A pair of snails sits on a fingertip. The snail, Lacuna vincta, is a common pest on kelp farms. Credit: Courtesy of Cara Blaine

Maine researchers are on the lookout this winter for a tiny snail that could potentially cause big headaches for the state's burgeoning kelp farms.

As kelp farms continue to expand along the coast, scientists and farmers are starting to notice Lacuna vincta, a scarcely studied snail smaller than an M&M that has been biting into farmers' profits. Researchers at the University of New England have set out to learn more about the creature in an effort to help the industry prevent future infestations.

Graduate student Cara Blaine started her research into L. vincta in 2021 after learning about kelp farmers' experience with the snail. Farms often see the snails attached to the long fronds of kelp, where they can lay doughnut-shaped rings of eggs that are burdensome to remove. If there are too many eggs, the kelp blades are written off as a loss by harvesters because it's more effort to scrape them off than the blade is worth.

Some farmers will also pull their kelp from the water early if they notice snails making themselves at home, shorting the farms of the potential profit of a full-grown blade.

"There are a lot of farmers having trouble with it here," Blaine said.

University of New England graduate student Cara Blaine pulls up some seaweed in her research on a snail that has become a pest for kelp farms. Credit: Courtesy of Cara Blai

The snail's presence isn't universal though, raising questions about why the species attaches to the kelp it does. They can appear on some farms and not their neighbors, seemingly at random. It's not clear if the snails prefer certain types of kelp, either.

"Two farms near each [other]," Blaine said. "One was getting slammed with snails and the other one wasn't. They were very close. So why was that happening?"

There's been some research in the past about the snails in wild kelp, but little on kelp farms, which have bloomed in recent years. The industry has grown from producing 45,000 pounds in 2017 to more than 1 million pounds in 2022.

"The industry is just so new and we're scaling so quickly that it's become an emerging issue," said Carrie Byron, a marine ecology professor at UNE. "I don't think the snails are just appearing for the first time, but I think it's becoming an issue because of where the industry is."

Blaine is examining if environmental DNA — DNA shed by snails in the water — can be used as an early detection tool for when snails may arrive on a farm. Blaine's also doing lab work to see if snails have a preference for different types of kelp, and she's surveying seaweed farmers to see how widespread the issue is.

Being a winter crop, kelp has been able to skirt most of the other pests that can plague other aquaculture farms. But L. vincta doesn't seem to mind the Gulf of Maine's frigid winter temperatures, making it a rare breed of nuisance.

"This snail is unique because it's present all year round and through the winter," Byron said. "So there's really no avoiding it."

Atlantic Sea Farms, one of the biggest kelp operations in Maine, is working with Blaine to better understand the snails. Liz MacDonald, the seaweed supply and advancement manager at Atlantic Sea Farms, said her roster of farmers often see them later in the growing season, but it hasn't been a huge issue for the company.

"We don't see it as a serious problem," she said. "Right now, it's more of a common pest."

In 2021, 30 farmers who partnered with Atlantic Sea Farms harvested about 975,000 pounds of kelp. MacDonald estimated less than 10 percent of the entire crop was impacted by the snails.

Blaine has heard more severe estimates though. Other farmers said the snails impacted about 20 percent of their crop, either by having to throw out blades with eggs or pulling them early to harvest before the snails lay their eggs.

Blaine's research is expected to wrap up this year. The UNE team hopes it will give the industry tools to be able to better manage the pests and get more of farmers' crops to market.

"It'd be really nice if we could identify some type of treatment we could do at the farm," Byron said. "So if the farmer is seeing lots of snails, what could we do to prevent the egg-laying on the blades?"