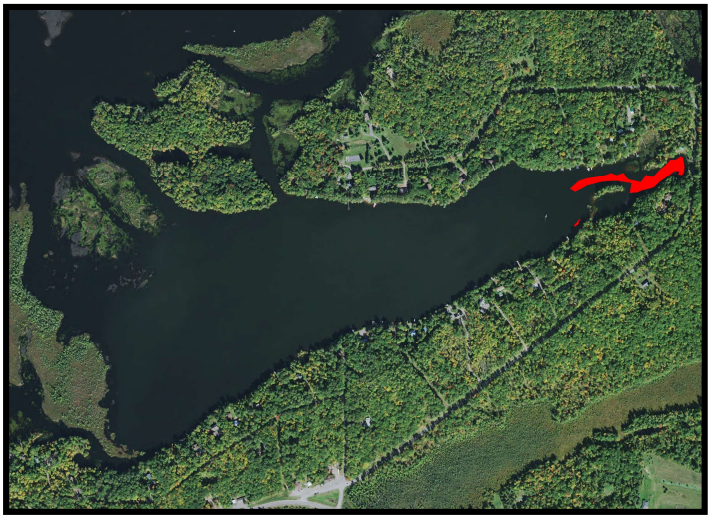
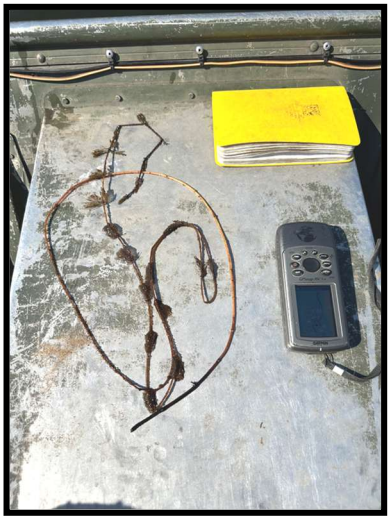
# Eurasian water-milfoil (*Myriophyllum spicatum*)
# Late-summer Bed Mapping Survey
# Callahan Lake (WBIC: 2434700)
# Sawyer County, Wisconsin



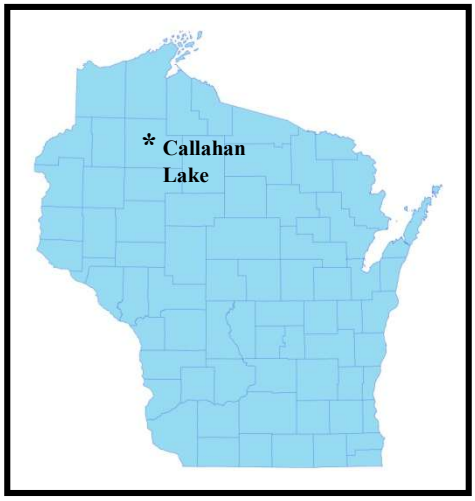
Eurasian Water-milfoil beds on Callahan Lake – 8/30/25



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)




Dense EWM bed southwest of the outlet bay island – 8/30/25

## Survey Conducted by and Report Prepared by:

Endangered Resource Services, LLC
Matthew S. Berg, Research Biologist
Saint Croix Falls, Wisconsin
August 30, 2025

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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 in 2021 – the last year data was available (WDNR 2025). 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).

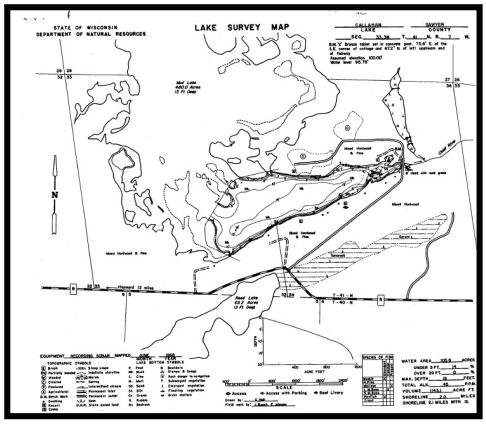



**Figure 1: Callahan Lake Bathymetric Map**

## 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 and 2021 late-summer EWM bed mapping surveys and our 2021 whole lake point-intercept surveys, Dave Blumer (Lake Education and Planning Services, LLC - LEAPS) updated this plan in 2022. In addition to continued small-scale herbicide treatments, the new APMP outlined manual removal efforts that included diver assisted suction harvesting (DASH).

Per WDNR expectations (Pamela Toshner/Alex Smith, WDNR – pers. comm.), whole-lake plant surveys on actively managed lakes are normally repeated every five to seven years to remain current. In anticipation of updating their plan in 2026, the CMLPA – again under the direction of LEAPS – applied for and received a WDNR grant (ACEI35725) to help cover the cost of surveys and the APMP review. In order to determine the current levels of EWM, in addition to the point-intercept surveys, the CMLPA, LEAPS, and the WDNR requested we complete follow-up late-summer EWM bed mapping survey of the lakes in 2025. Data from the surveys will provide current acreage and density of EWM that will help guide any future management. This report is the summary analysis of our August 30, 2025 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.

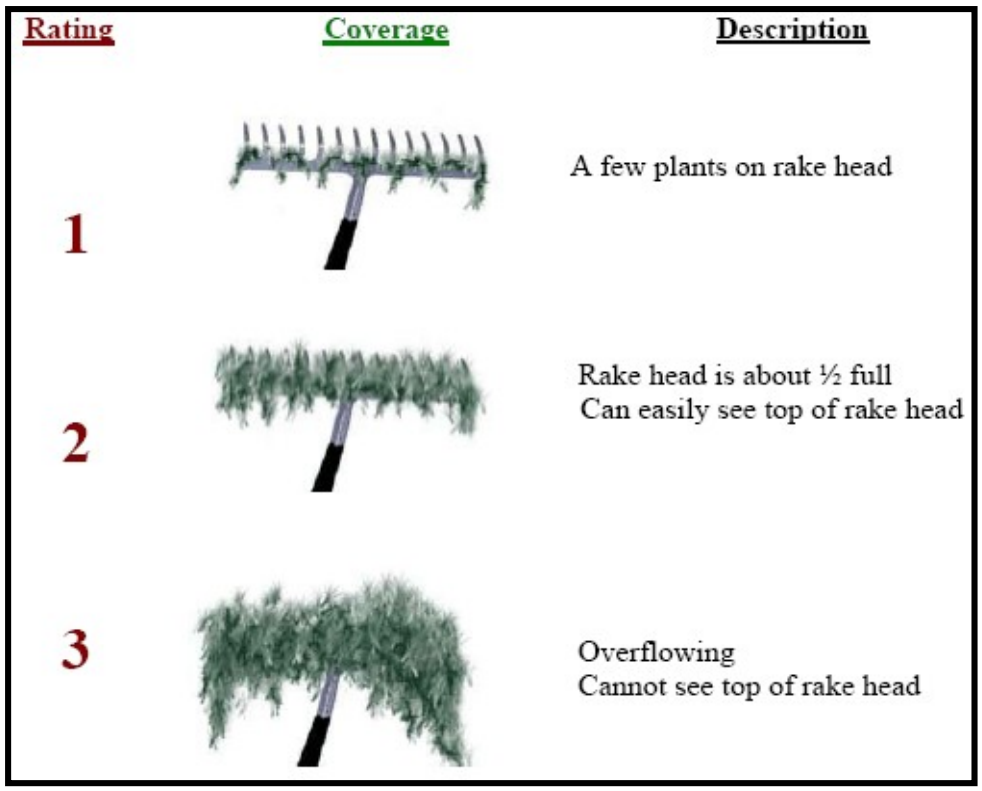



**Figure 2: Rake Fullness Ratings (UWEX 2010)**

## RESULTS:

## Management Areas:

A single area totaling 4.22 acres (3.06% of the lake's total surface area) was selected for chemical management in 2025 (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** |

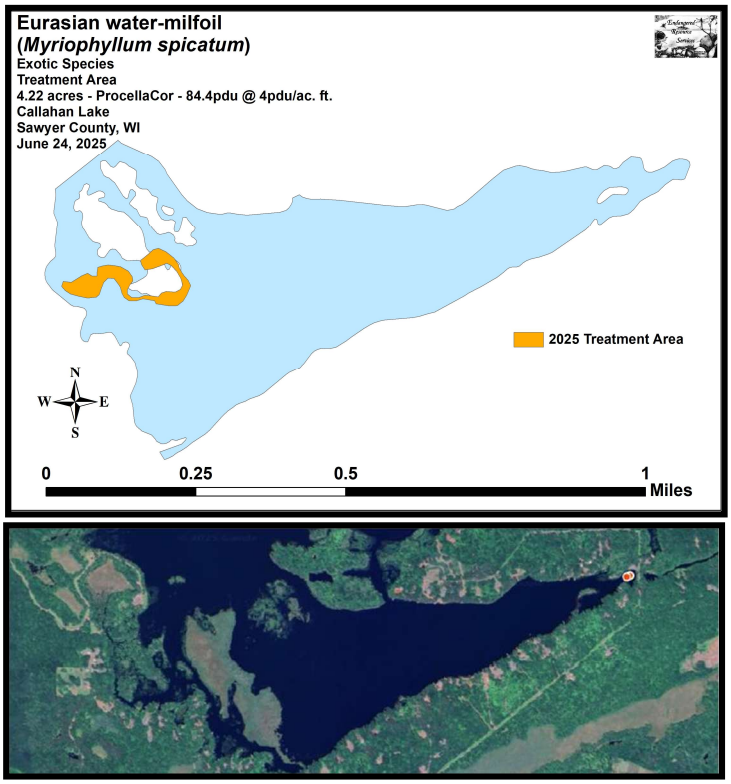



**Figure 3: Eurasian Water-milfoil Management Areas - Summer 2025**
**(DASH Aerial Courtesy Aquatic Plant Management, LLC)**

## Late-summer Eurasian Water-milfoil Bed Mapping Survey:

During the August 6, 2025 point-intercept survey and the follow-up August 30, 2025 Eurasian water-milfoil bed mapping survey, we searched a combined total of 28.8km (17.9 miles) of transects throughout the lake's visible littoral zone (Figure 4). Collectively, we mapped two beds that covered 1.88 acres (1.36% of the lake's surface area) (Figure 5) (Appendix II). This was a 4.29-acre decrease **(-69.53%)** compared to 2021 when we delineated 17 beds that totaled 6.17 acres (4.47% of the lake's surface area). It was also 1.38 acres less **(-42.33%)** than the 2020 survey when we documented 18 beds on 3.26 acres (2.36% coverage) (Table 2).

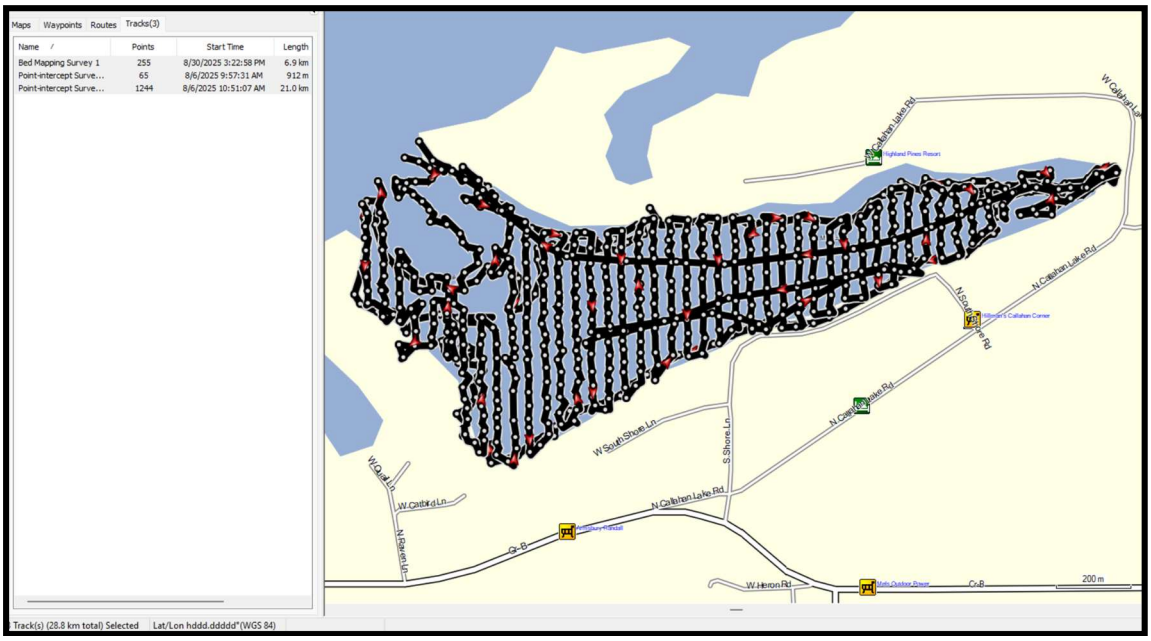



**Figure 4: 2025 EWM Littoral Zone Survey – GPS Tracks**

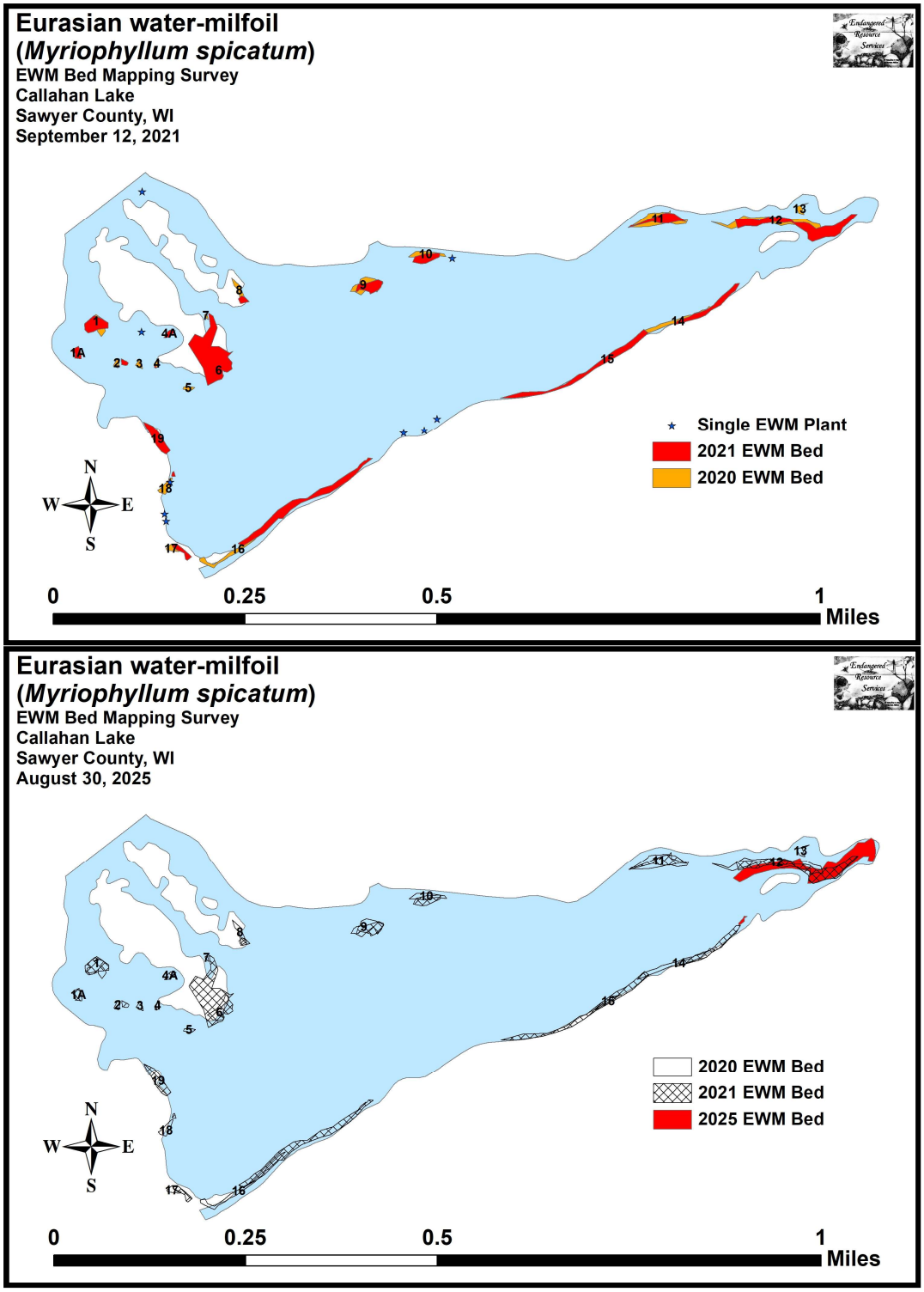



**Figure 5: 2021 and 2025 Eurasian Water-milfoil Bed Maps**

## Table 2: Late-summer Eurasian Water-milfoil Bed Mapping Summary
## Callahan Lake - Sawyer County, Wisconsin
## August 30, 2025

| Bed Number | 2025 Acreage | 2021 Acreage | 2020 Acreage | 2021-2025 Change in Acreage | Rake Range and Mean Rake Fullness | Depth Range and Mean Depth | Canopied | Navigation Impairment | 2025 Field Notes |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0.29 | 0.24 | -0.29 | - | - | - | - | No EWM seen. |
| 1A | 0 | 0.08 | 0 | -0.08 | - | - | - | - | No EWM seen. |
| 2 | 0 | 0.03 | 0.04 | -0.03 | - | - | - | - | No EWM seen. |
| 3 | 0 | 0 | 0.03 | 0 | - | - | - | - | No EWM seen. |
| 4 | 0 | <0.01 | 0.03 | -<0.01 | - | - | - | - | No EWM seen. |
| 4A | 0 | 0.05 | 0 | -0.05 | - | - | - | - | No EWM seen. |
| 5 | 0 | 0 | 0.04 | 0 | - | - | - | - | No EWM seen. |
| 6 and 7 | 0 | 1.49 | 0.23 | -1.49 | - | - | - | - | No EWM seen. |
| 8 | 0 | 0.05 | 0.10 | -0.05 | - | - | - | - | No EWM seen. |
| 9 | 0 | 0.24 | 0.32 | -0.24 | <<<1 | 5-8; 7 | Near | None | Widely scattered EWM – all chemically burned. |
| 10 | 0 | 0.20 | 0.17 | -0.20 | <<<1 | 6-9; 7 | Near | None | Widely scattered EWM – all chemically burned. |
| 11 | 0 | 0.30 | 0.52 | -0.30 | <<<1 | 5-8; 7 | Near | None | Widely scattered EWM – all chemically burned. |
| 12 | 1.85 | 1.01 | 0.66 | 0.84 | <<<1-3; 2 | 6-9; 7 | Near | Minor | Plants severely chemically burned. |
| 13 | 0 | 0 | 0.05 | 0 | <<<1 | 3-5; 4 | Near | None | Widely scattered EWM – all chemically burned. |
| 14 | 0.03 | 0.35 | 0.36 | -0.32 | 1-3; 3 | 3-8; 6 | Yes | Minor | Dense microbed – chemically burned. |
| 15 | 0 | 0.72 | 0.04 | -0.72 | - | - | - | - | No EWM seen. |
| 16 | 0 | 0.94 | 0.27 | -0.94 | - | - | - | - | No EWM seen. |
| 17 | 0 | 0.10 | 0.05 | -0.10 | - | - | - | - | No EWM seen. |
| 18 | 0 | 0.01 | 0.10 | -0.01 | - | - | - | - | No EWM seen. |
| 19 | 0 | 0.29 | 0 | -0.29 | - | - | - | - | No EWM seen. |
| **Total Acres** | **1.88** | **6.17** | **3.26** | **-4.29** | | | | | |

## Descriptions of Past and Present Eurasian Water-milfoil Beds:

Beds 1-8 – We saw no evidence of Eurasian water-milfoil anywhere on the western end of the lake in or around the herbicide treatment areas.

Beds 9-11 and 13 – Although rare, we did find a very few EWM plants alone the north shoreline form the midlake inlet from Mud Lake stretching towards the outlet. All showed significant chemical burn, and it was unclear if they would survive.

Bed 12 – Subcanopy EWM was present throughout the lake outlet bays. Plants showed significant chemical burn, and both dead and potentially dying plants were being ripped from the bottom by passing boat traffic. Whether the majority of these plants will survive is unclear, but the bed itself was now not more than a minor impairment.

Bed 14 – This microbed on the northeast tip of Bed 14 was dense and canopied despite all plants showing evidence of chemical burn. Due to its small size, it was unlikely to be more than a minor impairment.

Beds 15-19– We saw no evidence of EWM anywhere on the southwestern shoreline.

## 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.

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 aquatic plant community. With this in mind, working to control its spread in the most cost-effective manner possible, while simultaneously minimizing its impact on the lake's aquatic ecosystem, will likely continue to be important goals for the CMLPA as they update their management plan. 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 2026. Likewise, what if any future monitoring will occur on the lake is a conversation that needs to occur.

## LITERATURE CITED

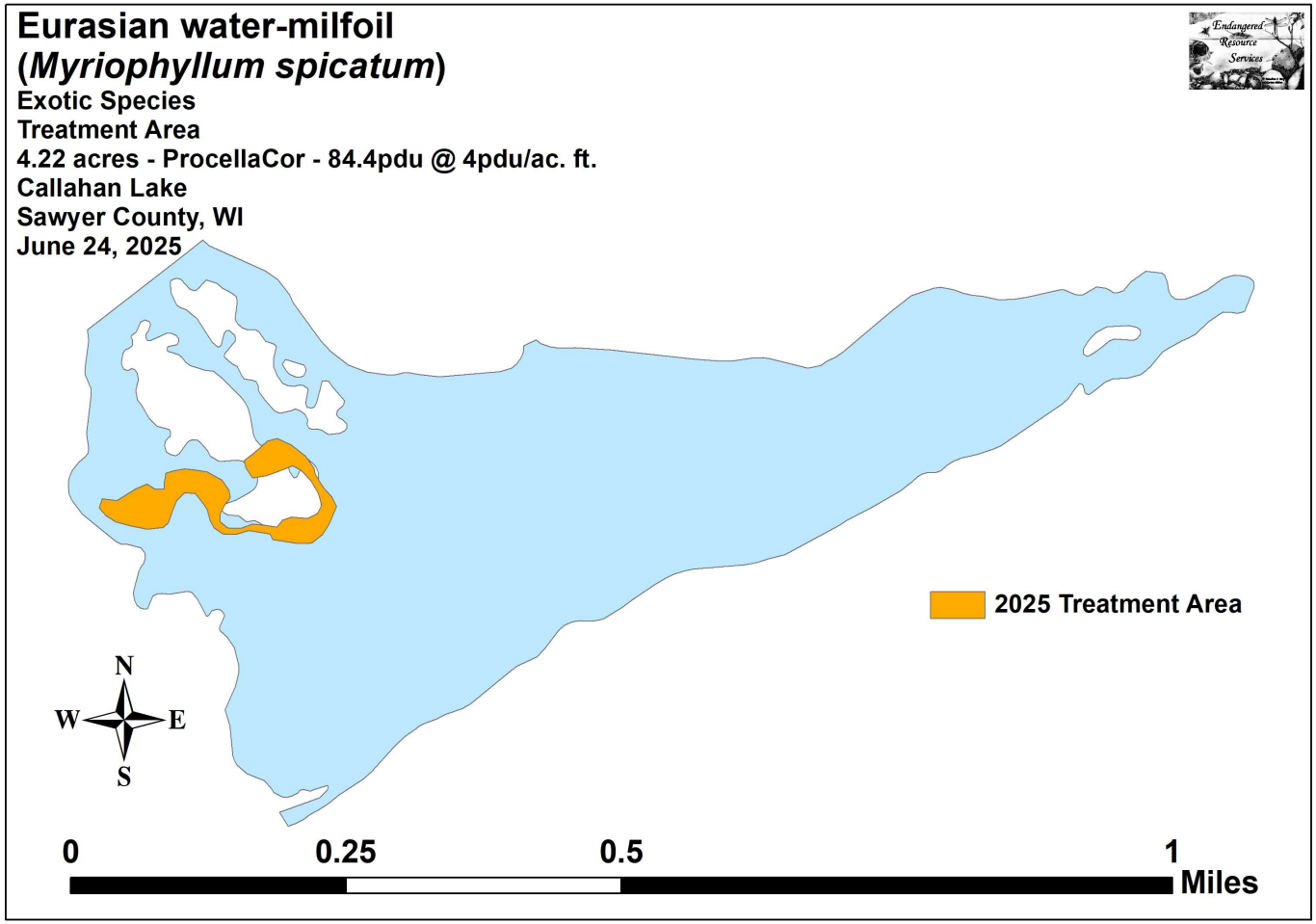

Busch, C., E. Johnson, and C. Holt. [online]. 1968. Callahan Lake Map. Available from https://apps.dnr.wi.gov/doclink/lakes_maps/2434700a.pdf (2025 December).

Kleczewski, T. 2009. Callahan and Mud Lakes Aquatic Plant Management Plan. Ayres Associates. Eau Claire, WI

WDNR. [online]. 2025. Callahan Lake - Citizen Lake Water Quality Monitoring Database. Available from https://dnr-wisconsin.shinyapps.io/WaterExplorer/?stationid=584005 (2025 December).

WDNR. [online]. 2025. Callahan Lake - Wisconsin Lakes Information. Wisconsin Lakes (2025 December) .

## 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

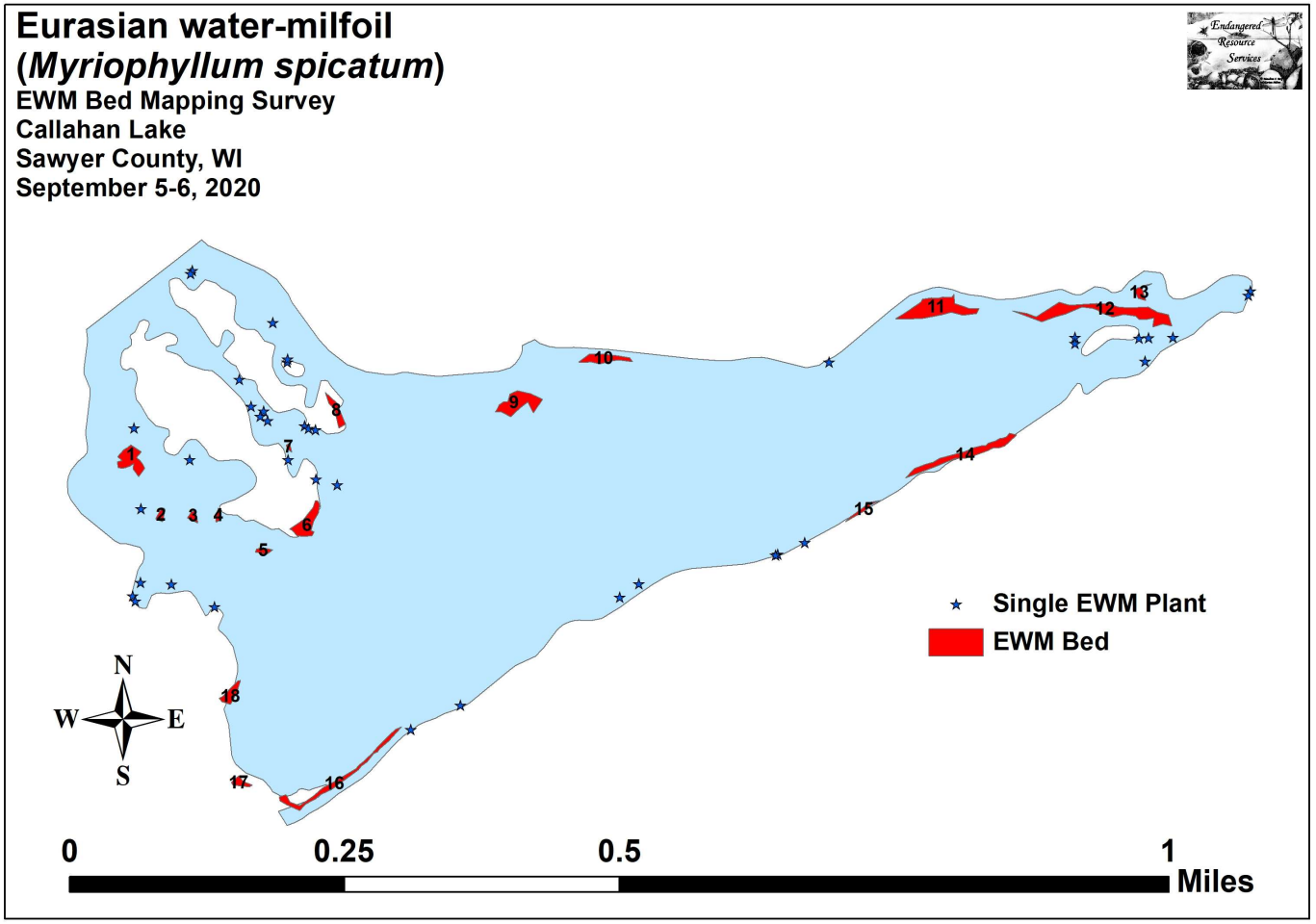
**2025 Dash Removal – Courtesy Aquatic Plant Management, LLC**

AQUATIC PLANT MANAGEMENT

## Map of Callahan Lake Dive Sites

Aquatic Plant Management LLC

## Appendix II: 2020, 2021, and 2025 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
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16
17
18
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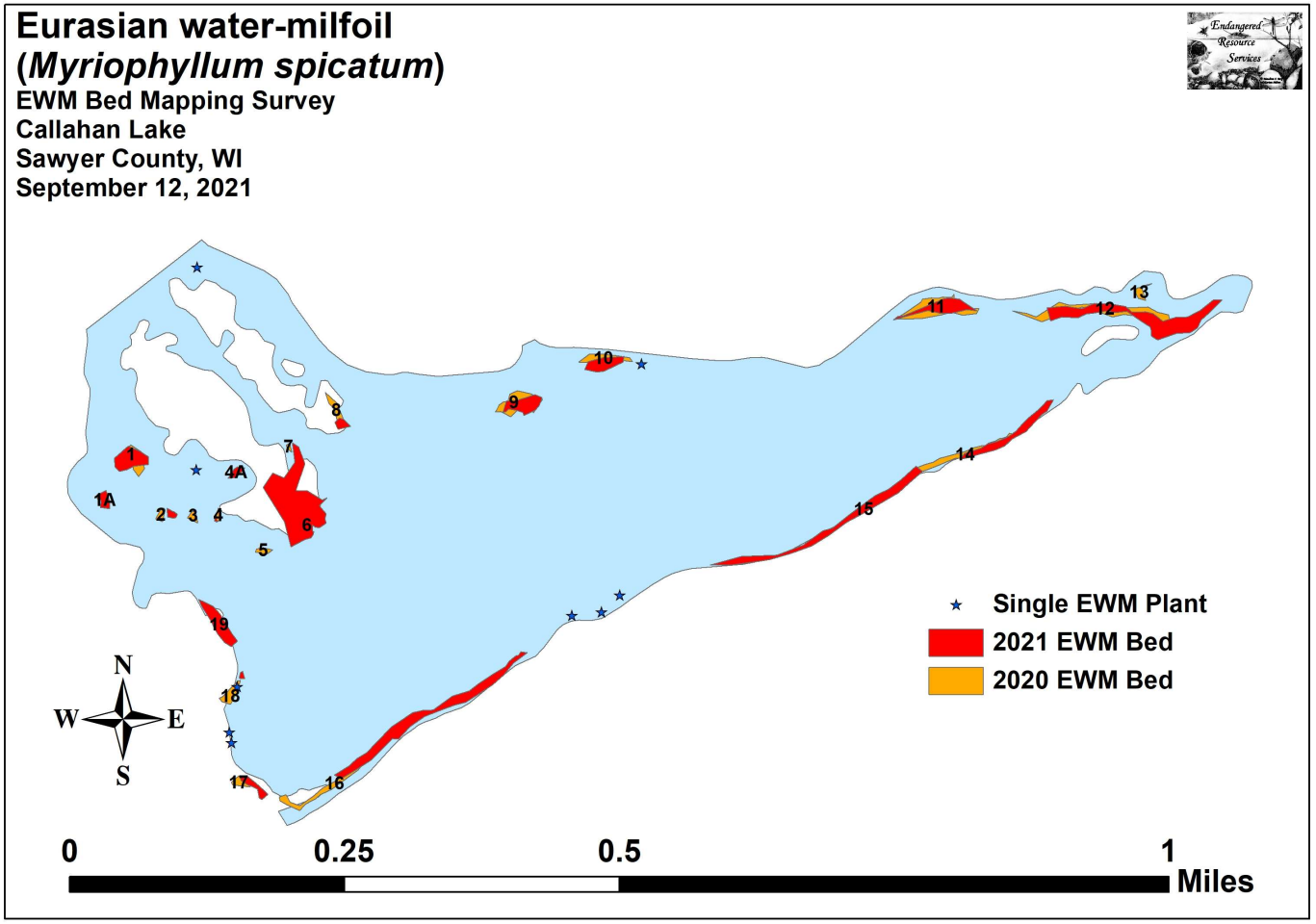
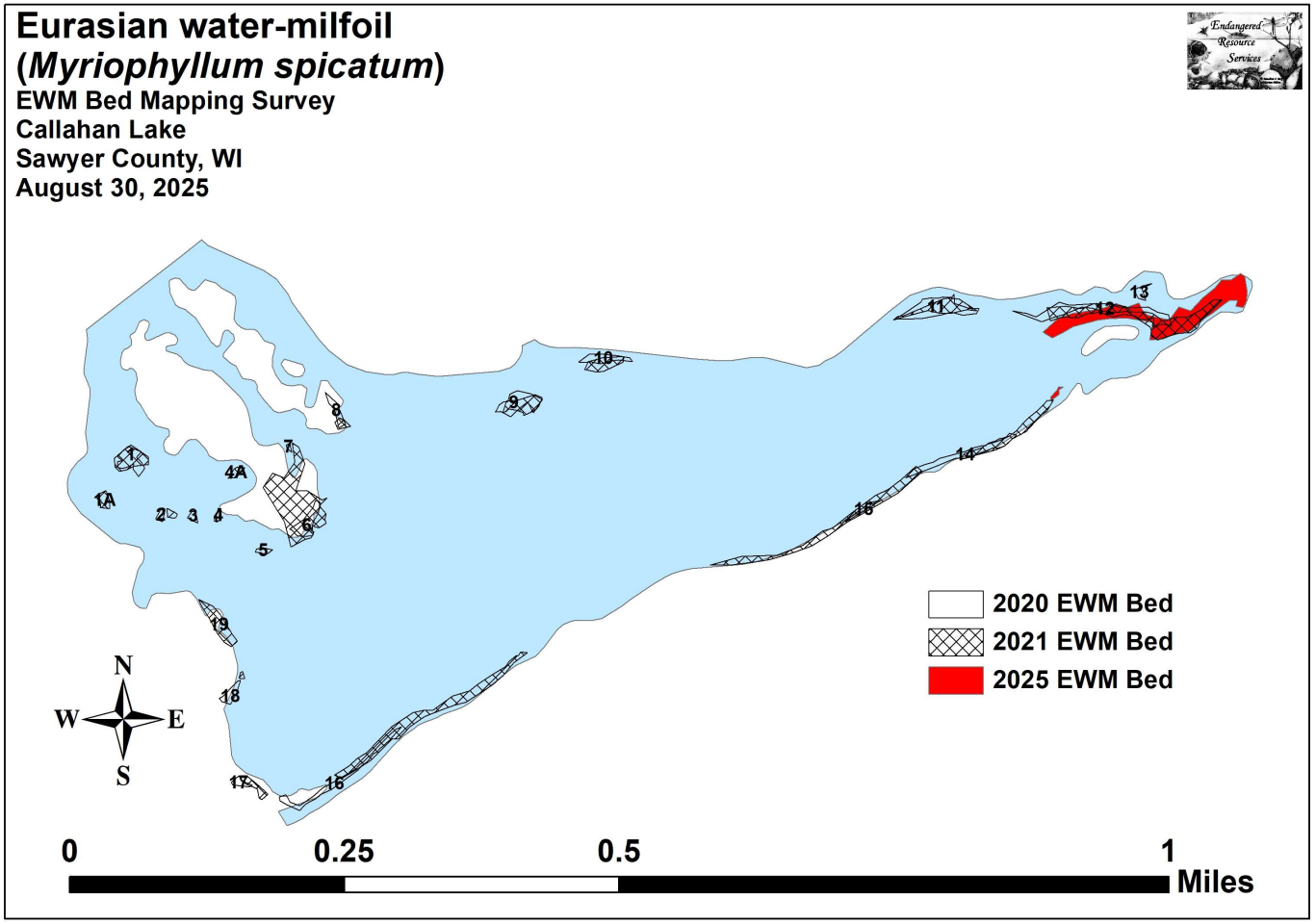
E
S
Single EWM Plant
EWM Bed
0
0.25
0.5
1
Miles


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
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4A
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16
17
18
19
2020 EWM Bed
2021 EWM Bed
2025 EWM Bed
N
W
E
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0
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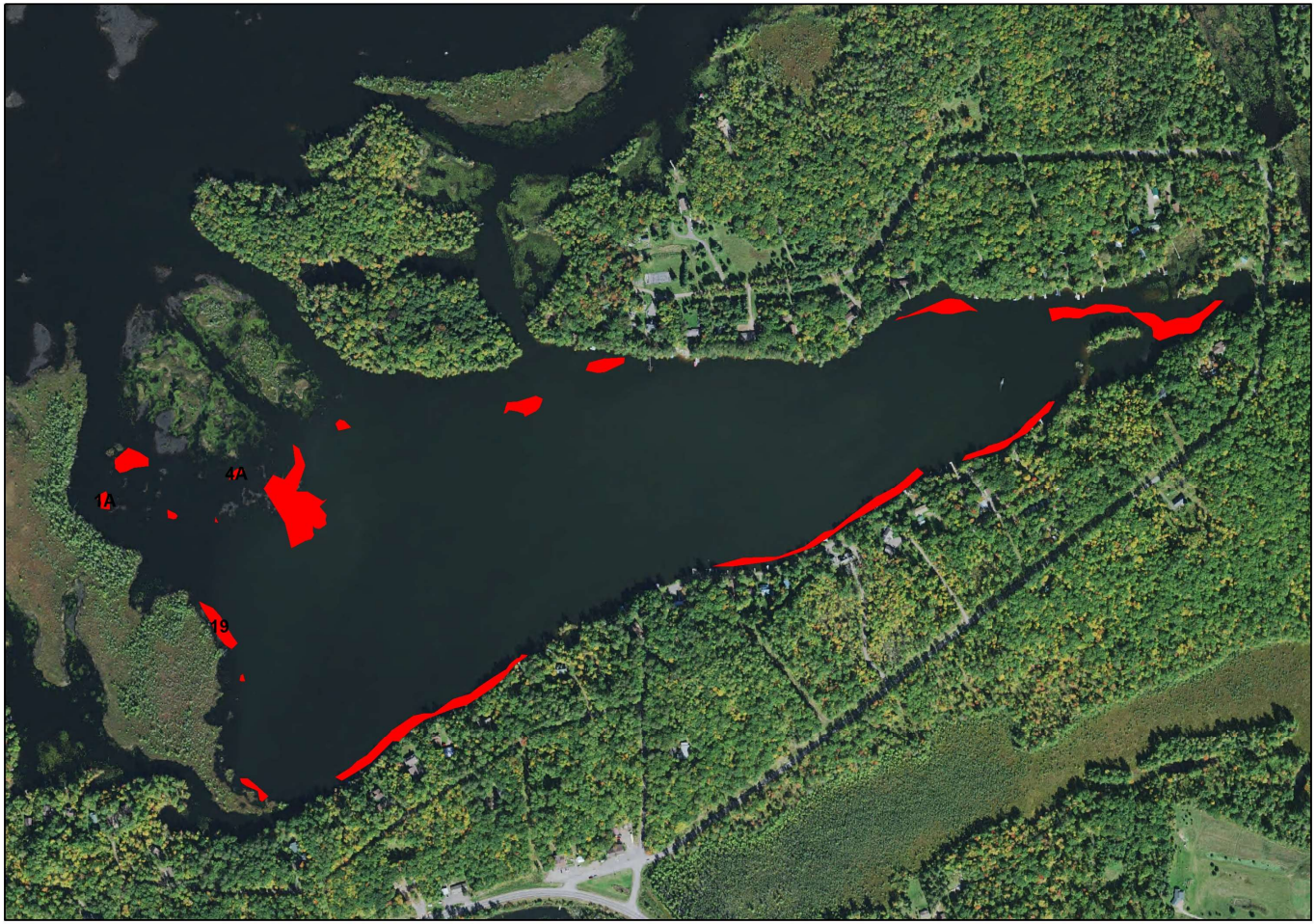
0.5
1
Miles

## 2020 Aerial View

## 2021 Aerial View



## 2025 Aerial View