

Spread Eagle Chain of Lakes (Florence County, Wisconsin)

Eurasian water-milfoil Monitoring Report

This is a product of a WDNR Early Detection & Response Grant awarded to:

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Cite as: *Premo, Dean, Angie Stine, and Kent Premo. 2017. Spread Eagle Chain of Lakes Eurasian water-milfoil Monitoring Report. White Water Associates, Inc.*



Date: February 2017

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Photo of Eurasian water-milfoil on cover page is by Dean Premo, White Water Associates, Inc.

INTRODUCTION

On September 5, 2012, during Early Detection Monitoring, the Wisconsin Department of Natural Resources (WDNR) discovered Eurasian water-milfoil (*Myriophyllum spicatum*) in North Lake of the Spread Eagle Chain of Lakes (SECOL) in Florence County, Wisconsin. Zebra Mussels (*Dreissena polymorpha*) were found in North Lake on the same inspection. An Early Detection and Rapid Response Project was awarded from the WDNR Aquatic Invasive Species (AIS) Planning Grants program to the Spread Eagle Chain of Lakes Association (SECOLA) for response to the simultaneous discoveries of these two aquatic invasive species. This initial grant was used in 2014 and 2015. A subsequent grant was awarded to continue the monitoring efforts for EWM, zebra mussels and the yellow iris (2015 through 2016). The objectives of this more recent grant were (1) conduct monitoring on the SECOL to locate and document EWM colonies; hand-pull EWM from existing and new sites; (3) conduct zebra mussel population monitoring; (4) document the distribution of yellow iris on the SECOL, and (5) provide education content for the SECOLA on aquatic plants, aquatic plant management, zebra mussels, and AIS monitoring.

This report documents the EWM monitoring and hand-pulling efforts in the Spread Eagle Chain of Lakes. Two separate reports cover zebra mussel and yellow iris efforts. We organize this report in four sections (including the Introduction). In the next section (Eurasian water-milfoil Background), we summarize the species' identification, reproduction, and dispersal. The Methods section details our approach to monitoring and hand-pulling the EWM in the Spread Eagle Chain of Lakes. Findings are reported in the Results and Discussion section.

EURASIAN WATER-MILFOIL BACKGROUND

Eurasian water-milfoil (EWM) can be aggressive AIS. Eurasian water-milfoil is identified by having whorls of finely divided leaves. EWM usually has 14 or more leaflets on each side of the leaf axis. Native water-milfoils usually have fewer than 12 pairs of leaflets. EWM is detrimental to lakes because it can form dense mats, preventing light from reaching other native plants and can interfere with boating and other recreational activities. EWM reproduces by buds, rhizomes and by mechanical fragmentation (such as being chopped up by boat engine propellers). The high level of boating traffic in the Spread Eagle Chain of Lakes increases the chances for this species to disperse throughout the chain.

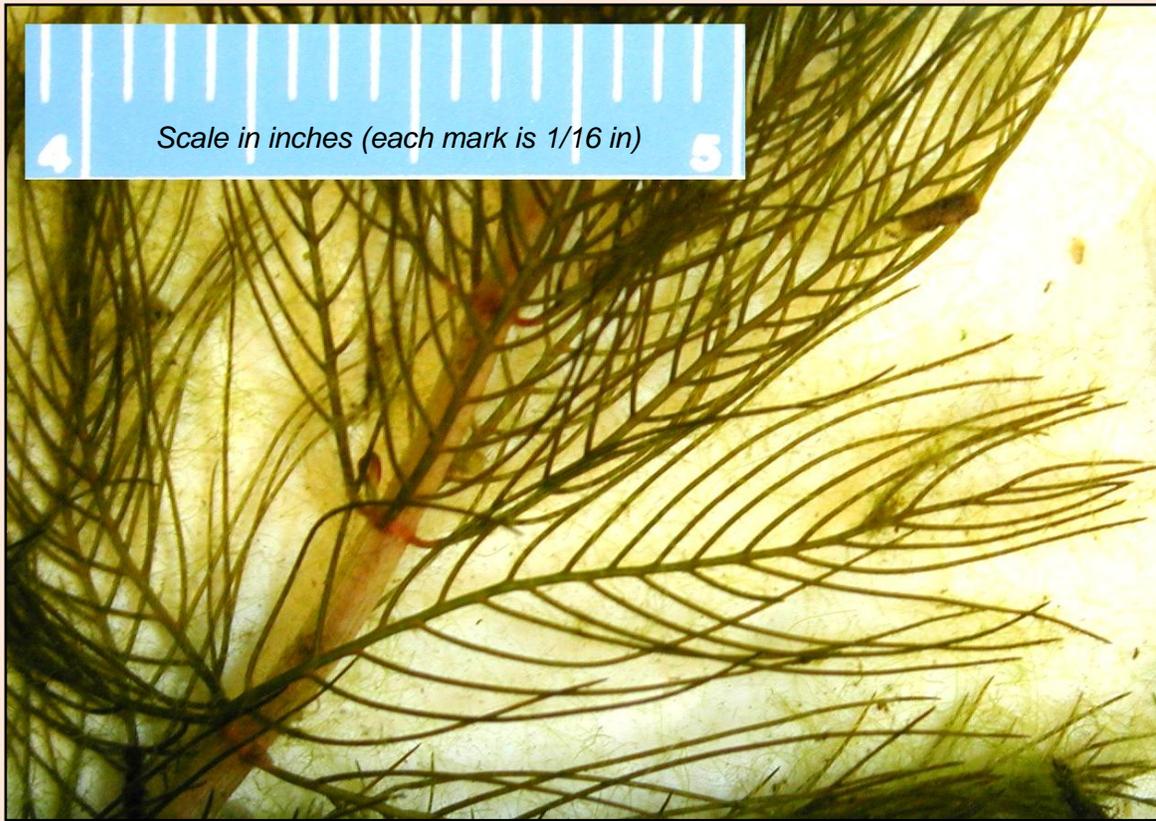


Exhibit 1. Photograph of Eurasian water-milfoil (*Myriophyllum spicatum*).

METHODS

White Water Associates field staff Tracey and Angie Stine teamed with SECOLA volunteers Carl Sundberg and Jay Weber to conduct meander searches for EWM in the Spread Eagle Chain of Lakes. Sundberg and Weber also used aquascopes to facilitate their monitoring effort. Bryce Crago (AIS Team Leader, Florence County) joined the team for some of the field work. Their efforts included careful inspection of places where EWM had been located in past years as well as visual inspection of all suitable areas in the SECOL. Hand-pulling efforts were conducted from a boat using a rake or underwater using snorkeling or SCUBA gear. The results and discussion section provides an account of the monitoring and hand-pulling efforts and results.

RESULTS & DISCUSSION

On June 2, 2015, Angie Stine (White Water Associates, aquatic biologist), Jay Weber (SECOLA volunteer), and Bryce Crago (AIS Team Leader for Florence County), conducted a search of areas in North Lake where EWM had been found in past years and removed by hand-pulling. The intent of the search was to determine if additional EWM was present at these sites. During this outing, Stine pulled two EWM plants south of Robbins's Island in the vicinity of Point Numbers EWM1-EWM7 (Exhibits 2 and 3). During the same outing, she removed 18 EWM plants on the northeast side of North Lake at EWM 8 (Exhibits 2 and 3) and 10 EWM plants in at EWM11 (Exhibits 2 and 3). The total wet weight of plants removed on June 2, 2015 was 21.8 pounds. On June 5, 2015, Angie and Tracey Stine (White Water Associates), working with Weber and Crago, used SCUBA to hand-pull EWM plants that had been observed in deeper water at points EWM8, EWM9, EWM10, and EWM11 (Exhibits 2 and 3). A total of 44 pounds was taken on June 5 making the two day total of about 66 pounds. As an indicator of progress in controlling the EWM population, this can be contrasted to the 380 pounds of EWM hand pulled in the 2014. Exhibit 4 provides a summary of the EWM hand-removal efforts on the SECOL.

In August of 2015, additional monitoring for EWM was conducted on parts of the SECOL. On August 4, 2015 White Water biologists and Jay Weber conducted a point intercept aquatic plant survey on West Lake. No EWM were observed during this effort. On August 5, 2015 White Water staff searched for EWM using a snorkel and mask in North Lake. No EWM were observed. Also conducted on August 5, 2015 was a meander search for EWM in other areas of the SECOL. No EWM were observed. On August 6, 2015, White Water staff and Jay Weber conducted a point-intercept aquatic plant survey on Middle Lake. No EWM were observed.

Two aquascopes were purchased in September 2015 and used by Jay Weber and Carl Sundberg to facilitate their EWM monitoring efforts. Living on the SECOL, these two volunteers are able to more frequently monitor for AIS and contact White Water Associates if any other areas of EWM appear or if they see any other suspicious plants or animals.

On June 2, 2016, Angie Stine met Jay Weber and Bryce Crago for EWM monitoring and removal work on North Lake. Jay Weber's pontoon boat was used for this effort. There was one plant pulled at EWM11, two EWM plants pulled at EWM9, and one plant pulled at EWM8 (Exhibits 2 and 3).

On June 24, 2016, Tracey Stine, Angie Stine, and Jay Weber conducted EWM monitoring via Weber's pontoon boat. They conducted a meander search on North Lake and

specifically visited areas where EWM was found in the past. Their efforts resulted in two plants pulled at EWM9, 8 plants pulled at EWM8, and 10 plants pulled at EWM 10 (Exhibits 2 and 3). A new EWM spot (EWM12) was discovered by Jay Weber and Carl Sundberg on the west side of Robbins Island (Exhibits 2 and 3). On June 24, 2016, 12-15 plants were pulled from this area. The total weight of the all EWM removed on June 24, 2016 was seven pounds. On June 24, 2016, a meander search of the entire chain looking for EWM and yellow iris revealed no additional EWM. East Lake and South Lake were visited by Jay Weber on a separate outing and he observed no EWM.

Tracey and Angie Stine (White Water) conducted a zebra mussel study on the SECOL on August 23 and 24, 2016. During this period of time on the lake, they watched for EWM on lakes in the Chain. No EWM were found on other lakes, but the crew did notice a few tall EWM plants in deep water of North Lake at EWM10 and decided to come back with SCUBA at a later date.

Tracey and Angie Stine met Jay Weber at his home on September 28, 2016 to hand-pull EWM by using SCUBA and Weber's pontoon boat in North Lake. One plant was pulled at EWM8. They found 2-3 plants at EWM9 that were hand-pulled. These specimens were well hidden in the Large-leaf pondweed (*Potamogeton amplifolius*) at this site. Tracey and Angie Stine continued an underwater meander search for any additional EWM. They pulled 4-6 EWM plants at EWM10. The total weight of EWM pulled on September 28, 2016 was 2.8 pounds.

White Water Associates staff and Jay Weber (SECOLA) have been impressed with the effectiveness of the hand-pulling efforts on North Lake.

In August 2016, SECOLA volunteer Jay Weber delivered a presentation to the SECOLA Garden Club at an event they called a *Mini Invasive Species Forum*. There were about 60 people in attendance for this gathering that was planned by SECOLA member Deb Cini and held on Bass Island in the SECOL. During the one hour presentation, Weber discussed aquatic invasive species and reviewed the history of the North Lake Management Plan and the AIS Rapid Response Grants. He brought samples of Eurasian water-milfoil so that participants could experience distinguishing this species from native aquatic plants. Weber described how the plant propagates and spreads. He warned how boating through colonies of EWM can cause it to fragment and disperse to new areas in the SECOL. He reviewed progress with the EWM hand-pulling efforts.

Exhibit 2. History of EWM on the Spread Eagle Chain of Lakes

Point	Year Found	Latitude/Longitude	Comments
EWM1	2013	45.90135, -88.13724	These are the locations of the original EWM finds on 9/18/13 south of Robbins Island by Caitlin Clarke and Carl Sundberg. Specimens from EWM1 were sent out for verification.
EWM2	2013	45.90090, -88.13726	
EWM3	2013	45.90125, -88.13728	This is the site of an additional find made by Angie Stine and Caitlin Clarke (White Water Associates) on 9/23/13 during a Spread Eagle Chain of Lakes EWM monitoring bout.
EWM4	2013	45.90121, -88.13731	On 9/25/13 Clarke and Stine returned to the EWM to conduct hand-pulling while snorkeling. These two additional points were marked where EWM plants were removed. About 100 plants (stems) were removed from these five sites. On 6/2/15, Stine hand-pulled 2 EWM plants.
EWM5	2013	45.90119, -88.13736	
EWM6	2014	45.90123; -88.13736	Points marked by Angie Stine during hand-pulling efforts in 2014 (south of Robbins Island). Part of the same general group of points EWM1-EWM5.
EWM7	2014	45.90122; -88.13731	
EWM8	2014	45.90485; -88.13362	NE corner of North Lake. Double-garage door boat house
EWM9	2014	45.90545; -88.13846	north of Robbins Island
EWM10	2014	45.90511; -88.14153	large clump, in open water north of boat landing
EWM11	2014	45.90565; -88.14156	In fine sediment near shore.
EWM12	2012	45.90604, -88.13928	Site of original North Lake EWM find in 2012 by WDNR
EWM13	2016	45.90294; -88.13970	2016 new site by Robbins Island across from Boat Landing discovered by Weber and Sundberg.

Note: EWM1 through EWM7 represent the same area of about 150 feet in length. No EWM were documented in 2016 searches in this area.

Exhibit 3. EWM Locations in the Spread Eagle Chain of Lakes

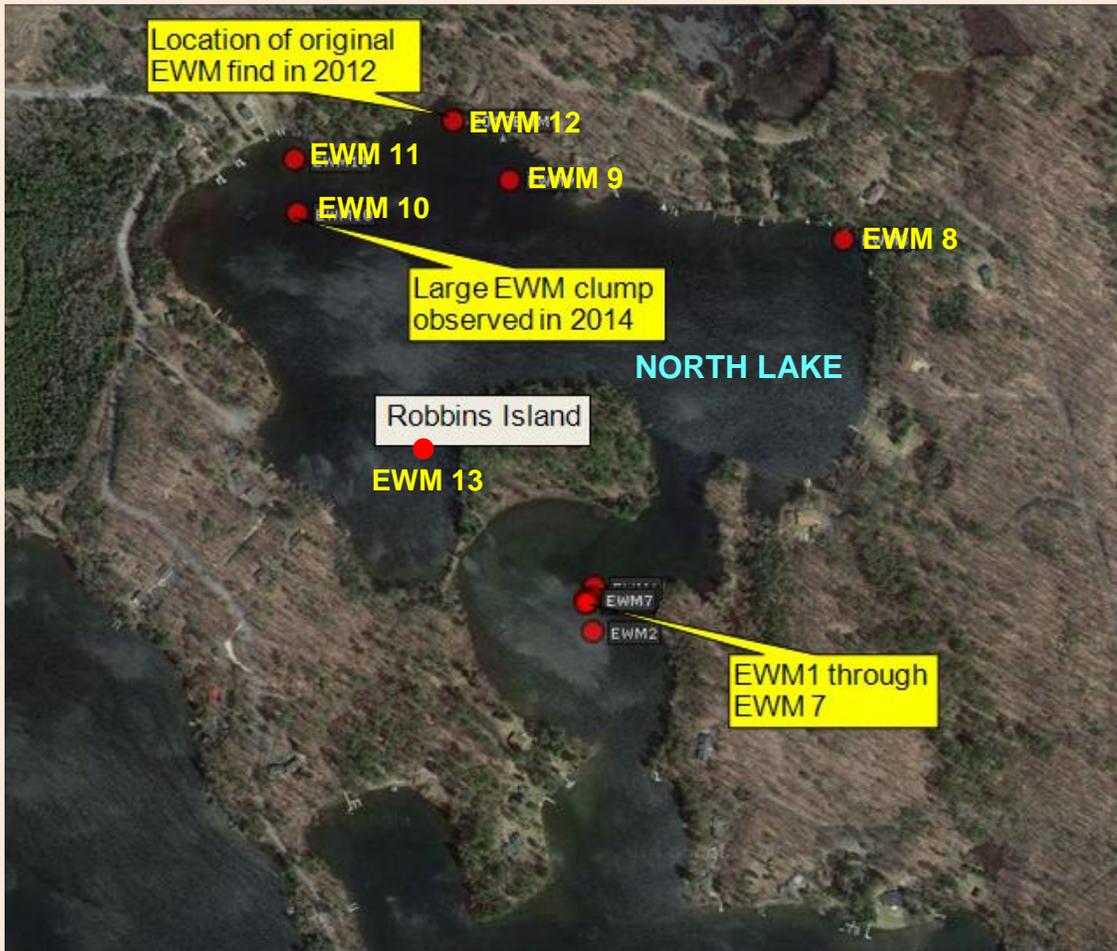


Exhibit 4. Removal History of EWM by Hand-pulling in Spread Eagle Chain of Lakes

Year	Wet Weight Removed	Comments
2012	0.5 pounds	Very few plants
2013	0.5 pounds	Very few plants
2014	380 pounds	EWM growth at its zenith in North Lake
2015	65.8 pounds	All from existing EWM sites
2016	9.9 pounds	Existing sites and one new site on North Lake