marine sciences research center
State University of New York at Stony Brook
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MSRC SOUNDINGS

LI Brown Tides: Why?

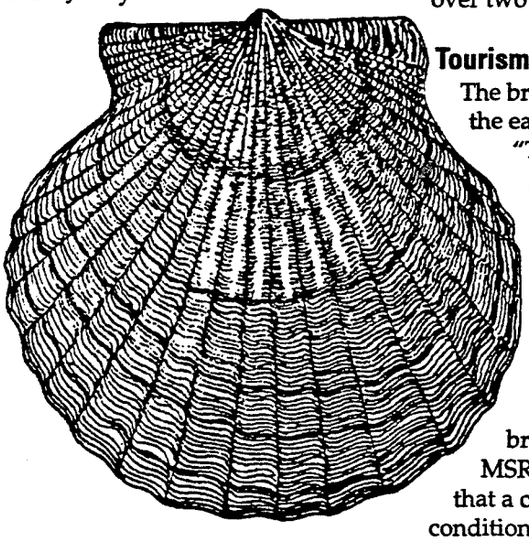
Why here? Will it strike again? What can be done about it? Those were the questions asked at the Brown Tide Summit on Long Island last fall following 1995's brown tide that devastated the Peconic Bay scallops and threatened the east end tourist industry.

The summit gathered scientists from throughout the nation, marine resources officials, residents, legislative representatives and environmentalists. The conference was organized by Stony Brook's Marine Sciences Research Center (MSRC), Sea Grant, and the Peconic Estuary Program.

Brown Tide Initiative Funded

Out of the conference came the Brown Tide Initiative, a three-year, $1.5 million research program, funded by the National Oceanic and Atmospheric Administration's (NOAA) Coastal Ocean Program and administered by Sea Grant. A scientific team from eight different research institutions from Maine to Virginia will work together to uncover why the brown tide keeps happening here. Projects involving MSRC scientists will receive $539,944 to study what conditions create brown tide blooms.

This money represents a scientific and public effort to end the threat from brown tides. Blooms of these one-celled plants have damaged shellfish and tourist areas along the east coast, from Rhode Island to New Jersey.



Scallops Wiped Out

A decade ago, brown tides wiped out Suffolk's Peconic Bay scallop fishery. With re-seeding, the fishery came back. Brown tides continued to damage the scallop fishery, and in the summer of 1995, disaster struck again. The one-celled plant known as *Aureococcus anophagefferens* returned to the eastern half of Great South Bay, Moriches Bay, Shinnecock Bay, and throughout the Peconic Bays system with an intensity not seen since the 1980s. Peconic Bay scallop populations plummeted.

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This summer, Long Island was spared another serious outbreak of brown tide, although a brief bloom with cell counts of up to 500,000 cells per milliliter occurred in Moriches and Quantock Bays. Major brown tide blooms contain over two million cells per milliliter.

Tourism Threatened

The brown tides also threatened the east end tourist economy: "There is a major financial impact from the brown tide," said MSRC Associate Director William Wise. "Visitors and boaters stay away when they read in the newspapers that it's like consomme soup out there."

Since the first severe brown tide bloom in 1985, MSRC scientists have found that a combination of drought conditions that increase water salinity and rainstorms that bring iron-rich runoff into the embayments favors this unusual organism.

Virus Isolated

Furthermore, during the summer of 1992, researchers isolated from the waters of the Peconic and Great South Bay systems viruses that infect the brown tide organism. Laboratory experiments show the virus can infect the algae but high iron levels may delay the viral destruction of brown tide blooms.

Because scallops have a short life span — 22 to 24 months — and reproduce only once or twice during that time, they are particularly vulnerable to brown tides. But the algae harm other shellfish as well, including oysters and hard clams. The brown tide blooms block the available light in the water, reducing the extent of the eelgrass beds that are essential habitat for the scallops. Also, substances produced by the algae interfere with shellfish feeding mechanisms, and the shellfish starve.

Food Chain Studied

Researchers will continue to look at the brown tide's place in the food chain to learn both what preys on the brown tide and what nutritents the brown tide needs. Scientists at the MSRC will also study the virus that infects *A. anophagefferens* and will continue researching the environmental conditions that produce brown tide blooms.

For more information, call Mr. William Wise, (516) 632-8656

Message from the Director

Soundings is a new publication from the Marine Sciences Research Center designed to inform MSRC's friends about our recent activities. Ranked by the National Research Council as one of the top ten oceanographic institutions in the nation, the MSRC is also the country's premier coastal research institution. We hope to give you news of ongoing projects and events and the names of faculty and staff for further information. I welcome comments on how *Soundings* can meet your needs.

--- J. Kirk Cochran

marine sciences research center

MSRC SOUNDINGS

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LI Recycling Twice State Rate

Long Islanders recycle an average of almost two pounds per person per day, nearly twice the State average, say researchers at the MSRC's Long Island Waste Reduction and Management Institute (WRMI).

Their findings are detailed in the first two volumes of what will be a six-volume comprehensive report on Long Island recycling habits. The new report, "An Assessment of Recycling on Long Island," also shows that on a per capita basis, Hempstead Town residents recycle more than anyone else – 955 pounds per person per year.

"Recycling has grown tremendously on Long Island over the past decade," says WRMI director Larry Swanson, "but we have yet to determine the most realistic recycling goals for Long Island." Recycling on Long Island has increased from some 25,000 tons in 1986 to over 800,000 tons in 1994, he said. Statewide, New Yorkers recycle at the rate of 1.35 pounds per person per day.

Defining recycling is a thorny task for researchers, Swanson points out, "but we hope to come up with a more appropriate definition based on the complexities of the waste stream. For example, plastic soda bottles you bring back to the supermarket are not considered recyclables. If you put them in your municipal recycling bin, they are."

•All 15 Nassau and Suffolk municipalities have mandatory source separation programs that targets newspaper, glass, metal and plastic containers.
All but one of the programs also targets corrugated cardboard; and all but one recycle yard wastes.

•East Hampton Town had the highest rate of household recyclables — paper and containers collected at the curb or separated at dropoff centers. Huntington had the best curbside collection, with 241 pounds per person per year. Shelter Island had 1994's best recycling rate of 45 percent of its waste stream.

•The higher the household income, the greater the efficiency of the curbside collection programs.

For more information, call Dr. Larry Swanson, (516) 632-8704

WASTE REDUCTION AND WRMI MANAGEMENT INSTITUTE

Camp Sea Wolf

Some 240 children had a summer they will never forget, thanks to the Marine Sciences Research Center (MSRC) and the Center for Excellence and Innovation in Education (CEIE).

Camp Sea Wolf is an environmental camp at Peconic Dunes in Peconic on Suffolk's north fork that combines a traditional camp experience with environmental programs. These include wetlands study, marine science, forestry, wildlife biology and ecology.

MSRC's Jennifer Ericsson developed a program in marine sciences, and estuary and wetlands study for 11- to 14- year olds. Ericsson is completing a master's in marine environmental sciences and her certification in secondary education. She worked closely with the camp's other educators to "have kids learn how all the individual environments fit together." The camp had three, one-week sessions, serving 80 children each week.

Getting her sixth, seventh and eighth graders to do good science and have fun was Ericsson's challenge. To make soil permeability more meaningful, Ericsson's kids tested the soil as they gathered worms for fishing and correlated permeability with worm concentration. In her aquifood lesson, the campers compared Long Island's soils to common snacks that they then sampled.

"You are not going to find any place else that offers you our program," camp director Richard Hilary said. "Our campers not only learn about the environment, they learn to be stewards of the environment. That will stay with them all their lives."
For more information, call Mr. William Wise (516) 632-8656