

Algae Doctor to Pair with Southampton on Nitrogen-Reduction Initiative

Posted by Beth Young • August 9, 2014

Dr. Christopher Gobler, of Stony Brook Southampton's School of Marine and Atmospheric Sciences, is a man who needs no introduction in Southampton Town.

Dr. Gobler's work, and the work of graduate students in his Southampton laboratory, has been at the forefront of research on the tie between recent harmful algae blooms in the East End's waterways and nitrogen runoff from septic systems and fertilizer.



Shinnecock Bay, looking east toward the Ponquogue Bridge. The western half of Shinnecock Bay has been closed to shellfishing during peak algal bloom seasons for several years due to toxins in the water.

Now, Dr. Gobler's lab is planning to partner with Southampton on two new initiatives: one would survey Southampton residents on their property's impact on nitrogen loading in the bays, and the other would develop a baseline for the amount of nitrogen that humans must control in order to maintain the health of the bays.

Two researchers in his laboratory, Dr. Theresa Hattenrath-Lehmann and Isabelle Stinnette, are proposing two projects that would help generate the scientific data needed by public policy makers throughout the East End to get a handle on the issue of nitrogen in the bays.

Dr. Gobler outlined their proposals to the Southampton Town Board at a work session Aug. 7.

Ms. Stinnette, who recently received her masters degree, is working on a "nitrogen footprint calculator," which could be used on Southampton Town's website for residents to figure out how much their property is contributing to excess nitrogen in the bay.

The calculator, which can be accessed anonymously, will include questions about the resident's distance from the bay, the type of wastewater removal system they have, the number of people in their house and the acreage they are fertilizing and landscaping.

Dr. Gobler hopes the calculator could be configured so residents could see the impact that steps they take to reduce nitrogen will have on their overall footprint.

Dr. Hattenrath-Lehmann would be working on a model to determine how much we need to reduce nitrogen in order to see a benefit to the bays.

"You can't answer that until you know how much nitrogen is going from the land to the sea," he said, adding that his lab has done most of its work on Shinnecock Bay but would also need to focus on the Peconic Bays in the future.

He estimated that septic systems are responsible for 2/3 of the nitrogen seeping into the estuaries of Southampton Town.



One object of the research, he said, would be to determine which types of septic upgrades would have the greatest impact on the bays. For example, nitrogen leaching from houses closer to the water's edge will reach the bay sooner.

He said Dr. Hattenrath-Lehmann will be creating a scenario in the lab in which nitrogen levels from various sources will be introduced to a man-made ecosystem, essentially a box of water. Researchers will then change the inputs to determine their effect on algae blooming in the box of water.

"We can do this best for the South Shore bays," he said. "We can try it in other systems but the quality of the model is based on the quality of the data [we have]."

For example, he said, researchers can use the data they collected during the Shinnecock Bay bloom of 2008 to recreate the bloom, and then run tests that measure the bloom if different sources of nitrogen are removed from the equation.

"We know the the systems that are in place now are failing," said Town Supervisor Anna Throne-Holst. "The next question and the really important question is — to start to really make a dent here — what standard does that require? That's a question that no one can answer today. It's a fundamental question."

"Developing a model is a big contribution Southampton can make to this issue, which can be used in other municipalities," she added.

Dr. Gobler suggested that Southampton Town, using money the town has reserved to improve water quality, contract with his laboratory to devote \$95,000 toward the effort, to cover the salaries of both Dr. Hattenrath-Lehmann and Ms. Stinette for 12 months.

Ms. Throne-Holst said that money would not be coming from taxpayers, but from money dedicated to water quality.

She added that the project will help elected officials determine how to maximize the money they'll ultimately have to spend to deal with the nitrogen crisis.

Suffolk County Executive Steve Bellone recently estimated in his State of the County Address that 200,000 houses in the county will need to upgrade their septic systems, at a cost of billions of dollars.

"It's mind-boggling how much it's going to cost to get to results we need here," said Ms. Throne-Holst. "Who's going to pay for that? The taxpayers, as we know today, can't foot this bill."

Dr. Gobler said the research his lab is doing will point out where in town upgraded septic systems will have the greatest impact on water quality.

"The likely scenario, if our concern is surface water, is not every home is going to need to be upgraded," he said. "It might be that everything needs to be on alternative systems in certain areas."

"The economic impact of this is enormous," said Ms. Throne-Holst. "This will help so we're not wasting dollars where they're much better spent going in a different direction."

Dr. Gobler said Ms. Stinette is ready to start work on the calculator right away.