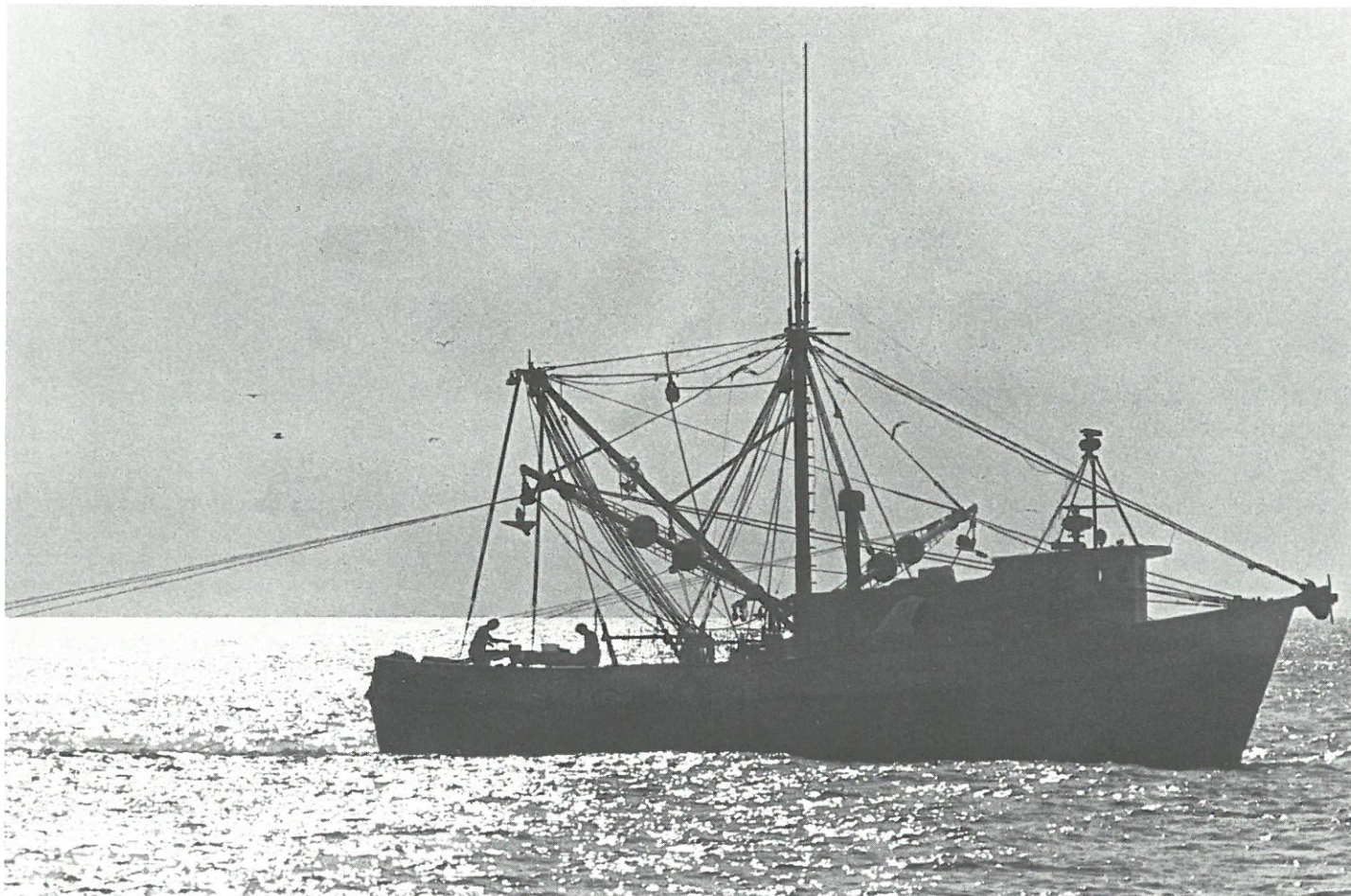


# COAST WATCH

Photo by Kathy Hart



*A trawler tows the line in the early morning light while the crew sorts fish*

## Of nets, towlins and tickle chains

With a shove the *Miss Bozy* is off from the dock. The motor revs as the propeller begins churning water to turn the 79-foot shrimp boat. After some quick maneuvers by Captain Ronald Cockfield, the *Miss Bozy* is cutting the water south to Masonboro Inlet.

The lights of Wrightsville Beach slip by as Jim Bahen and I settle in for a night of trawling. Bahen, Sea Grant's marine advisory agent at the Ft. Fisher N.C. Marine Resources Center, is picking up pointers from Cockfield.

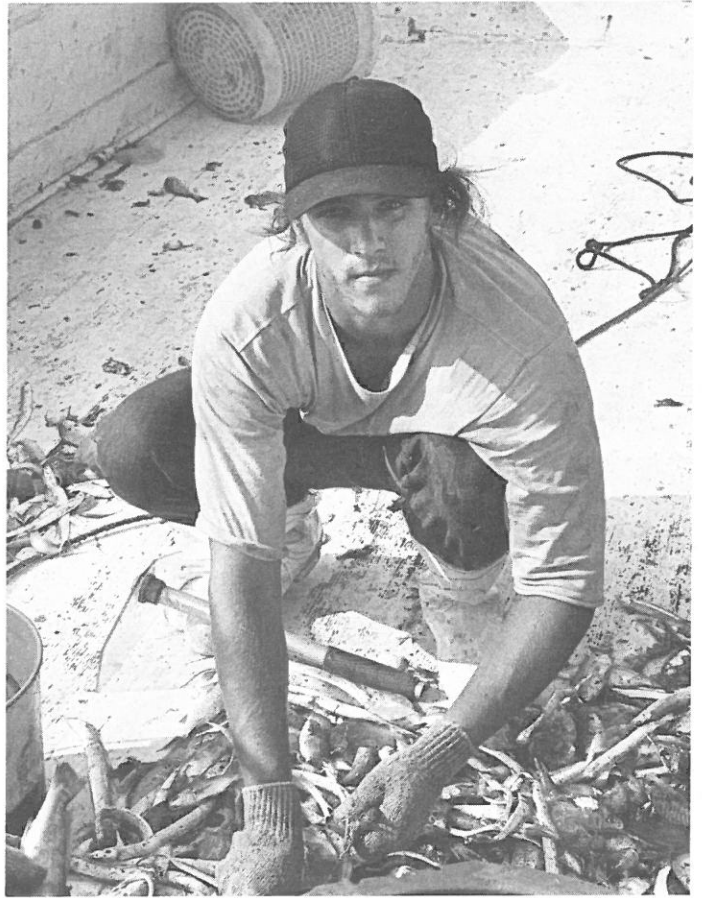
Once through the frothy Masonboro Inlet, a high-pitched groan signals the lowering of the outriggers into trawling position. The outriggers, held to a tight V by the mast for docking and travel, open to a wide V for trawling. Wires hold the outriggers spread-eagle from the mast. The outriggers balance the trawler in rough seas and pull the nets during trawling.

*Miss Bozy's* stern is an island of light on the dark sea as

*Continued on next page*



Ronald Cockfield



Charlie Powell

lights hanging from the mast and the wires illuminate the back deck for work. First mate Charlie Powell makes a final check of the nets, making sure the tailbag rope is secure. No one wants to lose a single shrimp tonight. Along the side of the boat, Powell readies the "tickle" chain, so called because it drags the ocean floor "tickling" the shrimp off the bottom and into the net.

Cockfield is running the *Miss Bozy* just offshore toward Carolina Beach. Powell points to several towers of blinking lights that emit loran navigational readings. "Ronald usually puts the nets down when we pull alongside those towers," the 20-year-old first mate says.

And to prove the first mate right, the motor slows just as the trawler pulls even with the towers. Cockfield emerges from the pilot house to help Powell lower the nets into the ocean. The sound of grinding winches fills the night air. First each set of otter doors are hoisted to the end of the outriggers. Placed at each side of the mouth of the net, the wooden doors aid in keeping the net open and on the bottom.

Next, the main body of the right net is lowered into the waves. The right tailbag follows. The procedure is repeated for the left net. The *Miss Bozy* is a double-rig trawler. She pulls two 75-foot nets.

With the nets in position, Cockfield lowers the doors into place. A marking on the steel towing line lets the captain know when the nets are the right distance from the boat and its propellers.

Off the left side of the boat Cockfield drops the try net. The try net, a 16-foot miniature version of the large nets, catches a small sampling of what the larger nets catch. Pulled up every 30 minutes to an hour, the try net gives the captain a good idea what he's catching and whether he should continue trawling in a certain area.

With all the nets in the water, Cockfield returns to the pilot house and increases the boat's speed for trawling. We soon pass another small island of light indicating another boat and crew are at work.

On this July night, just after 2:30 a.m., there is no moonlight reflecting off the water. Cockfield is glad. He catches more shrimp on dark nights.

It is the height of the season in southern North Carolina, and Cockfield is hoping for a large catch tonight. But so far the season has not been prosperous.

"My catches are nowhere near what they usually are," Cockfield says. "I'm catching a third of what I usually catch. Where I usually get ten to fifteen boxes of shrimp a night (one box holds about 100 pounds of shrimp), I'm lucky to get three boxes now. Shrimping's bad this season. We're not making any money."

Cockfield captains the *Miss Bozy*, but B. C. Costin of Wilmington owns her. Cockfield managed another one of Costin's trawlers, the *Night Train*, for six years. Cockfield says he has spent most of his life on the water. His father, also a shrimper, schooled him early in the techniques of shrimping. "I quit shrimping for a while a few years back and took up installing air conditioners," he says. "But I couldn't stay away from it. Staying on the water has a lure that keeps drawing you back."

About 45 minutes after setting out the nets, Cockfield winches in the try

net. As it surfaces, Powell grapples it aboard. The try net's contents are spilled on the trawler deck. Cockfield picks through the jellyfish, small blue crabs and miscellaneous fishes to pull out 24 good-sized shrimp—a fair number for this season. Powell swings the try net back into the water and pushes the leftovers through the left scupper, an opening in the side of the trawler that allows the water to drain from the deck.

Between hoists of the try nets, Cockfield and Powell relax. Cockfield listens to the chatter of his shrimping buddies on the VHF radio as he steers the trawler on its course. Powell peruses a couple of comic books then fries up a breakfast of sausage and eggs about 4:15 a.m.

Another haul of the try net brings up 31 shrimp and, after a third test of the net about 5:15 a.m., Cockfield decides to draw in the main nets. First he cuts the engines to a slow crawl and winches the doors to the end of the outriggers. Then Powell pulls the right "lazy line" aboard. The lazy line attaches to the net at the intersection of the net body and tailbag. By using the lazy lines, shrimpers "haul back" or draw aboard the tailbags for emptying without having to bring in the main body of the nets.

The lazy line attached to the winch, Cockfield draws in the right tailbag. With the weight of the catch heavy in the net, the tailbag swings aboard in an arch. Powell quickly steadies the bag and directs it toward the culling tray where he releases the knot that holds the bag closed. Out spills a mound of

fish and crustaceans. The right tailbag is tied and lowered back into the sea and the procedure is repeated with the left tailbag.

With both bags emptied, the culling tray is spilling over with the catch. While Cockfield positions the doors and prepares the trawler for a second tow, Powell, Bahen and I begin picking over the catch. Besides shrimp, Powell is keeping the flounder, larger blue crabs, squid and big spot to sell at the fish house. But most of the nettings—jellyfish, small crabs, ribbon fish and other small fish—are cast back into the ocean, a meal for the gulls and other fish.

Powell works fast. He spots the curled crustaceans with an extra sense that comes from sorting fish day after day. He tosses handful after handful into the bucket. Forty-five minutes and six gallon buckets later we're finished. We've filled just over two 70-pound baskets with shrimp. Powell transfers the shrimp to a large ice chest and shovels in fine ice. Shrimp are a highly perishable commodity that must be iced or refrigerated almost immediately after being caught.

The sun is up and a dull gray morning greets us. But the gray seems to be one that the sun will burn away. Ten trawlers are counted around us, some large like the *Miss Bozy*, others in the 35- to 50-foot range. With their outriggers spread, this fleet looks like a flock of large birds just settling on the water.

But the trawlers aren't the only fleet in evidence this morning. Another also floats in the water—cabbage head

jellyfish. Cockfield says he's seen more jellyfish than usual this year. They clog his nets. (Zoologists say the jellyfish are more abundant this year because of a variety of conditions, including higher salinity levels and favorable winds.)

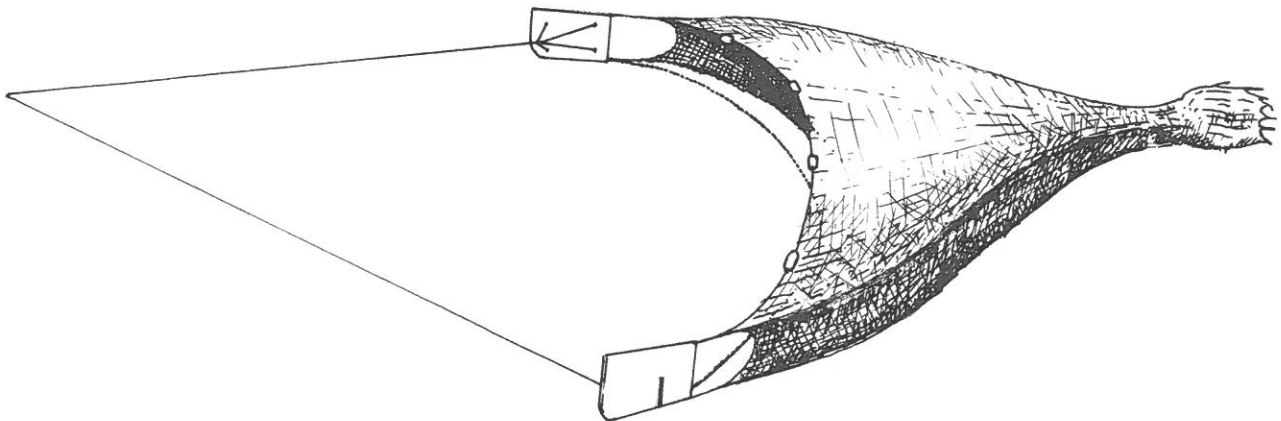
With daylight it's easy to see the houses that line Carolina Beach. Less than one mile offshore, the *Miss Bozy* is trawling back and forth between a point one mile north of the Carolina Beach Inlet to a point ½ mile south of the inlet. It takes 30 to 45 minutes to make the trek. Shrimpers concentrate around the inlet because the shrimp are thickest here. The inlets are the only escape from the sounds for the ocean-bound crustaceans.

Talk is thick on the VHF radio after the first haul. Captains are chattering about their night catches. One shrimper bellows out an occasional Tarzan-like yell. Powell says most of the talk centers on shrimp. "They talk about what they caught the night before and what they're catching tonight. But mostly they lie a lot," he says with a chuckle.

Powell says five years down the road he would like to captain a trawler. To be a good captain, Powell says, "you have to have a good memory and you have to be a good pilot. You have to be fair in money dealings. You have to be easy to get along with. You can't be a person who panics when you get in tight spots, like when you get nets hung."

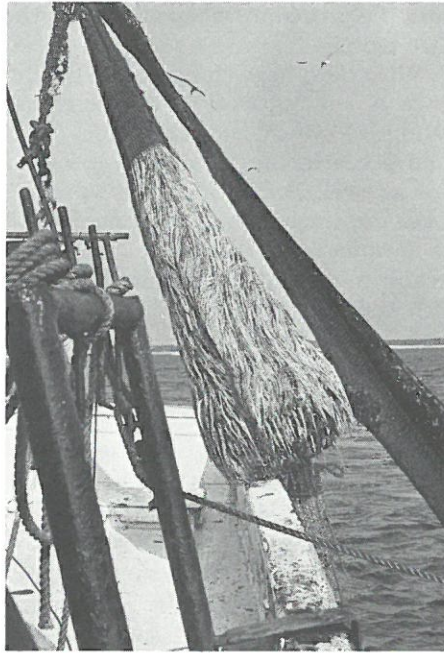
Again the grinding winches announce the try net is being pulled in.

*Continued on next page*



*A trawl net sweeps just above the ocean floor. The tickle chain tickles the shrimp off the bottom and into the mouth of the net. The shrimps are sucked into the tailbag by the onward push of the net*

Photos by Kathy Hart



## The catch of the day

*The tailbag is winched from the ocean to the deck. Then, like a deflating ballon, the tailbag spills its contents. They may be hard to spot, but about 150 pounds of shrimp lie among the blue crabs, jellyfish and spot.*



Powell quickly springs out of the cabin to help. This time only about 15 shrimp are found in the net.

Subsequent try-net catches are low. About 9:30 a.m. Cockfield hauls back the nets and tells Powell that he's through towing for the day. His own small catches and the small catches indicated by other shrimpers over the VHF convince Cockfield to pull in his nets.

The final haul brings two baskets of shrimp. All together, Cockfield has netted about 300 pounds of shrimp for eight hours of towing time. Last week shrimp were bringing \$2.25 a pound at

the dock. This week Cockfield says he's expecting a little more. Cockfield and Powell are paid a percentage of the catch. But first Costin must pay the operating cost of each trip—fuel, ice and maintenance of the boat.

Cockfield and Powell team together to haul in the nets and doors. Finally Cockfield pulls in the outriggers as Powell tidies the back deck. The *Miss Bozy* motors through Masonboro Inlet and Cockfield guides the boat toward its dock in Wrightsville Beach.

Costin waits at the dock for the *Miss Bozy* to tie in, and asks about the day's catch as he climbs aboard.

He tells Cockfield it will be an hour's wait before the fish house can take his shrimp.

Cockfield and Powell wait to deposit their catch. They will be able to catch a few hours of sleep before returning to the dock late in the afternoon to load the boat with ice. After dinner and a few more hours of sleep, they will board the *Miss Bozy* for another night of shrimping.

(Charlie Powell, 20, of Sea Gate, died July 30 from injuries sustained in a motorcycle accident.)

—Kathy Hart

# In seafood marketing, it's who you know

Between Ronald Cockfield's trawler and your plate, shrimp are ensnared in a process called seafood marketing. A complex business based largely on telephone deals and intricate personal relationships, seafood marketing transfers seafood commodities like shrimp from the dock to the table.

As part of their Sea Grant study of shrimping in North Carolina, John Maiolo and John Bort, two East Carolina University sociologists, examined the marketing structure that surrounds shrimp.

The process begins before the shrimper leaves the dock. To keep fishermen hauling in their catch and themselves in a supply of shrimp, many dealers offer fishermen docking space, fuel, ice, repair facilities, fishing and boat supplies and occasionally a provision of credit. The exact mix of services may vary from dealer to dealer and is dependent, to some extent, on the size of the dealer's operation, Maiolo says.

After docking the catch, the shrimper is paid by the pound for his haul. The price paid by the dealers in an area is usually the same or varies by only a few cents, Maiolo and Bort report. Many shrimpers see this across-the-board price as collusion between the dealers.

But dealers see it another way. They maintain dealers are selling to the same markets so they are getting similar prices for the shrimp.

At the same time, dealers told Maiolo and Bort that uniform pricing kept the marketing business on the even keel it needed to survive. Dealers cannot afford to have fishermen shifting their supplies between dealers for better prices because varying supplies for the dealer could mean incomplete orders for his customers.

Once dealers pay for the shrimp, the crustaceans are ready for processing. In North Carolina processing means heading the shrimp, sorting them by count size and packing them in boxes for shipping. The heading is done manually, usually by older women or, in many cases, the wives of the fishermen who bring in the catch. They take the shrimp between their thumb and index finger and pinch its head off. The "headers" are usually paid by the pounds of shrimp headed, with smaller shrimp bringing more money per

pound. Among the larger dealers, processing may include freezing the shrimp. The frozen shrimp are held at the processing plant until prices rise.

After packing the shrimp, dealers are ready to market their product. A dealer can sell shrimp directly to retail customers like restaurant and seafood markets or to wholesalers or processors, usually breaders.

A number of factors influences how a dealer markets his shrimp. Almost all dealers market other fish besides shrimp, usually agreeing to supply a customer with his needs for crabs, clams and oysters, in addition to shrimp.

Maiolo and Bort report that marketing patterns are generally related to shrimp size. Larger shrimp tend to be shipped to the breaders in Georgia, South Carolina and Florida. Breaders pay high prices for large shrimp, but their prices drop off for smaller shrimp.

Medium-sized shrimp (30 to 45 count) are an attractive buy for almost everyone. Restaurant buyers especially like this size shrimp because they can fill customer's plates with more shrimp for the money. Dealers

sell medium-sized shrimp to retail and wholesale buyers in and outside the state. (A 1974 Sea Grant research project by John Summey reported that 55.5 percent of the shrimp caught in North Carolina were sold in the state.)

Small shrimp glut local markets in large quantities during the summer. During these periods of abundant landings local prices drop, making shrimp a more economical buy for local people. Maiolo and Bort report prices from breaders for small shrimp are very low, so selling shrimp locally is often a profitable alternative for dealers.

But no matter whom the dealer sells to, the selling-and-buying interaction is usually carried out on a personal basis. Confidence in the honesty and integrity of the man with whom you're dealing is an important factor in the marketing business, Maiolo says. When thousands of dollars of perishable seafood are committed during a telephone conversation, trust in the person on the other end of the line is vital.

Marketing, though complex, boils down to the simple concept of knowing people—the people who harvest seafood and the people who sell it.

Photo by Steve Wilson



A Wrightsville Beach fish market sells shrimp, whole and headed

# A man called shrimper: Who is he?

The hours are poor. The benefits are sunburn, tired muscles and red eyes. The pay swings like a pendulum from good to bad. Who is the man who takes on this job of shrimping?

He's just under 49 years old with about 11 years of education. He most likely owns or is buying a house, is married, has two to three children and was born and raised in coastal North Carolina.

These are some of the facts gleaned from interviewing 97 full-time shrimp boat captains and 78 part-timers. The interviews were conducted as part of a UNC Sea Grant research project piloted by sociologists John Maiolo and John Bort of East Carolina University. Maiolo and Bort are trying to find out more about shrimpers and their crews so resource managers like the N.C. Division of Marine Fisheries will have a better idea of how their management plans affect the fishermen.

Maiolo, Bort and a research team interviewed fishermen in their homes in seven North Carolina fishing ports—Sneads Ferry, Morehead City/Beaufort, Atlantic, Oriental, Engelhard, Southport and Holden Beach. Assuring the fishermen their identities would not be made public, the research team asked some delicate questions about family, income and related fishing topics.

Maiolo and Bort found that a relative, usually the shrimper's father, was responsible for the fisherman's entry into fishing. The full-timers seem to have more family members involved in maritime occupations than did the part-timers.

About half of the full-time and part-time shrimpers interviewed said their wives work full or part-time, too. Thirty percent of the full-time fishermen's wives who work, do so within the fishing industry. Among the families where the wife works, she contributes 40 percent of the family income.

Most of the fishermen interviewed (79 percent of the full-timers, 93 percent of the part-timers) owned the boat they were shrimping from. Among the full-time shrimpers, 29 percent owned a second boat and 16 percent a third vessel. The figures were slightly lower for the part-timers (28

percent owned a second craft, 8 percent a third vessel).

Most shrimpers indicated shrimping was the first or second most important fishing activity of their primary vessel. Full-timers were also engaged in crabbing and clamming. Part-timers also oystered and gill-netted. Maiolo says the full-timers own a greater variety of fishing gear—nets, trawls, pots and dredges—than do the part-timers, indicating that fishing was their chief source of income.

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*"He sees his fish stocks in a state of decline, wants help from the state government on his own terms, but wouldn't change his job for anything."*

—John Maiolo

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To get fishermen to answer tough questions about income, Maiolo asked shrimpers: Given a fisherman of your experience, how much income could he expect in a good, average and poor fishing year? Maiolo believed the fishermen would base their answers on their own earnings.

Average expected earnings for full-time shrimpers are like this: \$21,500 in a good year; \$16,500 in an average year and \$10,000 in a poor year. In a good fishing year, 28 percent of the full-timers said a fisherman of similar experience could expect more than \$25,000 in income and 21 percent said they could expect to make more than \$30,000. On the other hand, in a poor year, three-fourths of the fishermen said a fisherman could expect less than \$10,000 in total earnings, and 44 percent said to expect less than \$5,000.

Maiolo says earnings from shrimping and crabbing comprise the majority of the full-timers' income. He found 64 percent of the full-time shrimpers earn all their income from fishing and only 10 percent would quit fishing as a first alternative if conditions became worse.

Average expected earnings for part-time shrimpers are less: \$11,900 in a good year; \$8,200 in an average year; \$5,000 in a bad year. Only six percent of the part-timers estimated a fisherman of like experience would earn more than \$25,000 in a good year.

Maiolo and Bort found part-timers earn 30 percent of their income through fishing—mainly shrimping and gill netting.

One complaint that ran rampant among full-timers interviewed was against fishermen who "double dip," or earn income from two sources, one of which is fishing. Maiolo says some fishermen feel these double-dippers have all the benefits of commercial fishing, but few of the hassles.

But in a survey of recreational

shrimpers, Maiolo and Bort found the threat from recreational fishermen to be minimal. Based on the survey, Maiolo estimates 12,200 pounds of shrimp are caught by recreational shrimpers and sold; another 78,620 pounds are caught but not sold. Even in the worst of years (1978), Maiolo reports the recreational catch to be less than three percent of the total reported commercial catch. In 1980, a record year, it would have been less than one percent.

In light of their grievances against part-time and recreational fishermen, it is not surprising that full-time shrimpers surveyed said they would like for the state to up license fees for full and part-time commercial fishing as well as recreational fishing. "It is clear that those who make part or all of their earnings from fishing are looking to the fee structure to solve the problems associated with harvesting pressure," Maiolo says.

After completing preliminary analysis of the captain's survey, Maiolo writes, "an image of a commercial fisherman who sees himself embattled and surrounded by a hostile physical, social and economic environment has emerged. He sees his fish stocks in a state of decline, wants help from the state government on his terms, but wouldn't change his job for anything."

—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).



When farmers need a weather forecast to help them time a planting or a harvest, they often tune in to the N.C. Agricultural Extension Service's Agricultural

Weather Program. Broadcast over the National Oceanic and Atmospheric Administration's (NOAA) weather radio network, the weather program adapts National Weather Service forecasts to state agricultural needs.

Two extension specialists, Katharine Perry and Gregory Johnson, prepare the agricultural forecast at North Carolina State University (NCSU). They tailor the forecasts for North Carolina's 17 weather zones, letting farmers know expected heat or cold stress for livestock and poultry, frost and freeze warnings, suitable planting dates, rain probabilities for pesticide spraying, fertilizer application, irrigation scheduling and more.

To receive these agricultural weather advisories, farmers must have a "weather" radio or a radio equipped with a weather band and tune it to one of three FM frequencies—162.40, 162.475 or 162.55 megahertz. Nine NOAA stations broadcast the bulletins in North Carolina, three in the coastal area—New Bern (11 a.m. to 5 p.m.), Wilmington (11 a.m. to 5 p.m.) and Rocky Mount (10 a.m. to noon every five minutes and noon to 1 p.m. every 15 minutes). The advisories are issued from Raleigh three times a day, 5:10 a.m., 9:35 a.m. and 3:35 p.m.

Besides offering agricultural weather advisories, the network,

through the county extension agents, conducts educational programs to help farmers make better use of the advisory bulletins. For more information about the N.C. Weather Program, write for a free pamphlet from the N.C. Agricultural Extension Service, Communications Division; North Carolina State University; P. O. Box 5037; Raleigh, N.C. 27650.

If you would like to see the weather program broadened to include information specific to coastal communities, contact John Sanders, UNC Sea Grant Coastal Weather Awareness Specialist; 105 1911 Building; North Carolina State University; Raleigh, N.C. 27650-5001.



If you like crabs, you're going to love the Office of Marine Affairs' N.C. State Fair exhibit this year. There will be crabs everywhere, in all sizes, shapes and designs.

And, there will even be some for tasting.

Panels and displays inside the new and larger exhibit tent will focus on this year's theme—the blue crab. The Marine Resources Centers' section will graphically display the biology of *Callinectes sapidus*, including the anatomy and many little-known facts about crabs. There will be blue crabs in aquariums and more crabs, with taped claws, in a "touch tank."

Sea Grant's section, written and coordinated by marine advisory agent Bob Hines, will center on the commercial aspects of the blue crab industry in North Carolina. In 1979, a record 26 million pounds of live blue crabs were landed in this state. But, if you only have a basket of crabs, staff from the NCSU Seafood Laboratory will provide a display to show you how to cook, clean and prepare crabs. There will be a limited quantity of cooked crab samples for tasting.

The Office of Marine Affairs' exhibit was designed and put together by Jay Barnes, exhibits coordinator at the

Bogue Banks Marine Resources Center. After the fair, the exhibit will be placed in the three Marine Resources Centers. The 1981 N.C. State Fair is scheduled for October 16-24.



UNC Sea Grant Director B.J. Copeland was elected president-elect of the Sea Grant Association during its July meeting. The Sea Grant Association unites

the numerous state Sea Grant programs along with others to create a strong national voice on issues involving marine problems.

Copeland will serve as president-elect for one year before succeeding Feenan Jennings, director of Texas A&M Sea Grant, as president of the association.

If he hopes to compete, today's commercial fisherman has to know his business, from bait prices to tax law. As Sea Grant's newest marine advisory agent, Larry Giardina will be working with fishermen and others in the state's seafood and marine industries to help them solve their business management problems.

Giardina, who has a master's degree in the economics of natural resources from Oregon State University, began work with Sea Grant in August. He is in the Marine Advisory Service office at the N. C. Marine Resources Center/Bogue Banks. His telephone number is (919) 726-0125.

The South Atlantic Fisheries Management Council will meet in Kitty Hawk, Sept. 22 to 24, at the Holiday Inn. The council develops management plans for the fish stocks in offshore waters near North Carolina, South Carolina, Georgia and eastern Florida. Regular meetings are held throughout the South Atlantic region. The public is invited to attend and ask questions or speak out on

*Continued on next page*

fisheries problems. For further information about the Kitty Hawk meeting, contact: Executive Director; 1 Southpark Circle, Suite 306; Charleston, S.C. 29407; (803) 571-4366.



A Wake County farmer may rub his eyes and take a second look when he sees a snowy egret standing at the edge of his farm pond. But what he's seeing is true. It seems young herons and egrets, like the young in a lot of species, have wanderlust just after leaving the nest, says James Parnell, a biologist at the University of North Carolina at Wilmington. The maturing herons and egrets leave their estuarine environment to visit the farm ponds of piedmont and eastern North Carolina before flying south to Florida and the Gulf for the winter.

The young of other colonial waterbirds like terns and gulls are also on the wing now along the coast. Once the young of any colonial waterbird species are able to fly, the colony, which is formed for nesting, disbands.

To learn more about the colonial waterbirds you may like a copy of the *Atlas of colonial waterbirds of North Carolina estuaries*, by James F. Parnell and Robert F. Soots, Jr. Published by UNC Sea Grant, the 268-page atlas provides information about

the history, biology and management of colonial waterbirds in this state, along with a more specific account and picture of each species found here.

To purchase a copy of this atlas, write UNC Sea Grant, P. O. Box 5001, Raleigh, N.C. 27650-5001. Ask for publication number UNC-SG-78-10. The cost is \$7.



During 1980, UNC Sea Grant began planning and funding its major research projects on a two-year cycle. An important part of that cycle is a site visit made by a panel that reviews and critiques Sea Grant's proposed programs. Sea Grant was host to a site visit last fall, and will have another in the fall of 1982.

But occasionally, research needs arise that can't wait. For that reason, Sea Grant holds funds in reserve for new, important activities. These funds can be used to initiate new projects, provide a rapid response to urgent research problems, or, in the case of "mini-grants," provide for short-term projects that test new ideas or supplement projects already under way.

Sea Grant's director, B.J. Copeland, recently awarded two new mini-grants. Lundie Mauldin, Sea Grant's marine education specialist, will receive \$700 to establish microcomputer programs with marine concepts. Designed for museums and school systems with

microcomputers, Mauldin's project will provide marine education through two "games." Students can choose to learn about underwater habitats and diving or the energy balance in coastal ecosystems. Mauldin is coordinating the work on this project with John Tashner of the Division of Science Education at Appalachian State University.

A \$960 mini-grant was awarded to Bob Hines, a marine advisory services agent with Sea Grant, to set up a demonstration for North Carolina's commercial fishermen on a new hydraulic net lifter. Hines recently traveled to Maine to talk with manufacturers and examine the equipment he'll bring back to use in the demonstration. Hydraulic net lifters save labor for fishermen with gill nets and long-haul nets. They also outperform conventional gear in rough water and in cold weather.

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