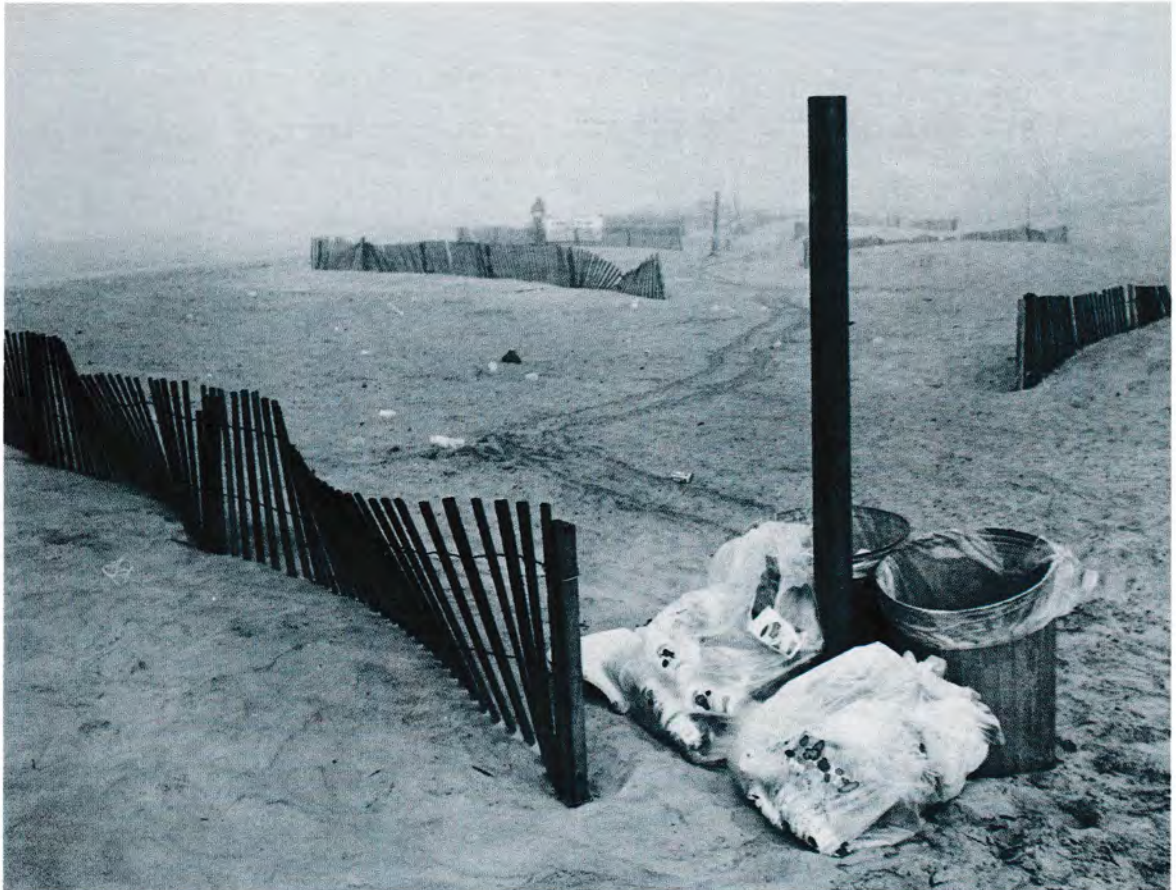




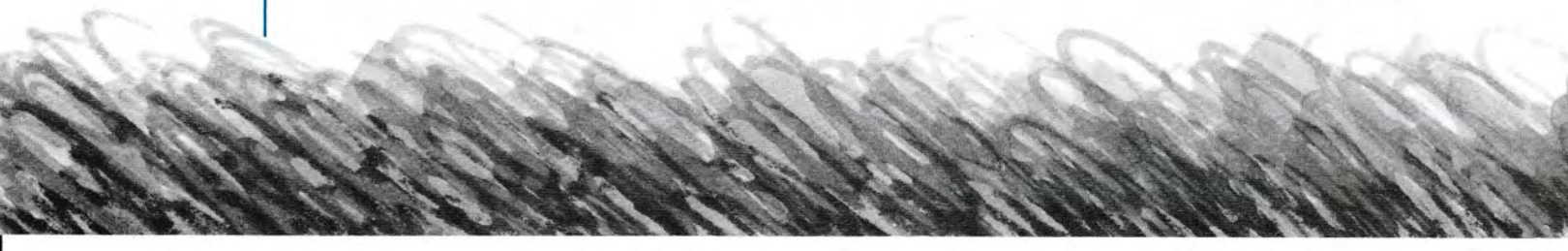
# Coastwatch

UNC SEA GRANT ■ AUGUST 1989

## WASHED ASHORE



*Photo by Scott Taylor*



# TRASHING THE OCEANS

By Sarah Friday Peters

Kuzu. Abfall. Ordures.

No matter how the speakers said it at the Second International Conference on Marine Debris, the words all meant the same thing.

Trash.

The speakers came from 11 different countries, but they spoke the same language as allies against plastics and marine litter.

For a week in April in Honolulu, Hawaii, the group learned that trash has no boundaries with the oceans as its highways.

For most, the story was the same.

Researchers Zoe Lucas and C.W. Ross of Nova Scotia found 90 percent of the items they picked up in a Sable Island study were plastic.

On six Mediterranean Sea beaches, Abraham Golik of the National Institute of Oceanography in Israel collected trash in a study earlier this year: 71.6 percent was plastic.

Russian packaging washed ashore on New Zealand beaches.

South American products anchored in Africa.

And a Chilean detergent bottle floated to North Carolina's Outer Banks.

No doubt plastic debris is a global marine pollutant that inflicts ever-increasing environmental and financial costs, says Jim Coe of the National Marine Fisheries Service in Seattle, Wash.

No doubt solutions must take an international perspective, too.

But too many questions stand in the way of answers now, the experts say. Researchers, technologists, economists, educators and policy-makers are just beginning to address problems associated with marine debris.

Four years ago, the first marine debris conference consisted mainly of scientists who found entangled birds or plastic pieces en route to other research.

Now counting those birds and collecting that plastic is the main focus of their research.

Peter Ryan has had his eye on birds for years.

The South African ornithologist says seabirds such as albatrosses eat more plastics than any other group of animals. Most often they mistake the debris for food such as shrimp.

The amount of plastic that birds ingest corresponds to the density of debris at sea, Ryan says. With those numbers increasing, he's worried about seabird populations.

Ingested plastics can physically damage a bird's digestive tract, his studies show. Some contain toxic compounds such as lead, mercury and PCBs. In addition, if a bird's stomach fills with plastic, there's no room for real food. And the plastic they don't digest can sometimes be regurgitated or "offloaded" to their chicks.

Bird nests tell the same story, says Richard Podolsky, an ornithologist at the Island Institute in Rockland, Maine.

Of 497 double-crested cormorant nests he examined visually, 188 or 38 percent had plastic in them. When some of the nests were dissected, the incidence of plastic was much higher—70 percent.



Photo by Scott Taylor

So far, Podolsky's data indicates the nests reflect the amount of debris floating into the area.

"There's more of it out there than we've all seen," Podolsky says. "It can have a long-term effect on the population."

The same thing can happen to fish, sea turtles, Northern fur seals, dolphins, whales, sea lions and other marine animals.

Incidents of plastic ingestion and entanglement are widespread. Yet data is sketchy because most of these animals move from place to place.

Keeping count of the trash is easier.

Scientific studies provide a window to the world of waste. And beach cleanups like North Carolina's Beach Sweep have become part of a national effort to pinpoint types and sources of marine debris in the United States.

Last fall during beach cleanups in 25 states and territories, 47,500 volunteers picked up 976 tons of trash. And they recorded each piece on data cards from the Center for Marine Conservation. The results comprised the first National Marine Debris Database.

So far, 65 percent of the items counted were plastic. Eleven percent were metal; 10 percent, paper; and 9 percent, glass.

Foam plastic pieces topped the list. Plastic pieces, plastic cups and utensils, metal beverage cans and foam plastic cups followed.

Not all the trash can be categorized by source, says CMC's Kathy O'Hara. But of the items identified most were galley-type wastes from boats and cargo ships. Fishing and boating gear came in second.

Less than 1 percent of the items found were medical wastes.

But that was enough to keep

thousands of vacationers away from New York and New Jersey beaches last summer.

In Long Island, 18 percent fewer people basked at the beach, resulting in a \$921 million loss in tourism revenues, reports Kathryn Wagner of the Office of Technology Assessment in Washington, D.C.

New Jersey beaches saw an 8 to 34 percent decrease in attendance and a \$745 million decrease in revenues, Wagner adds. Lost tourism and the increased costs of monitoring the beach hit hard.

The looming threat of medical debris and marine litter raises hairs in other coastal communities, too. And rightly so, Wagner says. Without change, an economic impact on vessels and shorelines is evident.

Implementation of Annex V of the MARPOL (Marine Pollution) Treaty should help. The ocean dumping law that went into effect last December prohibits the disposal of all plastics in the ocean and requires vessels to take such trash back to port.

The U.S. Navy is doing its part, too. By April, it reported a 70 percent decrease in plastics going to sea.

Teachers, port authorities, environmental groups, commercial fishermen, federal and state governments and others are joining the forces.

Even the plastics industry is cleaning up its act.

Companies are pouring millions into new technologies for degradable plastics and recycling. And the Society for the Plastics Industry, Inc., a national trade association, is working with CMC to educate the industry and the public about problems associated with marine debris.

Worldwide, such efforts will make the difference. And that's good news—no matter how you say it.

# TURNING TRASH AROUND

By Kathy Hart

Let's face it, America. We're a throwaway society.

In a wealthy nation rich in goods, almost everything is made to be disposable—diapers, paper plates, plastic cups, razors, lighters, cans, even contact lenses.

Use something once, maybe twice, and it's garbage. Plunk it in the trash can and push it out by the curb. Or, the less conscientious toss it out the window, drop it overboard or leave it behind.

Rep. John D. Dingell, chairman of the U.S. House Energy and Commerce Committee, says, "The age of disposables, from diapers to fast-food packaging, is leaving our communities awash in a sea of garbage."

In last year's beach cleanup of the Tar Heel coast, volunteers picked up thousands of disposables—8,346 soft drink bottles, 1,068 fast food containers, 11,238 beverage cans and 2,471 paper cups.

And North Carolina's beach cleanup totals are just the tip of an iceberg that may sink this nation in its own refuse. Consider these facts from the Environmental Defense Fund:

- Each American produces half a ton of garbage a year.
- Americans go through 2.5 million plastic bottles every hour.
- We trash enough office and

*Continued on next page*

Photo by Scott Taylor

writing paper annually to build a wall 12 feet high from Los Angeles to New York City.

- We throw away enough glass bottles and jars to fill the 1,350-foot twin towers of the World Trade Center every two weeks.
- We discard enough aluminum to rebuild our entire commercial airline fleet every three months.

All of these disposables are adding up to a heap of trash—160 million tons—and a national garbage bill that totals more than \$10 billion. Current waste disposal practices mean 80 percent of it will be buried in landfills and 10 percent burned in incinerators.

But what about the rest?

It's recycled—meaning it is reprocessed, reformed and reused. It's not lying in a landfill.

And that's what has city, county and state officials excited from coast to coast. Many landfills are near capacity, and with land prices skyrocketing, municipalities are hard pressed to find a place to bury their rubbish.

That's why we see wandering garbage barges on the nightly news and municipal refuse rolling ashore with the incoming tide.

But recycling offers hope. It saves money, energy and natural resources.

Moneywise, recycling saves dollars that would otherwise have to pay for the burial or burning of refuse. And it can generate income. Paper, aluminum, glass and plastic can be sold to recycling companies.

From an industrial standpoint, using recycled materials requires less energy than raw materials. According to the Environmental Defense Fund, making a can out of recycled aluminum takes only 5 percent of the energy needed to make an aluminum can from raw material.

And recycling conserves natural



resources such as forests and saves habitats.

But most folks think recycling means only glass, aluminum and paper. However, plastic can be recycled, too, says Barry Appelget of Mountain Polymers, a plastic recycling company in Greensboro.

Plastic soft drink bottles and milk jugs can be reformed into flower pots, carpet pads, toys, hose pipe and fill for pillows.

Plastic recycling is a fledgling industry, but one that is growing fast, Appelget says. And no wonder. There is plenty of plastic to recycle.

Appelget says 57.2 billion pounds of plastic are produced in the

**All of these items can be recycled.**

United States every year, and 15 billion pounds of that is one-time-use packaging.

Needless to say, much of that plastic ends up in our garbage. By volume, 25 percent of all trash buried in landfills is plastic.

And the qualities that make plastic so popular—light weight, durability and strength—also mean that it can take more than 400 years to degrade.

Although plastic's longevity counts against it in the landfill, it's a positive factor for recycling. Its durability and strength mean it can

be melted and reformed over and over again, Appelget says.

But only 1 percent of the plastic produced in the United States is recycled. Appelget is trying to increase those figures.

His company is processing 5,000 pounds of plastic a day or enough plastic per week to fill a one-acre landfill 8 feet deep.

But for Appelget's company and others like it to succeed, they need plenty of used material. And that means folks need to separate out their recyclable refuse.

Some local governments, such as Charlotte, Durham and Raleigh, have begun recycling programs.

In Charlotte, residents are provided with a special 10-gallon "curb it" container in which to place plastic soft drink bottles, glass and aluminum beverage cans. Newspapers are placed in paper bags on top of the containers.

According to the Center for Plastic Recycling Research, results from the pilot project showed that at least 74 percent of the eligible households in Charlotte were recycling regularly.

Other city and county governments in North Carolina and nationwide are following suit. Presently, at least 600 U.S. municipalities pick up recyclable materials at the curb. Others have designated drop-off bins.

If your town doesn't have a recycling program, you can still reduce your refuse by taking some items to the nearest buy-back center. Most centers accept glass, aluminum, tin cans and newspapers.

Some also accept magazines, aluminum foil and scrap, corrugated cardboard, paper bags, phone books, wood and plastic containers. Check with your buy-back center to see how you can make a difference.

# TAKE IT FROM THE KIDS

By Nancy Davis

When the camera panned on a remote beach piled high with trash, the audience stared stone-faced.

When they watched a baby sea lion struggle to free itself from a fishing net, they raised their eyebrows.

When the scene flashed to a seabird strangled in a plastic six-pack yoke, they winced.

But a sea turtle with a plastic bag protruding from its mouth brought gasps and looks of disgust from the audience.

"Ooh." "Gross." "Yuck."

Those were the reactions from a classroom full of sixth-graders—some of the very people who one day will be entrusted with the fate of our seas.

They were also some of the folks Sea Grant and other state agencies had in mind when we began sponsoring a statewide beach cleanup three years ago.

Sure, we wanted to rid the coast of trash, says Sea Grant marine education specialist Lundie Spence, the Big Sweep coordinator. But we also wanted to raise awareness of the litter problem on our beaches

and to change people's bad habits.

We figured if we educated kids about the problem, they'd grow up to be more responsible citizens.

"It's the standard cliché that the students of today will become the voters of tomorrow. But that statement carries a lot of weight," Spence says.

"We adults think that kids aren't concerned about the environment," Spence says. "But ask a kid what he thinks about littering. You'll find they have an awareness of the problem."

Spence was right. *Coastwatch* recently visited a sixth-grade science class in Wake County. And if their comments are any indication, these kids will take good care of the coast.

"I went to the beach last weekend, and I was looking for shells. But I found a lot of glass and trash, too," Aaron says.

"Our society is so lazy," Leslie says. "If there's a trash can on the beach next to them, they'll still toss their trash right on the ground."

"We're a society of convenience," Beth says.

"People think that leaving their trash on the beach doesn't matter," Anna says. "It saves them time. But it all builds up."

"Yeah," says Andrew. "People don't realize that the water can come up and carry all the waste out to sea."

Andy Wood, education curator at the North Carolina Aquarium at Fort Fisher, believes the best age to teach kids about their environment is the fifth grade. But even three-year-olds aren't too young to learn, he says.

"They can develop a sense of responsibility," he says. "It's important to approach kids early so they

*Continued on next page*

develop a positive attitude about themselves and their planet."

"Once they get a little older, they start to set a pattern. They're exposed to kids with other philosophies. If we wait too long, they may already have something ingrained in their minds. They may already have a lackadaisical attitude about where they put their garbage," Wood says.

Wood focuses his programs on marine debris towards children, with the hope that he'll also reach their parents.

"So when that parent pulls up to a traffic light and dumps his ashtray in the street, the child may tell the parent, 'Hey, wait a minute. Don't do that.' So we're able to approach adults through children. Sometimes adults won't listen to other adults, but they'll listen to kids," Wood says.

Evidently, Wood is right. Sixth-grader Becky says if she saw her parents littering, she'd reprimand them. And if she saw a stranger drop trash on the beach? "I'd give them a dirty look, and then I'd pick it up," she says.

Anna says, "If I saw someone littering, I'd tell them that animals are dying because you're doing this."

Andrew would have another approach. "I'd pick it up and ask them why they did that. Then I'd give them reasons not to do that again," he says.

The students also had some recommendations for reducing litter on the beaches.

Anna believes local beach communities should pitch in more. She says, "On some beaches, we should have more trash cans. If there are more there, people might use them more."

Andrew says we should "pass some more laws against dumping trash."

"If you see trash on the beach, take it back and help clean up," Courtney says.

Mark believes it's all a matter of getting the word out. "We should put advertisements on plastic bags—'Save the ocean.' And then people might think about it more," he says.

But even for all their concern and sage advice, every now and then, the innocence of a sixth-grader was replaced with a touch of cynicism.

Becky put the problem most succinctly when she said, "There's always gonna be somebody who doesn't care. There's always gonna be some business or some people who just don't care."

But Becky adds, "When we grow up and we get into offices like governor and stuff, . . . we can do a lot more about it."

### Concerned kids pick up trash in last year's beach cleanup.



Photo by Scott Taylor

# THE BIG SWEEP

Volunteer for The Big Sweep today!

Join others Sept. 23 for the nation's first statewide waterway cleanup. To volunteer, pick your favorite North Carolina beach, lake or river. We'll supply the litter bags; you bring gloves, a hat and sunscreen. For cleanup locations, call our Telecom USA toll-free hotline 1-800-27SWEEP between 8 a.m. and 5 p.m. Monday through Friday.

And show your support early by ordering a Big Sweep T-shirt. The white, 100 percent cotton shirts carry the blue and yellow sweeping logo across the front.

The T-shirts come in medium, large and extra-large sizes. Mediums are great for kids. Be sure to specify the quantities and sizes you need.

To order yours, send \$5 plus \$1 for postage and handling per shirt to Sea Grant. Make checks payable to The Big Sweep-KNCCB.

# 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.



**B**e one of a first. Join other volunteers on Sept. 23 for the nation's first state-wide waterway cleanup. Help pick up litter from Nags Head to the Nantahala River or just about any lake or river in between for The Big Sweep '89.

Formerly Beach Sweep, The Big Sweep will cover North Carolina's coastline and inland waterways. From 9 a.m. to 1 p.m., volunteers will collect trash and record each piece on data cards. The tallies will be compiled into a national data base in Washington, D.C.

Any groups or individuals can participate. Just choose your favorite beach, lake or river and call the Telecom USA Big Sweep Hotline 1-800-275WEEP.

And while you're out by the water, wear a T-shirt bearing The Big Sweep logo. The yellow swoosh with blue lettering covers the front of the 100 percent cotton shirt. To order yours, send \$5 plus \$1 for postage and handling per shirt to Sea Grant. Make checks payable to The Big Sweep-KNCCB.

The Big Sweep '89 is coordinated by Sea Grant, Keep North Carolina Clean and Beautiful, WRAL-TV, N.C. 4-H Program, N.C. Wildlife Resources Commission, N.C. Aquariums, N.C. Division of Coastal Management, N.C. Division of Parks and Recreation, and Keep America Beautiful/Carteret County.

**S**ea Grant has just installed a new computer inventory and data base system that will help us keep better track of our newsletter and publication customers.

In transferring from one computer system to another, it's possible that some errors may occur on your mailing label. If so, just write *Coastwatch* and notify us of any changes you would like made. Please include your new customer identification number that appears on the mailing label of this issue of *Coastwatch*.



**H**urricanes, severe storms and extreme flooding rarely occur in Eastern North Carolina. But there's always a chance they will.

Living on the sound, river or oceanfront increases the chances of property damage or loss from flooding. So for most coastal property owners, having flood insurance pays off.

Typical homeowner insurance policies don't cover damage caused by rising water from coastal storms, erosion, stream flooding or stormwater runoff, says Spencer Rogers, Sea Grant's coastal engineer. If you want flood insurance coverage, you need a separate flood insurance policy.

Flood insurance is required for most mortgages in flood-prone areas, Rogers says. And it is recommended for coastal property owners in threatened areas.

But such insurance can be expensive.

That's why Rogers recently wrote *Saving Money on Flood Insurance for Coastal Property Owners*. This 12-page booklet outlines construction techniques and building modifications that can reduce the annual cost of flood insurance premiums. And it explains little-known details in the flood insurance program that can help you and your insurance agent optimize rates.

As an example, one building style typical of coastal construction is described and modified to show the effect on annual flood insurance premiums.

*Saving Money on Flood Insurance* is a helpful guide for prospective builders, current homeowners or designers at the coast. For copies, send \$1 to Sea Grant and ask for publication number UNC-SG-89-05. And be sure to use your customer identification number, which appears on *Coastwatch*, when ordering.



**I**n May, all shrimp boats 25 feet or longer trawling in ocean waters were required to pull turtle excluder devices in their nets.

Since then, many fishermen using TEDs have complained of reductions in trawl efficiency and in shrimp catches.

But now, North Carolina fishermen can get help fine tuning their TEDs. With the help of a grant from the Gulf and South Atlantic Fisheries Development Foundation, Sea Grant marine advisory agent Jim Bahen and Varnamtown fisherman Gerald Ivey will work with fishermen having TED troubles.

The purpose of the project is to minimize the impact to fishermen of the transition to TEDs, Bahen says.

Jerry Schill, executive director of the N.C. Fisheries Association, is encouraging fishermen to call Bahen for help with their TEDs.

"We're trying to teach fishermen how to install TEDs and how to fine-tune them. That's what this grant is for. We think their problems of shrimp loss and damage to their nets will be minimized through this grant," Schill says.

Many fishermen are installing TEDs on their vessels for the first time. And improper installation can affect the performance of a shrimp trawl, Bahen says.

If you need help installing a TED or fine-tuning one already on your boat, call Bahen at 919/458-5498. Either Bahen or Ivey will assist you as soon as possible.



**T**he juniors and seniors in New Bern Senior High School's coastal biology class did more than study science last year. They published a book. *Seafood*

*for Thought* is a 144-page paperback book about North Carolina's bountiful seafood harvest.

The book is organized around the seafoods we pull from our Tar Heel waters, including everything from oysters and clams to octopus and squid.

*continued next page*

**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*

To compile the book, the students interviewed fishermen, seafood dealers and marine biologists. And they included several recipes for each species.

For your copy of the book, write New Bern High School, 2000 Clarendon Blvd., New Bern, N.C. 28560. The cost for *Seafood for Thought* is \$8.

*Coastwatch* is published monthly except July and December by the University of North Carolina Sea Grant College Program, 105 1911 Building, Box 8605, North Carolina State University, Raleigh, N.C. 27695-8605. Vol. 16, No. 7, August 1989. Dr. B.J. Copeland, director. Kathy Hart, editor. Nancy Davis and Sarah Friday Peters, staff writers.

**Coastwatch**

105 1911 Building  
Box 8605  
North Carolina State University  
Raleigh, NC 27695-8605

ADDRESS CORRECTION REQUESTED

Nonprofit Organization  
U.S. Postage  
P A I D  
Raleigh, NC  
Permit No. 896