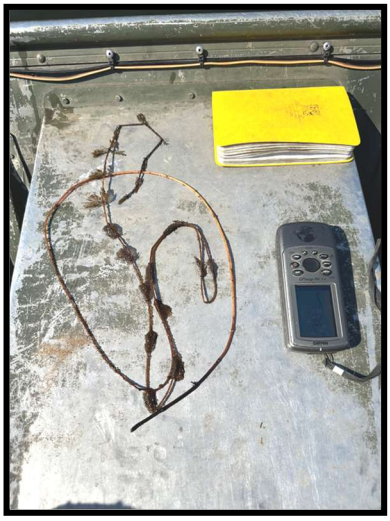
Eurasian water-milfoil (*Myriophyllum spicatum*)
Late-summer Bed Mapping Survey
Callahan Lake (WBIC: 2434700)
Sawyer County, Wisconsin



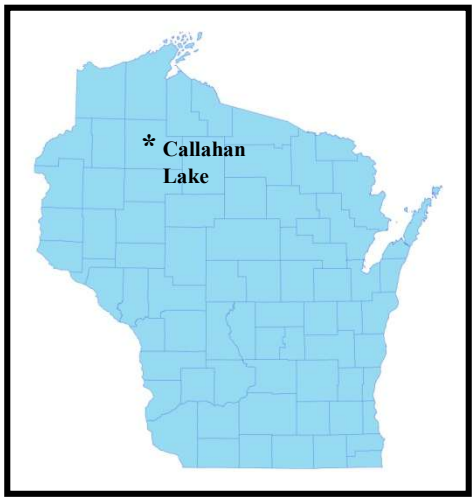
Eurasian Water-milfoil beds on Callahan Lake – 8/19/26



Chemically burned EWM near outlet – 8/30/25

Project Initiated by:

The Callahan and Mud Lakes Protective Association,
Lake Education and Planning Services, LLC, and the
Wisconsin Department of Natural Resources (Grant ACEI35725)





Dead calm and sunny survey conditions on Callahan – 8/19/26

Survey Conducted by and Report Prepared by:

Endangered Resource Services, LLC
Matthew S. Berg, Research Biologist
Saint Croix Falls, Wisconsin
August 19, 2026

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INTRODUCTION:

Callahan Lake (WBIC 2434700) is a 138-acre drainage lake created by an 8ft dam on the north fork of the Chief River in north-central Sawyer County, Wisconsin in the Town of Round Lake (T41N R7W S33/34). It has a maximum depth of 18ft and an average depth of 11ft. The lake is mesotrophic in nature, and water clarity is good with summer Secchi readings averaging 10.2ft over the past ten years (WDNR 2026). The lake's bottom substrate is primarily sand along the shoreline before transitioning to a sandy muck at most depths over 7ft (Bush et al. 1968) (Figure 1).

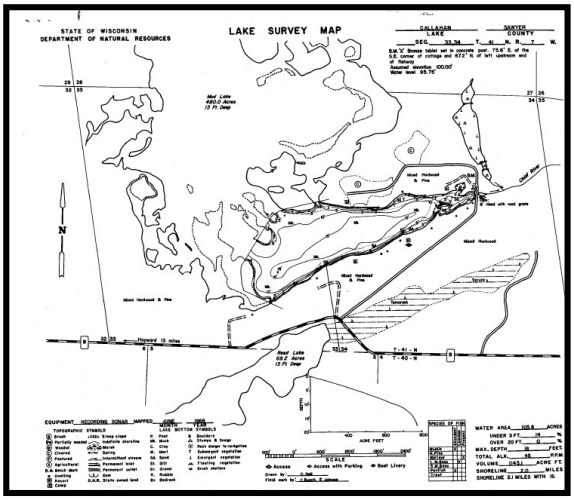


Figure 1: Callahan Lake Bathymetric Map

BACKGROUND AND STUDY RATIONALE:

Eurasian water-milfoil (*Myriophyllum spicatum*) (EWM) is an exotic invasive plant species that was first identified in Callahan Lake in the fall of 2005. Following an initial whole lake point-intercept survey in 2008 (J. Williamson), the Callahan and Mud Lakes Protective Association (CMLPA) and the Sawyer County Land and Water Conservation Department (SCLWC - K. Maki) used a 2009 Wisconsin Department of Natural Resources (WDNR) rapid response grant to hire Ayres Associates to write the lakes' original Aquatic Plant Management Plan (APMP) that called for herbicide applications to control the infestation (Kleczewski 2009). Using data gathered from our 2020, 2021, and 2025 late-summer EWM bed mapping surveys, and our 2021 and 2025 whole lake point-intercept surveys, Dave Blumer (Lake Education and Planning Services, LLC - LEAPS) updated this plan in 2022 and 2026. In addition to continued small-scale herbicide treatments, the new APMP outlined manual removal efforts that included diver assisted suction harvesting (DASH).

Both herbicides and DASH were utilized to manage Eurasian water-milfoil on Callahan Lake in 2025, but no active management occurred in 2026. To see how EWM levels responded to a year without active management, the CMLPA, LEAPS, and the WDNR requested we complete an additional late-summer EWM bed mapping survey of the lake in 2026. Data from the survey will provide current acreage and density of EWM that will help guide any future management. This report is the summary analysis of our August 19, 2026 field survey.

METHODS:

Late-summer Eurasian Water-milfoil Bed Mapping Survey:

During the survey, we searched the visible littoral zone of the lake. By definition, a "bed" was determined to be any area where we visually estimated that EWM made up >50% of the area's plants, was generally continuous with clearly defined borders, and was canopied or close enough to being canopied that it would likely interfere with boat traffic. After we located a bed, we motored around the perimeter taking GPS coordinates at regular intervals. We also estimated the rake density range and mean rake fullness of the bed (Figure 2), the range and mean depth of the bed, whether it was canopied, and the impact it was likely to have on navigation (**none** – easily avoidable with a natural channel around or narrow enough to motor through/**minor** – one prop clear to get through or access open water/**moderate** – several prop clears needed to navigate through/**severe** – multiple prop clears and difficult to impossible to row through). These data were then mapped using ArcMap 9.3.1, and we used the WDNR's Forestry Tools Extension to determine the acreage of each bed to the nearest hundredth of an acre. Because EWM was so rare post-management, we also GPS marked individual plants.

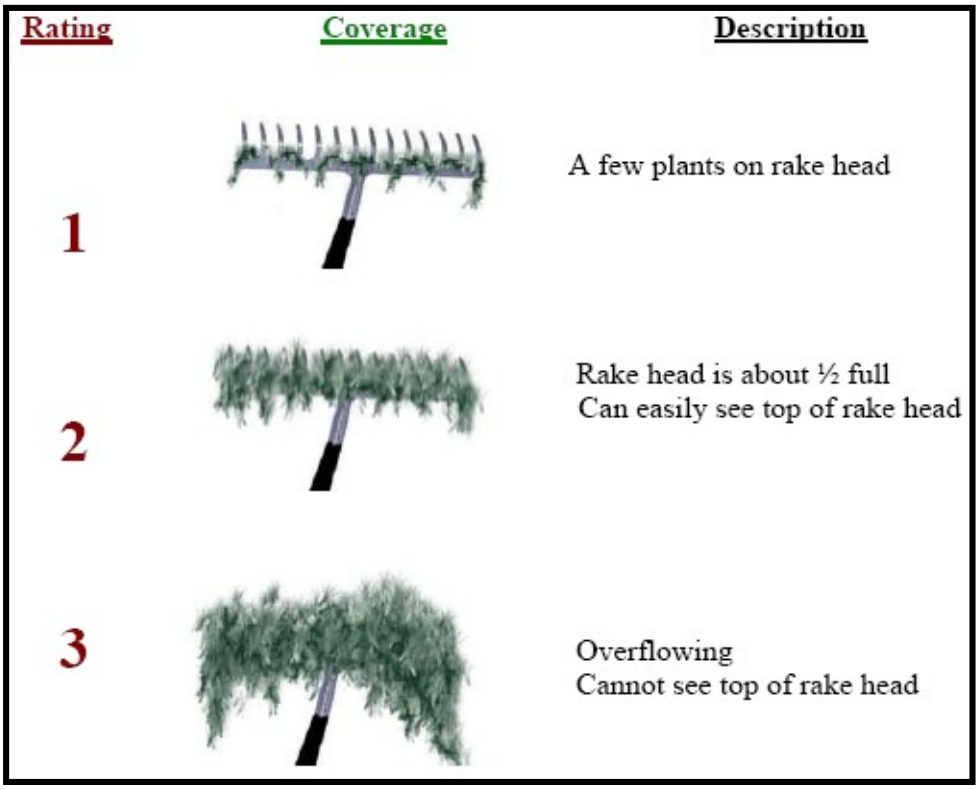


Figure 2: Rake Fullness Ratings (UWEX 2010)

RESULTS:

2025 Management Areas:

In 2025, a single area totaling 4.22 acres (3.06% of the lake's total surface area) was selected for chemical management (Table 1). Treatment occurred on June 24th with Northern Aquatic Services (Dale Dressel - Dresser, WI) applying 84.4 total product dosage units (pdu) of ProcellaCor at a rate of 4pdu/acre ft. (Figure 3) (Appendix I). The reported water temperature at the time of treatment was 76°F, the ambient air temperature was 72°F, and winds were 0-3 mph out of the northwest.

A single additional area was also chosen for suction harvesting in 2025 (Figure 3). On August 2nd, Aquatic Plant Management, LLC (Minocqua, WI) used DASH to remove a total of 76.0 cubic feet of EWM during 7.0 hours of dive time.

Table 1: Eurasian Water-milfoil Chemical Treatment Summary
Callahan Lake – Sawyer County, Wisconsin
June 24, 2025

Bed Number	Final Treatment Area (acres)	Chemical and Total Volume
Bed 1	4.22	ProcellaCor – 84.4 pdu
Total	**4.22**	**ProcellaCor – 84.4 pdu**

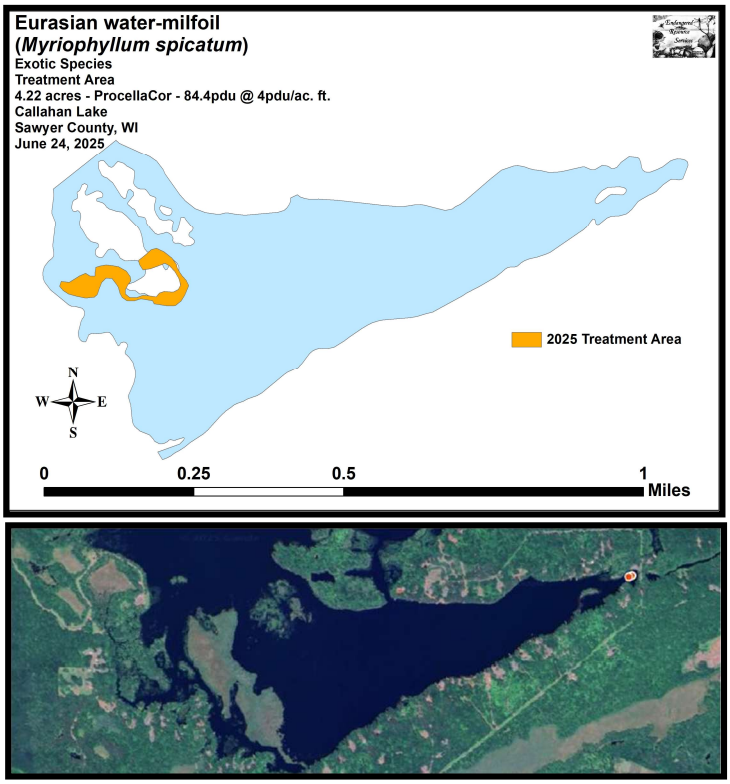


Figure 3: Eurasian Water-milfoil Management Areas - Summer 2025
(DASH Aerial Courtesy Aquatic Plant Management, LLC)

Late-summer Eurasian Water-milfoil Bed Mapping Survey:

During the August 19, 2026 Eurasian water-milfoil bed mapping survey, we searched transects totaling 7.5km (4.7 miles) throughout the lake's visible littoral zone (Figure 4). Collectively, we mapped three beds that covered 0.73 acres (0.53% of the lake's surface area). Outside these areas, we saw and marked just 23 additional single plants (Figure 5) (Appendix II). This was a 1.15-acre decline **(-61.17%)** compared to 2025 when we delineated two beds that covered 1.88 acres (1.36% surface area). It was also a 5.44-acre decline **(-88.17%)** compared to 2021 when we delineated 17 beds that totaled 6.17 acres (4.47% surface area); and a 2.53-acre decline **(-77.61%)** compared to the 2020 survey when we documented 18 beds on 3.26 acres (2.36% coverage) (Table 2). Although no active management occurred in 2026, presumably, this further decline in acreage was due to the severely chemically burned plants we found near the outlet in 2025 not surviving (see report cover).

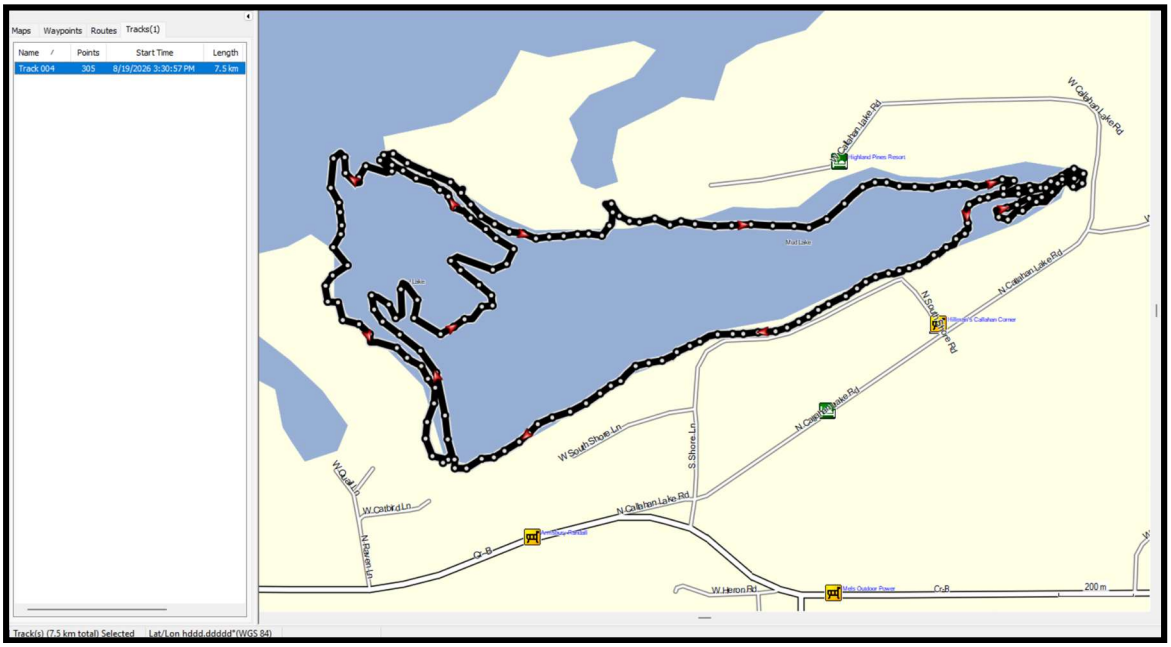


Figure 4: 2026 EWM Littoral Zone Survey – GPS Tracks

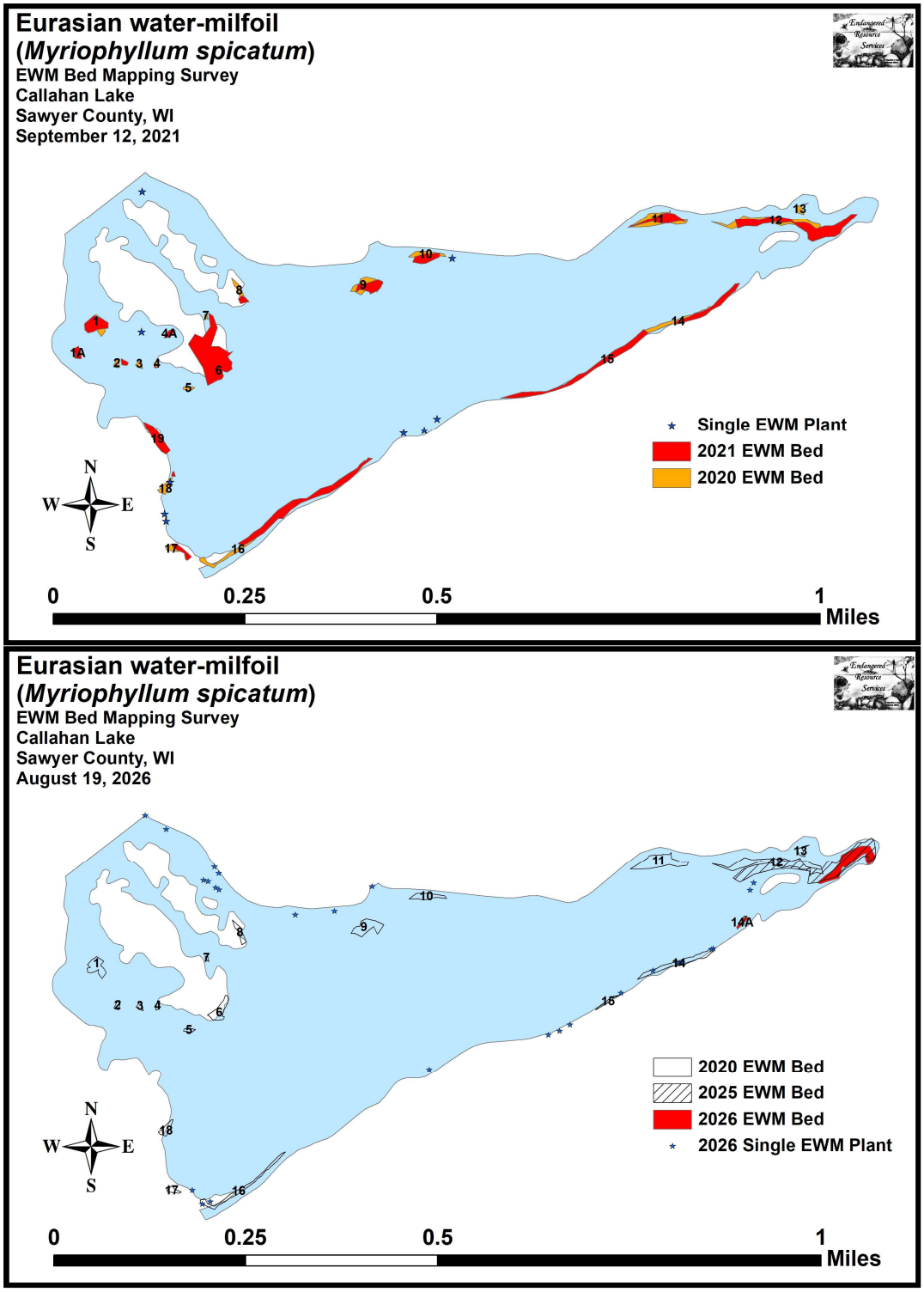


Figure 5: 2021 and 2026 Eurasian Water-milfoil Bed Maps

Table 2: Late-summer Eurasian Water-milfoil Bed Mapping Summary
Callahan Lake - Sawyer County, Wisconsin
August 19, 2026

Bed Number	2026 Acreage	2025 Acreage	2021 Acreage	2020 Acreage	2025-2026 Change in Acreage	Rake Range and Mean Rake Fullness	Depth Range and Mean Depth	Canopied	Navigation Impairment	2026 Field Notes
1	0	0	0.29	0.24	0	-	-	-	-	No EWM seen.
1A	0	0	0.08	0	0	-	-	-	-	No EWM seen.
2	0	0	0.03	0.04	0	-	-	-	-	No EWM seen.
3	0	0	0	0.03	0	-	-	-	-	No EWM seen.
4	0	0	<0.01	0.03	0	-	-	-	-	No EWM seen.
4A	0	0	0.05	0	0	-	-	-	-	No EWM seen.
5	0	0	0	0.04	0	-	-	-	-	No EWM seen.
6 and 7	0	0	1.49	0.23	0	-	-	-	-	No EWM seen.
8	0	0	0.05	0.10	0	-	-	-	-	No EWM seen.
9	0	0	0.24	0.32	0	<<<1	3-5; 4	No	None	A few very widely scattered single plants.
10	0	0	0.20	0.17	0	-	-	-	-	No EWM seen.
11	0	0	0.30	0.52	0	-	-	-	-	No EWM seen.
12	0.68	1.85	1.01	0.66	-1.17	<<<1-3; 2	6-9; 7	Near	Minor	Two plants seen near island – rest by dam.
13	0	0	0	0.05	0	-	-	-	-	No EWM seen.
14 and 14A	0.04	0.03	0.35	0.36	0.01	<<<1	3-5; 4	Yes	Minor	Dense microbed and collection of sprouts.
15	0	0	0.72	0.04	0	<<<1	3-5; 4	No	None	A few very widely scattered single plants.
16	0	0	0.94	0.27	0	<<<1	3-5; 4	No	None	A few very widely scattered single plants.
17	0	0	0.10	0.05	0	-	-	-	-	No EWM seen.
18	0	0	0.01	0.10	0	-	-	-	-	No EWM seen.
19	0	0	0.29	0	0	-	-	-	-	No EWM seen.
Total Acres	**0.73**	**1.88**	**6.17**	**3.26**	**-1.15**					

Descriptions of Past and Present Eurasian Water-milfoil Beds:

Beds 1-8, 18, and 19 – For the second straight year, we saw no evidence of Eurasian water-milfoil anywhere on the western end of the lake in or around the 2025 herbicide treatment areas.

Lake Inlet from Mud Lake and Beds 9 and 10 – In the north inlet channel and extending along the northwest shoreline, we found a few handfuls of recently established plants.

Beds 11 and 13 – In 2025, we found a very few EWM plants alone the north shoreline from the midlake inlet from Mud Lake stretching towards the outlet. All showed significant chemical burn, and, at that time, we noted it was unclear if they would survive. During the 2026 survey, we saw no evidence they had as the entire shoreline remained free of EWM.

Bed 12 – Subcanopy EWM was again present near the lake outlet where we also found surviving native Northern water-milfoil (*Myriophyllum sibiricum*). Interestingly, upstream areas of the bed where we documented EWM plants that showed significant chemical burn in 2025 appeared to have almost all died as we found only two surviving plants immediately west of the island.

Beds 14 and 14A – The downstream end of the bed (14A) was almost unchanged from 2025, and plants again formed a canopied mat along the shoreline. In the middle of the area near the Callahan Lake Resort, a super cluster of low-density plants was forming at the ends of docks. Due to their small size, neither of these areas were likely to be more than a minor impairment if at all.

Beds 15-17– Along the rest of the southern shoreline, we saw eight additional plants. Each was a single-stemmed sprout and appeared to be recently established.

DISCUSSION AND CONSIDERATIONS FOR MANAGEMENT:

Eurasian water-milfoil is widespread in the Mud/Callahan system making eradication an unrealistic expectation. Although EWM was found throughout Callahan Lake, past active management has dramatically reduced it from an estimated 55 acres covering 39.86% of the lake's surface area in 2008 (Kleczewski 2009). Following the herbicide treatment and follow-up DASH work in 2025, **EWM levels were down 96.58%** compared to this presumed highwater mark with further declines noted in 2026 **(-98.67%)** after plants that were chemically burned in 2025 failed to regrow.

Past management of Eurasian water-milfoil in Callahan Lake has come at a high economic cost, and, as herbicides are non-selective, has also likely had significant impacts on the native aquatic plant community. With this in mind, working to control EWM's spread in the most cost-effective manner possible, while simultaneously balancing both its impact on lake access, recreational navigation, and the lake's aquatic ecosystem, with any collateral damage to native vegetation from active management, will likely continue to be important for the CMLPA moving forward. Ultimately, the amount of EWM growth the CMLPA and WDNR are comfortable with will determine how much, if any, active management occurs in Callahan Lake in 2027. Likewise, what if any future monitoring will occur on the lake is a conversation that needs to occur.

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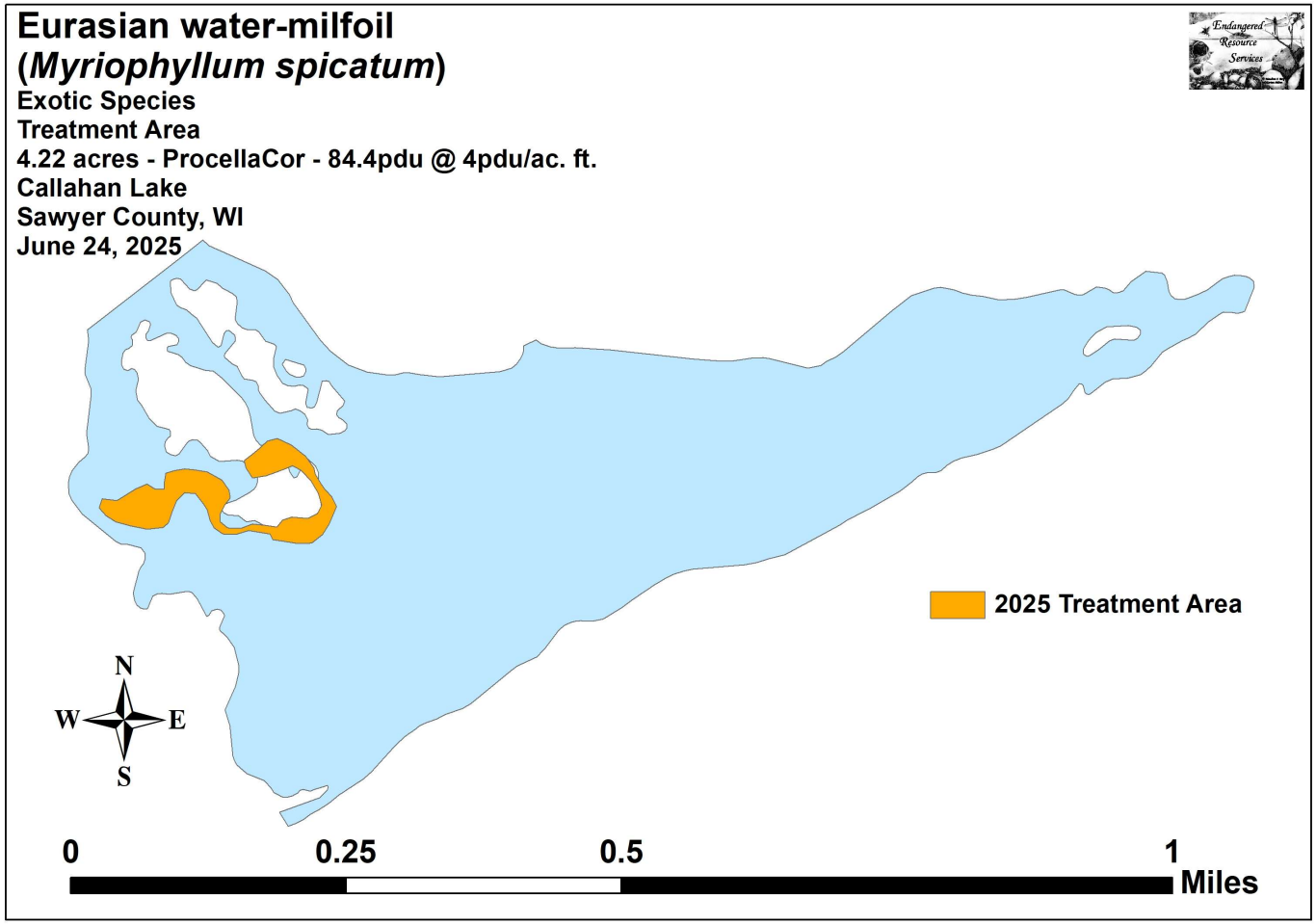
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Appendix I: Summer 2025 Eurasian Water-milfoil Management Areas


Eurasian water-milfoil
(Myriophyllum spicatum)
Exotic Species
Treatment Area
4.22 acres - ProcellaCor - 84.4pdu @ 4pdu/ac. ft.
Callahan Lake
Sawyer County, WI
June 24, 2025
Endangered Resource Services
2025 Treatment Area
N
W
E
S
0
0.25
0.5
1
Miles

2025 Dash Removal – Courtesy Aquatic Plant Management, LLC

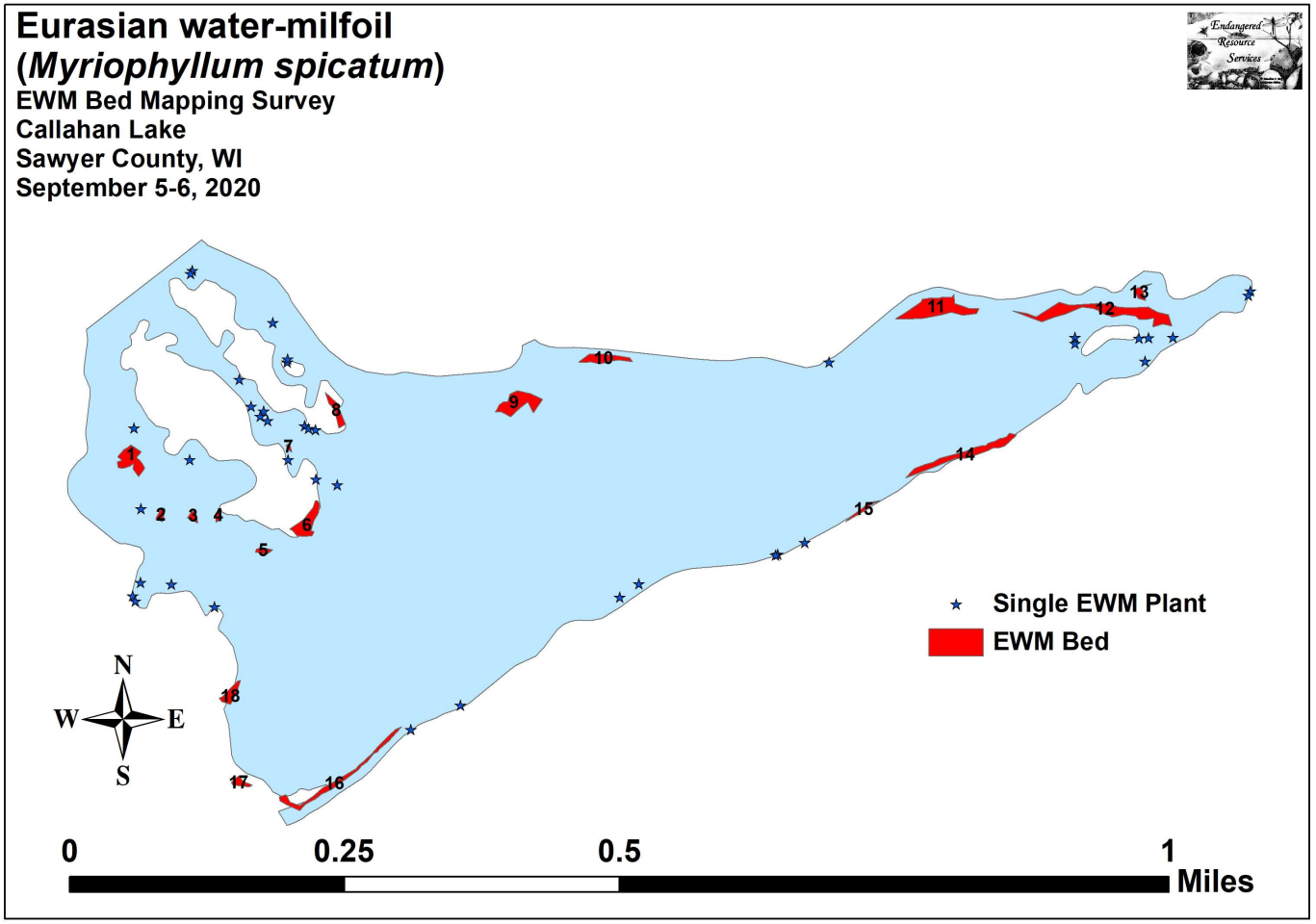
AQUATIC PLANT MANAGEMENT

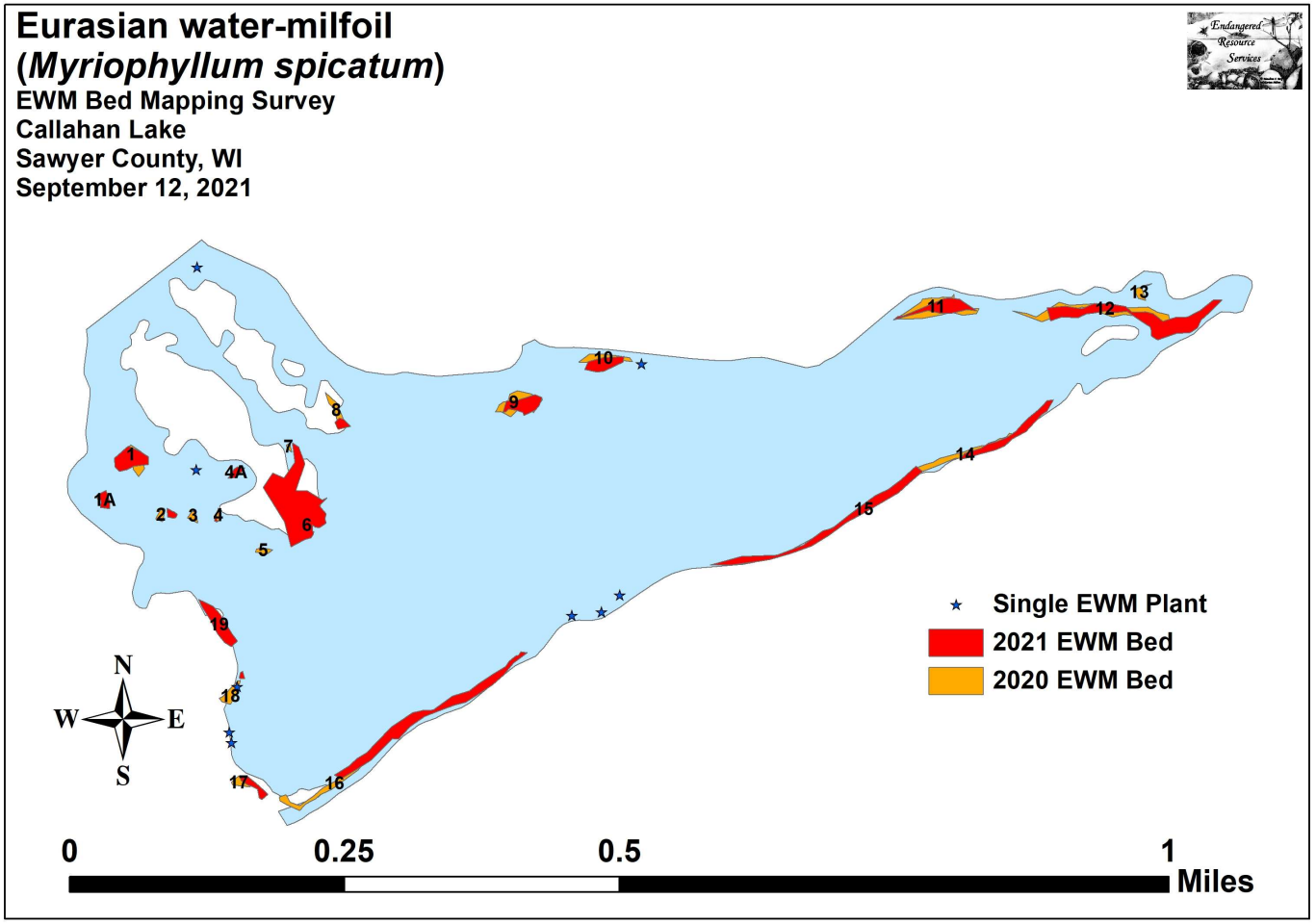
Map of Callahan Lake Dive Sites

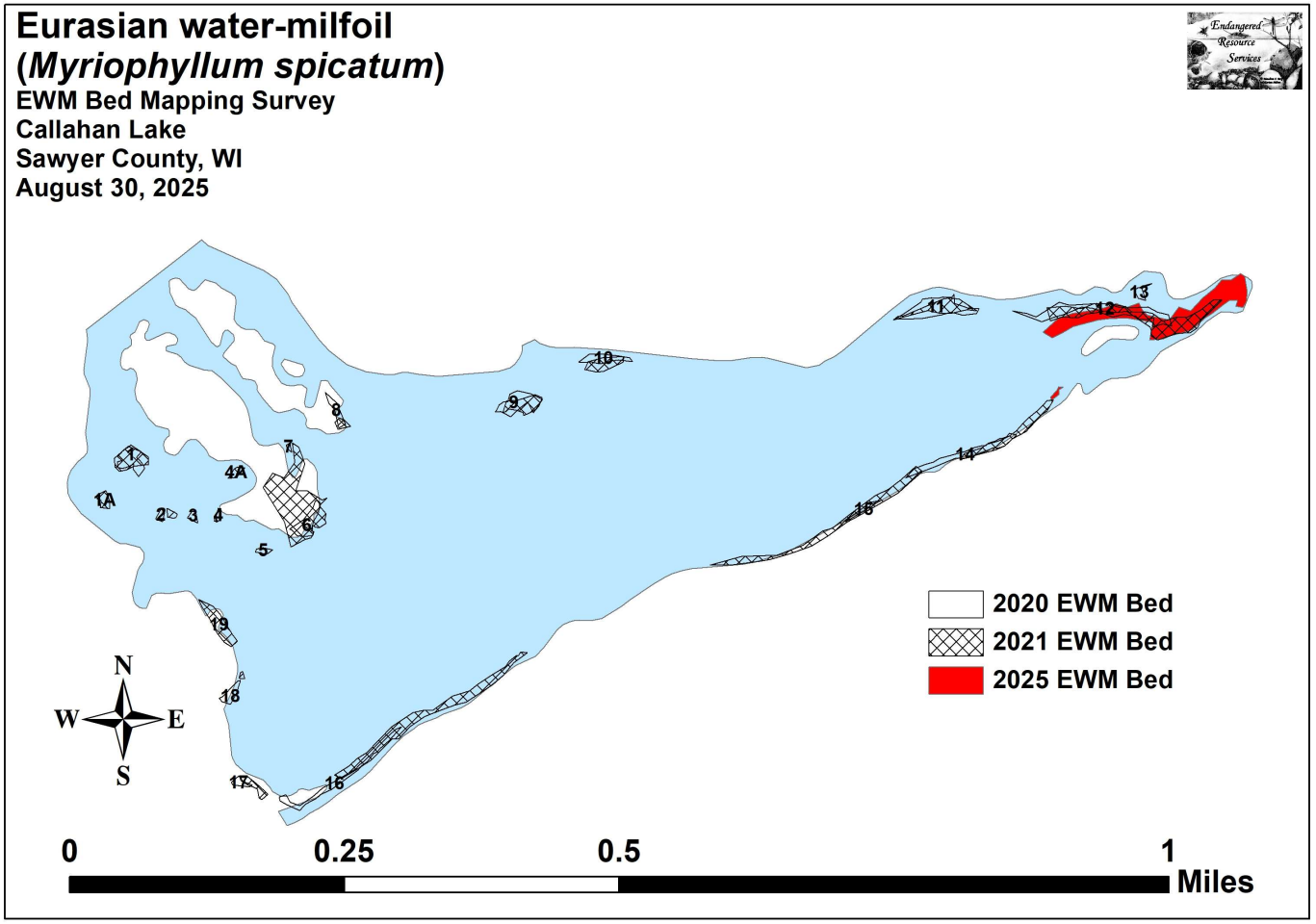


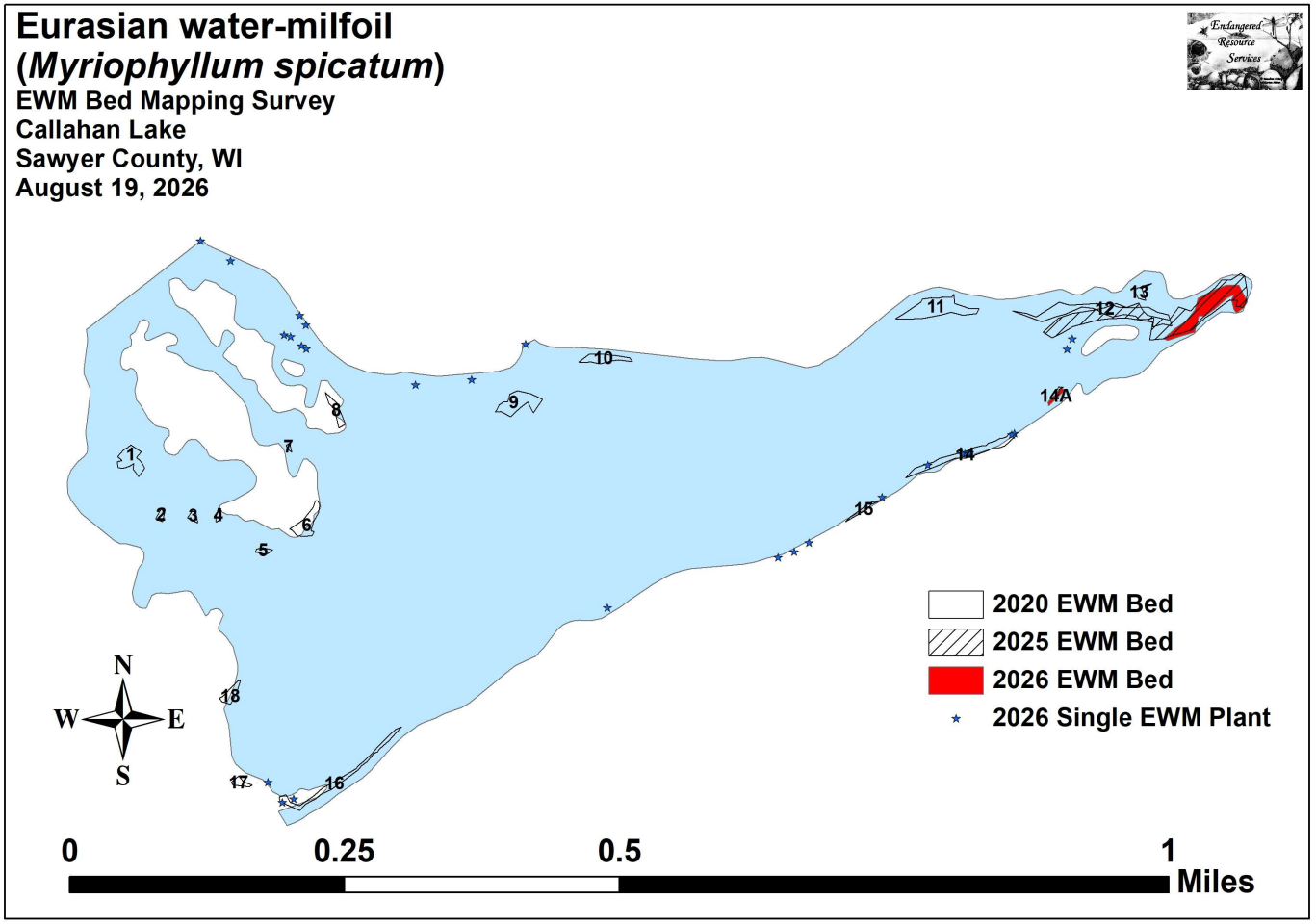
Aquatic Plant Management LLC

Appendix II: 2020, 2021, 2025, and 2026 Eurasian Water-milfoil Bed Maps


Eurasian water-milfoil
(Myriophyllum spicatum)
EWM Bed Mapping Survey
Callahan Lake
Sawyer County, WI
September 5-6, 2020
Endangered Resource Services
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
N
W
E
S
Single EWM Plant
EWM Bed
0
0.25
0.5
1
Miles


Eurasian water-milfoil
(Myriophyllum spicatum)
EWM Bed Mapping Survey
Callahan Lake
Sawyer County, WI
September 12, 2021
Endangered Resource Services
1
1A
2
3
4
4A
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
N
W
E
S
Single EWM Plant
2021 EWM Bed
2020 EWM Bed
0
0.25
0.5
1
Miles

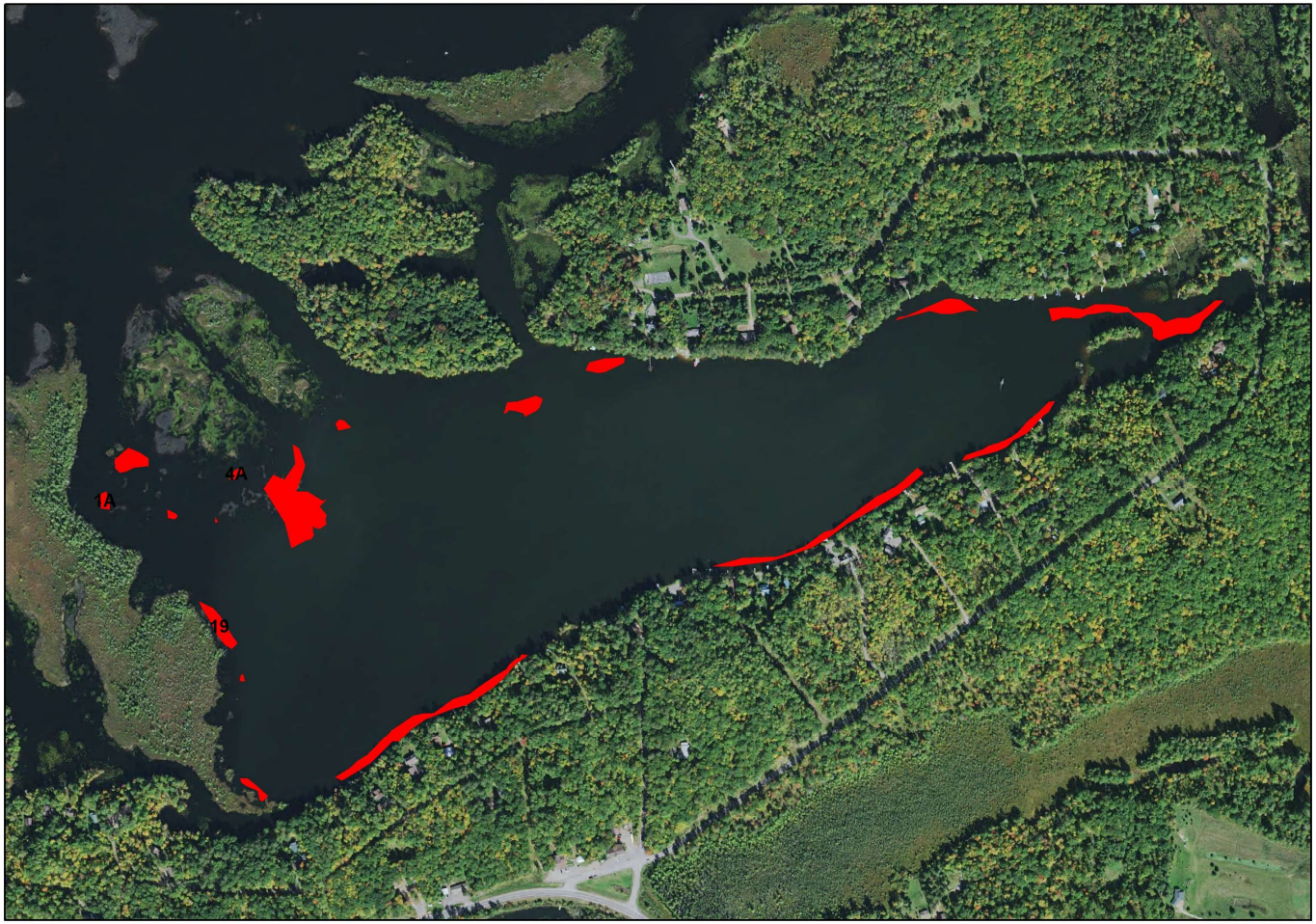

Eurasian water-milfoil
(Myriophyllum spicatum)
EWM Bed Mapping Survey
Callahan Lake
Sawyer County, WI
August 30, 2025
Endangered Resource Services
1
1A
2
3
4
4A
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
2020 EWM Bed
2021 EWM Bed
2025 EWM Bed
N
W
E
S
0
0.25
0.5
1
Miles


Eurasian water-milfoil
(Myriophyllum spicatum)
EWM Bed Mapping Survey
Callahan Lake
Sawyer County, WI
August 19, 2026
Endangered Resource Services
1
2
3
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14A
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2020 EWM Bed
2025 EWM Bed
2026 EWM Bed
2026 Single EWM Plant
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0.5
1
Miles

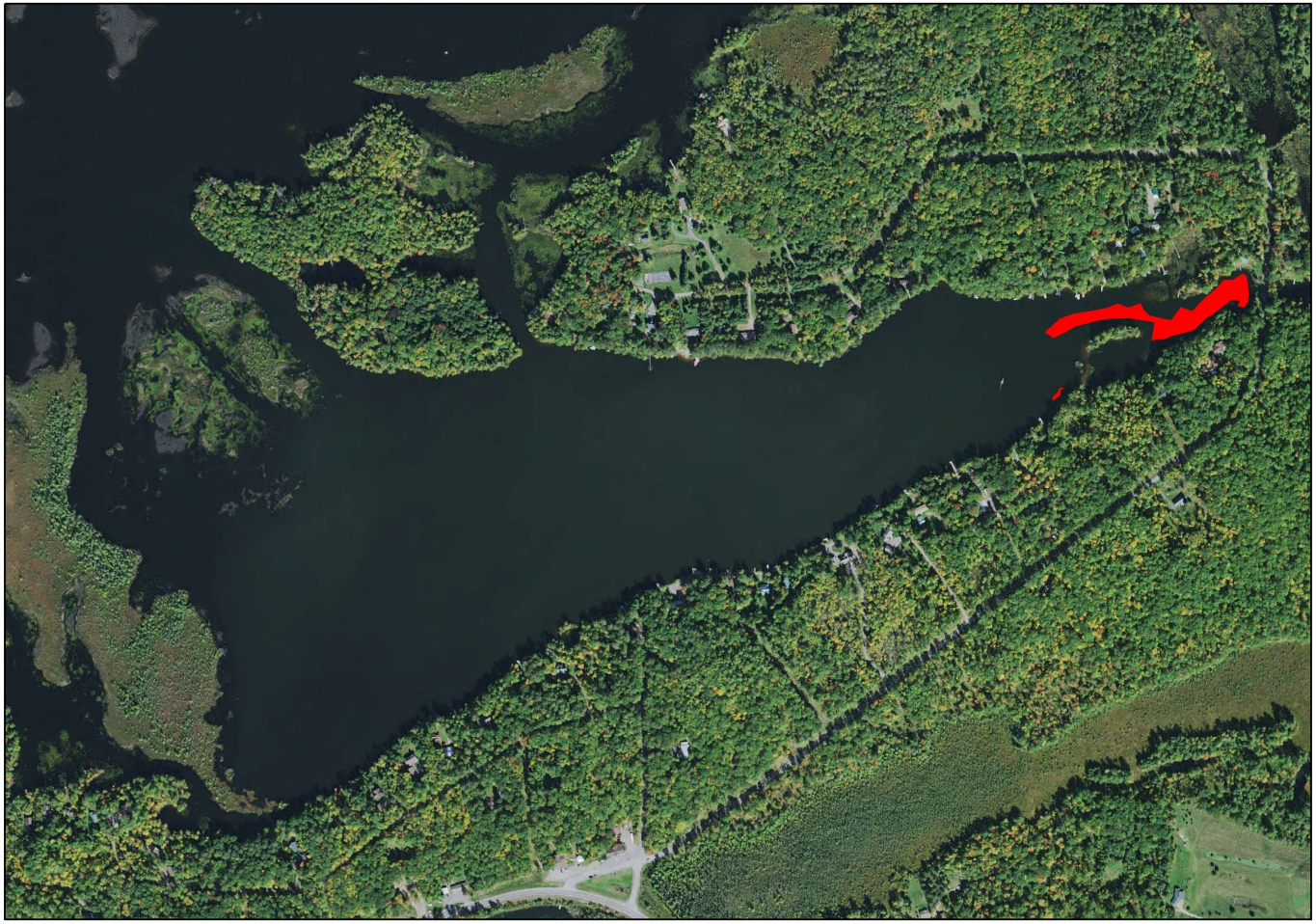
2020 Aerial View



2021 Aerial View



2025 Aerial View



2026 Aerial View

