

The Mystery of Spiny Water Flea

Taken from the Plum Lake newsletter *Loon Hoots* courtesy of John Richter

In August of last year, we learned that a UW researcher found a small population of Spiny water flea in Plum Lake. Spiny water flea is native to Northern Europe and Asia and it was introduced to the Great Lakes in the ballast water of freighters that came down the St. Lawrence Seaway. We are the 12th inland lake in Wisconsin where this little monster has been discovered.

In Plum, the population was assessed one more time last fall and the results amounted to one critter. It seems clear we are in the very early stages of infestation. The infestation on Star is significantly larger. This early discovery could give us time to find an effective method to discourage population growth to the point where it significantly affects the food chain and water clarity and that is our goal at this point.

Since its discovery on Trout Lake in 14, water clarity has declined. We will follow that example at some point unless we interrupt the growth of the population.

Since then, we have been corresponding with the researcher who is working on spiny, Dr. Ben Martin of UW limnology. His research is focused on top down pressures (predation) on spines. As he says, his "main theory is if we can understand the native food web of an invaded lake, can we promote the populations of fish consuming spiny water flea in order to decrease their abundances and regain native zooplankton and water clarity."

We knew that cisco are a major predator of spines and we also knew that our cisco population is struggling to maintain itself as it is in most of the northern lakes. This doesn't seem to be a likely solution to the problem.

Dr. Martin has been working on experiments with various fish species captured in affected lakes to learn about their affinity for spiny and their capacity to eat them. He found that red eared sunfish, smallmouth bass and yellow perch were all predators with perch leading the list. This research will continue north to Vilas County next year, primarily on Trout and also on Plum.

Rewind to 1986, when we first learned that rusty crayfish had been found in Plum. Our historic weedbeds began to disappear over the following decade and with the loss of that habitat, our panfish populations began to decline. Perch are a slow-moving fish and are at the top of the list as prey species for large game fish.

Without cover, the population could not sustain itself at its former abundance. Fast forward to today and nothing much has changed for the better for perch.

DNR is promoting a means to increase spawning and cover habitat for fish species with their "fish sticks" projects, for which grants are available. Fish Sticks are mature trees hauled to sites on the lake over the ice and piled in a grid pattern in shallow water and anchored to the shore. Studies have shown significant benefit to panfish and bass populations as a result of the installation of these structures. As a result of the preliminary finding from Dr. Martins study, improved the habitat for panfish and particularly perch could provide a possible control on

spinies, if we can increase the populations of predators before the spiny population gets a foothold.

With that in mind, I met last week with Eric Wegleitner, our new fisheries biologist to explore this idea. Our target would be for grant applications next fall and installation of at least 3 structures in the midlake area in the winter of next year, looking at bay locations on state land for two of them and perhaps a fourth in Starlight. Spiny water flea occupies deep water and the population of panfish species in midlake and Starlight Bay is quite low. Focusing on those locations for habitat structures will have the most impact.

In Minnesota, related research on the collapse of the Walleye fisheries in two of the large lakes is ongoing. Kabetogama and Mille Lacs are significantly impacted by spiny water flea and the game fish seasons have been shortened on these lakes due to a drastic decline in the walleye population. Water clarity has also declined. The studies are using Leech Lake and Winnibigoshish as control lakes since neither have been invaded by spinies although core sediment samples found evidence of a failed invasion in Leech Lake in 2001. Leech Lake, by the way, is considered to be one of the best perch fisheries in the upper Midwest which may account for the failed invasion. Using analysis of lake bottom sediment cores, Minnesota researchers made an interesting discovery. In the two invaded lakes, spiny water flea has been found in sediment dating back to the 1930's, although no evidence of spinies being in the lake water was found until 2007 and 2009 respectively. Fish populations began to decline a few years later.

Here is the mystery—the St. Lawrence Seaway wasn't completed until 1958. There is no known vector that could account for the presence of spiny water flea in the 1930's. There is clearly more to learn, but our response cannot wait.

When spinies were first discovered, there wasn't much hope. "Well, there is nothing you can do" isn't a useful response and in the case of our new infestation with spiny water flea, it seems it might not be correct.

At the worst, a revived perch population would be a welcome result of our efforts.