

Eurasian Watermilfoil Delineation Survey

Roosevelt Lake (#11-0043) & Lawrence Lake (#11-0053)
Cass & Crow Wing County, MN

Surveyed: June 30 and July 9, 2024



Survey, Analysis, & Reporting by:

James A. Johnson – Aquatic Ecologist, Freshwater Scientific Services, LLC



Certified Lake Manager
www.NALMS.org

Survey & Analysis Methods

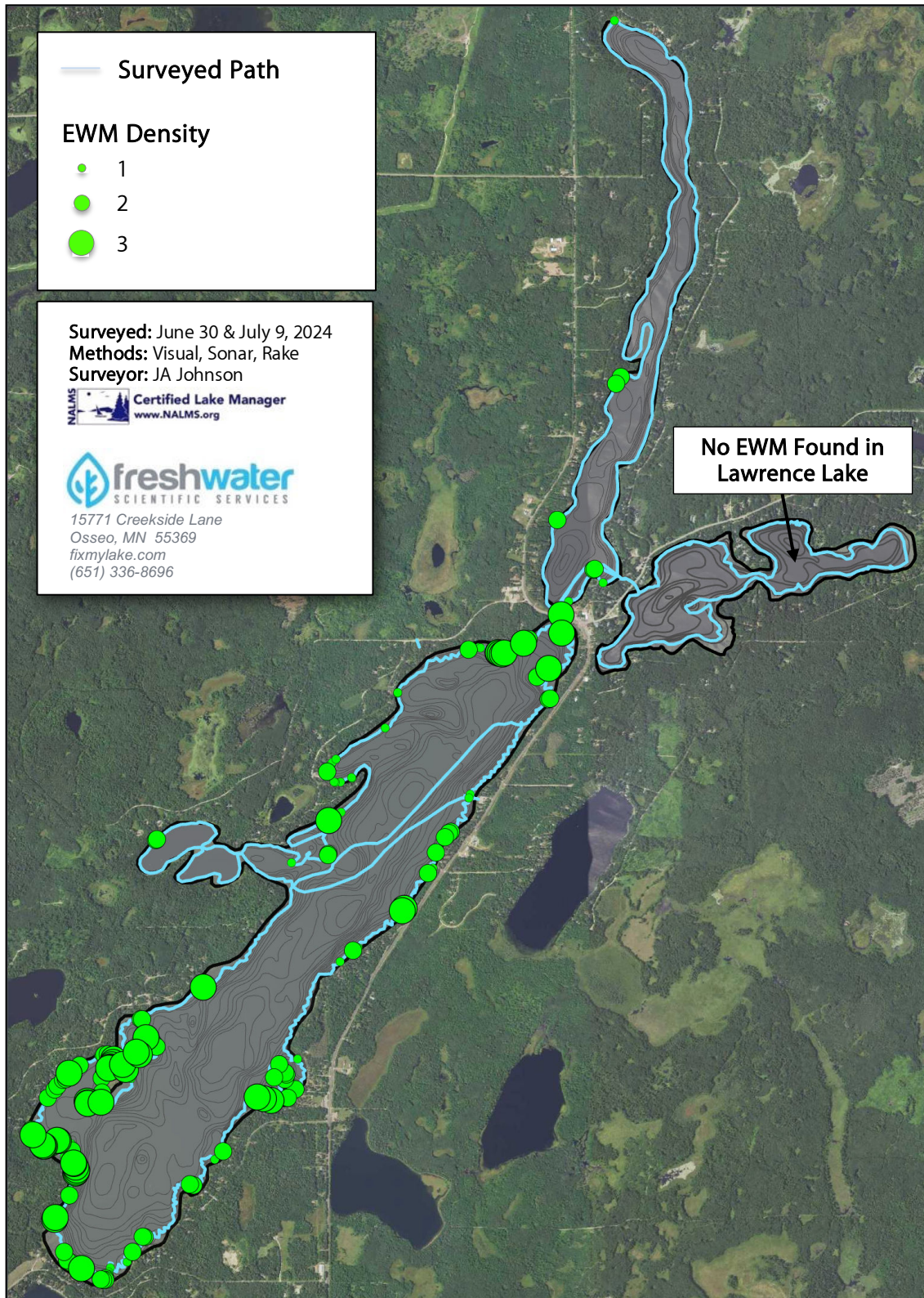
EWM Delineation Surveys

Freshwater Scientific Services, LLC completed search and delineation surveys for Eurasian watermilfoil (EWM) on Roosevelt Lake (#11-0043) and Lawrence Lake (#11-0053) on June 30 and July 9, 2024. For these surveys, we navigated a search path over the vegetated portion of each lake while using a combination of surface observations, sonar readings, and rake tosses to locate and delineate areas of EWM growth. Visual and sonar assessments were conducted continuously, with subsequent rake tosses to assess EWM presence/abundance at sites where plants were not identifiable from the surface. We recorded any locations with EWM using a hand-held Garmin GPS unit (GPS-MAP78), and then documented water depth and EWM abundance (density rating; 1 to 3 scale as described below).

Score	Visual	Rake
1	Light / Solitary plants	1-2 stems
2	Moderate / Dense patches	3 to 9 stems
3	Dense / Uniform matted EWM	10+ stems

Water clarity and overall visibility at the time of the surveys were excellent. This allowed us to conduct an intensive visual survey that was much more likely to locate smaller patches of EWM growth than a rake or sonar survey alone.

Roosevelt Lake (#11-0043) & Lawrence Lake (#11-0053) Eurasian Watermilfoil Delineation: 2024



Roosevelt Lake (Northern Basin) (#11-0043)

Eurasian Watermilfoil Management Plots: 2024



 Proposed EWM Plots

Plot	Area (acres)	Mean Depth (ft)	Mean EWM Density (1-3)
1	0.10	8.2	1.0
2	0.39	6.9	2.0
3	0.25	9.2	2.0
4	0.19	8.2	1.7
Total	0.93 acres		

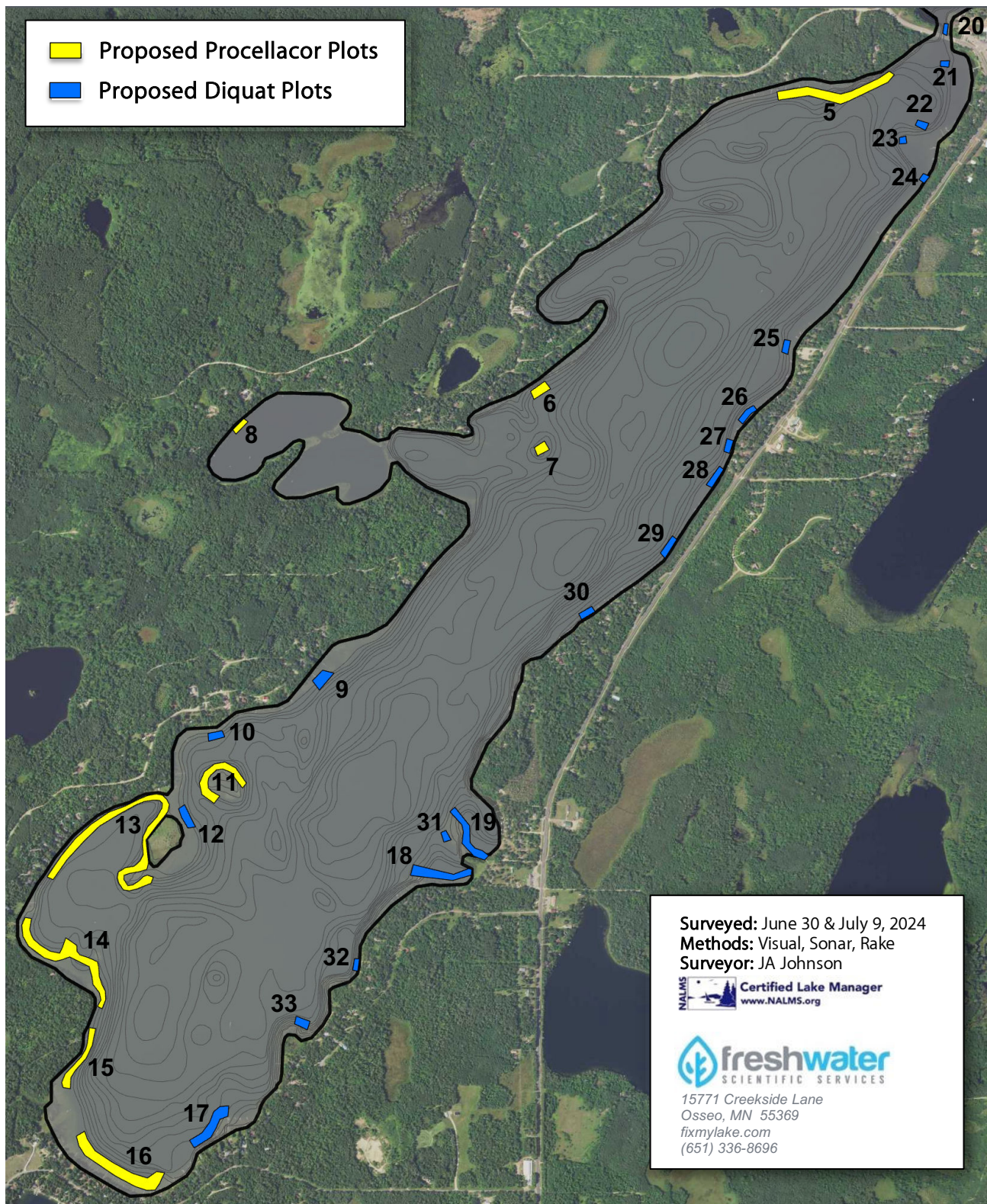
Given that these are newly identified sites and still very localized, we recommend treating these sites aggressively with a systemic herbicide (procellaCOR).

Surveyed: June 30 & July 9, 2024
Methods: Visual, Sonar, Rake
Surveyor: JA Johnson




 15771 Creekside Lane
 Osseo, MN 55369
 fixmylake.com
 (651) 336-8696

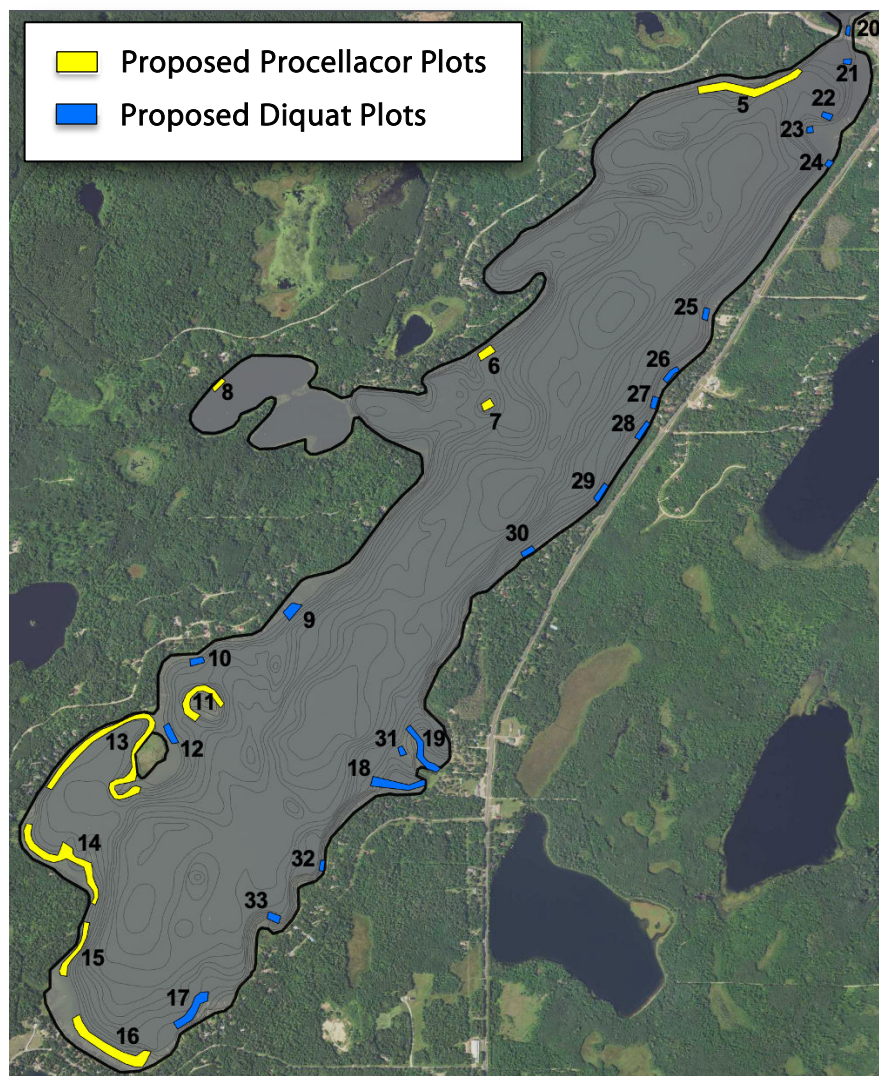
Roosevelt Lake (Southern Basin) (#11-0043) Eurasian Watermilfoil Management Plots: 2024



Roosevelt Lake (Southern Basin) (#11-0043)

Eurasian Watermilfoil Management Plots: 2024

Plot	Area (acres)	Mean Depth (ft)	Mean EWM Density (1-3)
5	4.10	7.6	2.0
6	0.67	8.7	2.3
7	0.47	7.2	1.5
8	0.35	8.6	1.5
11	2.30	6.5	2.2
13	7.13	4.7	2.0
14	4.73	5.9	2.2
15	1.54	8.3	2.3
16	4.43	6.8	1.7
9	0.81	6.6	2.5
10	0.45	5.2	2.0
12	0.71	6.1	2.3
17	1.91	7.1	2.0
18	1.90	5.8	1.9
19	1.71	5.9	1.8
20	0.18	6.7	2.0
21	0.20	6.1	2.5
22	0.31	6.6	2.5
23	0.19	5.9	2.0
24	0.21	5.7	2.0
25	0.34	5.6	1.0
26	0.51	6.2	1.8
27	0.34	5.6	2.0
28	0.51	5.2	1.5
29	0.54	5.7	2.3
30	0.39	6.4	1.5
31	0.27	5.9	2.0
32	0.24	5.6	2.0
33	0.47	5.7	2.0
Total	37.91 acres		
Auxin	25.72 acres		
Diquat	12.19 acres		



Auxin-Mimic Herbicide (ProcellaCOR) Plots (yellow)

Based upon budget limitations, the lake group has worked with Freshwater and PLM to select prioritized plots to treat with procellaCOR. These plots tend to have denser growth (5,11,14-16), are potential fragment superspreaders (5-7, 11, 13), or are new sites of localized infestation (plots 1-4, 8).

Contact Herbicide (Diquat) Plots (blue)

The remaining plots were designated for treatment with diquat based upon smaller plot size and lower potential to spread fragments (isolated within a bay). We expect that the EWM in these diquat-treated areas will regrow next year, so these treatments are intended only as a stop-gap measure to reduce spread by fragmentation and reduce reinfestation of the areas treated with procellaCOR. If warranted, some of these areas may be treated with a systemic herbicide in the future to provide more long-term control.

Management Context

Overview of EWM Growth in Roosevelt Lake

The denser patches of EWM growth we found were generally groupings of small, isolated patches, or long narrow bands of dense growth. However, the total acreage actually occupied by EWM across the entire lake was only 0.8 acres. These patches included 200 individual sites, with the following breakdown of patch sizes:

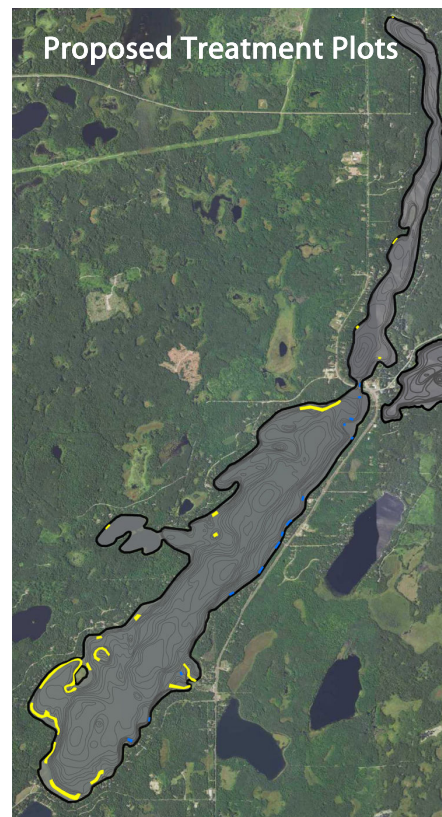
- Only 4 were larger than 0.05 acres (~50x50 ft), with the largest being 0.2 acres (~100x100 ft)
- 10 were between 0.02 and 0.03 acres
- 57 were between 0.01 and 0.02 acres
- The remaining 129 sites were less than 0.01 acres (<20x20 ft), with 76 of those being individual EWM plants that occupied only 1-3 square ft.

Proposed Herbicide Treatment

Herbicides require a minimum concentration and contact time duration to effectively control EWM. In small plots, drift and dispersion can make it very difficult to maintain sufficient contact time with the target plants, leading to reduced efficacy. This is evident in the past treatment of small plots with procellacor in Roosevelt Lake; many of which have not achieved lasting control. Consequently, when treating patchy growth or narrow bands, we must include surrounding areas in the treatment plot to ensure sufficient contact time. This explains why the treatment acreage is much greater than the actual EWM patch coverage). For 2024, we have proposed procellacor treatment only in larger plots that encompass multiple denser EWM patches along substantial stretches of shoreline, with the goal of providing improved control of EWM relative to past years. For the smaller isolated patches where contact time will be difficult to maintain, we have proposed much smaller plots to be treated with a fast-acting contact herbicide (diquat). Although diquat will not kill the roots of the treated plants, it will help to minimize spread from these sites by reducing fragments. Our aim is to control the larger plots with procellacor (kill roots and all), and then revisit the smaller diquat-treated areas for potential procellacor treatment in the future as warranted.

Prioritizing Plots

If the budget will not allow for treatment of all proposed procellacor plots, we recommend that you focus first on treating the new areas of infestation in the northern basin, followed by the offshore patch and new EWM site in the no-wake western bay, and lastly on treating all plots within specific stretches of shoreline to help reduce the potential for reinfestation of the treated areas from nearby plots. Your lake has several natural break points (peninsulas and islands) that help to isolate stretches of shoreline and may help to slow fragment drift from neighboring sections of shoreline.



Online Resources & Contacts

Minnesota Administrative Rules for Aquatic Plant Management

<https://www.revisor.mn.gov/rules/?id=6280>

Minnesota DNR – Aquatic Plant Management Regulations & Permit Application Forms

<http://www.dnr.state.mn.us/apm/index.html>

Nicole Kovar

Invasive Species Specialist

Minnesota DNR

nicole.kovar@state.mn.us

(218) 616-8102

Wendy Crowell

ALS Management Consultant

Minnesota DNR

wendy.crowell@state.mn.us

(651) 728-0051