

INTRODUCTION

Porters Lake, Waushara County, is an approximate 68-acre mesotrophic spring lake with a maximum depth of 18 feet and a mean depth of 7 feet (Figure 1). Possessing no inlet, the lake lies within the Wolf River Drainage Basin, and is drained via Porters Creek which flows into downstream Mount Morris Lake. Porters Lake's surficial watershed encompasses approximately 77 acres.



Figure 1. Porters Lake, Waushara County, Wisconsin.

In 2006, the Porters Lake Management District (PLMD) received a Wisconsin Department of Natural Resources (WDNR) Lake Management Planning Grant to create a lake management plan for Porters Lake which was finalized in 2007 (Onterra, 2007). The only invasive species

located in 2006 was purple loosestrife (*Lythrum salicaria*) growing along the lake's shoreline in a few locations; no invasive submersed aquatic plant species such as Eurasian watermilfoil (*Myriophyllum spicatum*; EWM) or curly-leaf pondweed (*Potamogeton crispus*; CLP) were located. Due to the presence of EWM and CLP in many nearby waterbodies, the PLMD contracted with Onterra to complete additional aquatic plant surveys in 2012. These surveys were conducted with two main objectives: 1) to locate any potential AIS within Porters Lake, and 2) reassess the lake's aquatic plant community and compare it to the data collected during the 2006 surveys.

On June 26, 2012, workers from UW-Stevens Point were coincidentally also conducting an aquatic plant survey on Porters Lake and indicated to Onterra ecologists upon their arrival to the lake that they believed they had identified EWM growing within a near-shore area in the southwestern portion of the lake. Onterra ecologists also believed these plants were EWM, and specimens were collected and positively identified as EWM by the UW-Stevens Point Herbarium. In the spring of 2013, an herbicide spot treatment was conducted which was successful at reducing the EWM within the application area. Since the 2013 treatment, the PLMD has been working with Golden Sands Resource Conservation & Development Council, Inc. (RC & D) and UW-Extension Lakes to coordinate hand-removal and monitoring of remaining EWM within the lake, and Onterra has been conducting surveys to locate and map locations of EWM annually since its discovery as well. This report discusses the EWM monitoring results from 2017.

MONITORING METHODOLOGIES

Onterra ecologists completed two meander-based visual surveys in 2017, the Early-Season AIS Survey (ESAIS) and Late-Season EWM Peak-Biomass Survey, both of which aim to locate and map potential occurrences of EWM. While EWM surveys are typically conducted later in the summer to coincide with its peak growth, the ESAIS Survey is typically conducted in June to locate and map areas of EWM so these data can be relayed to hand-harvesters. This provides the hand-harvesters with the most up-to-date and accurate information regarding locations of EWM within the lake. In addition, the hand-harvesters could better allocate their time to removing EWM rather than searching the lake for suitable areas to

conduct hand-removal. The results obtained from the Late-Summer EWM Peak-Biomass Survey are used to guide management strategies for the following season.

During the ESAIS and Late-Summer EWM Peak-Biomass Surveys, a sub-meter GPS was used to map EWM locations by using either 1) point-based or 2) area-based methodologies. Large colonies >40 feet in diameter are mapped using polygons (areas) and were qualitatively attributed a density rating based upon a five-tiered scale from *Highly Scattered* to *Surface Matting*. Point-based techniques were applied to EWM locations that were considered as *Small Plant Colonies* (<40 feet in diameter), *Clumps of Plants*, or *Single or Few Plants*.

2017 SURVEY RESULTS

On July 7, 2017, Onterra ecologists conducted the ESAIS Survey on Porters Lake. Conditions for this survey were ideal with full sun and calm winds. No EWM was located during this survey. Onterra ecologists returned to Porters Lake on September 1, 2017 to complete the Late-Summer EWM Peak-Biomass Survey. Again, survey conditions were excellent with full sun and light winds. During this survey, 22 single EWM plants were located in an isolated area in the southwest portion of the lake where the herbicide application occurred in 2013 (Figure 1 and Map 1). These plants were located in approximately 1-foot of water or less over organic sediments amongst surface-matted coontail, spatterdock, and northern watermilfoil. Given these plants were growing in soft sediments, all 22 plants were easily hand-removed with a rake by Onterra ecologists (Figure 2). However, because of the abundance of native plants in this area and difficult navigation, it is likely that some EWM plants were missed. The coordinates of the 22 plants located and removed were provided to the PLMD and it was recommended that volunteers search this area for remaining plants if possible yet in 2017.

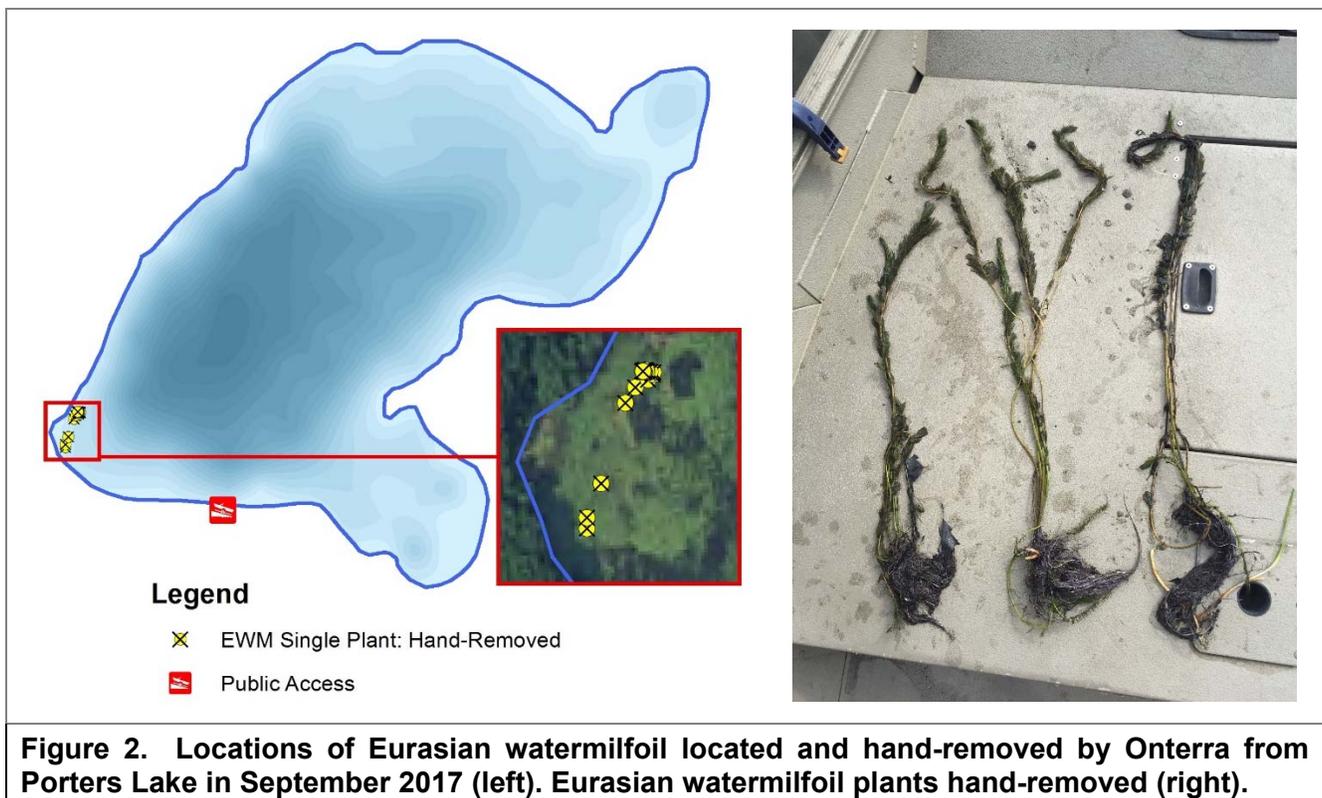


Figure 2. Locations of Eurasian watermilfoil located and hand-removed by Onterra from Porters Lake in September 2017 (left). Eurasian watermilfoil plants hand-removed (right).

On October 4, 2017, Paul Skawinski (UW-Extension), Anna Cisar (Golden Sands RC&D), and Tom Boisvert (UW-Stevens Point volunteer) completed a survey on Porters Lake via kayaks. They estimated they hand-removed approximately 200 additional EWM plants from the southwest area of the lake along with a number of floating fragments (Figure 3).

CONCLUSIONS AND DISCUSSION

The 2017 surveys completed on Porters Lake by Onterra, UW-Extension, and Golden Sands RC&D staff indicate that the EWM population has grown since 2016. While a number of the EWM plants located in 2017 were hand-removed, there were likely plants that were missed or not fully removed. In addition, floating fragments were observed in October and may have spread to areas of the lake

outside of the southwest bay where the rooted plants were located. Continued active monitoring and hand-removal will be essential to ensure that the population remains small and does not expand to levels beyond the control of hand-harvesting. The PLMD should continue their diligent monitoring using volunteers, Golden Sands RC & D staff, UW-Extension Lakes staff, Onterra staff, or a combination of these. Continued monitoring and hand-removal multiple times throughout the growing season will maximize the probability of finding EWM occurrences within the lake and allow alternative management strategies to be developed in the event that the population expands beyond the control of hand-harvesting.



Figure 3. Eurasian watermilfoil plants hand-removed by Paul Skawinski, Anna Cisar, and Tom Boisvert in October 2017 from southwest bay of Porters Lake. Photo courtesy of Paul Skawinski.



Onterra LLC
 Lake Management Planning
 815 Prosper Road
 De Pere, WI 54115
 920.338.8860
 www.onterra-eco.com

Sources:
 Data: Hydro: WDNR
 Orthophotography: NAIP, 2015
 Map Date: September 5, 2017
 Filename: Map1_Porters_EWM_Sept17.mxd



Project Location in Wisconsin

Legend

-  EWM Single Plant: Hand-Removed
-  Public Access

Map 1
 Porters Lake
 Waushara County, Wisconsin
September 2017
EWM Locations