



UNIVERSITY OF NORTH CAROLINA

# SEA GRANT COLLEGE NEWSLETTER

September, 1976

1235 Burlington Laboratories  
NCSU, Raleigh, N.C. 27607 Tel: (919) 737-2454

## Creeping and Crawling on Currituck Sound the dilemma of Eurasian Watermilfoil

In 1959 people noticed strange, long plants growing in a pond on the Pea Island refuge. The plants disappeared after the Great Ash Wednesday storm of 1962 and people forgot about the incident. Then in 1964, Currituck Sound fishermen began noticing similar patches of weed. A year later one patch had spread over 100 acres and by 1968, 8,000 acres of Currituck Sound were completely covered and 67,000 more acres were showing the plant. Today an estimated 60,000 to 80,000 acres in Currituck Sound, Kitty Hawk Bay, Little, Perquimans, Pasquotank and Alligator Rivers, East Lake, Point Harbor, Martin Point Creek and Back Bay, Va., are tangled with the weed—Eurasian Watermilfoil.

Since its arrival milfoil has snarled fishing lines, gummed boat motors, tipped sailboats and provoked quarrels between the bass sport fishermen who think the milfoil helps fishing and the residents and commercial fishermen who think milfoil is a pain in the neck.

Local residents complain about the mosquitoes, flies and spiders that inhabit the milfoil and the rotten egg smell that arises every fall when the plant rots and drifts to shore in large putrid mats. Eel fishermen curse the milfoil when they pull dead eels from their traps. Shoreline property owners grumble that their land's resale value has probably dipped. One woman lost her home when the firefighters' pumps clogged with milfoil from the Sound. And one man states flatly that Currituck Sound is "sick."

"It's a mess. There's no doubt about it," sighed Currituck County Manager Graham Pervier.

Where did milfoil come from? What is it? Why is it here? And what can we do about it?



## Coping with milfoil—what can and cannot be done. . .

Eurasian milfoil, or *Myriophyllum spicatum*, is an exotic, rooted water plant native to Europe and Asia. It is an aggressive grower and can survive in a wide range of temperatures, depths and salinities. Generally the plant prefers water with less than one-third to one-half salinity. Milfoil needs light to live.

Scientists speculate that milfoil came to the U.S. in the 1880s on a foreign ship. Fragments of milfoil can root and begin new plants: the plant has the capacity to grow 64,000 branches from one branch in three months. Milfoil can also propagate through seeds and winter buds. So it is not surprising that the weed quickly crept from New Jersey to the Chesapeake Bay where it was a problem in the 1950s and 1960s until it mysteriously died away. Milfoil is now a pest from North Carolina to Canada, Wisconsin, New York, Florida and in the Tennessee Valley Authority Lakes.

A bone-crunching hurricane would probably do a lot to alleviate the milfoil infestation of Currituck Sound, but other less capricious methods of control are available. All of the known controls, however, are either costly, slow, risky or still in the research stage.

Chemical control with the herbicide 2,4-D has already been tried on a very small-scale in North Carolina. The state sprayed selected areas in 1968, 1971 and 1974. Nine hundred acres of Kitty Hawk Bay which were sprayed in 1974 are still relatively

free of milfoil and other native plants. Martin Point and Point Harbor, however, which were dosed in 1971 and 1974, were buried in the weed by the summer of 1975.

No short-term harmful effects have been found with 2,4-D according to Thayer Broili of the Department of Natural and Economic Resources (DNER). But there is always the danger of future unknown impacts, so the state is reluctant to make a full-scale chemical attack on the weed, Broili said.

"It's basically a stop-gap measure that would have to be repeated every one, two or three years," he said. "It could be used effectively in limited areas, but I think we'd be in for a big mess if we used it for a large-scale operation." Plus, 2,4-D spraying costs an estimated \$60 an acre, he said.

Many Currituck and Dare County residents believe that salinity control is the answer to their milfoil problems. Scientists agree that milfoil could probably be controlled by raising the salinity of Currituck Sound to one-third or one-half sea strength. But the environmental and economic implications are large.

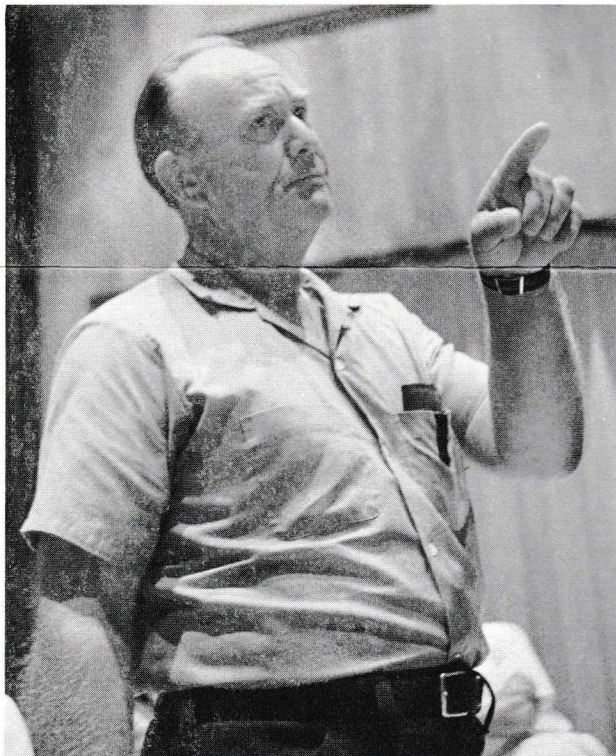
First the economics: In order to raise the salinity of Currituck Sound and keep it at a level inhospitable to milfoil, approximately \$17 to \$18 million would have to be spent in the first year if pumping were used. Another estimated \$3.2 million would have to be spent annually. It would take from 55 to 145 days to reach the correct salinity level and constant maintenance would be required, according to Ernest Knowles of the NCSU Center for Coastal and Marine Studies.

If an inlet were cut between the sound and the sea, \$10.2 million would have to be spent initially, Knowles estimated. And constant dredging would be needed to keep the inlet open, he said.

Environmentally the picture is also gloomy, especially for the bass fishermen and the local people who depend on the bass fishing business: milfoil may not like high salinity, but neither do the bass.

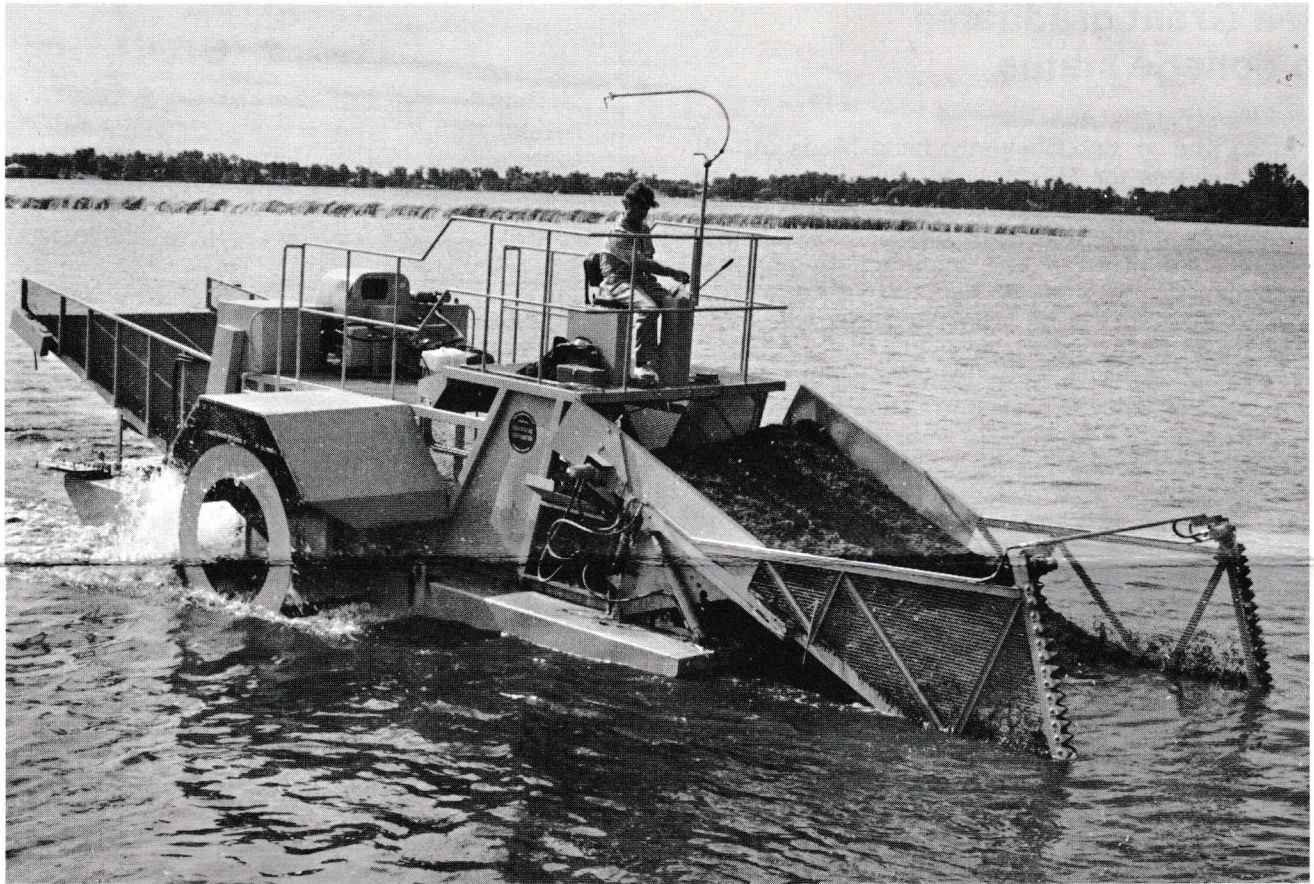
"It's obvious if we raise the salinity to levels that will control the milfoil we'll eliminate the fresh water species and the fisheries that go along with it," said Don Baker, Chief of the Inland Fisheries Division of the State Wildlife Resources Commission. "If we choose that route, it will be very expensive. Besides, we're talking about inducing changes we really won't be able to control. I don't think we have the expertise to do it, or the financing."

Mechanical mowing and harvesting of milfoil is a control method now being practiced in parts of the United States and Canada. Machines on gawky, paddle-driven rafts chop the tops of the plants and



Coinjock resident L. C. Barrow

(See "Looking," page 3)



**A weed harvester manufactured by the Aquamarine Corp. at work on a Wisconsin lake.**

## Looking at the solutions: a confusing array of choices

*(Continued from page 2)*

clear the debris, providing immediate relief for clogged waterways and offended eyes. Mowing and harvesting would have to be repeated, perhaps several times a season, and the machines are still slow—a good machine can cover an acre an hour, according to expert Don Livermore of the University of Wisconsin.

“Mechanically harvesting 80,000 acres is too much to think about,” Livermore confessed. “It boggles the mind.”

Mowing and harvesting limited areas is conceivable, although the machines are expensive. A single harvesting system costs between \$50,000 to \$100,000, according to C. Brate Bryant, president of the harvester-producing company Aquamarine Corporation. But community groups and counties have purchased them for use on Wisconsin Lakes, he said.

In North Carolina, however, counties are not allowed to spend ad valorem tax money, and probably not any tax money, for any type of aquatic plant control, according to Ron Aycock, attorney for the N.C. Association of County Commissioners. The state has the authority but has not set aside any funds for milfoil control. The U.S. Army Corps of Engineers can also take on the milfoil battle but only at the request of state or local governments.

And any Corps project must be justified on a cost-benefit ratio, according to spokesman Otis Johnson.

The financial problems associated with milfoil harvesting might disappear if an economic use could be found for the weed. “If they found a way for it to make people money, there wouldn’t be a sprig left in a year,” predicted Coinjock resident Marcus Griggs.

Research is underway to find cheaper and more efficient ways of harvesting and to find ways to economically convert milfoil into animal feed, silage (unfortunately, so far, cows hate the taste), fertilizer, compost and other products. Milfoil is also being investigated as a sewage treater and a methane gas supplier, according to Bryant, and is already used as a mulch.

Since milfoil depends on light, another way to control the weed would be through shading. Plants such as lotus could be grown over the milfoil to block the light, suggested Ron Stanley, of the Environmental Protection Agency. “The milfoil would eventually go, but then you’d have water lotus which is just as difficult to get through,” he said discouragingly. “Also it would take many years to stop the milfoil here because lotus grows very slowly.”

*(See “Coping,” page 4)*

# To the rescue . . . Sea Grant tackles the milfoil problem

So what do we do about milfoil?

UNC Sea Grant began meeting the milfoil problem July 23 and 24 with a conference at the Marine Resources Center at Roanoke Island. State officials and milfoil experts—both scientists and local residents—met and shared what they knew and didn't know about the weed. Then S. E. Caroon, a spokesman for the Coinjock Ruritan Club, implored the gathering to provide the hard data needed to get some action.

***"Currituck Sound is Currituck County's greatest asset and Currituck Sound is sick. It's sick and it needs help."***

"I am convinced that people in Raleigh don't really know how acute the problem is," Caroon told the group. "We who live along the Sound have only the Currituck Sound as our laboratory. Our tools are our eyes, our nose and the taking of life from the Sound. That's all we have. We know we have a problem, an environmental problem for the people living along the shore of Currituck Sound."

"It's become obvious to me we need your help. We need you to come down and see what we're talking about. And come in the right season. Come in the fall when Currituck Sound around Churches Island is like a septic tank, a cess pool. It's not fit to live near."

"Currituck Sound is Currituck County's greatest asset and Currituck Sound is sick," added L. C. Barrow. "It's sick and it needs help and it needs help beyond what we can do locally."

If funding is approved, UNC Sea Grant's first step toward helping Caroon and his neighbors will be to experimentally mow and harvest selected areas of milfoil next spring to study the growth and regrowth of the weed during a two-year period. Areas will also be sprayed with herbicides and studied.

## Coping with milfoil. . .

*(Continued from page 3)*

Black plastic could be spread on the milfoil or black dye dumped in the water, but neither method is particularly practical for Currituck Sound, admitted ECU biologist Graham Davis.

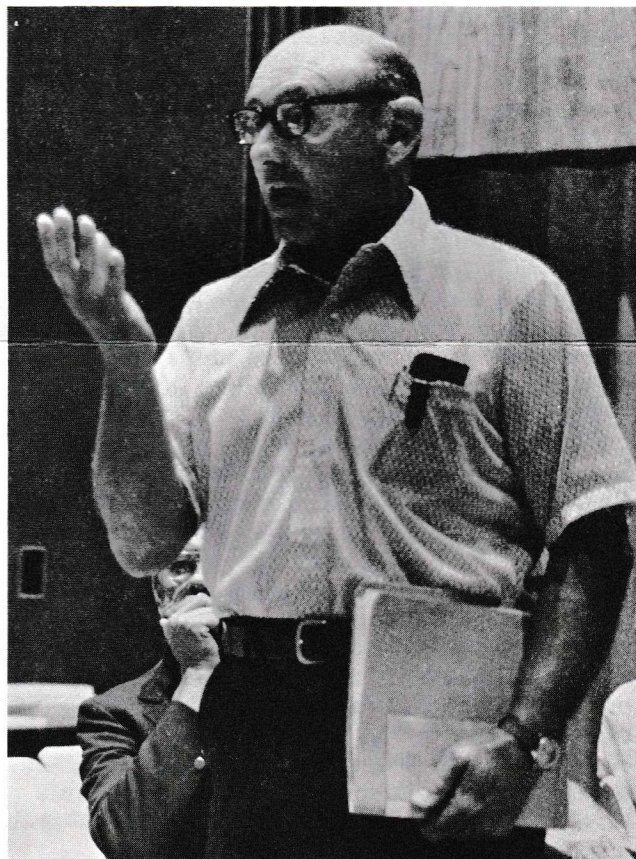
A more promising, but still experimental, solution involves using natural milfoil predators. The white amur fish, for example, could be introduced in the Currituck Sound to eat away the milfoil problem. There is no guarantee, though, that the amur—a distant cousin of the minnow although it grows to over 100 pounds—would stop eating once the milfoil course was through. Similar problems exist with other natural biological controls like the parayonyx moth and sea cow.

At the same time, Sea Grant researchers will be exploring potential milfoil uses, studying the relationship of milfoil to water quality and determining the impact of milfoil on bass and other important species such as spot, bluegills and carp. The "edge effect" of milfoil will be investigated to see what happens to fish and plants when selected areas are mowed in the middle of a milfoil patch.

Finally, Sea Grant will try to attach some economic values to Currituck Sound and to the impact of milfoil and different milfoil controls, since any action would have to be justified in terms of money.

"Milfoil is probably doomed to failure," said B. J. Copeland, Director of the UNC Sea Grant College Program. "But the question is when will the failure occur and can we put up with it while it's here? If we are expected to deal with the problem, there has to be a gelling of what the problem is and what the choices of action are."

For a copy of the proceedings of the milfoil conference, write UNC Sea Grant, 1235 Burlington Labs, North Carolina State University, Raleigh, N.C. 27607.



Coinjock Ruritan Club spokesman S. E. Caroon

## College status

# Sea Grant earns an "e" for excellence

When S. E. Caroon got up and asked permission to speak, he said he had a tale to tell that folks "up in Raleigh" hadn't tuned in to.

Dr. B. J. Copeland, Sea Grant director, allowed as how he'd called the Eurasian Watermilfoil conference to give scientists, state-local officials, and coastal residents a chance to speak and listen. So, next day, Coinjock resident and Ruritan Club member S. E. Caroon approached the podium armed with letters and notes.

In all, Caroon and the others who spoke on milfoil gave the audience an earful of the problem which coastal residents and the Coastal Resources Commission had asked Sea Grant to explore.

Afterwards, some of the scientists and other professionals got together. They figured out what they thought it would take to combat and, perhaps, use milfoil.

Their plan is now part of Sea Grant's research proposal for 1977. If funds are approved this fall, Caroon and his neighbors will get some help.

*"Sea Grant College just verified our own commitment to trying to solve relevant problems related to North Carolina's marine resources..."*

Charlie Bass, who fishes out of Mackeys, is getting some help, too. Four years ago, no one in North Carolina much cared about eel fishing but Sea Grant advisory agents decided the state's eels would bring a high price on export markets. Bass and others took a liking to the idea. Last year, eeling brought fishermen \$600,000 and helped get a new company going. Related industries are estimated to have produced \$6 million in investments.

Private individuals and state officials alike got a promise from Washington last month that UNC Sea Grant would continue to listen to and help the Charlie Basses and S. E. Caroons of North Carolina. Secretary of Commerce Elliot Richardson announced that the University of North Carolina Sea Grant Program had been selected for Sea Grant College status.

The designation recognizes UNC Sea Grant for a job well done. It also guarantees stable and, probably, increased funding for UNC Sea Grant's coastal research and advisory activities. At the same time, it challenges university researchers and advisory agents to maintain their standards of excellence in identifying and meeting coastal problems head on.

UNC Sea Grant director Copeland believes the key to the program's success lies in the strong ties researchers, advisory agents and administrators have been able to establish both with the people of North Carolina and with state officials.

"Sea Grant College just verified our own commitment to trying to solve relevant problems related to North Carolina's marine resources. The success of the program has been and will always be due to the people who do the work, and to the relationship we have established and hope to maintain with state agencies, the university system, and the people."

*(See "Sea Grant," page 6)*



**UNC President William C. Friday and Governor James Holshouser, Jr. at the Sea Grant College ceremony.**

The University of North Carolina Sea Grant College Newsletter is published monthly by the University of North Carolina Sea Grant College Program, 1235 Burlington Laboratories, Yarbrough Drive, North Carolina State University, Raleigh, N.C. 27607. Vol. 3, No. 9. September, 1976. Dr. B. J. Copeland, director. Written and edited by Karen Jurgensen and Johanna Seltz. Second-class postage paid at Raleigh, N.C. 27611.

## Sea Grant graduates to college status

(Continued from page 5)

According to Bob Shephard, who heads up advisory services for the National Sea Grant office in Washington, North Carolina Sea Grant is recognized for particular strengths in:

—its recognition of and approach to regional problems;

—the excellence of its scientific researchers and maturity of its advisory services;

—and its ability to first identify problems and then “spread resources around” thus satisfying a variety of needs from coastal zone management to recreation advisory services.

Around the country, federal-state Sea Grant partnerships have been growing. There are now 17 institutional programs, 10 coherent programs and four more states are joining up. Sea Grant colleges are at the top of the organizational charts. To be considered for college status, an institutional program must be three years old, must have demonstrated an ability to get the job done and must include research, advisory services and education.

UNC now joins 10 other schools in Sea Grant College status. At those other schools, the recognition has helped them improve their programs, protected them from level-funding budget crunches (colleges are given preferential treatment), and given them political cudos within their state governments.

So what does all this mean to the people of North Carolina? According to National Sea Grant director Robert B. Abel, college status “is really the recognition of the meaning” that has already been demonstrated. It means that the University of North Carolina Sea Grant College Program will continue to strive to “close the loop,” as Abel put it, to convey the results of scientific research to the people who can use the information—the fishermen, the seafood processors, the recreation industry, coastal residents, vacationers—those who use the state’s coastal resources.

University of North Carolina  
Sea Grant College Program  
1235 Burlington Laboratories  
North Carolina State University  
Raleigh, N.C. 27607



## Free, Free

The Sea Grant Newsletter is about coastal things. And, it's free. If you'd like to receive it, fill in the blank below and return to Sea Grant, Box 5001, Raleigh, N.C. 27607.

Name \_\_\_\_\_

Address \_\_\_\_\_  
Street or Box Number

City State Zip Code

To help us better serve you, please indicate your coastal interests.

## Fresh off the Press

### Public Use of Private Beaches

by David J. Brower and David W. Owens  
publication number UNC-SG-76-08

### “Taking” By Regulation and the North Carolina Coastal Area Management Act

by David Rice  
publication number UNC-SG-75-26

### Aerial Photography for Planning and Development in Eastern North Carolina: a handbook and directory

by Simon Baker  
publication number UNC-SG-76-03

### Ecological Determinants of Coastal Area Management

by David Brower  
publication number UNC-SG-76-05

To order: Write Sea Grant, Box 5001, Raleigh, N. C. 27607

Second-class postage paid at Raleigh  
N.C. 27611