

COAST WATCH

They all laughed when Cap'n Briggs went sailing

Just try to tell a hardworking commercial fisherman, supporting a \$100,000 mortgage and a ton of gear, that he needs a sailboat. Tell him to "let the wind supply the horsepower."

He'll suspect a cologne-scented bureaucrat has been hatching memos again. Or, he'll laugh the whole thing off as a joke.

And that is exactly the way Captain Lane Briggs' career as a sailing waterman began— as a joke. Briggs is a native of North Carolina's mountains who says he knew he'd spend his life on the water "the first time I ever saw the sun rise over Wrightsville Beach." Since that morning, Briggs has put in 30 years as a fisherman, tugboat captain and professional waterman.

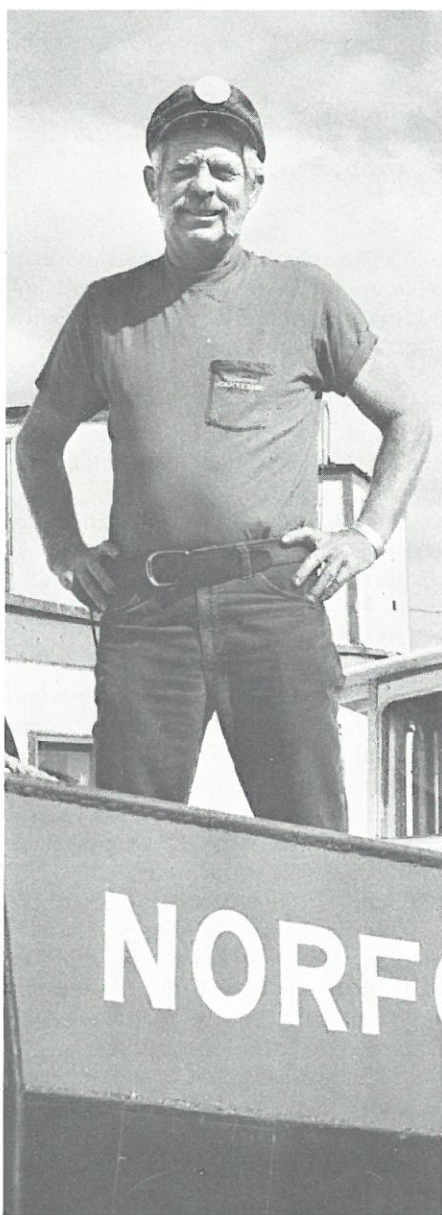
The joke? It began in 1975, when Briggs decided to throw a dockside crabs-and-beer blast, featuring a pre-party sailboat race.

"I wanted all the people around the dock to join in," Briggs says, "so I made a rule: 'If you want the crabs and beer, you have to race a sailboat.'"

That sounded fair enough until someone pointed out that Captain Lane Briggs did not own a sailboat. Briggs' company, Rebel Marine, does a lot of tugboat and salvage work out of Norfolk, Va., with some commercial fishing on the side. You don't need a sailboat for that sort of thing.

But Briggs is a sport, so he went to work on the *Steel Rebel*, his tug.

"It all started as just sort of a prank," he says. "I'd salvaged an old mast and some stuff, and just rigged up a squaresail on my boom, and also added a jib. . ."



Lane Briggs aboard his tug

The *Steel Rebel* was not the world's loveliest sailboat. For cloth, the crew hoisted an old parachute, a tablecloth and a few other odds and ends.

"You've never seen anything more peculiar than a tugboat rigged for sail," says Kathy Hill, Rebel's office manager and a member of the crew. "We ran up everything but the cook's underwear."

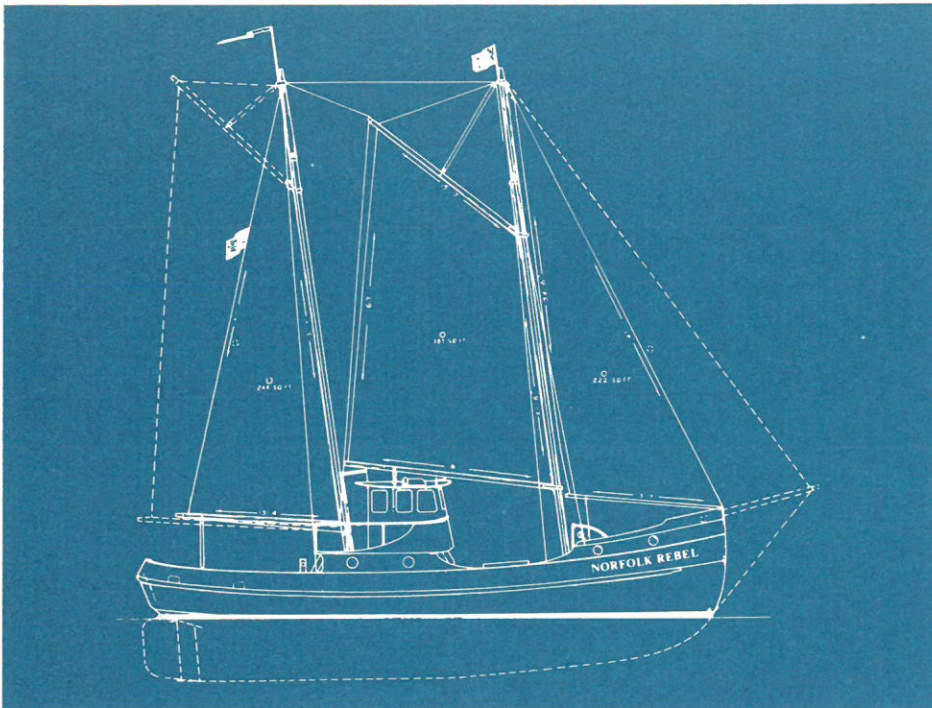
The *Steel Rebel* wallowed through the race like a sow among the swans. But she finished, with help from the diesel. The crabs and beer were fine, too.

"Then, a couple of days later, we were towing a barge on the bay," Briggs recalls. "We hadn't bothered to take down the masts and sails. We had a good breeze at our backs, and I looked down, and we were doing a full knot better than our usual speed. So I eased off the throttle and finished the job in less time with less fuel. After that, I made some adjustments and squeezed another knot out of her. We tried several different combinations of sails and rigging, and finally got to where we were going faster and using a lot less fuel."

Briggs says the gaff rig that he settled on lowered his fuel consumption about 30 percent. With a tow, it increased his speed 3.5 knots— even more on a light run. The joke was paying off, but there was still a lot of laughing on the waterfront.

"Everybody thought I was nuts for a while," Briggs says. "That was when fuel was still thirty or forty cents a gallon. Now that it's over a dollar,

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The "Tugantine," with spars or "gaffs" supporting its sails

they're taking a little more notice."

One of the people who took special notice was Merritt Walter, a naval architect from Norfolk.

"He kept telling me my boat couldn't sail, according to all the rules," Briggs says. "But since it was sailing, he said 'just think what we could do if we had a boat designed to use sail.'"

The old *Steel Rebel* did have a serious limitation: because of the hull design, she could not sail upwind. But Briggs was so convinced the wind was saving him money that he told Walter to design a new boat. The vessel was to be a diesel-powered, sail-assisted tug set up to double as a commercial fishing boat.

Financing was the first obstacle. Briggs was proposing a \$300,000 risk—a newfangled design with no track record.

"The bank took a good, hard look at it, and decided to go along," Briggs says.

The keel of the new boat was laid on April Fools' Day, 1978. Not since Noah began his Ark had there been such chuckling.

The *Norfolk Rebel*, a steel-plated, light tug, 51 ft. long, was launched May 22, 1980. From the water line down, she's a sailboat, trim, with a full keel. But she also sports a 320-horse V-8, assorted electronic gear, and a fish

hold. The masts are designed to carry 1200 square ft. of gaff-rigged sail, including a foresail that can be used with a retractable bowsprit.

Walters and Briggs had conceived neither a sailboat nor a conventional workboat, but a hybrid for which there was no nautical term. They coined the name "Tugantine."

"We all held our breaths during the first trials," Kathy Hill remembers. "With a new design, you never really know how it will perform. But it worked beautifully. She was practically turning on a dime, and wasn't squatting or digging in the way you might expect a sailboat to do under that kind of power."

"Our idea is using sail to assist the diesel," Briggs says. "It's not all sail. I don't think that would be practical, with the work we have to do."

There are a few disadvantages to the sails, Briggs admits. Getting under some of the bridges is a problem. For some of the deck work, the main boom has to be raised out of the way. And, Dacron sailcloth is expensive.

But Briggs says that in the first year he sailed the *Steel Rebel*, he saved enough on fuel to more than pay for the sails and rigging. He claims that he can bid a job lower and make more profit. And, the extra time devoted to sailing, he says, is counted in minutes, not hours.

Based on his experience with the first boat, Briggs expects to use the *Norfolk Rebel's* sails about 50 percent of the time he's working, saving about 40 percent on fuel.

"I feel I can sail to and from the fishing grounds, and put less running time on the engine," Briggs says. "And, if my engine breaks down, I don't have to pay somebody to tow me in. I sail home."

He'll try longlining and bottom fishing, mostly, since the longer the run, the better the efficiency under sail.

Rebel Marine has been awarded a \$72,000 grant from the National Marine Fisheries Service to rig the boat with sail.

"Captain Briggs' project is the first we've supported this way," says Ed Loughlin, energy coordinator for the NMFS office in Washington, D. C. Loughlin says the government's backing for the project is based on the belief that sails offer some hope to the nation's commercial fishing fleet, which is being hounded, nearly to extinction, by the cost of energy.

Loughlin estimates that, for trawlers, about 57 cents of every dollar in overhead is spent on fuel. The average shrimper burns a gallon and a half for each pound of shrimp he hauls home, Loughlin says.

In exchange for the grant money, Briggs has agreed to formally analyze and document the performance of the boat. He has gotten help in doing so from the Sea Grant program at the Virginia Institute of Marine Science (VIMS). Sea Grant specialists at VIMS helped Briggs write the grant proposal. Part of the grant will be used to pay a researcher on the project.

"We want to see how the boat performs over a range of wind conditions and working conditions," says John Lucy, Sea Grant's marine recreation specialist at VIMS. "We also want to find the optimum ratios of diesel and sail assist, to spell out what combinations might save a fisherman the most money."

"I think you're going to see a lot more fishermen trying the idea," Briggs says of wind power. "When fuel was cheap, they just went ahead and designed boats for brute power and carrying capacity. But who can afford the fuel anymore? Sometimes, you just get to hurtin' so bad you have to change, whether you want to or not."

Along the docks, boats are idle, tempers are short

Sandy Edwards believes he has seen the commercial fishing industry hit the skids, almost overnight. Because of the leap in fuel prices, he says, fishermen are losing money, boats are tied up and idle, and tempers and patience are nearing the snapping point.

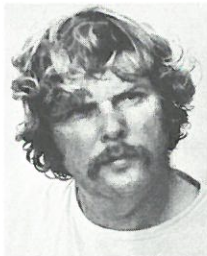
"It just restricts your movement," Edward says. "You can't go out and look for fish, because you can't afford to burn the fuel. There's a lot more guys sitting at the dock, listening to the radios, than there are out fishing. It's putting a crimp in everybody's style."

Edwards, who takes his *Raven* after snapper and grouper off Hatteras, says the once-cooperative atmosphere among the fishermen in his area is souring. Crews tend to monitor radios for word of a big catch, then race for the productive area.

"It means a hundred and fifty boats show up at one spot," he says. "There's a lot more competition and the tempers are a lot shorter."

"If I didn't have my boat paid for, I'd be looking at about one more year

in business," he says. "As it is, I'm expecting to last about three. But if I were to have a major breakdown, I'd be ruined, and that's the way ninety-nine percent of the guys are."



Edwards

To save gas, fishermen are buying smaller boats and less powerful engines, Edwards says. He has had to drop his engine's cruising speed from 2000 rpms down to 1800, and what was once a three-hour trip now requires

four. To squeeze more use out of the trips, some of the captains are loading a variety of gear onto their boats, just to be prepared.

"They're putting on gill nets, they're putting on net reels—they're trying to make little boats into big boats," Edwards says. "But it's just not working out."

For Edwards and others, the fuel problem is especially bitter because the

prices they get for fish have not come close to keeping up with the rate of inflation.

"The other day I went out and burned a hundred gallons of fuel, at over a dollar and thirty cents a gallon, and came back with a load of trout. I got ten cents a pound for my trout. I caught thirteen pounds of trout to buy every gallon of fuel I burned."

Some of the largest boats are able to use fuel-saving devices, such as Kort nozzles and adjustable-pitch propellers—gear perfected by foreign fleets, which are accustomed to expensive energy.

UNC Sea Grant's continuing education program for commercial fishermen, coordinated by Jim McGee of East Carolina University, introduced about 150 commercial fishermen to some of these fuel-economy measures during 1980. The workshops were well-received, and more are planned for this year. (Also, the Virginia Institute of Marine Science will conduct a major conference on "fuel efficiency alternatives" later in the year).

Sail power— Will it work?

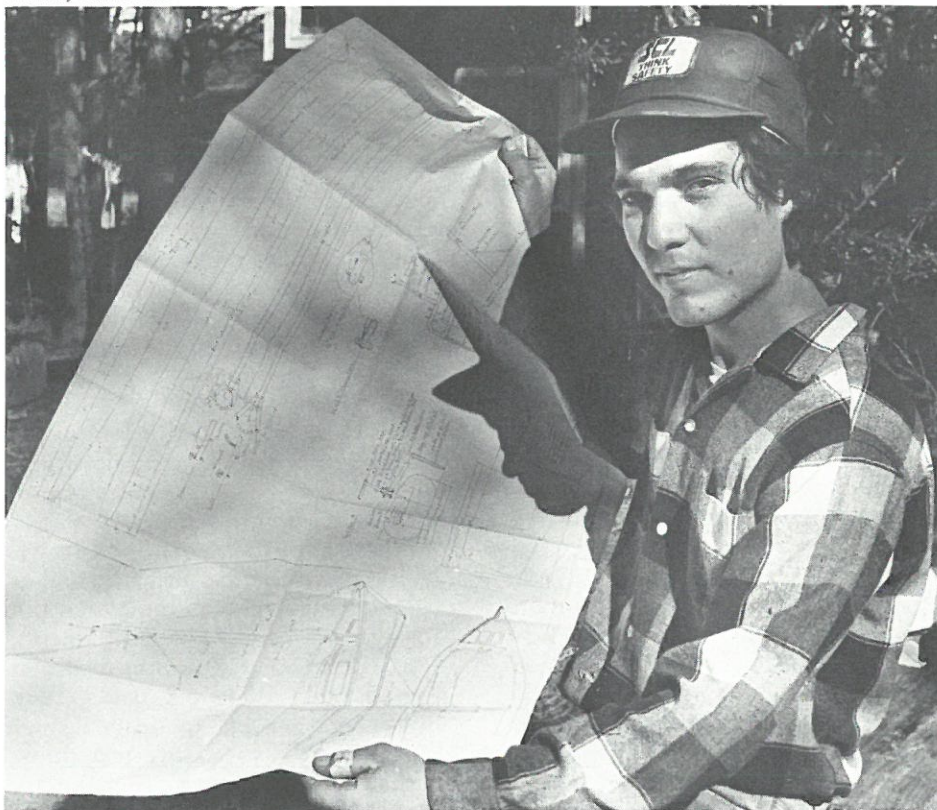
There are sailing experts. And, there are workboat experts who know horsepower and fishing. But when it comes to sail-assisted engine power, there are no real experts—only a few pioneers experimenting with a new breed of boat.

Several of these pioneers happen to be in North Carolina. Bill Hall. Bryan Blake. Paul Lockwood. So far, most of their work has been on paper. But they're beginning to get serious notice, in trade journals and national boating and fishing magazines, where their notions of sailing hulls and furling are appearing elbow-to-elbow with the latest in muscular workboats and V-8 diesels.

They point to a few successful experiments around the world: the Japanese *Shin Aitoku Maru*, a two-masted tanker with computer-operated, folding sails that save the ship's owners 50 percent on diesel fuel;

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Photo by Neil Caudle



Bryan Blake, boatwright, with blueprints

the Hawaiian *Cornucopia*, a 60-ft. schooner that sails to and from the tuna grounds at 7½ knots; the *Norfolk Rebel*, and others, like the German-designed *DynaShips*, that have not been thoroughly tested.

"I don't see any other solution to the fix these fishermen are in," Hall says of the "sail-assist" idea. "Of course, the first thing a fisherman does is burst out laughing when you bring up the idea of sail. But unless they go this way, I'm afraid they're going to just end up sitting on the dock."

Hall spent 18 years as a naval architect in the small boat design division of the Navy Department. He also has 20 years of experience on the water, as a commercial fisherman and charter-boat operator. He works now as a project engineer for Uniflite Corporation, a yacht-building firm with a boat shop near Holly Springs.

Hall has modified the design of a 50-ft. Chesapeake Bay bug-eye, the swift old sailing workhorse notorious for its ability to outrun the Maryland Oyster Police during the Chesapeake Bay oyster wars. Hall designed the craft as a sail-assisted diesel trawler. Drawings show a shallow draft, a beam tow (which Hall says would pull a 35-foot shrimp trawl), two masts and three self-furling Genoa jibs. The "jennies" are common on new sailboats over 30 ft.

"The hull shape is very good," Hall says. "It has evolved over the years to be very efficient in the water. The engine could be smaller and would not run as much. And, the difference between the cost of a big engine and a small engine would outfit the boat with sails."

Hall points out that almost half the time, the winds off North Carolina are 15 mph or stronger.

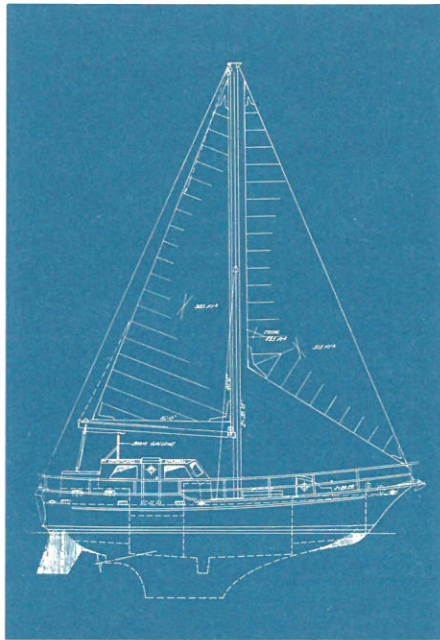
"This boat would be efficient under sail if the wind is twelve miles per hour or above," Hall says. "I believe a fisherman could use his sails at least fifty percent of the time he was out working."

Hall figures his boat would cost about \$180,000 to build, ready to sail. He admits to a business interest in the idea—he'd like to get a design commission or two. But he has also used the boat as part of his campaign to get more recognition for the fisherman's problems. He writes and publishes a newsletter, *The Professional Waterman*, and once served three

years on the Maryland Sea Grant advisory board, arguing the need for research and action to help the commercial fishing industry.

"You could say I'm pretty outspoken about all this," he says. "But I know what these guys are facing. I've been down that street."

Bryan Blake is a 24-year-old boatwright from Gloucester who has gotten his boatbuilding training on the job—in James Rose's boat shop on



CSY's yacht-turned-workboat

Harkers Island, and at the Straits Railway in Gloucester. At the railway, where boats are hauled out for repair, Blake has torn down and put together everything from modern yachts to historic old sharpies and bug-eyes.

Blake's ambition is to build new sail-powered workboats for what he believes will be a new generation of commercial fishermen—a generation that will sail.

Like Hall, Blake reached into the past for help when he began designing his first fishing boats. He chose one he calls a "Core Sound sharpie," a classic North Carolina workboat with remarkable speed and utility. He had overhauled several old examples at the railway, and knew what went where.

"My philosophy is that the men who used to build these old boats, they have generations of experience behind them," Blake says. "If we just throw all that out the door, we're making a big mistake."

Blake is especially reverent when he

speaks of sharpies built by Ambrose Fulcher, an Atlantic builder who died 30 years ago. About 50 of Fulcher's boats are still working on Core Sound. Blake's modified sharpie has materialized as two juniper-planked boats, the 20-ft. *Tortuga* and the 30-ft. *Sakonnet*. Both are adapted to use small engines when the sails are impractical.

Blake thinks that as the price of fuel goes up, fishermen will find it profitable to use sail once again. He also believes that state officials should look into incentives to encourage fishermen to use sail. He cites as an example the 25 or 30 skipjacks dredging oysters in Maryland's Chesapeake Bay waters.

"The only ones allowed to dredge there are the guys that sail," Blake says.

"So far, the people who take the idea seriously are the guys sixty or seventy years old—the ones who can still remember working under sail. They know it can be done."

For Paul Lockwood, the interest is not so much in boats, but sails. Lockwood, who has 20 years of experience in yachting and charter sailboats, makes sails for pleasure craft in Beaufort. But he sees, in the next few years, a new market for his product developing among commercial fishermen.

"I think it's going to take a more drastic increase in fuel prices," Lockwood says, "then you're going to see some fishermen going to the trouble and expense of sail. But almost all of them could benefit from it to some extent."

Lockwood is hoping to supply the sails for these fishermen. To convince them, he's planning to outfit a "demonstrator."

"Right now, I'm trying to buy a fifty-foot sailing yacht. It is a very heavy-duty yacht, and I plan to rig it out for commercial fishing. We'd actually get a crew on it, maybe sometimes this summer, and let people see first-hand that it will work."

Lockwood points to a similar project in the Tampa, Fla., area. The CSY Yacht Corporation of Tampa has been especially successful running a leasing service for the owners of the yachts it builds and sells.

According to John Van Ost, sales administrator for CSY, the company's leap into sailing workboats was in-

spired by a local fisherman.

"One of the fishermen down here came by one day a few years ago and bought one of our rejected hulls, Van Ost says. "He rigged it out for commercial fishing, and after he'd been using it for a while, word got around that his fuel bill had gone from six hundred dollars a trip to about a hundred and fifty dollars a trip. The same things that make the hull good for the leasing business— durability, strength, and stability in rough weather— make it adaptable for commercial fishing."

So far, CSY has built six sailing workboats designed especially for commercial fishing. All of them have been sold, at about \$150,000 each. The model is a 44-footer with a full keel, a sloop rig, roll furling, an insulated hold, an on-board freezer, an array of electronics and a 85-hp Perkins diesel.

Van Ost says the boats cruise at 8½

knots under sail with average winds. The deck of the yacht has been modified to create more work space and to accommodate the gear.

"We're using the sail to assist the diesel and to extend the efficiency of the boat, to make fishermen more competitive," Van Ost says. "We're able to use sail here about fifty percent of the time. It will work especially for the snapper-grouper fishery, for long-lining, gill-netting, and for a number of other things that don't require dragging a heavy net."

CSY is not waiting for a market to develop among fishermen before it promotes its boats. It is creating at least part of its market in its own "fishing school," an academy of commercial fishing opened in January. In its six-month courses, the school teaches would-be fishermen— not only the basics of how to fish, but also the

principles of sailing. The ten students already enrolled are getting first-hand experience aboard CSY sailing workboats.

The company is even establishing Gulf Coast "fishing centers" where local fish houses will work sailing vessels into their operations, with assistance from the company.

Don Sweat, Florida Sea Grant's marine advisory agent in the Tampa area, has been helping the company plan these centers, and advising them on the workings of the commercial fishing industry.

"The boat they're building is a real Cadillac," Sweat says. "I think there's going to be a lot of interest in this whole project, whether the sails prove themselves efficient or not. The design of the hull just means you're going to save fuel."

Sailboats built To work (play!)

There are a couple of rather startling sailboats stirring in the waters around Beaufort. No frills. No snazzy paint job. Just white, basic, and business-like.

Mark Fonseca and Susan Schmidt-Fonseca, and Jud and Martha Kenworthy, have revived the art of fishing under sail with one of the state's most venerable old designs: the Core Sound workboat.

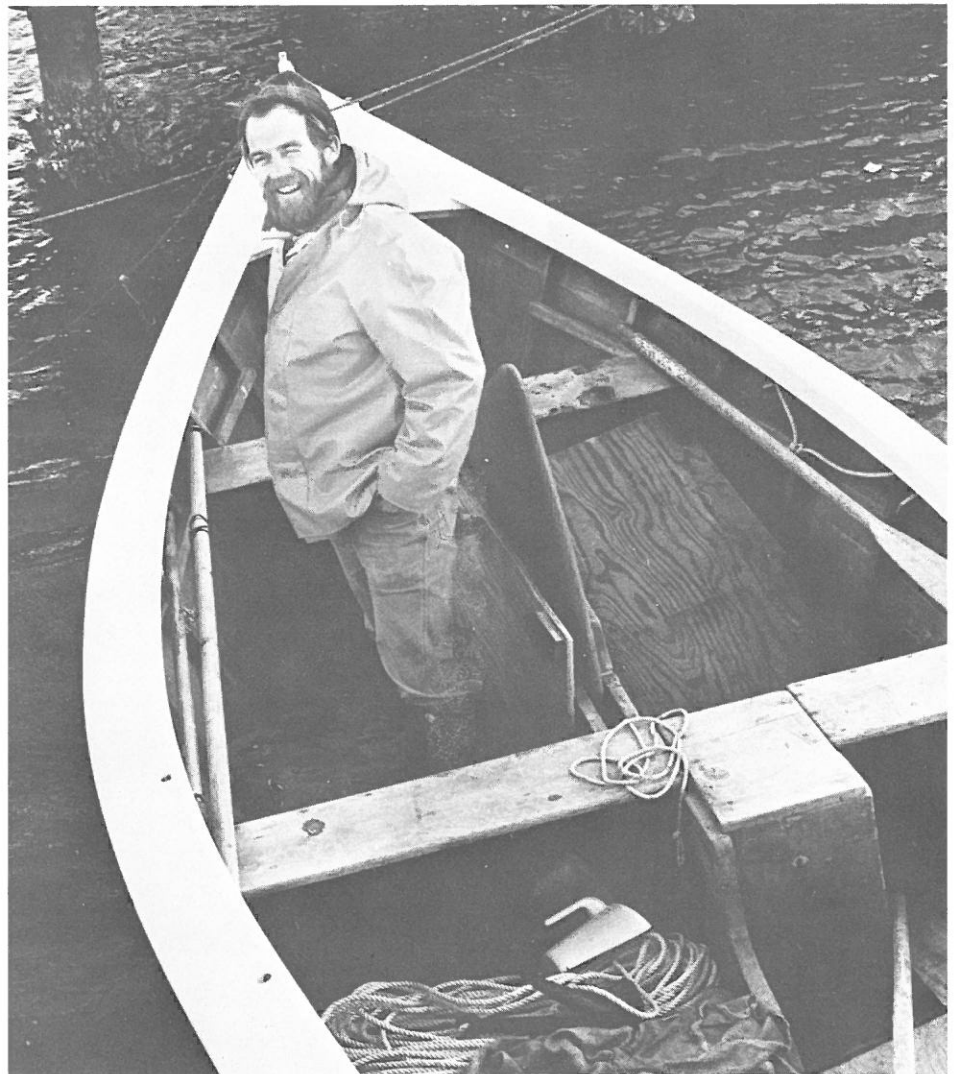
"We both like to sail, and we both like to fish," says Mark, "and we can't afford two boats. It seemed like a logical choice."

"We weren't sure at first that it was possible," Susan says of the job of combining those functions. "Then we found out about Bryan (Bryan Blake, the boat-builder), and he was already working on the idea."

With Blake's help and supervision, the Schmidt-Fonsecas and the Kenworthys put hours into building the first of the boats, the 20-ft. *Tortuga*, which the two couples shared until Mark and Susan decided to build one for themselves— a little larger, since they wanted more deck space for fishing and some cabin space for weekend sailing trips. Their 30-footer, the *Sakonnet*, was launched

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Photo by Neil Caudle



Jud Kenworthy in the Tortuga

last year.

Both boats are designed to use small auxiliary engines during fishing operations.

"There are times when I'd like a little more power," Kenworthy says. "You couldn't make a living, I don't think, using these boats for commercial fishing— not unless the cost of fuel just goes out of sight."

"You can use them mostly with passive fishing methods," Mark adds, "gill netting, oystering, channel-netting, that kind of thing."

Susan sees the boat as insurance against hard times, since it would be able to provide them with some food and income, without the expense of a lot of fuel. Building the boat, she says, was an exercise in compromise.

"But it works out. We have a pact. I won't yacht-up his fishing boat, and he'll keep the fish guts out of the cabin."



The Tortuga and the Sakonnet, minus sails and crew

Almost lost— the art of fishing under sail

According to Mike Alford, the state's fishermen and boatbuilders can learn a lot about wind-powered workboats right in their own backyards. There are hundreds of fine old sailing workboats discarded and moldering in creeks, sheds and yards.

Alford has begun a study of the state's historic boats for the Hampton Mariners Museum in Beaufort. When he finds a boat with historic impor-

tance, he measures it, photographs it, and transforms the lines and contours into detailed blueprints. Eventually, he hopes to compile a book of these studies, a work of reference for boatbuilders and historians alike.

(If you have an old boat, or have records, drawings or photographs of one, Alford would like to hear from you. Write: Mike Alford, Hampton Mariners' Museum, Turner Street,

Beaufort, N.C. 28516.)

Alford believes that without the introduction of cheap gasoline in this century, the old classics of the state's fleet would have continued to evolve.

"I believe that what we've seen is a sudden interruption in the natural development of the boat," he says. "We almost, but not quite, lost the art of fishing under sail. We need to go back to the extremely efficient boats of a couple of generations ago, and pick up where we left off."

Alford points to three mainstays in the old North Carolina sailing fleet of workboats:

—The sharpie, used mainly for oyster fishing along the shallows of the central coast, beginning in the late 1800s.

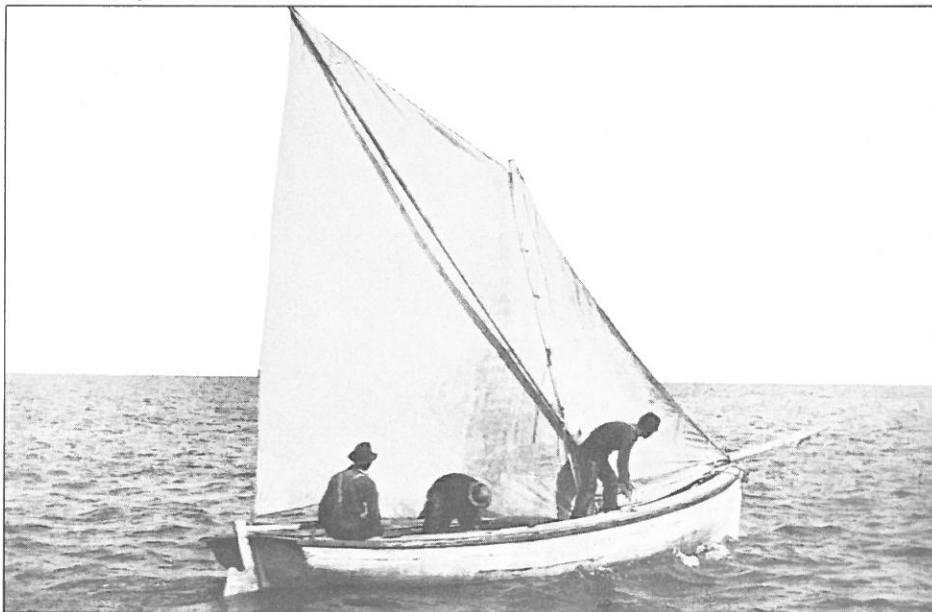
—The spritsail skiff, a late-19th century craft used up and down the coast.

—The Albemarle shad boat, which may have been indigenous to North Carolina.

Each of these types evolved to suit the locations, fisheries and economic conditions of the times, Alford says.

"Some of these boats are crumbling away in the marsh somewhere," Alford says. "But if we study them, we can learn— not only about where we've been, but also something about where we might go from here."

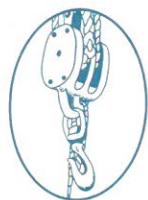
Courtesy of Hampton Mariners Museum



An Albemarle shad boat at work with spritsail rigging

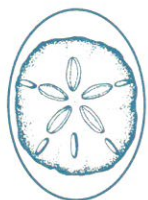
THE BACK PAGE

"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 (919/737-2354).



Winter air is dry and cold. And for fishermen, the combination of wet hands and dry air can mean chapped skin. Cracked and broken skin is an entry point for bacteria and fungus that can cause sores and rashes.

For years, fishermen have dipped their hands and work gloves in bleach to kill off the bacteria. But the bleach only dries out the skin more. Jim Patterson, a dermatologist at the University of North Carolina at Chapel Hill, suggests fishermen use a mild solution of peroxide or an antiseptic solution called provodone iodine to ward off bacteria. Patterson says if fishermen soak their gloves in bleach they should rinse the gloves in fresh water before wearing them. He suggests fishermen use lotion frequently during the winter and consult with a doctor if sores or rashes appear.



Bill Rickards, UNC Sea Grant's associate director, is resigning June 1 to become director of the Virginia Marine Science Consortium. In his post, on the Charlottesville campus of the University of Virginia, Rickards will coordinate all of Virginia's Sea Grant programs.

Rickards joined UNC Sea Grant as assistant coordinator in 1971. In addition to his administrative respon-

sibilities, he has conducted aquaculture research and has directed the NCSU Eel Culture Project.

Peter Fricke, an East Carolina University (ECU) anthropologist who has worked on several Sea Grant research projects, has temporarily joined the National Marine Fisheries Service's Office of Resource Conservation and Management in Washington, D. C.

In his new post, Fricke will advise federal officials on social-science issues related to the management of fisheries. He will also work part-time for Sea Grant's national office.

Fricke is principal investigator for a new Sea Grant project this year on recreational sound fishing in North Carolina. Marcus Hepburn, an anthropologist with the Institute for Coastal and Marine Resources at ECU and a former Sea Grant research assistant, will take over some of the work on the project. Hepburn will also help with Fricke's share of a Sea Grant study of hard-clam harvesting methods.



Sportfishing Gear Maintenance, an illustrated bulletin, provides tips on how to clean and pack away your rod and reel at the end of the fishing season. From restoring the reel handle to rewinding the line guides, the bulletin tells fishermen how to ready their equipment for the next season. Part of the "Blueprint" series, this bulletin can be obtained free by writing Sea Grant, P.O. Box 5001, Raleigh, N.C. 27650. Ask for UNC-SG-BP-81-1.

A revised edition of *Wreck Diving in North Carolina*, by Dennis Regan and Virginia Worthington, is off the presses. The booklet describes 43 of the state's underwater wrecks, relating their locations and depths. It also provides the locations of inland and coastal dive shops along with a list of nearby decompression facilities. If you would like to receive this free publica-

tion, write Sea Grant and ask for UNC-SG-78-13.

Sea Grant has also recently published a *Diver's Emergency Information Card*. The card could save your life by providing vital information if you are involved in a diving accident. The card also lists the names, locations and telephone numbers of the nearest hyperbaric chambers. The card is free for the asking from Sea Grant.

Estuarine Shoreline Erosion in North Carolina is a series of five colorful posters depicting erosion in four of the state's major estuaries: Core/Bogue Sounds, Albemarle Sound, Pamlico River and Neuse River. Written by Stan Riggs, Mike O'Connor and Vince Bellis, each poster includes a map with a description of shoreline types and erosion rates. The fifth poster, "Cause and Effect," explains the reasons for estuarine erosion. The posters are free from Sea Grant, but please specify which poster(s) you would like.



When business is good, there are about 500 women shucking scallops in North Carolina. Proposed changes in New England shellfish regulations would jeopardize the jobs of these women, half of whom are black.

This year, two Sea Grant fellowships have been awarded to two black students who will study the problem. Tony Arnette and Audrey Robinson, two sophomores studying sociology at ECU, will code, analyze and report data on the economic and social impacts of the proposed regulations, focusing on the role of black families in the development of the fishery. John Maiolo, an ECU sociologist and Sea Grant researcher, will direct the project.

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Sea turtles are having a hard time these days. Their numbers are dwindling and many are on the endangered species list. The disappearance of nesting grounds on the

beaches is one major cause of the turtle's decline. But many sea turtles die every year when they get caught in fishermen's nets and drown.

The National Marine Fisheries Service (NMFS) is sponsoring a workshop in Manteo in mid-March for the North Carolina and Virginia Sea Grant marine advisory services agents to explain a new sea turtle excluder device. The device is designed to keep turtles out of the fishermen's nets. After the workshop, Sea Grant agents will be able to pass along the new information to fishermen in their areas.

The fisheries personnel will also explain sea turtle regulations being considered by NMFS for the coasts of South Carolina, Georgia and Florida, fishing grounds for many North Carolina fishermen.



To catch the latest in workboats and nets for small-boat fishing, attend the Workboat Expo being held in Wilmington, April 4th and 5th. Sponsored by

UNC Sea Grant, the expo will gather small-boat designers, manufacturers, and dealers, along with net makers to exhibit their wares for small-boat fishermen. A series of free mini-

seminars also will be held during the expo on gear maintenance, tax management, fishing regulations and business management.

The expo was organized by Sea Grant marine advisory agents Jim Bahen in Wilmington and Bob Hines in Bogue Banks and Sea Grant specialist Leon Abbas in Raleigh. It will be held at the National Guard Armory, 2221 Carolina Beach Road in Wilmington. The expo will be open to the public Saturday, April 4th from 10 a.m. to 5 p.m. and Sunday, April 5th from 11 a.m. to 5 p.m. Admission for the expo is free.



The University of Georgia Extension Service is sponsoring a regional workshop for shrimp boat operators who are interested in converting to multi-purpose fishing. The workshop will be held March 31 and April 1 at the Ramada Inn in Savannah, Georgia.

Topics to be covered by experienced fishermen include offshore trawling for fin fishes; surface and bottom longlining; hook and line fishing and deepwater shrimping and scalloping. Boat construction and financing for diversification will also be discussed.

Funding has been provided by the Coastal Plains Regional Commission, Georgia Sea Grant and the University of Georgia. For pre-registration or further information, call Dave Harrington or Jack Rivers at (912) 264-7268.

Attention

We are purging the newsletter mailing list, and a postage-paid subscription card for you is in the mail now. We are required by law to periodically purge the list of *Coastwatch* subscribers. *Coastwatch* is free, but you must renew your request for it in order to remain on the mailing list.

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