



Volume 2, Issue 6
Nov-Dec 2016

The Monitor

Invasive Spiny Water Flea Damages Economy and Ecology in Lake Mendota

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Aquatic invasive species have fundamentally changed how our lakes sustain and improve our well-being. In response to this change, CLMN has played a key role in improving invasive species detection statewide, partnering with WDNR to better detect nonnative plants, fishes, and crustaceans. These efforts protect the aspects of lakes most important - and most valuable - to Wisconsin citizens.

Paul Skawinski



The spiny water flea is only 1/2-inch long, but has a big impact

The spiny water flea (*Bythotrephes longimanus*) is hardly a household name in Wisconsin. WDNR has confirmed the invasive predatory zooplankton in just 12 inland WI lakes, and the effects of spiny water flea – an extreme reduction in the native zooplankton biomass of lakes, biomass that small fishes depend on for survival – are often hard to see. The spiny water flea itself measures at just 1/2-inch long, making its detection particularly challenging.

Spiny water flea in Lake Mendota (Madison, WI) has been anything but inconspicuous. Spiny water flea was detected in 2009 at the highest densities ever recorded anywhere. Spiny water flea preys on zooplankton like *Daphnia* – an important grazer of algae and, in turn, hero of water quality in Lake Mendota. *Daphnia* biomass fell by 60% over the following years. As a result, Lake Mendota became murkier and has lost over three feet of water clarity.

Hundreds of thousands of citizens swim, fish and boat on Lake Mendota and care deeply about the lake’s water quality. So, we attempted to quantify the economic value of water quality in Lake Mendota. Our findings were staggering. We estimated that Dane County citizens value 1 meter of water clarity in Lake Mendota at \$140 million (updated from a 2001 “willingness-to-pay” survey to Dane County citizens).



Jake Walsh

Daphnia pulicaria, an important grazer of algae in Wisconsin lakes

A Secchi disc is lowered into a murky Lake Mendota in 2015. Photo by Jake Walsh

We don't know how to control or eradicate spiny water flea from lakes, highlighting the importance of preventing its spread in Wisconsin. However, we also know that water clarity is degraded by nutrient runoff from agriculture in Lake Mendota's watershed. Statistical modeling suggested that if we could reduce agricultural runoff to Lake Mendota by 71%, we could bring back that one meter of water clarity.

We estimate that a project of that magnitude would cost anywhere from \$86 million to \$160 million (Yahara CLEAN Report, Strand Associates, 2013). These costs are on par with the \$140 million value of water clarity in Lake Mendota. These results provide a strong economic case for investing more in controlling or preventing invasions in order to protect water quality – something CLMN continues to support in Wisconsin.

Spiny water flea has been confirmed in just 12 inland WI lakes. All users of our state's water have an important responsibility to limit the spread of this invasive species while it is present in only a small number of lakes. Following the Clean Boats, Clean Waters prevention steps before and after enjoying time on a lake will drastically reduce the risk of transporting spiny water fleas and other aquatic invasive species.

Announcements

Please Submit CLMN Data by November 1st

Please remember to enter or mail your CLMN data by November 1st so we have a complete picture from each lake participating in CLMN.

DNR Invites Public Comments on Aquatic Plant Management

The Wisconsin Department of Natural Resources is completing a strategic analysis on Wisconsin's aquatic plant management program. DNR is charged with protecting aquatic plants and the benefits they provide to aquatic ecosystems, but also to manage the negative impacts of aquatic invasive species. The public comment period will be open until November 16th, 2016. More information on the strategic analysis can be found by searching dnr.wi.gov for "aquatic plant management strategic analysis".

Get Out and Vote For Your Lake

Voting is a right and responsibility of all of us. As you head out to the polls on November 8th (or vote early), consider how each candidate's proposed policies will impact your lake.

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A bi-monthly electronic publication of the Wisconsin Lakes Partnership

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