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N.Y. / REGION

Long Island Sees a Crisis as It Floats to the Surface

By KIRK SEMPLE JUNE 5, 2015

RIVERHEAD, N.Y. — The dead turtles, about 100 of them, started washing ashore near here in late April. Then came the dead fish, in numbers no one had seen before. By this week, tens of thousands of fish carcasses had bobbed to the surface of the Peconic River, which runs along the southern border of this town, and in adjoining Flanders Bay, washing ashore in putrid drifts.

The waters of the Peconic Estuary, on the East End of Long Island, were coughing up their fauna.

There is little debate about what caused the die-offs. Scientists trace the fish carnage to algal blooms fed by elevated levels of nitrogen, which can be attributed in large part to the region's outdated septic tanks and cesspools. Evidence suggests that a similar sequence killed the turtles in what scientists said was a highly unusual die-off.

Nitrogen loading in the ground and surface waters of Suffolk County is a longstanding problem that threatens the area's natural ecosystem and, by extension, its economy.

"It really is a crisis," said Anna Throne-Holst, supervisor of the Town of Southampton, on the southern flank of the Peconic Estuary. "It needs all the attention it can get."

The pollution problem stems in part from the fact that the population of Suffolk County, now about 1.5 million, grew sharply over the past several

decades despite the absence of proper infrastructure. About 74 percent of the county's residents rely on septic tanks and cesspools rather than municipal treatment plants. Most of those systems were built before 1972.

The nitrogen-rich sewage leaches into the aquifers, which connect to the region's surface water, its rivers and bays and the Long Island Sound. Nitrogen can also be traced to discharges from wastewater treatment plants and to fertilizer used on lawns, golf courses and agricultural lands, including the area's well-known vineyards.

The recent nitrogen-fed algal blooms endangered both the turtles and the fish, though for different reasons.

Necropsies on the turtles — diamondback terrapins — showed the presence of saxitoxin, a potent neurotoxin produced by an algal bloom commonly known as red tide. The toxin, which collects in shellfish eaten by turtles, causes paralysis and can lead to death.

Karen Testa, executive director of Turtle Rescue of the Hamptons, a nonprofit organization based in Jamesport, N.Y., estimated that about 100 terrapins had died from late April to mid-May, with most washing up along the shore of Flanders Bay, just beyond the mouth of the Peconic.

"The unique thing was that it was turtles, and that there were no injuries to the turtles," Ms. Testa said. "They were in perfect physical condition. If it was a trap, you'd see markings on their skin from trying to claw their way out.

"We still don't know for sure that it was the toxin, but we don't know what else it can be," she said.

The fish die-off began a couple of weeks later.

Christopher Gobler, a professor at the School of Marine and Atmospheric Sciences at Stony Brook University, said the fish kill started on the morning of May 28. The next morning, Mr. Gobler got a call from an acquaintance.

"You should probably get down here," the caller said.

Mr. Gobler rushed to the bank of the Peconic. Vast numbers of dead and dying fish were bobbing in the water and stretching to the opposite bank, like a silvery floating bridge. Carcasses were piled at the river's edge and clumped in the marsh grass.

The fish were menhaden, or bunker, which are an important food source for many birds and predatory fish and also harvested for bait and fertilizer.

Mr. Gobler's colleague showed him a video of fish throwing themselves up on the boat ramp of the Riverhead Yacht Club in a desperate bid to get oxygen.

"I've seen small kills around here but I've never seen anything like this," Mr. Gobler said this week during a return visit to the club. The boat ramp was still blanketed in menhaden. With each tidal cycle, new carcasses replaced old ones.

Scientists said the menhaden had probably been chased up the river by larger fish — a periodic occurrence. Even if water conditions had been perfect, they said, some of the fish could die under such circumstances, as too many panicky fish can quickly diminish the oxygen supply in shallow water.

But as nitrogen levels in the water rise, fish must compete for oxygen not only against one another but also against algal blooms, which absorb the water's oxygen at night. The recent "mahogany tide" algal blooms in the estuary, Mr. Gobler said, had been "very, very intense."

During the fish kill, monitors in the river showed oxygen levels dropping to — or nearly to — zero on several consecutive nights.

While fish die-offs happen every year, Mr. Gobler said, "This one was much worse and widespread and in much larger quantities."

Conservationists and officials said the latest die-offs were a stark reflection of the need for remedies to the nitrogen-loading problem.

"Such occurrences will become the norm if we don't reduce 30 to 50 percent of the nitrogen going into the Peconic Estuary," said Kevin McDonald, conservation finance and policy director for the Long Island chapter of the Nature Conservancy.

Some scientists believe that more large-scale die-offs could happen in the coming months, though not as large as the recent fish kill.

"If I was a betting man, I would bet we would see more of these in the summer," said Carl LoBue, senior marine scientist for the Nature Conservancy chapter.

There is broad consensus in Suffolk County about the urgent need to

address the problem

A water resources management plan the county released last month called nitrogen "public water enemy #1" and said that nitrate concentrations had increased more than 80 percent from 1987 to 2013 in one of the aquifers beneath the county and more than 40 percent in another. Nitrogen loading has helped to destroy tidal wetlands and other coastal ecosystems, the plan said, and has damaged commercial fisheries, including the once-robust bay scallop fishing industry in the Peconic Estuary and the clamming trade in Great South Bay.

Officials and residents worry that the damage could extend to other sectors of the economy, not least the real estate business.

"When we do polling, like 85 percent of the people, when you ask them what they love about Long Island, say 'the beaches and the bays,' " said Mr. LoBue, who grew up on Long Island's South Shore and whose father was a commercial fisherman. "It's a big reason people have second homes out here. It's really important to the economy and why people like to live here."

Suffolk County has taken a number of steps to address the issue, including starting a $383 million expansion of the sewer system to reduce the reliance on septic tanks and cesspools, Justin Meyers, a spokesman for the county, said. In addition, Gov. Andrew M. Cuomo announced in October the creation of a center at Stony Brook University to develop affordable, high-tech nitrogen-removal technology for home wastewater systems.

Ms. Throne-Holst said she envisioned the center, which emerged from a proposal by Stony Brook and Southampton, as "the Silicon Valley of wastewater technology." She said the state had provided financing for the initiative through the 2015 budget.

The impact of nitrogen pollution has been most severe in the Great South Bay, according to the county's water resources management plan. The bay once produced more than half the clams eaten in the United States, but over the past quarter-century, the harvest has fallen by 93 percent. Overharvesting was once a problem, but the clam population has failed to recover because of recurring algal blooms.

Mr. LoBue said the blooms that turn Great South Bay brown have become so common that "instead of people remarking that the water is brown, they get excited when the water's not brown."

He added: "There's a generation younger than me for whom that's just the way it is."

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