

Researchers discover 2 new non-native species in Great Lakes

August 10 2018, by Tony Briscoe, Chicago Tribune

Cornell University researchers have confirmed two new exotic species, both about the size of a flea, have established themselves in the Great Lakes, according to the U.S. Environmental Protection Agency.

The arrival and staying power of both species in western Lake Erie remains a mystery to scientists who say it is the farthest north either has been tracked in the Western Hemisphere. Although neither is considered an invasive species because they have been found in low abundance compared with native zooplankton, they now join the more than 180 foreign species that have crept into the Great Lakes, which has one of the highest numbers of non-indigenous species in the world.

While experts say their introduction to the planet's largest system of fresh water is alarming, the discovery validates arguments from public officials and environmental groups who say monitoring is necessary for early detection.

Cornell has been monitoring zooplankton populations in all five of the Great Lakes since 2012, but the [new species](#) were located through a separate program funded by the Great Lakes Restoration Initiative, which has provided billions of dollars in federal funding for conservation and restoration. Earlier this month, the U.S. Senate voted to fund the program with \$300 million, breaking with President Donald Trump's proposed budget that sought to cut funds to \$30 million. The appropriations bill still needs to be signed by Trump by Oct. 1 to secure funding, but at a public meeting earlier this week Chris Korleski,

director of the EPA's Great Lakes National Program Office based in Chicago, said he was "optimistic."

"We now have information about the presence of a non-native species that we didn't have before" and wouldn't have had without the restoration program, Korleski said Wednesday.

Every spring and summer, Cornell researchers in the EPA's research vessel, the Lake Guardian, tow nets across 72 areas in the Great Lakes to monitor zooplankton populations. But in recent years, as part of the restoration program, they've searched closer to shore, sifting through Lake Erie's pea green waters. While non-native zooplankton species are considered rare, Cornell researchers have discovered four in the past three years, all in western Lake Erie.

"Generally speaking, western Lake Erie has the most diverse assemblages of these species out there, probably because of how nutrient rich it is, and how different it is than the other Great Lakes," said Cornell taxonomist Joe Connolly. "It's shallow, it's relatively warm and you get a lot of strange things there."

Plankton serve as the base of the food chain because they are the staple of several small fish species' diets and they help sustain the Great Lakes' \$7 billion fishing industry.

Cornell's team of six trained taxonomists examine thousands of samples through high-powered microscopes. If they find an unfamiliar organism, they will dissect it with a needle and try to distinguish its features.

"When they see something unusual they definitely get kind of excited and try to figure out what it is," said James Watkins, a senior research associate. "It's often a big detective story. You have to get all the background information and take it apart before you come out and

announce it."

It's unclear what risk these species could pose because their ecological impacts when they were introduced in the southern U.S. haven't been studied, according to Cornell researchers. The university will continue to track the extent of the population and further assess potential risk.

Henry Vanderploeg, a research ecologist with the National Oceanic and Atmospheric Administration, said these species resemble some native species of zooplankton. For that reason, they don't outwardly have characteristics that would make them impervious to predators.

Because the new species are acclimated to warmer weather, Vanderploeg said, they may have a competitive advantage in the summer months.

"They could potentially compete," Vanderploeg said. "Whether they will be the winners or not is another question."

A more pressing question for conservationists is how did the species arrive.

The two zooplankton species were detected in western Lake Erie between 2015 and 2017. *Mesocyclops pehpeiensis*, a predatory species native to tropical and temperate areas of Asia that feeds on other species of zooplankton and the larvae of mosquitoes, has been found near Ohio's East Harbor State Park. *Diaphanosoma fluviatile*, a filter-feeding zooplankton originally from Central and South America and the Caribbean, was found in the Maumee River near Toledo Harbor.

Mesocyclops is believed to have arrived in the United States on aquatic plants from Asia. Before it was found in Lake Erie, the farthest north it had been reported was in an aquatic garden in Washington, D.C. Less is known about the *Diaphanosoma fluviatile*, which researchers speculate

could have hitchhiked with migratory birds.

So far, all of the non-native zooplankton species have only been spotted in western Lake Erie. The population of the *Thermocyclos crassus*, another non-native zooplankton discovered by Cornell researchers in 2014, has grown and spread somewhat. But researchers say it might be difficult for them to move too far given the lack of oxygen in the central part of Lake Erie and the deeper, clearer waters on the east side.

Farther north, in lakes Michigan and Huron, fast-filtering invasive mussel species have decimated [zooplankton](#) populations, dramatically cleaning their waters, which are now clearer than Lake Superior, researchers say.

In the past, [invasive species](#), such as zebra and quagga mussels, have entered the Great Lakes by stowing away in the ballast tanks of international ships. But environmental groups have argued that once a foreign species has entered the Great Lakes, ships that trek from one to another could help the species spread.

"Today's announcement is a reminder for the Great Lakes region of the need for strong ballast water standards and ballast water treatment on board all ships operating on the Great Lakes," said Molly Flanagan, vice president of policy for the nonprofit Alliance for the Great Lakes, in a statement. "Additionally, it is a reminder of the critical need for ongoing monitoring for new non-native [species](#) in the Great Lakes. We applaud the team at Cornell University Biological Field Station for their ongoing research in this field."

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Citation: Researchers discover 2 new non-native species in Great Lakes (2018, August 10)

retrieved 21 July 2024 from <https://phys.org/news/2018-08-non-native-species-great-lakes.html>

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