



Mille Lacs Lake Watershed
Management Group

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Topic of the Month

February 2020

Spines in Our Lakes: The Spiny Waterflea Invasion

Aquatic invasive species are some of the scariest things that can impact the health of our lakes. One of the most alien looking of these is the invasive spiny waterflea. This species has been slowly colonizing the great lakes region and expanding outward for a long time. This predatory invader changes the ecology of an area by devouring helpful zooplankton that keep algae blooms under control. In addition, they can reproduce with blinding speed in the warm summer months. This helps them build up a massive egg bank in the mud at the bottom the lake that can support their population through several bad years giving them the ability to permanently change a lake's ecosystem.



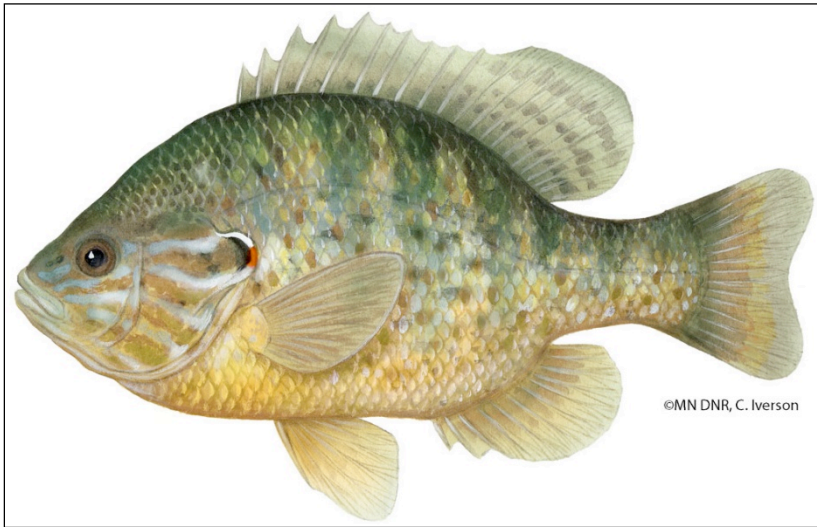
To make matters worse their large barbed tail spine, measuring up to 0.5 inches, discourages many fish from eating them. When a fish does eat this invasive water flea the hard spine can cause damage to the young fish, by poking holes in their stomachs or intestines. All of this means less fish and smaller fish for people to harvest from our lakes. The spiny waterflea is a direct impact on Minnesota's economy and society. There is no known effective population control for spiny waterflea in natural water bodies at this time.

While the spiny waterflea was first discovered in Mille Lacs lake in 2009, a recent sediment study done by the University of Minnesota has found

“evidence that spiny waterflea was resident continuously in Lake Mille Lacs and Lake Kabetogama since the 1930s, or about 80 years before it was first detected in the open waters of either lake. Evidence demonstrates that spiny waterflea had a prolonged history of low abundance in both lakes before about the year 2000 at which time it began to increase rapidly. Zooplankton that are prey and competitors of spiny water flea often declined in abundance after spiny waterflea increased in abundance.”¹

How did the spiny waterflea avoid discovery in Mille Lacs for so long? It could be simply that Mille Lacs does not have an environment that contributes to the spiny waterflea taking over the food chain. Or it could be because something has been keeping the population of waterfleas under control until recently.

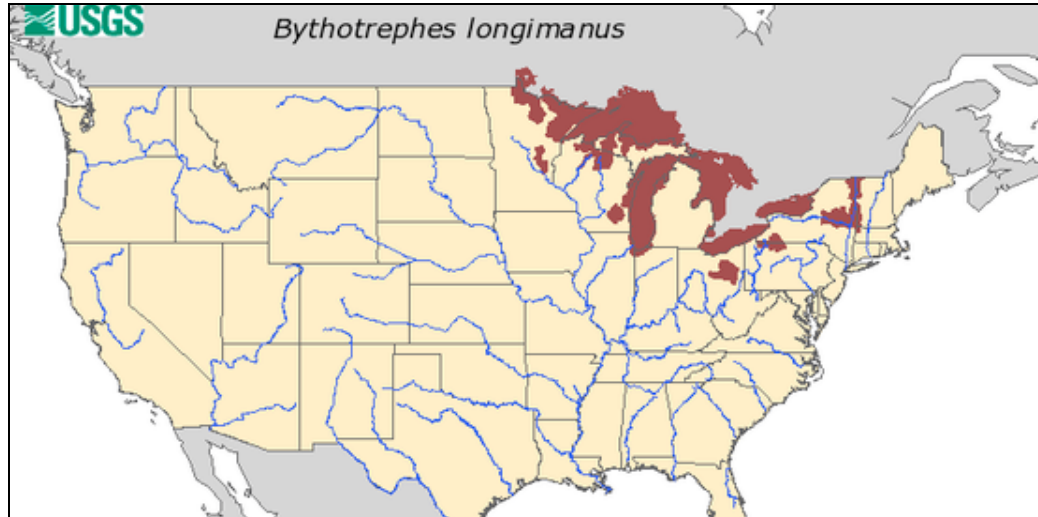
¹ Characterizing spiny waterflea impacts using sediment records <https://www.maisrc.umn.edu/spinywaterflea-impacts>



New evidence shows we may have an ally in the fight against the spiny waterflea and this ally may be a factor in their control. The humble pumpkinseed is a native species of sunfish that is 87% efficient at breaking the long filament off the spiny water flea and eating it in great numbers.² Pumpkinseeds are found in many lakes in Minnesota and prefer similar habitat to the spiny waterflea. Even with pumpkinseeds expanding their diet to include the spiny waterflea there is a slow progression of invasion throughout the Great Lakes region.

What can we do to help?

Stopping further colonization by this invasive species is in our hands now by stopping its movement into new bodies of water. Cleaning off mud and draining water from our boats before moving to another lake are critical for eliminating the resting eggs of the spiny waterflea. One of the few control methods for already infected lakes includes stopping excessive nutrient runoff. This can limit the food supply of the spiny waterflea and is one sure way to control their numbers. Working together, we can slow the spiny waterflea invasion.



²Jaime Fay LeDuc^a Martin M. Hobmeier^b W. Charles Kerfoot^b, Journal of Great Lakes Research, Pumpkinseed sunfish counter spiny cladoceran defenses,

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