

Water

# Weevils a tiny weapon in Christmas Lake's invasives fight

Kirsti Marohn Excelsior August 22, 2019 9:00 a.m.



Student researchers study how weevils interact with milfoil inside a lab tent near Excelsior on Aug. 9, 2019. Evan Frost | MPR News

For the past several weeks, a group of high school students has been on a nature scavenger hunt in the Twin Cities' western suburbs. They're looking for a bug smaller than a grain of rice — underwater, in the middle of a lake.

The group is part of an experiment to control invasive Eurasian watermilfoil on Christmas Lake in Excelsior — without using chemicals or mechanical cutting.

Instead, they're using weevils, a native beetle whose larvae feed on the invasive plant. They collect adult weevils from Eurasian milfoil plants, raise them in tanks until they reproduce, then tie bundles of milfoil with attached weevil eggs to standing plants in the lake.



From left, northern milfoil, hybrid and Eurasian milfoil sit on the deck of a boat after being pulled from Christmas Lake near Excelsior. Evan Frost | MPR News

The idea is that the hatched and hungry larvae will devour the milfoil stalks, causing the plants to

collapse and die off.



William Lager | MPR News

The experiment has been so successful that this summer, it's been a challenge for the students to find Eurasian milfoil plants that haven't already been eaten by the weevils they're trying to collect.

"This is a good problem," said Dena Wetzel, a video producer who grew up on Christmas Lake and is overseeing and documenting the project this summer.

### 'Like sifting for gold'

Eurasian watermilfoil first showed up in Minnesota lakes three decades ago. Now, hundreds of lakes in the state are infested with the invasive plant, which forms dense mats and chokes out native species.

On a hot August afternoon, a group of students from area high schools who volunteered for the project were ready to go weevil hunting. They leapt off a boat into the lake, wearing wet suits and snorkel masks. They paddled around, peering into the water below for weevils clinging to milfoil plants.

"I thought I saw some, but it's so far down there," said Elizabeth Meyer, a sophomore at Breck School in Golden Valley.



A student diver searches the milfoil of Christmas Lake for weevils earlier this month. Evan Frost | MPR News

When Meyer spotted one of the tiny insects, she brought the plant to the surface for a closer look.

"I got one," she called. "He's right at the top of the plant, where they usually are."

But with less invasive milfoil in the lake now, Wetzel said it's also harder to find weevils because there's less food for them to eat.

"Now it's more like sifting for gold," she said. "Before, it was like picking berries."

Sallie Sheldon, a professor at Middlebury College in Vermont, pioneered the process for using weevils to control invasive watermilfoil. Sheldon has spent decades researching biological controls for invasive species.



Two lab tents sit near Christmas Lake in early August. Evan Frost | MPR News

Eurasian watermilfoil was discovered in Christmas Lake in the late 1990s. Before treatment began, it tended to form thick mats on the water's surface by the Fourth of July, said lake resident Joe Shneider.

In 2012, the Minnehaha Creek Watershed District launched a pilot project to put weevils in Christmas Lake using Sheldon's method. But the program was

halted when the company hired to do the work pulled out before completing the project, and the invasive plants eventually returned.



Lucy Kiernat prepares to jump into Christmas Lake in search of weevils earlier this month. Evan Frost | MPR News

Sheldon spent time at Christmas Lake last summer to get the student-led project started, and returned earlier this summer to check on its progress.

Wetzel said the difference from year to year has been astounding.

"Even though we didn't make any big announcements about how great it looked at the beginning of the summer, how little Eurasian watermilfoil there was, I heard a ton of people who live on the lake say, 'Yeah, you know, I haven't seen much,'" she said.

### Speeding up nature

After their watery search, the students brought the plants they'd collected back to shore, and carried them inside two temporary greenhouses lined with glass tanks. They rinsed the plants in cold water.

"The cold kind of shocks them a little bit," said Lucy Kiernat, who graduated from the Blake School in Minneapolis last spring. "Then you kind of move the plants around, and hope the weevils just pop off. Then you can see them a lot easier."

Inside the tanks are bundles of Eurasian watermilfoil. The students put the weevils they've collected into the tanks, where they'll breed and lay eggs.



A tiny yellow weevil egg is attached to a section of milfoil pulled from Christmas Lake. Evan Frost | MPR News

"Once there's a good amount of eggs on the plants, we put them back in the lake," Kiernat said. "So, when the eggs hatch, the larvae will go onto the plants in the lake, and then they dig a hole through the plant stem. And then the whole plant just crashes down, and is dead."

The lack of Eurasian watermilfoil this summer is making the students' research more challenging. But it also means that they're close to their goal: to reach a balance in the lake, with a sustainable population of weevils keeping the invasive plant under control.

Shneider said the project is making a big difference. Years ago, before weevils were introduced, Eurasian milfoil formed thick mats on top of the water by the Fourth of July, he said.

"The nuisance factor is simply gone," Shneider said.

With less Eurasian milfoil in the lake, native plants have started to make a comeback, Shneider said.

"People who have lived on the lake for most of their life would say it's kind of coming back to where it used to be," he said.



Student researchers (from left) Macie Amundson, Anika Kaura and Lucy Kiernat parse through samples of milfoil they collected on Christmas Lake in search of weevils. Evan Frost | MPR News

Shneider, who is president of the Minnesota Coalition of Lake Associations, hopes other lakes will try using weevils to fight invasive milfoil.

"Everybody's looking for this answer," he said. "This is a biological control that doesn't appear to have any downside. And there's nothing better than that."

The cost — about \$4,000 last year and \$8,000 this year — is minimal, compared to what lake associations are spending to treat invasives, Shneider said.



Three weevils hang on to a piece of milfoil in a petri dish in a lab tent near Christmas Lake. Evan Frost | MPR News

"Quite frankly, I don't think lake associations are going to balk at the cost because it's not prohibitive. It is a cheap solution," he said. "You just have to have the willpower to not chemically treat and not harvest, and stay the course for five years."

The Christmas Lake project is expected to wind down after this summer. Wetzelsaid several other Minnesota lake associations have expressed interest in testing the weevil method.



Student researcher Elizabeth Meyer climbs back onto a boat after collecting milfoil from Christmas Lake. Evan Frost | MPR News

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