

# Green crab population decimating harbor eelgrass

By Elizabeth Clemente

[eclemente@inkym.com](mailto:eclemente@inkym.com)

*Editor's Note: This story is another in a series focusing on water quality in Nantucket's harbors.*

As concerns about fertilizer, septic systems and boat mooring dominate the conversation about water quality on Nantucket, two island scientists are looking toward a group of smaller culprits: green crabs.

“Because we’ve had such an emphasis on the harbor ecosystem and the water-quality impacts to eelgrass, we’re also starting to look beyond just the simple nutrient levels of the harbor,” Emily Molden, resource ecologist for the Nantucket

Land Council, said.

“A number of studies have been done in a few places that (have) correlated declines and degradation of eelgrass beds with the increasing green crab population.”

Originating in northern Europe, green crabs are an invasive species that are thought to disrupt eelgrass growth through damage to the plant’s roots. The crabs do not eat the grass, but disturb it by burrowing in the surrounding sediment. Molden said she believes since many of the species the crabs feed on also live in eelgrass, like mollusks and shellfish, the crustaceans may also disrupt it while looking for food.

Along with Emily Goldstein Murphy, director of natural science at the Maria Mitchell Association, Molden has been working on a pilot research project this summer to gauge the population size of green crabs on Nantucket.

“(We want) to make sure we understand the type of data we’re going to get before investing in significant research and boat time, which is expensive,” Goldstein Murphy said.

The team is using a method known as “capture, mark, recapture,” which involves tagging the green crabs with special marine-animal markers, returning the animals to the water and coming back the next day to recapture more crabs. The ratio of marked crabs to unmarked crabs on the second day gives an indication of the population size, and repeated studies can give insight into how quickly the crabs are reproducing.

Goldstein Murphy said the original plan was to complete three weeks of crab surveys this summer, but she and Molden had to cut the first week short due to an issue with the markers they were using.

“That’s the whole reason we’re doing this. If we had hired people and maybe rented a boat for the summer and had these pens (not) work, that would have been a huge loss,” she said. “Now it’s just a loss of \$30 in special pens.”

While Molden said it is difficult to pinpoint how exactly the species first came to Nantucket, it is believed that they arrived on boats, but over the course of the last 10 years their numbers have skyrocketed. She said local scientists have yet to pinpoint an exact reason for the increase.

“I would be surprised if it had anything to do with their food source. I think it has more to do with temperatures in the water warming up,” she said. “We’re certainly still learning a lot about them too and what their impacts are, so this (study) is certainly just the first step.”

Alternate uses for the crabs have been discussed as well, from using them in fertilizer, as bait for fishing and lobstering, and even as delicacies of the New England restaurant trade.

A 2015 *Boston Globe* article written by Roger Warner, who leads the “Green Crab R&D” project in Ipswich, chronicles executives from Legal Seafoods trying to find an ideal way to prepare a batch of crabs caught in local waters.

Since that time, Warner’s group has been awarded a \$20,000 pilot seafood-marketing grant from the state to be used towards their efforts.

Warner said the Ipswich-based project has discovered several ways to prepare the crabs, with the easiest being turning them into stock, or broth, to be added to foods like clam chowder for extra flavor. In September, the group will introduce a plan to use the crabs’ roe in dishes, which will help eliminate the eggs from the water to slow the population from growing and also create a new delicacy.

“We don’t know how to make them on a large enough scale. In terms of mass-production, we’re not there yet,” Warner said. “It’s more efficient if you involve seafood wholesalers, and that’s a big challenge for us. What we found among restaurant chefs (is that they’re) very receptive.”

Molden said as research around Nantucket’s green crab population develops further, trying to incorporate the invasive species into the local restaurant trade on the island could be one efficient solution here as well.

“I don’t expect at this point for us to eliminate them or eradicate them from the waters because they’ve been around coastal New England and the Northeast for so many years,” she said.

“But I think trying to understand the kind of effect they’re having out there in the ecosystem and (seeing) if there’s some way that we can and should mitigate that impact (is important).”

Molden and Goldstein Murphy will continue their research throughout August.



A green crab caught in Nantucket Harbor is tagged for research.

Photo by Emily Molden



NLC Resource Ecologist Emily Molden holds a green crab while MMA intern Sara Schoen takes measurements.

Photo by Emily Goldstein Murphy