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Crucial eelgrass disappearing; nitrogen blamed
KIRK MOORE
Asbury Park Press

By KIRK MOORE
TOMS RIVER BUREAU

Barnegat Bay's underwater sea grass meadows — critical nursery areas and home to many of the estuary's crabs and fish — thinned dramatically from 2003 to 2006, a trend that Rutgers University scientists link to high levels of nitrogen pollution coming into the bay.

Eelgrass beds in Barnegat Bay showed an average loss of half of their biomass, the measured weight of fronds per square meter of bay bottom, while the loss was almost 88 percent in Little Egg Harbor, the southern end of the estuary, according to a paper recently completed by research professor Michael J. Kennish and field researchers Scott M. Haag and Gregg P. Sacowicz.

The Rutgers report comes weeks after state biologists reported that bay scallops sharply declined in 2006, after a couple of years when the bivalves were widespread in Little Egg Harbor.

"The scallops really inhabit the sea grass beds . . . and now you know why the scallops weren't there," Kennish said. "It's a primary indicator of conditions in the bay."

At the top of the scientists' list of suspected causes is what Kennish calls the ongoing eutrophication of Barnegat Bay: an ecosystem-wide shift that's come from increasing flows of nitrogen compounds in the water.

Nitrogen fuels the growth of algae, Kennish said, which can smother eelgrass.

The scientists' work on eelgrass could pave the way to establishing standards for nitrogen emissions into waterways, said Kennish, who is on a national science advisory board helping the U.S. Environmental Protection Agency deal with the problem.

EPA officials say two-thirds of the nation's estuaries have eutrophication problems, and Barnegat Bay is

near the top of that list.

"The problem is, there's no nutrient standard in New Jersey or other states to control nitrogen inputs," Kennish said. Developing those standards would give government and environmental agencies a warning signal, Kennish said: "You cannot exceed that number without wrecking the system."

Longtime eelgrass researcher Paul Bologna, director of the aquatic and coastal sciences program at Montclair State University, says he sees similar patterns in his data on the bay's aquatic vegetation dating back to 1998, although it's not as dire in some locations.

"There are parts of my data that are very similar, but in some locations we've seen more stability," Bologna said. "We're also having some successes with (eelgrass) restoration."

The 2003-06 timeframe may show an especially sharp drop because water quality in 2003 was especially good, with a disappearance of brown-tide algae that had plagued the bay earlier this decade, Bologna said.

Confounding factors like brown tide make it hard to determine "what is a good year, what is a normal year?" he said.

"I don't disagree with Mike's (Kennish) assessment that it's due mostly to human activity and excess nitrogen going into the bay," Bologna added.

Some of it comes as atmospheric fallout, from air pollution caused by distant power plants and motor vehicles, scientists say. But half of it comes from people who live in Ocean County and even parts of southern Monmouth County around the headwaters of the bay's tributary streams.

Lawn fertilizer, pet waste, disturbed soil, pavement and storm drains all contribute nitrogen compounds to storm-water runoff. And just like it does on land, that nitrogen acts as a fertilizer in the bay, feeding the sudden growth of algae, Kennish said.

Excessive nitrogen from storm-water sewers and air-pollution fallout annually put an estimated 2.5 million pounds of nitrogen compounds into the bay, Kennish said. The estuary is 42 miles long, no more than three miles across at its widest points and an average of three feet deep, with just two direct outlets to the ocean.

In such a small body of water, the result has been explosive growth of both microscopic plants called phytoplankton and large algae like sea lettuce that floats through the bay in massive drifts. Those plants tend to shade or smother eelgrass, and "the 2006 data were totally unexpected," Kennish said.

The solution is simple, but political will is needed for it to happen, Kennish said.

"We've got to reduce the inputs at the sources," he said. "We need to reduce development."

"The watershed is now about 35 percent developed. A lagoonal estuary like this should really only have 20 percent development," Kennish said. New Jersey also needs to work with the federal government to curb air emissions from Midwest power plants, he said.

Known among scientists as *Zostera marina*, eelgrass grows in long, thin fronds that shelter blue crabs, bay scallops and young fish. Biologists say eelgrass beds are one of the most important pieces in the bay ecosystem; a massive East Coast disease outbreak and die-off of eelgrass in the 1930s led to a collapse of bay scallops and endangered the survival of brant, geese that eat eelgrass.

ON THE WEB: Visit our Web site, www.app.com, and click on this story for a link to the Rutgers University sea grass report and join in the online discussion of this topic in story chat.

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