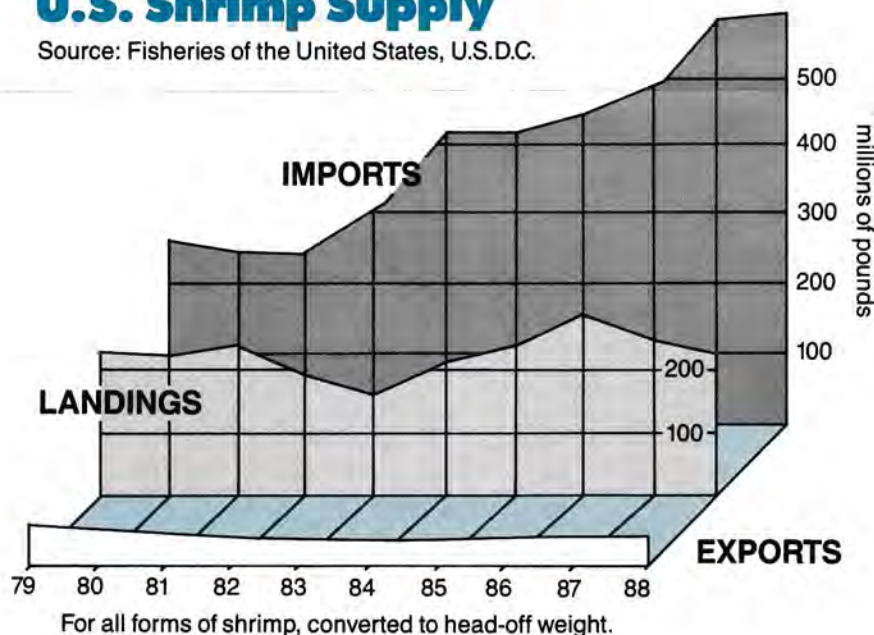
Hopkins believes fishermen need to take better care of their catch if they want to compete with imports and get a better dockside price.

"They (American shrimpers) are working against a perfect product," Hopkins says.

But there isn't much incentive for

## U.S. Shrimp Supply

Source: Fisheries of the United States, U.S.D.C.



There aren't any broken pieces, and they're all the same size.

"I know what I'm getting and when I'm getting it. I don't have to count on 10 percent loss because of black spot or broken pieces like I did when I bought locally.

"Here, fishermen still fish like their fathers and grandfathers," he says.

bringing in a better product. Dockside prices have been backsliding since the early 1980s, yet the costs of doing business—fuel, ice, insurance, boat repairs, labor—are all rising.

"We've got to get prices more in line with our costs," says retired shrimpman Carol Yeomans of Vandemere. "Right now, after we pay our expenses, we got



# Just A U.S. Catch

By Kathy Hart

nothing left unless we have an extra, extra good year."

Some fishermen believe tariffs or limits on foreign shrimp could drive prices up. Others believe in an outright ban of imports.

And Jim Easley, an economist at North Carolina State University, has another possible solution to shrimpers' woes. He believes fishery managers should consider limiting the number of vessels plying the waters for the bug-

energy costs are too high to produce a profitable harvest in the short season we have."

Hodson says that in tropical countries, shrimp farmers can raise two and a half crops per year. But the more temperate climate of the United States would only allow culturists to raise one crop.

A U.S. fish farmer depending on one intense crop would be akin to putting all his shrimp in one basket. A late freeze, low oxygen levels in ponds or disease could wipe out a whole year's harvest, Hodson says.

"It's simply too risky right now," he says.

Besides, the harvesting season for cultured and wild shrimp would coincide. That would just mean more competition for the fisherman.

But for now, consumers wanting a heapin' helpin' of fried shrimp don't care where it's harvested or how it gets there. They only want good-tasting shrimp.

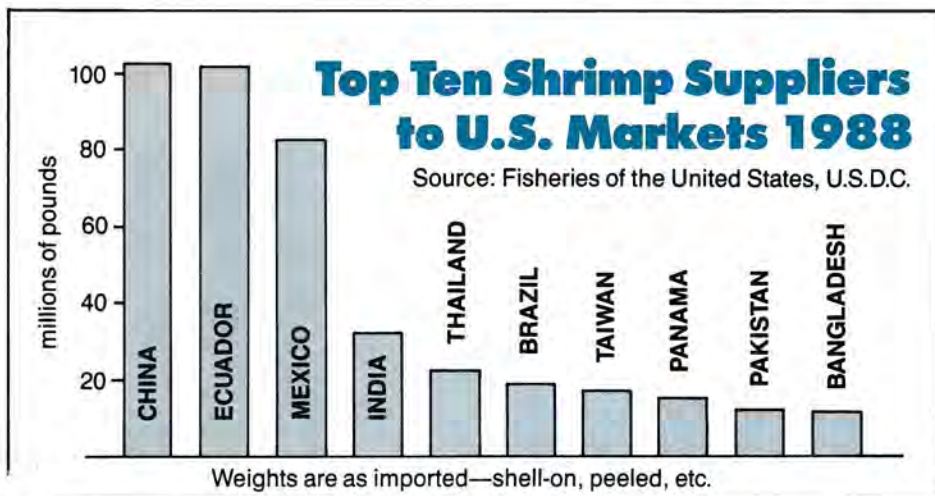
For the average diner, there is no taste difference between imported and domestic shrimp, although they are different species, says Joyce Taylor, Sea Grant's seafood education specialist.

But she does make one exception: the large imported tiger shrimp.

After taste-testing these huge beauties steamed and fried, Taylor says the meat is firmer, more like lobster, and chewier, but not tough. However, the flavor is the same.

Tiger shrimp are making a big splash on the American market and offering consumers a mouthful. They are raised in Indonesia, Thailand and the Philippines, and their large size makes them a marketable specialty item for shrimp cocktails.

Big or small, domestic or imported, Americans are hooked on shrimp. But don't be surprised if commercial fishermen find the crustaceans from abroad a little hard to swallow. ●



But Jerry Schill, executive director of the N.C. Fisheries Association, says none of these options are really viable. Banning or limiting imports would boost the value of shrimp, but it would also hike the cost to consumers.

"You can't take that option away from consumers," he says.

And, he adds, tariffs would only mean that other countries would retaliate against U.S. fishery exports.

What's the answer?

Quality, labeling and marketing, Schill says.

First, commercial shrimpers need to provide processors and distributors with top-quality shrimp. Then that shrimp needs to be labeled as an American catch. And finally, it needs an extra push in the marketplace.

"We do a poor job of marketing our product," Schill says. "Look at the peanut, soybean or sweet potato growers. They spend hundreds of thousands of dollars on staff and promotion. Our industry just won't support itself like that."

like crustaceans.

Easley says Gulf and South Atlantic fishermen are dividing the shrimping pie into too many pieces to make it profitable. He points to statistics that show the number of shrimping vessels in the Gulf and South Atlantic increased 47 percent between 1970 and 1983.

"When you have open access, the catch per vessel falls and the cost per pound harvested rises," he says.

That adds up to less money in the wallets of commercial shrimpers.

Easley suggests limiting the number of part-time shrimpers or eliminating new entry of vessels into the fishery.

But Schill isn't sure fishermen would accept such a plan.

Well, what about aquaculture?

It's turning out tons of shrimp in Asia and South America. Why not in the U.S.A.?

"It's simply not profitable here," says Sea Grant associate director and aquaculture expert Rod Hodson. "Labor and



# Fisherman Seeks His

By Carla B. Burgess



A hard southwesterly wind is blowing as the *Miss Charlotte* heads toward the shrimp line in Nelson's Bay.

Daylight is waning and tiny lights emerge along the shoreline. Terns follow in the boat's wake, outlined by the backlit clouds.

"That's one of the fringe benefits of this job," Bob Austin says as he moves around the stern of the boat. "You see a lot of sunrises and sunsets."

Austin, a 15-year shrimper, has just left the fish house dock in Stacy. He's going to make the Saturday sundown tow in Core Sound. From the looks of it, he'll be the lone trawler tonight.

He lowers the outrigger before the wind does it for him, then ducks inside the cabin. He tells his visitors they'll miss out on the radio banter fishermen keep up on a normal night.

The only activity indoors is the subdued movement of Austin's two children and a squall on the edge of the radar screen. The storm is 24 miles away, he reassures his nine-year-old daughter, Jennifer.

Austin stands at the wheel and maneuvers into the darkness.

We're going to tow the line, he explains. That is, the imaginary line the shrimp will cross as they crawl from the nursery area, which is off limits to fishermen, toward the sea.

Here in the bay, that established line happens to lie between two street lights

on either shore, Austin points out.

"That makes it easier on us and on the enforcement officer," he says, noting that the officer can spot infringements on the nursery area even from his living room.

On Saturdays, regulations allow a one-hour tow after sundown. At 8:30, he lowers the nets and begins trawling.

Austin built the *Miss Charlotte* 10 years ago. Brought up in Carteret County, where his father was in the Marine Corps, Austin is a seventh-generation boatbuilder.

"It would be something to fall back on if the fishery stayed in shape, but if it collapses, boats like these will probably be up for sale," he says.

If not, Austin, 39, has a wildlife management degree that could sustain him. A first-generation fisherman, he started out teaching marine vocations at a Long Island high school.

But teaching was not for him, and neither was the low-salaried technician job offered him after graduation.



So he decided to move back to Carteret County and fish full time.

Austin loves the outdoors and working for himself, but with the unpredictability of shrimping, something to fall back on is not a bad thing to have.

In the winter, Austin rigs his boat for clam kicking but that resource is "over-

harvested," he says. Clamming is open maybe one month, three days a week. "Twelve days and the season is basically over," he says.

Commercial shrimping is also imperiled, what with adverse weather, water pollution, competition with recreational fishermen and foreign imports, low prices and high operational costs to contend with.



At 200 nights a year, Austin figures fuel and equipment upkeep run him about \$10,000. He guesses he needs to make \$90 a night to break even. Shrimp prices fluctuate from \$1 to \$2 a pound.

Austin is lucky in many ways. So far, the *Miss Charlotte* hasn't been a maintenance burden.

"The motor here's 10 years old," he says. "I've never had to put a wrench on it."

And he doesn't have to use turtle excluder devices (TEDs) because of his small nets and subsequent short tow times. Many shrimpers complain that TEDs are responsible for shrimp loss.

"You're working on a very small margin of profit," Austin says. "A small loss in shrimp could make the difference between a fifteen-thousand dollar year and a twenty-thousand dollar year."

Austin says he would need to hire extra hand to manage the devices.

"I operate the boat by myself, nor-



# Small Piece of the Pie

mally," he says. "If I had a couple of those things swinging around my head, I don't know if I could handle it."

As he reaches the turnaround point, Austin steers the boat to tow back down the line. Each side of the cabin takes a few see-saw dips as the *Miss Charlotte* swings around.

Despite all the problems faced by shrimpers, Austin doesn't make a lot of accusatory remarks. He seems realistic and accepting of the obstacles.

Of competition with recreational fishermen, Austin plainly states "the water belongs to the public" and he even blames commercial fishermen themselves for lack of organization.

As for turtle restrictions and closure of fishing waters, Austin says, "You have to have management and regulations."

As 9:30 approaches, Austin prepares bring up the nets. He dons waders, boots and cap and readies things on deck. Then he begins turning the winch to haul in the nets.



"It's just a limited resource," Austin says. "There are just too many people after a very small pie."

Tonight's slice is not a bad portion, he sees, when the nets are up and the bags are visible. Austin quickly estimates the haul at 60 or 70 pounds.

In the poor light, it is hard to see

anything but the silvery bycatch gleaming like bottlecaps in the net.

He readies the culling table, then releases the mouth of the tailbag. Shrimp, crabs and small fish pour onto the boards. Austin takes the sides of the net in both hands and shakes violently, releasing some of the bycatch overboard.



On a normal night, he would lower the nets again, then cull the catch during the next trawl.

Tonight, he picks up speed and navigates the *Miss Charlotte* toward the harbor. He will cull the shrimp when he has docked.

As he steers, he shines a spotlight port side, avoiding a row of crab pots ahead. He guides the boat into the harbor through a maze of thin stakes with phosphorescent crowns that are sticking out of the water.

Austin works rapidly to tie up the boat. He assembles the culling tray. He props a board on the side of the table so that the crabs and smaller fish will slide overboard as he culls.

"All that bycatch isn't wasted," he says. "The birds eat it and the crabs and shrimp eat it, too."

His gloved hands work rapidly, as he rakes the catch close to him and sorts through it. There are small spots,

croaker, hogfish, blue crabs and, of course, shrimp. He stashes a few peelers and soft crabs to take home.

Jennifer and her brother, Brian, 11, also wearing gloves, peer and poke. He answers all their queries patiently and points out the oddities—a small shark, a sea robin, a spider crab and several mantis shrimp, called "knucklebusters" for their humbling striker claws.

"If the shrimp are good and the weather permits, we'll work six days," Austin says of his typical work week. Sunday is his day off, though he might spend it making repairs and working on the boat.

He'll go to sleep each morning when he's done, then he can spend time with his wife and kids when they come home from school.

His wife, Charlotte, is a schoolteacher.

It's after 11 o'clock and the culling tray is almost empty.

"It has its freedom," he says, then stops himself, smiles and contemplates a bit. He shakes his head. "But then, if you're catching good shrimp, you've got to go." ●



Photos by C.R. Edgerton



# All Shrimp Are Not Created Equal

By C.R. Edgerton

To most folks, shrimp are shrimp.

As they drag one of the freshly steamed crustaceans through cocktail sauce or dip it in butter, they never give a thought to its species name or habitat.

Few people know that the several species of edible shrimp are caught at different times of the year and often live in different types of habitat. And, though this information is of little concern to those who eat these homely creatures, it is vitally important to the person who catches them for a living.

In North Carolina, and along the rest

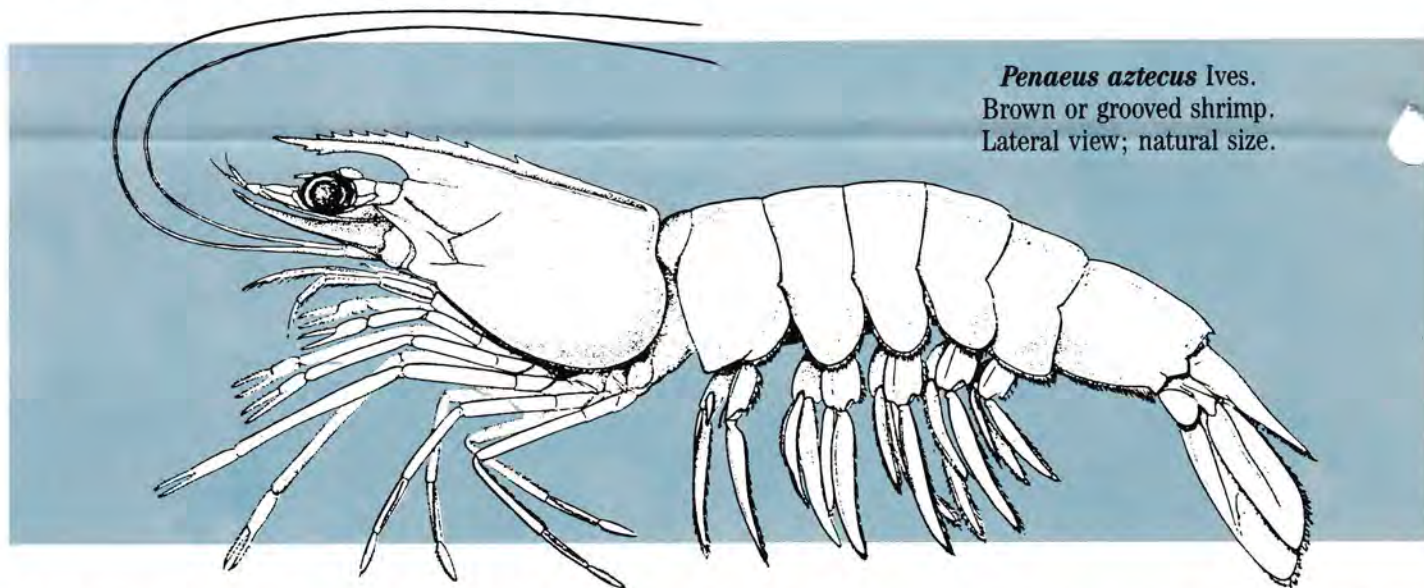
usually seek shrimp that are migrating in and out of the dozens of bays, rivers and creeks that feed into Pamlico Sound. Larger shrimp boats can withstand the rigors of the ocean and are often found trawling offshore. In Tar Heel waters, large quantities of shrimp rarely venture farther than 10 miles away from shore.

Brown shrimp are sought from late June until October; white shrimp from August through November; and pink shrimp are more plentiful in September or May, primarily because of their higher tolerance for colder water.

cleaned and cooked. But, if you study them closely before preparation, identification is easy.

First, there's the color, although that's not always a reliable method. If the shrimp have been out of the water for more than a few minutes, they tend to lose much of their distinguishing colors.

Then there's the season: white shrimp in late June, brown shrimp in August and pink shrimp in the early fall or spring. But, because the seasons overlap in the wild, that is not a totally accurate method.



*Penaeus aztecus* Ives.  
Brown or grooved shrimp.  
Lateral view; natural size.

of the South Atlantic Coast, fishermen seek brown, pink (also called spotted or night shrimp) and white shrimp. These species are highly prized for their flavor and are plentiful if in season.

Shrimp, like crabs and lobsters, are crustaceans. They are foragers that spend most of their lives feeding and moving along the bottoms of estuaries.

Each year they return to the open ocean to spawn. The spawning cycles of the three commercial species overlap.

Small-scale commercial fishermen

To catch juvenile brown or white shrimp, fishermen trawl in water with muddy bottoms and low salinity levels. The adults of those species can be found in saltier waters. And brown shrimp are usually caught at night.

Pink shrimp prefer sandy, grassy bottoms with water that is saltier, even when young. The Pamlico Sound is the northern limit for these three species.

So, how do you know if you're eating a white, brown or pink shrimp?

The experts say it's almost impossible to tell after they've been headed,

Some people claim to be able to tell the difference by taste. But not all palates are created equal. What tastes like pink shrimp to you may taste like white shrimp to someone else.

The simplest way to differentiate is to do what the experts do. Look at the carapace, the hard covering over the shrimp's head. Brown and pink shrimp have a groove on top of the head to the end of the carapace (see illustration). On the white shrimp the groove is about one third as long. ●



# 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, Box 8605, NCSU, Raleigh, N.C. 27695-8605.*



**T**eenage Mutant Ninja Turtles weren't the only shelled reptiles swinging into action this summer. Large loggerhead sea turtles were busy heaving them-

selves onto Tar Heel beaches during a summer of heavy nesting.

North Carolina beaches are the most northern sites in the wide, warm belt around the world where sea turtles nest.

Of the seven species of sea turtles, loggerheads venture more frequently into cooler waters. They are the state's most common nester.

On rare occasions, the green turtle comes ashore. Almost as large as the loggerhead and also brown in color, green turtles are named for the green-colored fat inside their body.

Tom Henson of the N.C. Wildlife Resources Commission coordinates a state program to record sea turtle activity in North Carolina.

Henson receives weekly reports on nesting sites. This year, nesting activity increased. He believes that nesting is cyclical and that peaks occur about every four years.

Because we had a warm winter, loggerheads started to nest about two weeks early this year. One even nested in April.

Most loggerhead mothers drag ashore and bury their eggs in sandy nests during May and June. In August, baby turtles start hatching.

This year, Caswell Beach turtle watchers reported seeing the first hatchling emerge from its nest July 7. That's one of the earliest recorded hatchings of sea turtles in the Tar Heel state.

How many turtles actually nest in North Carolina? Henson has these figures. Caswell Beach had 50 nests. Last year, there were 38. Long Beach recorded 49, up from 32 last year. Hammocks Beach reported 19; Cape Lookout, 40; Bald Head Island, 88; Holden Beach, 38; and Sunset Beach, 8.

The most northern nesting was Currituck Banks. And a green turtle nest was reported on Bald Head with possibly two more south of Fort Fisher.

**S**kip Kemp feels like a father many times over.

Between April and June, Kemp, a Sea Grant Marine Advisory Service agent, became the proud papa of 10,000 planting-size scallops.

The spawning, hatching and rearing of the tasty sea creatures was the culmination of a two-year mariculture research project. During this time, Kemp developed expertise which will aid hatchery owners and mariculturalists in the future production of scallops.

Early in the project, Kemp discovered ways to isolate certain green algae from Bogue Sound. Propagated in their purest form, these algae were used as food for seed scallops purchased from a Massachusetts hatchery.

Later, Kemp developed more efficient ways to grow the larval scallops to marketable size in raceways, pens and bottom nets. The scallops were harvested, cooked and served to a group of shellfish lovers who gave rave reviews.

Kemp's experiments also proved that clam production increases about 17 percent when scallops and clams are grown together under controlled conditions.

Perhaps the most visible result of the scallop project is a culture demonstration facility constructed at the N.C. Aquarium at Pine Knoll Shores. The facility includes hatchery, nursery and grow-out demonstrations. More than 150 people have toured the site since January.

For more information on the project, or to schedule a tour of the demonstration facility, contact Kemp at 919/247-4007.

**T**here's no time like fall for fishing—a line in the water and a cool breeze at your back.

But some fishermen are disappointed if they don't catch exactly what they want. They discard or release the other fish they catch.

Stop.

Many unwanted fish offer just as much challenge on the line and taste on the table.

If you're worried about what to do with an amberjack, a triggerfish or a skate when you get it off the line, then help is just a letter away.

Sea Grant's *Recipes with a New Catch: Cooking Nontraditional Fish* can help you cook some of yesterday's rejects into today's gourmet table fare.

The 40-page cookbook offers more than 60 recipes for preparing and cooking underutilized species such as black drum, crevalle jack, croaker, pigfish, sharks and sheepshead.

For instance, there's nothing better than shark creole, smoked mullet, cajun catfish or baked triggerfish.

For a copy of *Recipes with a New Catch*, write Sea Grant. Ask for UNC-SG-86-06. The cost is \$2.



**C**ome next June, a group of North Carolina science teachers will be paddling to the sea.

Well, at least part of the way.

From Lake Phelps to the Scuppernong River, then to Albemarle Sound and, finally, Oregon Inlet on the Outer Banks, the teachers will be getting hands-on training in their field.

"Paddle to the Sea," a program designed for 20 elementary to secondary-level teachers, will target applicants in Tyrrell, Hyde, Dare and Washington counties.

"The idea is to provide the teacher with concrete experiences of the Albemarle Sound watershed," says Lundie Spence, project leader and UNC Sea Grant's marine education specialist.

The five-day event will provide "an in-service training program for local teachers, so they will not only have experience with



that environment but also have access to curriculum materials that can be applied immediately in the classroom," Spence says.

The group will be looking at the EPA-funded Albemarle-Pamlico Estuarine Study (APES) and recent educational materials from the N.C. Division of Coastal Management.

"We'll take water samples for oxygen, salinity and some nutrients," Spence says. "And we'll be looking at shoreline vegetation and making some observations on habitat changes as we move from the water enclosed by land to the estuary to the sea."

The teachers will be canoeing in Lake Phelps and on the Scuppernong. They will use the facilities in the aquarium to study the APES research. And they will survey Oregon Inlet from a rented headboat, Spence says.

Teachers who want to be considered for the program may contact Lundie Spence, UNC Sea Grant, Box 8605, Raleigh, N.C. 27695-8605. Applications will be mailed as soon as they are available.



**S**ome Raleigh high school students ignored the horror movies, the bad press and the tall tales. They adopted a 12-inch nurse shark and named

him Jaws Junior.

Vivian Coxé, a special programs teacher at Millbrook High School, knew the ocean

fascinated her students. For years, she had kept a saltwater aquarium in her classroom.

But she and her students wanted a new challenge. Coxé explored the possibilities and learned that a nurse shark would adapt well to her 30-gallon school aquarium.

So the Millbrook students placed their order and waited for their new classmate to arrive. In the meantime, they did a little research.

They learned about nurse sharks—their habitat and habits—and aquarium maintenance. The class got "shark fever," Coxé says.

Then Jaws Junior arrived. He quickly adapted to his new environment. As for the students, they continued to find out about their finned friend and began performing some behavioral experiments.

Learning about Jaws was so much fun the students never realized they were doing school work, Coxé says.

Jaws provided an invaluable learning experience. That's why Coxé received a Wake County Education Foundation grant to buy a 100-gallon aquarium when Jaws outgrew his first home.

But by school's end, Jaws had doubled in size and needed even more space. So Coxé contacted the N.C. Aquarium at Roanoke Island. They had a special live shark exhibit.

The aquarium staff agreed to give Jaws a new home, and the Millbrook students are hoping to visit their old friend this fall.

And Coxé has used the experience to write a children's book, *The Little Shark Who Went to School*.

**D**id you know that a hurricane can literally turn your pleasure boat into a pile of rubble?

If a hurricane should strike the Tar Heel coast this year, would you be ready for it?

Whether your boat is a small pleasure craft or a large sea-going yacht, there are a number of ways to ready your vessel for hurricane survival. Sea Grant's *Prepare* poster explains some of these methods.

The poster explains what you need to do before hurricane season and what steps to take if a hurricane is forecast for your area. The advice could save you thousands of dollars.

For a free copy of the *Prepare* poster, write Sea Grant. Ask for publication UNC-SG-86-08.

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