Education and enforcement keys to improving water quality

Editor's Note: This is the first part of a multi-part series on the challenges and efforts to improve the health of Nantucket's harbors.

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Cormac Collier shifts Google Earth back and forth between 2012 and today, flashing images on the screen of the waters off Monomoy and Hussey Shoal. The movement takes on a time-lapse quality, eelgrass covering the shoal and plentiful in the water one moment, then shrinking dramatically seconds later.

"Look at all that eelgrass gone in five years," said Collier, executive director of the Nantucket Land Council. "These are traditionally big scalloping areas."

Eelgrass is the canary in the water-quality coal mine. It is directly connected to the size of the scallop harvest, the future of the commercial- scalloping fleet, and the slice of local culture and off-season economy it represents. It is also, however, an indication of the health of the waters surrounding this island.

In the winter of 2014, Peter Boyce outlined the results of a decade-long survey on eelgrass at a meeting of the Harbor and Shellfish Advisory Board. His findings put the rate the harbor was losing eelgrass at 50 percent over a decade.

In the following year the town began a concerted effort to improve water quality. Funding was appropriated for the improvement of the Brant Point shellfish propagation lab, extending the reach of the municipal sewer system to Monomoy and Shimmo and for a Madaket water-quality improvement study. New fertilizer rules and regulations for landscapers were adopted. All were initiatives aimed at improving water quality in Nantucket Harbor.

This is a snapshot of where some of those initiatives stand today.

Green lawns vs. a clean harbor "By and large there is definitely some traction, especially with the more established landscape companies," Collier said, when asked whether the fertilizer regulations have become part of how lawns are cared for this spring and summer. "But there is also a large number of landscapers who might not have the knowledge or care enough yet to buy in."

The town has reached out to landscapers at several open meetings to talk about the science behind the regulations and to suggest alternative ways of maintaining and nourishing lawns.

The two main ingredients in fertilizer are nitrogen and phosphorous, which promote stem and flower growth. If too much is administered, the excess nutrients will leach into the ground and eventually into the water, encouraging weed growth and algae blooms that can hurt marine and plant life.

“If we sit down for a meal on Sunday, we don’t eat two weeks’ worth of food,” Collier said. “If we finished up what we could eat and threw the rest away, essentially that is the same as if grass got too much fertilizer at one point, too much nitrogen. It would eat what it needed and then it would all get washed away.”

The Land Council has produced both a 30-second public service announcement that is screened at the Dreamland before movies, and an audio public-service announcement, in both English and Spanish, that can be heard on the Cape & Islands NPR station WNAN.

“I know I sound like a broken record,” Collier said, when asked what it will take to get the majority of landscapers to adhere to the town’s fertilizer regulations. “But outreach, outreach, outreach, and education, education, education.”

And when outreach and education are not enough, there is a need for increased enforcement of the town bylaw covering fertilizer use.

Town health director Roberto Santamaria and natural- resources coordinator Jeff Carlson are in charge of monitoring whether landscaping companies are honoring the best management practices established by the fertilizer regulations.

Their job is made more difficult by the fact that they are restricted from going onto private property to investigate.

“It comes down to seeing what landscapers have in the back of their trucks,” said Emily Molden, resource ecologist at the Nantucket Land Council.

“It’s obviously fairly difficult to enforce fertilizer use when you’re not able to go on private property,” Collier said.

“Who knows what people are using (in more remote areas of the island). It’s a drawback, but we do have the ability to see what they’re using from a public way.”

Collier added that in order for the enforcement component to improve, the fertilizer advisory committee, made up of landscape professionals, private citizens and island nonprofit groups, would need to make a recommendation to the Board of Health to change the rule.

Monitoring water quality

When he was a selectman, Bob DeCosta liked to say that there is no silver bullet to the problem of how to improve water quality, and that a solution will not happen overnight. Ask almost anyone involved in water-quality initiatives and they will tell you the same thing.

In recent years the town has worked to expand its water-quality monitoring on island by directing more resources toward the effort, Collier said.

The Department of Natural Resources hired Kaitlyn Shaw as its water-quality specialist, and Collier said the department also purchased more water-quality testing equipment to keep up with the research. “Talking about Nantucket Harbor specifically, of our nine spots that we test, our five-year trend is all but two of those spots are improving,” Carlson said.

He also elaborated on some of the new equipment the town has purchased, including sod units, which are a more continuous way of measuring water quality on a regular basis.

“The (units) are out in the harbor (and) measure temperature and dissolved oxygen and chlorophyll pH,” he said. “We do those on two week cycles where they take a measurement, (and) you can set them for restrictions every 15 minutes or every hour to get a really good look at what’s happening as far as the cycle of our water.”

Carlson added that summer can be a busy time to plan new initiatives due to the high level of field-data collection happening, but his department has also discussed natural pre-treatment options for stormwater before it can be discharged into the harbor during the winter months.

“I mean at this point we’re kind of looking surface-level at everything from surface water inputs, to how boat activity in the harbor affects our water quality, and how we can do a better job,” he said.

Cleaner water through septic care

If there is a road map that will lead to a healthy harbor, it will include both bringing more properties onto the town’s sewer system and restricting the nitrogen and other nutrients that flow out of septic systems and into ground water. When nitrogen and other nutrients are introduced to areas like Long Pond, the algae begin feeding and bloom as a result, eating away all of the oxygen, much like in the excessive-fertilizer scenario.

“Once the oxygen starts dying off, you get a whole deoxygenated environment that gets into Hither Creek,” Santamaria said. “And once it gets into Hither Creek it kills off eelgrass, scallops, the whole nine yards.”

Over the last two years Town Meeting has voted to back an extensive sewer initiative along the town harbor watershed, but voted down an initiative to do the same thing in Madaket.

Board of Health regulations call for phasing in what are called innovative/alternative (IA) septic systems, which reduce nitrogen outflow by 50 percent. This septic bylaw focuses on the town harbor watershed, and will be introduced upon property transfer, system failure, renovation or repair.

“The two big parts where we want the innovative and alternative systems are past Gardner Road on the Nantucket Harbor watershed,” Santamaria said. “Then, if sewer doesn’t come to Madaket, the whole Madaket watershed.”

A regulation passed in March would require innovative alternative (IA) systems to be installed in Madaket as of July 1, 2019 if town sewer is not implemented by then in the area. But Santamaria is hopeful it will not come to that.

The most recent Town Meeting vote approved a $200,000 appropriation to study Madaket water-quality issues. Santamaria hopes that study will lead to Town Meeting approval of a Madaket sewer project.

Until the study is complete Selectmen do not intend to put forward any additional proposals regarding sewering Madaket as an alternative to installing the IA systems.

In the meantime, Santamaria stressed the importance of septic system maintenance, and said homeowners should be pumping their septic systems every two years and having conventional systems inspected every five years.

He also said homeowners should be careful about what is being flushed down their household drains, and refrain from dumping bacon grease, pills or other chemicals that could harm their systems and the environment, as well as test their well water regularly.

“You want to test your water well. You want to make sure your septic system, or your neighbor’s septic system, isn’t affecting your drinking water. A lot of people don’t realize how much the well goes hand-in-hand with your septic system,” he said. “We’re all in this boat together.”

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– Cormac Collier Executive director, Nantucket Land Council

A busy mooring field off Monomoy Beach at the end of July. Harbor health is negatively affected by many factors, including leaching from septic systems and fertilizer runoff into the waters of Nantucket Harbor.

Photo by Nicole Harnishfeger