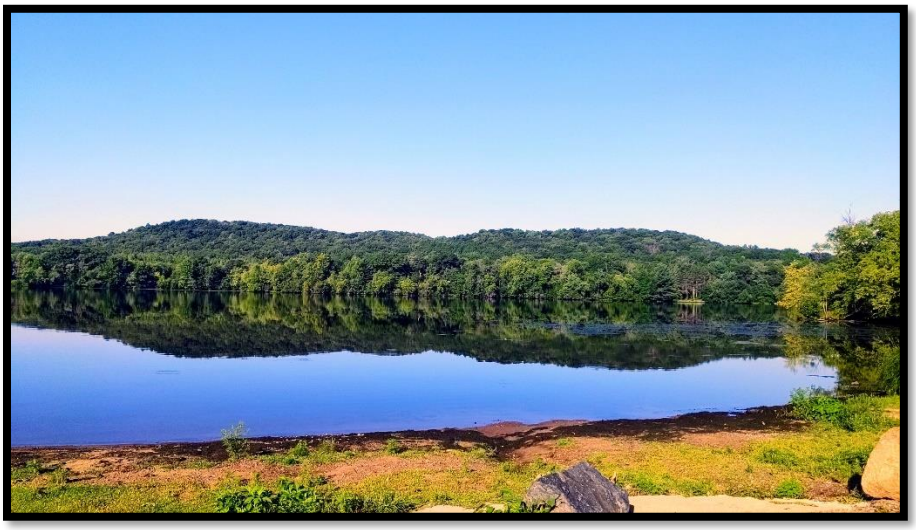
Lake Monitoring and Protection Network

Cooperative Agreement, 2nd Quarter Report



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June 2024

CONNECTING PEOPLE WITH NATURE

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Newsletter

4/5	Sent out AIS Newsletter to 99+ Subscribers

AIS Signage Surveys

6/4	Lake EC: ND Circle Boat Launch
6/4	Lake EC: South Boat Launch
6/5	Lake Altoona North Landing
6/19	Lake Menomin Park Landing
6/25	Round Lake County Park Landing

Social Media

5/23	Have You Seen Me: Rusty Crayfish
5/25	Boat Launch Message
5/27	AIS Reproduction
5/31	Stop Aquatic Hitchhikers

AIS Surveys

6/4	Lake Eau Claire AIS Survey with 2 Volunteers & AIS Tech
6/5	Lake Altoona AIS Survey with 1 Volunteer & AIS Tech
6/12	Wetland Survey in New Auburn
6/12	Clear Lake AIS Survey
6/19	Chippewa River Boat Launch AIS Survey
6/19	Lake Menomin Specimen Collection & Boat Launch AIS Survey
6/25	Round Lake AIS Survey with 2 Chippewa County Interns

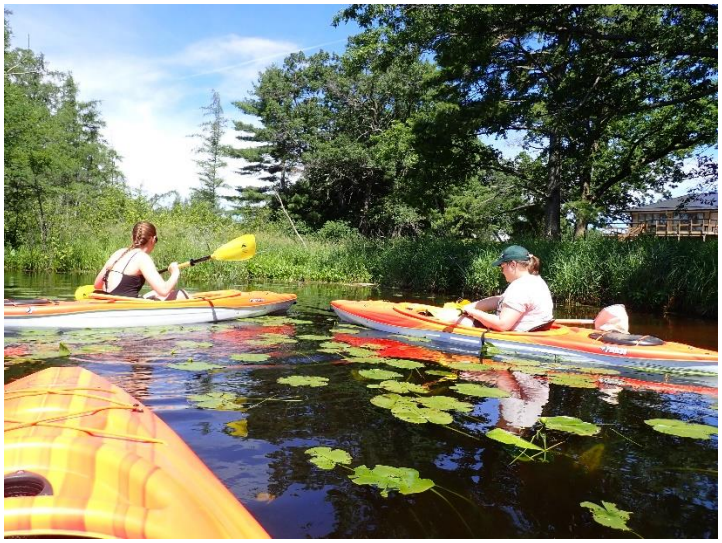

Figure 1: Chippewa county interns assisting with AIS Survey on Round Lake.

Citizen Lake Monitoring Network

4/4	Assisted Volunteers with SWIMS & Trained 2 new volunteers for Lake Wissota
4/5	Trained Volunteer on Water Chemistry Monitoring
4/17	Brought CLMN Supplies to Volunteer in Menominee
5/21	Met with Volunteer to Train on Water Clarity & Chemistry Monitoring

5/30	Met with Volunteer in Eau Claire for Supplies/Information
6/14	CLMN Lab Slip Walkthrough on SWIMS
6/17	SWIMS Data Check & Volunteer Communication
6/20	Met with Lake Eau Galle about Setting up CLMN on the Lake

Clean Boats, Clean Waters

4/9	Ordered Outreach Materials for Lake Groups and Participating Launches
5/11	Held a CBCW Training for 2 Volunteers/Lake Groups
5/22	Held a CBCW Training for 4 Watercraft Inspectors
6/7	Trained 1 New Watercraft Inspector
6/12	Watercraft Inspector Check in on Sand Lake

Lake Groups

5/11	Held a CBCW Training for 2 Lake Groups
5/20	Assisted LWIPA with Lake Management Plan/Surface Water Grant Questions
6/22	LWIPA Summer Picnic
6/24	LWIPA – Lake Management Plan Meeting

Outreach and Education

4/9	Lakes & Rivers Virtual Series: Helping Our Waters
4/22	Earth Day Presentation with Pepin County Middle Schools
5/2	Met with Chippewa County Intern for LMPN Education
6/20	Bees, Trees, & Cheese AIS Presentation
6/22	LWIPA Summer Picnic Tabling
6/26	Plant ID Course at Kemp Natural Resource Station

Purple Loosestrife Biological Control

4/24	Assembled Mass Rearing Cage
5/16	Met with Volunteer for PL Plant Digging/Biocontrol Overview
6/10	Beetle Collection from Ryder Road Site (EC County)
6/14	Beetle Collection/PL Biocontrol Monitoring (Chippewa County)
6/19	Collected Extra PL Plants to Support Beetle Population

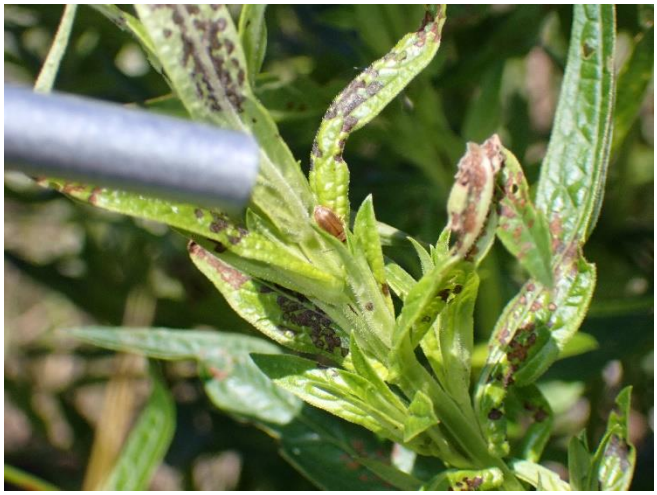

Figure 2: Purple Loosestrife beetle collection.

Travel and Meetings

4/2	Monthly Lakes & Rivers Partnership Meeting
4/10-4/12	Lakes & Rivers Convention in Stevens Point, WI.
4/17	Brought CLMN Supplies to Volunteer in Menominee
4/17	Webinar: D.A.S.H. – Diver Assisted Suction Harvesting for Invasive Aquatic Plant Removal
4/22	Earth Day Presentation with Pepin County: Silver Birch Lake
4/29-4/30	Spring AIS Partnership Meeting in Rosholt
5/2	Snapshot Day Site Leader Training
5/7	Monthly Lakes & Rivers Partnership Meeting
5/14	Assisted DNR Partners with Goldfish Removal in Altoona
5/21	Webinar: Natives & Invaders: The Status of Canadian Crayfishes
6/14	CLMN: Lab Slip Creation Walkthrough
6/20	Met with Lake Eau Galle
6/24	LWIPA Lake Management Plan Meeting

Figure 3: Zebra Mussels found in Lake Menomin.

GLOSSARY

AIS – Aquatic invasive species

ALPOA – Amacoy Lake Property Owners Association

BCR – Beaver Creek Reserve

CBCW – Clean Boats, Clean Waters

CLMN – Citizen Lake Monitoring Network

CSC – Citizen Science Center (Beaver Creek Reserve)

LCC – Land Conservation Committee (Eau Claire County)

LCFM – Land Conservation and Forest Management (Chippewa County)

LLLPRD – Lower Long Lake Protection and Restoration District

LMPN – Lake Monitoring and Protection Network

LWIPA – Lake Wissota Improvement and Protection Association

Secchi disk – instrument used to measure water clarity

Station – Specified location on a waterbody with historical and/or continuous associated fieldwork

SWIMS – Surface Water Integrated Monitoring System

WBIC – Waterbody identification code

WCI – Watercraft inspector

WDNR – Wisconsin Department of Natural Resources

Invasive mussels fashion silk-like byssus via mechanical processing of massive horizontally acquired coiled coils

Full Article Link

Abstract

Zebra and quagga mussels (Dreissena spp.) are invasive freshwater biofoulers that perpetrate devastating economic and ecological impact. Their success depends on their ability to anchor onto substrates with protein-based fibers known as byssal threads. Yet, compared to other mussel lineages, little is understood about the proteins comprising their fibers or their evolutionary history. Here, we investigated the hierarchical protein structure of Dreissenid byssal threads and the process by which they are fabricated. Unique among bivalves, we found that threads possess a predominantly β-sheet crystalline structure reminiscent of spider silk. Further analysis revealed unexpectedly that the Dreissenid thread protein precursors are mechanoresponsive α-helical proteins that are mechanically processed into β-crystallites during thread formation. Proteomic analysis of the byssus secretory organ and byssus fibers revealed a family of ultrahigh molecular weight (354 to 467 kDa) asparagine-rich (19 to 20%) protein precursors predicted to form α-helical coiled coils. Moreover, several independent lines of evidence indicate that the ancestral predecessor of these proteins was likely acquired via horizontal gene transfer. This chance evolutionary event that transpired at least 12 Mya has endowed Dreissenids with a distinctive and effective fiber formation mechanism, contributing significantly to their success as invasive species and possibly, inspiring new materials design.

Invasive Properties and Ecological Impacts of Eurasian Watermilfoil, Myriophyllum Spicatum

Full Article Link

Overview

Eurasian Watermilfoil (*Myriophylum spicatum*) has many characteristics that contribute to its invasive nature. EWM populations can cause dense matting to occur to the point of supporting the weight of frogs and wading birds. Other characteristics EWM possesses includes its tolerance to cold, low nutrient requirements, and it's asexual reproductively. This article includes other relevant sources that dive deeper into the invasive nature of EWM.