



# Coastwatch

UNC SEA GRANT ■ FEBRUARY 1991

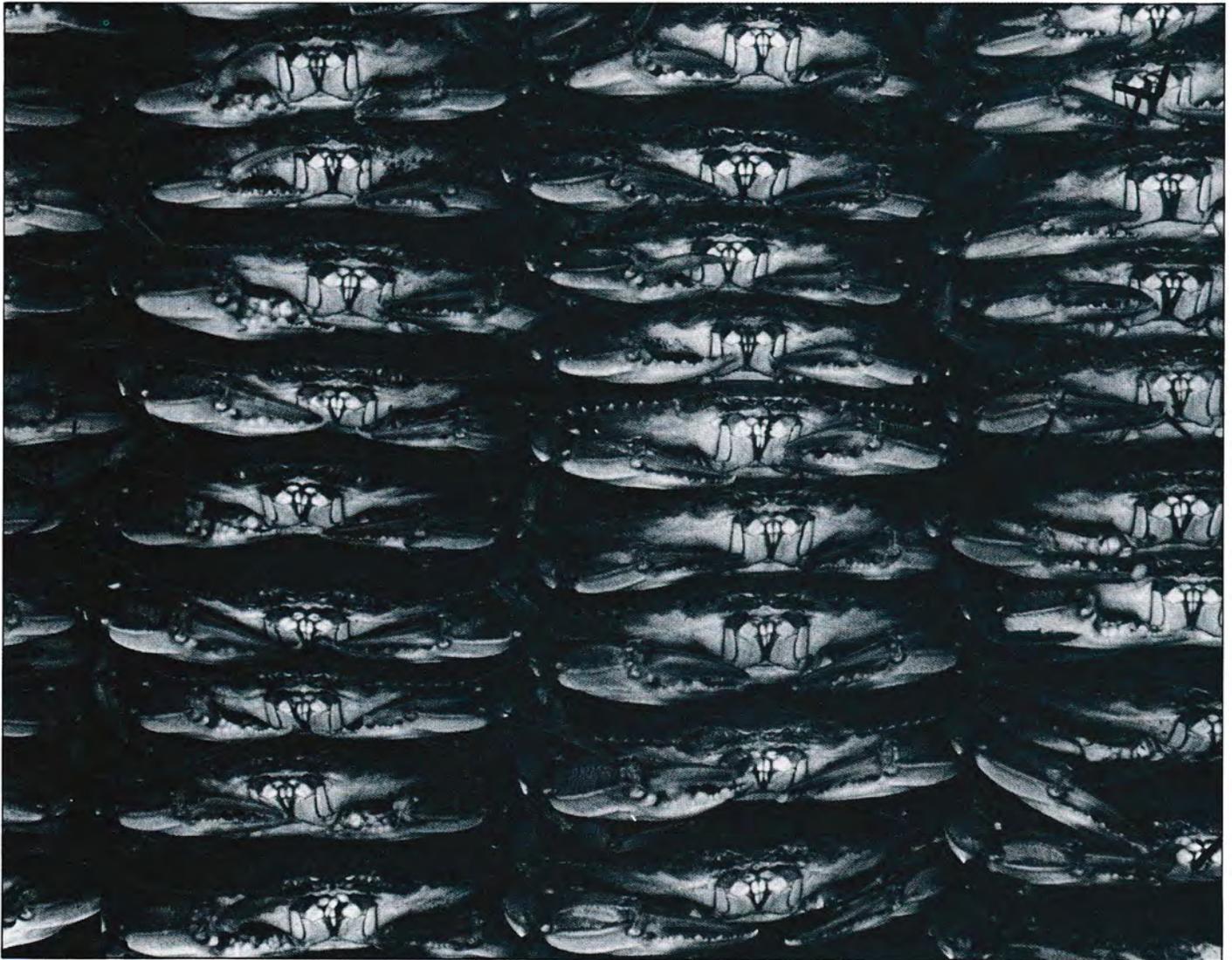


Photo by Mark Hooper

## Seafood Safety: An Issue For The '90s

# A Stamp of Approval for Tomorrow's Seafood

By Kathy Hart



Photo by C.R. Edgerton

HACCP.

It's one of those bureaucratic acronyms that doesn't tell you anything but means a lot.

It's being volleyed about in Congress and analyzed in university food science departments. In the seafood industry, it's applauded, dreaded and misunderstood.

The letters stand for hazard analysis critical control point, an awkward phrase that doesn't mean more than its acronym.

Translated into everyday English, HACCP is the mandatory inspection program being proposed for the U.S. seafood industry.

Consumer advocate groups from coast to coast have urged their congressmen to pass legislation that would mandate an inspection program for the seafood industry comparable to that used for red meat and poultry.

As demand for fish and shellfish has spiraled upward, so has concern about seafood safety and public health. The media has focused increasing attention on pollution in our coastal waters. And consumers adding one and one to get two have surmised that the catch harvested

from these waters may not be as safe as they'd like.

But their addition may be faulty, says Donn Ward, a seafood extension specialist with the North Carolina State University Department of Food Science.

He says seafood safety problems may be more a problem of perception than reality.

Just over 20 percent of all food-borne illnesses reported to the national Centers for Disease Control between 1973 and 1987 were attributed to seafood.

But after you adjust for per capita consumption and omit sicknesses related to consumption of raw shellfish, the number of illnesses drops to 25 percent below that for poultry and only slightly more than that for beef.

And even these figures may be too high because they include illnesses caused by fish caught recreationally, Ward says.

"You don't stop on the side of the road, shoot a cow, haul it home, clean it and cook it," he says. "But a lot of people do catch their own fish and shellfish, and often they mishandle it."

Illnesses caused by this mishandling



Photo by Steve Wilson

of recreational fish are lumped in government statistics with those resulting from commercially handled seafood. As a result, the seafood industry may be getting a bad rap it doesn't deserve.

"I'm not saying the seafood industry doesn't have problems with illnesses because it does," Ward says. "But the public's perception is that there are more problems than actual evidence shows."

And these aren't the only wrong ideas Americans have about seafood safety.

"The public has the impression that seafood processors are not inspected now," Ward says. "They are inspected. It's just not continuous inspection like we have for meat and poultry."

The Food and Drug Administration inspects all food, including fish and shellfish, that crosses state lines. They periodically visit seafood businesses to inspect plant sanitation.

The Environmental Protection Agency monitors coastal water quality, establishes allowable limits for specific toxins and tests fishery products. The U.S. Fish and Wildlife Service does the same for inland fish.

Oil spills in Alaska. Syringes on New Jersey beaches. Fishless water in Boston Harbor.

Consumers are getting the message from Dan Rather to Phil Donahue that our coastal waters are polluted.

Is this talk of pollution affecting people's perception of the fish and shellfish caught in these waters?

Maybe, say Sea Grant researchers David Griffith and Jeff Johnson. These East Carolina University anthropologists are determining what people know about coastal pollution and how it affects their seafood buying and eating habits.

Griffith and Johnson have surveyed consumers in several states and across North Carolina to see if geography, age, education or race play factors in people's knowledge about coastal pollution and

what they think of the fish and shellfish harvested from these waters.

Johnson says some people glean information from the morning newspaper. But others' ideas are based on folk theories or individual assumptions.

The team is just beginning to analyze its findings from more than 150 interviews. Now they're tracking 30 people with monthly telephone surveys to see if information they read or see—be it from Dan Rather or their next door neighbor—is affecting their eating habits.

When their study is complete, Griffith and Johnson will advise the seafood industry about educating its consumers. Armed with the right information and approach, the seafood industry can calm any fears the American public has about the seafood it eats.

Photo by National Fisheries Institute



On the state level, the N.C. Department of Agriculture inspects finfish facilities; the N.C. Division of Shellfish Sanitation, shellfish and their harvesting waters. And some county governments also scrutinize the fishermen's catch.

But all this inspection doesn't impress consumer advocacy groups.

They say that the present system focuses on plant sanitation not product safety, it's confusing and it's geared more for large processors than Mom and Pop operations.

To answer the public's call for better

*Continued on the next page*

inspection, congressmen have introduced no less than nine mandatory seafood inspection bills in the last few years.

None have passed.

Two major controversies are preventing passage, Ward says. First, Congress can't decide which federal agency should administer the inspection program. Some feel it should be under the auspices of the FDA; others vote for the U.S. Department of Agriculture.

And then there's the question of who pays for the inspection.

Some believe industry should foot the bill to ensure its own product safety; others say the seafood industry should be treated just like the red meat and poultry industries. The inspection in their plants is paid for by federally appropriated funds.

If Congress can resolve these two sticking points, then seafood may soon be inspected from the boat to the consumer.

And regardless of which agency regulates the program or who pays for it, seafood inspection will be based on the HACCP inspection method.

This method identifies the points, or hazards, during processing when seafood could become contaminated. These critical points would then be monitored to ensure that processing and handling procedures are safe and under control.

Each seafood processing plant, be it large or small, would develop a HACCP plan based on the types of fish and shellfish it handles, its equipment and its operating procedure. Once the plan received federal approval, then the plant would have to keep detailed records about its monitoring of the critical control points.

Ward says compliance with a HACCP plan should mean three things for American consumers. It should ensure public health and plant sanitation. It should also stop fraudulent activities such as purposely mislabeling a low-priced species as a higher priced one.

Although HACCP will have a big impact in the United States, its effects will also be felt abroad. American processors told Congress if U.S. products had to meet rigorous standards then imported

products should receive similar scrutiny.

Congress listened, and its proposed legislation requires seafood entering the United States to be bought only from companies that use an inspection method equivalent to HACCP.

American processors are divided on the issue of mandatory inspection. Many favor the program as a way to restore consumer confidence. Others feel it calls for too much government intervention.

Many just don't yet understand its concepts and complexities, Ward says.

But whether the seafood industry likes it or not, mandatory seafood inspection is the wave of the future.

"It's no longer a matter of if, it's a matter of when," Ward says.

"If consumers think seafood inspection is going to significantly reduce seafood-borne illnesses, then they may be disappointed. Illnesses associated with seafood are not a large problem now. But what they will notice is an improvement in the quality of the fish and shellfish they buy."

## Inspection Plan Gets Mixed Reviews

By C.R. Edgerton

If you want to know crab meat, ask Jimmy Johnson.

As plant manager for the Washington Crab Company in Washington, N.C., he oversees the handling of about 14,000 pounds of crab meat per day.

Before shipping it to northern markets, Johnson makes sure the meat is picked and packaged in a safe, clean environment. Doing it any other way, he says, would put his company out of business.

Although he has misgivings about governmental intervention in an industry that has traditionally thrived on independence, he says he's not afraid of what federal inspections by the HACCP method might mean to his business.

He's already made sure his factory meets certain guidelines for sanitation as imposed by agencies such as the state's Department of Environment, Health and Natural Resources and the federal Food and Drug Administration.

"Our plant is inspected on a regular basis," he says. "We're open to any type of inspection that they may wish to do."

Johnson says inspectors routinely sample his products (mostly crab meat with



Photo by C.R. Edgerton



some whole fish) and test them for bacteriological problems.

"We're also checked for cleanliness, sanitary practices and the physical condition of our plant, right down to the covers on our lightbulbs," he says.

Although current inspections are not as time-consuming or as thorough as those that would be mandated by a federally imposed HACCP system, Johnson believes they are sufficient.

"We don't need inspectors who come into our plant on a daily basis like they do in beef or poultry plants," he says. "Visual inspection of our product just won't work in a seafood market. It would be better for them to just come around now and then."

Johnson says he isn't convinced that seafood processors should be so closely scrutinized anyway.

"I'm not convinced that we need it," he says. "The push for HACCP is coming from consumer advocates and from huge seafood processors who stand to gain more business if the image of seafood is made more positive."

The media has not helped, he says.

"The consumer is wary of seafood because the industry hasn't come out against the biased accounts about seafood we see in the media. We're like ostriches with our heads in the sand. We haven't done much about it, hoping it'll go away."

Case in point: the red tide scare of two years ago.

"The red tide only affected a small area of our coast and only a very small amount of seafood," he says. "But during that time, you couldn't give North Carolina seafood away. The media blew the whole thing out of proportion."

More positive media reports could be one outgrowth of the proposed HACCP inspections, says North Carolina State University food scientist Donn Ward, head of a national committee charged with developing courses and materials for training seafood processors in the HACCP method.

"The tragedy is that people think seafood plants are not inspected at all," Ward says. "It's totally erroneous for them to assume that."

Ward says all seafood processing plants are regularly inspected by state and federal

agencies. HACCP will bring changes only in the method of inspection.

The more complicated techniques of HACCP inspections will create a need for educating seafood processors. The federal government will strongly urge that processors undergo HACCP training, although it won't be mandatory.

The training will include a two- or three-day educational program written on a high-school level. There will be a final exam and participants will be expected to maintain a certain level of competence.

Those who pass the exam will be given a certificate of completion by the National Fisheries Institute, sponsors of the training program.

"Mere attendance in this program will not mean a thorough understanding of HACCP," Ward says. "It will require some study and work. For some, this type of training will be absolutely essential just to help them understand the inspection program."

Ward predicts mixed reactions from seafood processors, some of whom will not accept the government's intervention in their businesses.

Jimmy Johnson says his company will welcome the new methods and the training. But he still feels HACCP will be more of a hardship than a help for small and family-owned processing plants.

"Our paperwork will probably triple and that will require more man hours, which will cost more," he says.

Some processors, especially those that have remained very small or are working in outdated buildings with antiquated equipment, may be forced out of business by the new inspection regulations.

"It's going to be a necessary evil, like a steam roller that you can't stop," Johnson says. "It will drive up the cost of operating and will narrow even more an already extremely narrow profit margin."

Johnson says his company will "easily comply" with HACCP inspections. And he expects the government to force foreign processors to comply under the same guidelines as American companies.

If HACCP inspections come, as they surely will, Johnson realizes that he and other small North Carolina seafood processors will have to adhere or go out of business.

"It's coming," he says. "We'll have to grin and bear it, and just hope for the best." ●

# Handling Seafood Safely at Home

By Carla B. Burgess

The responsibility for seafood quality and safety doesn't end at the grocery store or at the processing plant.

It carries over into our own kitchens and what we do there.

Sea Grant's seafood education specialist Joyce Taylor offers some tips on how to ensure a top-notch meal.

"The most important consideration in handling seafood at home is just plain old cleanliness," says Taylor.

Follow these guidelines during seafood preparation to assure sanitation:

- Wash hands frequently with soap and warm water before working with a new food or utensil.
- Prevent cross-contamination; never let raw seafood come in contact with cooked food. Use a clean cloth or paper towels while cooking.
- Use an acrylic cutting board, never a wooden one.
- Wash boards, counters and all utensils in detergent and hot water.
- Thaw frozen seafood overnight in refrigerator or under cold running water. Never let seafood thaw at room temperature.
- Don't leave cooked seafood out on the counter too long. Store in the refrigerator within two hours of cooking.

Some harmful substances in raw seafood—such as parasites—are eliminated by cooking.

Salmonella, a bacteria that can cause food poisoning, is also killed through proper cooking.

But suppose you like to fish for your supper?

Then from the nibble on the end of



Joyce Taylor

Photo by The Charlotte Observer

Seafood-borne diseases most often fall into one of three categories.

**Raw molluscan shellfish**—Shellfish harvested from water contaminated with harmful bacteria and viruses can transfer these diseases to consumers if the shellfish are eaten raw or partially cooked.

Runoff from farms and cities, malfunctioning septic tanks and poor sewage treatment facilities are all causes of contamination. In North Carolina, the Division of Shellfish Sanitation monitors our waters to detect bacteria that indicate the presence of harmful viruses.

If bacteria levels are high, then waters are closed to shellfishing. Currently, oysters and clams cannot be harvested from 370,081 coastal acres to protect public health.

Shellfish harvested from contaminated waters can carry gastrointestinal viruses and hepatitis.

**Scombroid poisoning**—Species such as tuna, mackerel and bonito have high levels of an amino acid called histidine in their bodies. If, after harvesting, these fish are not iced and kept cool, the histidine breaks down through bacterial action to become histamines that can cause an allergic reaction for consumers.

The reaction can include sweating, a peppery sensation around the mouth, dizziness, nausea and diarrhea. The discomfort usually lasts four to six hours.

Cooking the fish will not prevent the reaction.

**Ciguatera**—This problem is restricted to tropical fish. It is a toxin that begins with a dinoflagellate bloom around reefs and is passed up the tropical food chain.

The toxin is not detectable by taste, smell or sight.

The onset of the symptoms of this toxin occur rapidly. They are nausea, vomiting, headache, a tingling in the mouth and throat, and a reversal of hot and cold sensitivity.

If you exhibit any of these symptoms and think they are being caused by eating tainted seafood, call your doctor or hospital immediately.

your line to the delectable morsel on the end of your fork, you've got to be prepared.

"I always tell people to ice fish the minute you get them out of the water," Taylor says. "You can't ice them too soon."

Take special precautions with species such as tuna and mackerel, where improper handling can cause more than spoilage. If these species heat up, they can cause an allergic reaction that no amount of cooking will prevent.

Taylor recommends dressing these fish immediately, or at least heading, gutting and rinsing them before icing them down.

Superchilling, a combination of ice and salt in a cooler, is a good method for storing fresh fish when you're going to be out a few days.

It's not uncommon to see people fishing all day on a beach or pier while the three or four fish they've caught lie in a bucket of water beside them. Then they wonder why their fish aren't pleasing to the palate.

"They had cooked them in that bucket before they took them home is why," Taylor says.

"A lot of fish, if poorly handled, are not going to make you sick," she says. "They're just going to taste bad."

To learn more about how to properly handle, prepare, transport and store fresh fish, write Sea Grant for a copy of *Bringing the Catch Home*, publication UNC-SG-86-26. The brochure costs 50 cents. ■

# 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.



**N**orth Carolina clams are big business. In 1986, the hard-shelled mollusks accounted for \$7.5 million in income to North Carolina.

That money was earned mostly by part-time clambers who picked a site at random and waded into knee-deep water with bull rakes and floating wash tubs.

But there's a better way.

Sea Grant's newest publication will show you how to get your fair share of the Tar Heel clam pie.

*Clam Gardening: A Manual for the Small-Scale Clam Operation in North Carolina* focuses on how to lease a clam gardening site, plant seed clams, and harvest and market the mature crop.

Marine Advisory agent Skip Kemp wrote the manual based on his own research and his extensive experience working with successful clam gardeners up and down the Tar Heel coast.

"This manual is geared for the average person who wants to start his or her own clam gardening operation in estuarine bottomland leased from the state," Kemp says. "It's a book anyone can use."

The 36-page manual includes how-to drawings and photographs and lists companies that can supply the necessary equipment. Several tables and charts illustrate what the clam gardener can expect from an average crop.

For your copy of the manual, send \$5 to UNC Sea Grant, Box 8605, North Carolina State University, Raleigh, N.C. 27695-8605. Ask for publication UNC-SG-91-02.



**T**he 1991 North Carolina Commercial Fishing Show is right around the corner—March 9–10.

The show will feature exhibits and sales of items used in commercial fishing, such as boats, engines, nets, hydraulics, electronics and more.

Sponsored by the Carteret County Watermen's Association, the show will be held at the Crystal Coast Civic Center, 3505 Arendell St., Morehead City. Showtimes are 9 a.m. to 6 p.m. March 9 and 10 a.m. to 5 p.m. March 10. Admission is free.

NASA will have its SARSAT (Search and Rescue Satellite) van on exhibit. This system, used by Emergency Position-Indicating Radio Beacons (EPIRBs), will be explained and demonstrated.

A series of seminars sponsored by Sea Grant will be offered to watermen during the two-day event. Topics include: "Crab Shedding as a Commercial Venture," "Shellfish Culture as a Commercial Venture," "Dioxin in North Carolina Waters," "Seafood Safety and Inspection Legislation and the Fisherman," and "TEDs in North Carolina—What Do We Expect in 1991?"

For a schedule of the seminars, contact Sea Grant marine agent Bob Hines at 919/247-4007.



**W**ould you like to know more about how to preserve and protect North Carolina's coastal resources?

If so, the third annual Coastal Celebration promises to offer entertaining and educational answers to your questions. This unique two-day festival focuses on what individuals can do to conserve coastal resources.

The celebration is set for April 13–14 in the Kerr Scott Building at the North Carolina State Fairgrounds in Raleigh. The theme for 1991 is "Our Past, Our Future." Admission is free.

The event will include demonstrations of trades such as boat building, model boat construction, net making and mending, oyster shucking and decoy carving. Also back this year will be traditional music and dance, coastal folklore, storytelling and scrumptious seafood.

Last year's celebration drew more than 15,000 people.

A new attraction is the Educational Resources Room, which will feature panel discussions, slide presentations, demonstrations, lectures and other programs designed to educate adults and young conservationists.

The event is part of WRAL-TV's Save Our Sounds project. Co-sponsors include the North Carolina Coastal Federation and other non-profit and governmental organizations.

Sea Grant and The Big Sweep will be among the exhibits included. We hope to see you there!

**W**hen it comes to getting a good buy and the freshest fish at the seafood counter, it pays to know what's in season.

Sea Grant has a seafood poster that colorfully charts the availability by month of North Carolina's most popular fish and shellfish species.

At a glance, the 23-by-17 inch poster can tell you when Tar Heel fishermen are harvesting bluefish, flounder, king mackerel, snapper, shrimp and clams. For example, you'll know that February is a good month to buy sea bass, gray trout and porgies, but in July you'll want to fill your grocery bags with shrimp, croaker and hard crabs.

Using the chart should help you plan meals, get better buys and choose the freshest fish and shellfish.

The chart was compiled by Sea Grant's seafood education specialist Joyce Taylor. It's based on North Carolina commercial landing statistics.

If you'd like to hang this seafood availability chart in your kitchen, write Sea Grant. Ask for UNC-SG-84-04. The cost is \$2.

UNC Sea Grant is soliciting research proposals for the 1992-1993 funding period. If you're a researcher and would like to submit a proposal, call the Sea Grant office in Raleigh or consult the "Call for Proposals" memorandum available at

the research office of your university. All proposals must be submitted by April 4.

The Big Sweep is proud again! Big Sweep '90 has been named a state-

wide winner in North Carolina's 1990 Take Pride in America awards program. The program recognizes outstanding stewardship efforts involving public land.

Winners in the statewide program automatically become nominees for a national Take Pride in America award.

North Carolina's waterway cleanup, which takes place each fall, has won three national awards. This is Big Sweep's fourth state award.

The Big Sweep is organized by UNC Sea Grant, other state agencies, corporations and volunteers.

**Coastwatch is a free newsletter. If you'd like to be added to the mailing list, fill out this form and send it to Sea Grant, Box 8605, NCSU, Raleigh, N.C. 27695-8605.**

Name \_\_\_\_\_

Address \_\_\_\_\_

City/State/Zip \_\_\_\_\_

**To help us specialize our services, please answer these questions.**

I am in the following line of work:

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Boatbuilding/repair    | <input type="checkbox"/> Homemaker         | <input type="checkbox"/> Seafood processing/marketing    |
| <input type="checkbox"/> City/county government | <input type="checkbox"/> Lawyer            | <input type="checkbox"/> State government                |
| <input type="checkbox"/> Commercial fishing     | <input type="checkbox"/> Marina operator   | <input type="checkbox"/> University professor/researcher |
| <input type="checkbox"/> Educator               | <input type="checkbox"/> Marine recreation | <input type="checkbox"/> Other _____                     |
| <input type="checkbox"/> Farming                | <input type="checkbox"/> Mass media        | _____  |

Coastal property owner:  yes  no    Boat owner  yes  no

\$\_\_\_\_\_ contribution to defray printing costs for *Coastwatch*

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