BALD EAGLE LAKE, RAMSEY COUNTY: 2025 AQUATIC VEGETATION REPORT

Report by the Invasive Species Program – Division of Ecological and Water Resources
Minnesota Department of Natural Resources

Lake: Bald Eagle (DOW# 62000200)

Lake Surface Area: 1097 acres

Littoral Area: 589 acres

County: Ramsey

Survey Type: Point-intercept

Date of Survey (most recent): August 12, 2025

Observer[s]: April Londo (MNDNR)
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2025 Summary:

The most recent aquatic vegetation point intercept survey of Bald Eagle Lake (DOW #62000200) was completed on August 12, 2025. Submersed plants were present throughout the lake to a depth of 4.4 meters (14.5 feet). Within the littoral zone (area in the lake from the 0 – 15-foot depth range [0 – 4.5 meters]), 66% of the sampled points contained native submersed taxa. The average number of native submersed taxa per sample point was 3.3, and a total of 18 native submersed plant species were documented during the survey (see **Summary Table** below for historic data). Three invasive species have been managed in Bald Eagle (curly-leaf pondweed (*Potamogeton crispus*), Eurasian watermilfoil (*Myriophyllum spicatum*) and flowering rush (*Butomus umbellatus*) with efforts being organized by Rice Creek Watershed District.

Summary Table. Summary of aquatic submersed plants in Bald Eagle Lake, Ramsey County, Minnesota (DOW# 62000200) as indicated by the results of point-intercept surveys. Values were calculated from the littoral depth range (0 – 15 feet).

PI Survey Date	Max Depth of Growth in feet [95%] †	% Points w/ Native Submersed Taxa	Mean Native Submersed Taxa/ Point	# Submersed Taxa
AUG 10 2010	11	74	1.6	11
AUG 16 2011	13	71	1.4	13
AUG 1 2012	11	54	0.9	13
SEPT 16 2014	10	59	1.5	15
SEPT 9 2015	13	50	1.3	16
AUG 24 2016	14	77	2.1	16
SEPT 7 2017	12	67	1.9	18
AUG 22 2018	12	71	1.4	16
SEPT 6 2019	9	55	1.5	19
AUG 13 2020	10	65	1.7	16
SEPT 13 2021	9	57	1.6	16
AUG 29 2022	9	70	2.0	18
AUG 9 2023	9	62	2.0	19
Aug 12 2025	14	66	3.3	18

† 95th percentile calculated based on all vegetated sampling points
Taxa refers to groups of submersed aquatic plant species or genera

Lake Description:

Bald Eagle Lake is a 1097-acre lake located near White Bear Lake, Minnesota. It has four invasive aquatic plant species which include submersed plants: Eurasian watermilfoil (*Myriophyllum spicatum* abbreviated as EWM), curly-leaf pondweed (*Potamogeton crispus*, abbreviated as CLP), and emergent plants: Flowering rush (*Butomus umbellatus*) and purple loosestrife (*Lythrum salicaria*). The maximum depth of water is 11 meters (37 feet). Approximately 54% of the lake is littoral (water depth zone from 0 – 15 feet where aquatic plants are likely to be found). In the spring of 2014 and 2016, the lake was treated with aluminum sulfate (alum) – organized by the Rice Creek Watershed District – to reduce internal phosphorus, increase water clarity, and improve submersed aquatic vegetation growth. For additional water quality information: https://webapp.pca.state.mn.us/surface-water/impairment/62-0002-00 and https://whaf-lakes.dnr.state.mn.us/lakedetails/62000200/topic/summary.

Management History:

Historically, Bald Eagle Lake was a Minnesota Department of Natural Resources (MNDNR) pilot project lake from 2010 – 2012 and received a variance to treat more than 15% of the littoral area for lake-wide curly leaf pondweed (CLP) control. Since then, only partial-lake CLP treatments have been requested, and treatment acreage has varied but remained under the littoral limit. Curly-leaf pondweed treatments for Bald Eagle Lake have historically been organized by the Rice Creek Watershed District (RCWD). In the most recent five years the RCWD has used diquat to target CLP growth through spot treatments (see **Table 1 – Invasive Plant Management Summary** for a recent history of herbicide treatments).

In 2014, the RCWD applied aluminum sulfate (alum) to Bald Eagle Lake to reduce internal phosphorus levels and improve water clarity. The second dose of alum occurred in 2016. Overall submersed plants including Eurasian watermilfoil (EWM) responded positively to the alum. As a result, in 2017 and 2018, the Bald Eagle Area Association managed nuisance EWM through small spot treatments using auxin mimic herbicides (2,4-D). The Bald Eagle Area Association organized an EWM spot treatment to be completed on Bald Eagle in August 2025, which is the first EWM treatment in six years.

Flowering rush is an emergent invasive plant that has been managed in Bald Eagle Lake since 2013 by the MNDNR and the RCWD. Flowering rush plants have been removed by hand on the west-central shoreline annually (August – September; see **Photos 1 & 2**). Since the discovery of the plant in August 2013, management efforts have reduced the density and distribution of flowering rush in Bald Eagle

Lake (from roughly 200 wet weight pounds of flowering rush to a few single plants pulled in 2021). There were no plants observed during the 2023 point-intercept survey but there were several plants observed in the 2025 survey. Staff from RCWD and MNDNR hand pulled the plants and will continue to monitor the population.

Table 1 – Invasive Plant Management Summary. Characteristics and history of herbicide treatments for Bald Eagle Lake, Ramsey County, Minnesota (DOW# 62000200, total acres: 1097, littoral acres: 589, 15% littoral acres: 88).

Date	Treatment [W, P, N]	Target Species	Total Acres Treated	Herbicide	Licensed Commercial Applicator
APR 2010	W*	CLP	241	Endothall	Lake Restoration Inc.
MAY 2011	W*	CLP	125	Endothall	Lake Restoration Inc.
MAY 2012	P	CLP	97	Endothall	Lake Restoration Inc.
MAY 2013	P	CLP	62.5	Endothall	Lake Restoration Inc.
MAY 2014	P	CLP	92	Endothall	PLM Lake and Land Mgmt Corp.
MAY 2015	P	CLP	92	Endothall	Lake Restoration Inc.
APR 2016	P	CLP	14	Endothall	Lake Restoration Inc.
APR 2017	P	CLP	28.5	Endothall	PLM Lake and Land Mgmt Corp.
JULY 2017	P	EWM	19.4	2,4-D	Lake Restoration Inc.
MAY 2018	P	CLP	19.6	Endothall	Lake Restoration Inc.
JULY 2018	P	EWM	42.2	2,4-D	Lake Restoration Inc.
MAY 2019	P	CLP	68.9	Diquat	Lake Restoration Inc.
MAY 2020	P	CLP	75.5	Diquat	Lake Management
MAY 2021	P	CLP	86.9	Diquat	PLM Lake and Land Mgmt Corp.
MAY 2022	P	CLP	26.5	Diquat	Lake Management
MAY 2023	P	CLP	68.9	Diquat	Lake Management
MAY 2025	P	CLP	29.2	Diquat	Lake Management
AUG 2025	P	EWM	5.4	2,4-D	Lake Restoration, Inc.

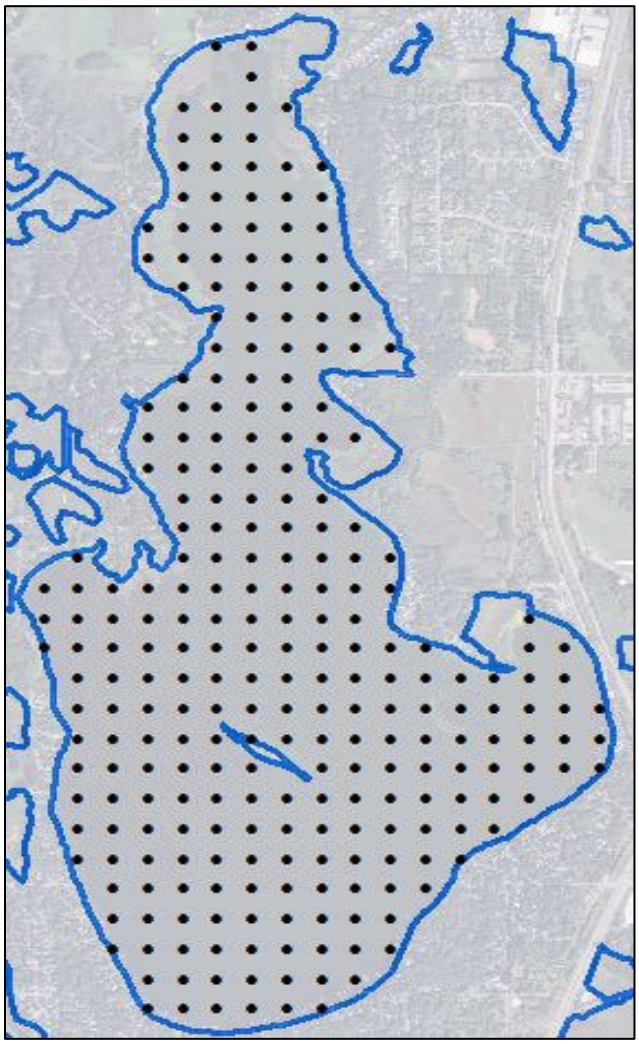
* Indicates variance year
Treatment: W (whole lake), P (partial lake)
CLP is an abbreviation for curly-leaf pondweed
EWM is an abbreviation for Eurasian watermilfoil

Survey Objectives:

Point-intercept surveys were used to assess the distribution of aquatic plants in Bald Eagle Lake. The primary purpose for this type of survey is to 1) develop baseline knowledge of the current plant community in a lake, and over time, 2) compare year to year plant variation (in plant presence and spatial location). Moreover, this survey will help the Minnesota Department of Natural Resources and our partners monitor native plant communities and evaluate possible responses to invasive aquatic plant management efforts. It is important to note that distributions of aquatic plants may vary from year to year due to effects such as differences in weather, as well as the effects from plant and water quality management.

Survey Methods:

We used a point intercept survey method developed by John Madsen in "Aquatic Plant Control Technical Note MI-02, 1999". Survey points were placed 125-200 meters apart using a Geographic Information System (GIS). This spacing allowed for placement of 108-268 points. Plant samples were collected by throwing and dragging a double-sided rake along the lake bottom at each point. Plant samples were assessed on the boat to determine species and rake fullness as a surrogate for abundance (scale of zero [no plants] to 4 [dense, matted on the surface] was used in 2012-2017 and a zero to 3 scale in 2018 and subsequent years). Frequencies of occurrence percentages (i.e., how often a plant species was found in the lake) were calculated based on the littoral zone (the portion of the lake is less than 15 feet in depth).



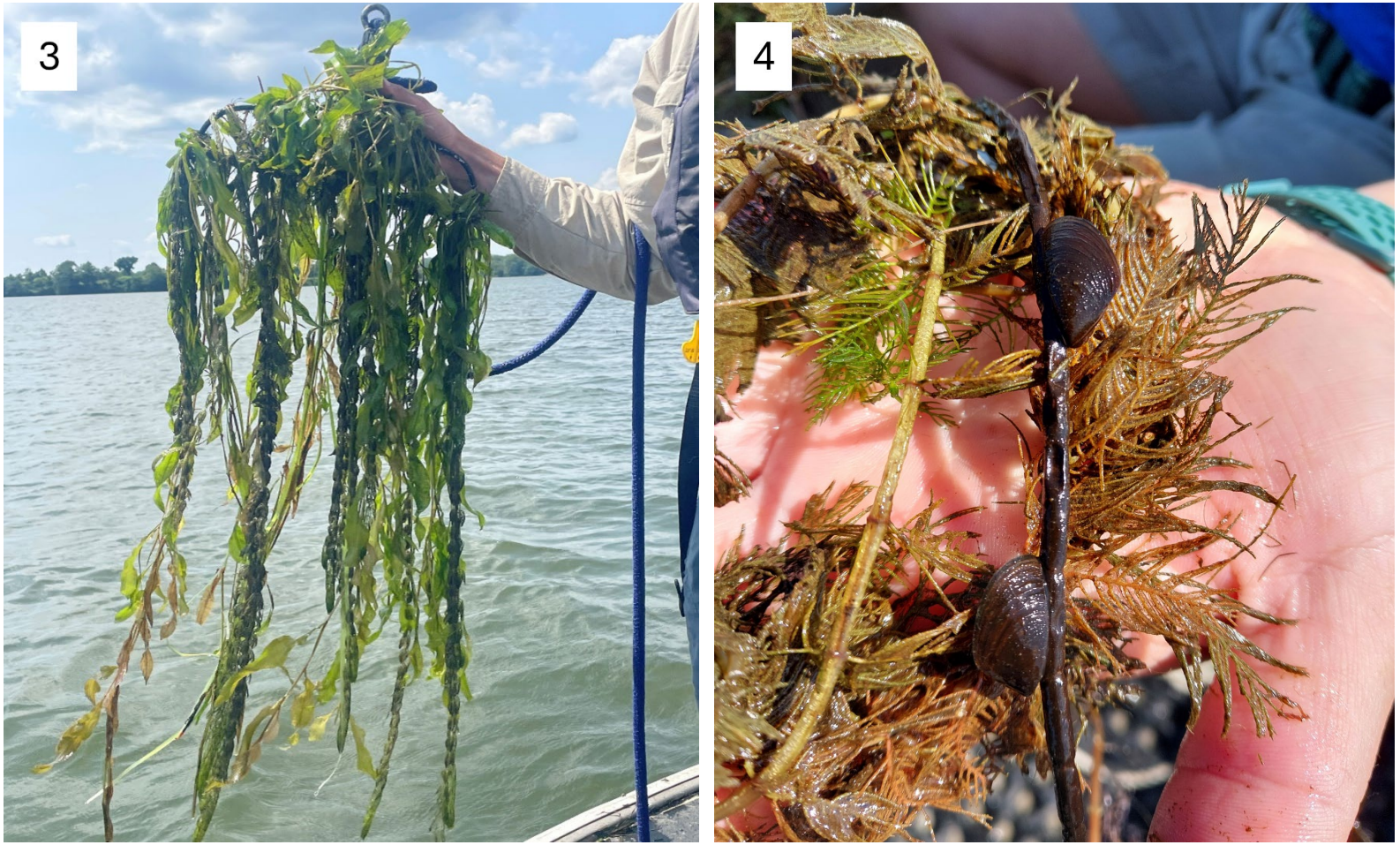
Survey Observations:

Eighteen native submersed aquatic plant species were observed in the 2025 point-intercept survey on Bald Eagle Lake (lowest number of plants observed was in 2010: 11 species, **Summary Table**). The mean submersed native taxa per sampling point was 3.3, which is the highest average observed in the past ten years (see **Table 3 – Point Intercept Metrics**; see **Figure 1**).

Native plant species dominating the system (i.e., water stargrass, coontail, Illinois pondweed and water celery), have stayed consistent following the initial aluminum sulfate (alum) treatment in 2014; although frequencies have increased in the past four years. Other native submersed plant taxa that have increased recently include Northern watermilfoil, flat-stem pondweed, and clasping-leaf pondweed. Canadian waterweed and naiads have also been observed in higher frequencies in recent years. Frequencies of white-water crowfoot and common bladderwort have not recovered to historical numbers as seen in the 2016 survey (see **Table 4 – Plant Frequency of Occurrence**), while leafy pondweed was observed for the first time in the 2023 survey. Native populations will continue to be monitored in the future to document temporal variability coinciding with on-going invasive plant management.

In 2019, Eurasian watermilfoil frequency and density were observed at their lowest levels since 2012 while more recent surveys (2020 – 2025) densities are comparable to earlier years (see **Figure 2**). Low occurrences of curly leaf pondweed are typically observed late season (August-September) since most curly-leaf pondweed senesce in early summer (see **Table 4 – Plant Frequency of Occurrence**). Early season surveys focusing on curly leaf pondweed management reductions – conducted by Blue Water Science – are not presented in this report but are available upon request.

Photos 1 & 2. Left (1): Rice Creek Watershed District staff removing flowering rush from Bald Eagle Lake in 2016. Right (2): Flowering rush plant showing root mass and stems in Bald Eagle Lake, Ramsey County, Minnesota (DOW # 62000200)



Photos 3 & 4. Left (3): Healthy native plants and Eurasian watermilfoil found during the 2025 point-intercept survey on Bald Eagle Lake, Ramsey County, Minnesota. Right (4): Eurasian watermilfoil retrieved from rake toss with zebra mussels attached to plant stem.

Table 2 – Point Intercept Metrics. Summary of point intercepts metrics for Bald Eagle Lake, Ramsey County (DOW# 62000200). Blue highlighted values were calculated from the littoral depth range (0 – 15 ft).

Survey Metrics	SEPT 2015	AUG 2016	SEPT 2017	AUG 2018	SEPT 2019	AUG 2020	SEP 2021	AUG 2022	AUG 2023	AUG 2025
Treated (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Surveyor	MNDNR	MNDNR	MNDNR	MNDNR	MNDNR	MNDNR	MNDNR	MNDNR	MNDNR & RCWD	MNDNR & RCWD
Total # Points Sampled	262	267	266	265	265	258	252	188	172	169
Max Depth of Growth (95%) in feet	13	14	12	12	9	10	9	9	9	14.5
# Points in Max Depth Range	128	139	149	147	94	119	101	108	115	161
# Points in Littoral (0-15 feet)	150	158	174	171	172	171	166	148	168	169
% Points w/ Submersed Native Taxa	50	77	67	71	55	65	57	70	62	66
Mean Submersed Native Taxa/ Point	1.3	2.1	1.9	1.4	1.5	1.7	1.6	2.0	2.0	3.3
# Submersed Native Taxa	15	16	16	14	17	14	14	16	17	18
# Submersed Non-Native Taxa	1	2	2	2	2	2	2	2	2	2

Table 3 – Plant Frequency of Occurrence. Historic percent frequency of occurrence for submersed vegetation within the littoral zone (0 – 15 feet) in Bald Eagle Lake, Ramsey County, Minnesota (DOW# 62000200).

Taxonomic Name SUBMERSED PLANTS	Common Name	SEPT 2015	AUG 2016	SEPT 2017	AUG 2018	SEPT 2019	AUG 2020	SEPT 2021	AUG 2022	AUG 2023	AUG 2025
Myriophyllum spicatum*	Eurasian watermilfoil*	29	37	41	11	4	22	20	20	33	33
Ceratophyllum demersum	Coontail	23	26	22	28	22	37	31	38	38	38
Elodea canadensis	Canadian waterweed	-	1	2	-	-	-	-	2	1	5
Macroalgae	Muskgrass and Stonewort	17	12	19	8						
Chara spp.	Muskgrass					7	16	14	11	21	25
Nitella spp.	Stonewort					-	1	1	-	-	-
Heteranthera dubia	Water stargrass	18	15	17	15	15	29	29	30	26	22
Myriophyllum sibiricum	Northern watermilfoil	23	23	13	5	5	6	4	18	11	10
Najas spp.	Naiads	1	1	-	1	1		2	3	10	2
Najas flexilis	Slender naiad					1	4				5
Potamogeton gramineus	Variable pondweed	1	2	14	-	-	2	4	1	9	2
Potamogeton illinoensis	Illinois pondweed	11	8	6	19	17	28	27	32	28	32
Potamogeton praelongus	White-stem pondweed	3	6	5	6	7	5	8	5	1	6
Potamogeton richardsonii	Clasping-leaf pondweed	3	2	2	3	2	5	2	7	5	9
Potamogeton zosteriformis	Flat-stem pondweed	-	-	-	2	-	5	3	8	14	24
Ranunculus aquatilis	White-water crowfoot	5	12	9	2	1	-	-	1	1	2
Utricularia macrorhiza	Common bladderwort	1	6	2	1	1	-	-	1	-	1
Vallisneria americana	Water celery	20	15	18	15	18	26	31	30	23	30

Floating, free-floating & emergent plants observed: *Nuphar advena* (yellow pond lily), *Nymphaea odorata* (white water lily), *Nuphar variegata* (bullhead pond lily), *Lemna trisulca* (star duckweed), *Drepanocladus spp*. (aquatic mosses), *Schoenoplectus spp*. (bulrushes), *Typha sp*. (cattail species).
Less common (< 5% frequency) submersed vegetation observed: *Potamogeton crispus* (curly leaf pondweed)* in 2010, 2011, 2014, 2016-2022 and 2025, *Bidens beckii* (water marigold) 2010, 2015-2017, and 2022, *Stuckenia pectinata* (sago pondweed) in 2011-2022 and 2025, *Potamogeton nodosus* (long-leaf pondweed) in 2012 and 2021, *Potamogeton friesii* (fries' pondweed) in 2015, 2020 and 2025, *Utricularia minor* (small bladderwort) in 2016 and 2017, *Eleocharis acicularis* (needle spikerush) in 2017, *Potamogeton natans* (floating-leaf pondweed) in 2018.
* Denotes invasive aquatic plant
- Denotes no detection during survey

Figure 1 – Native Species Taxa Density. Spatial distribution and species richness (# of native species per sample point) of all submersed plant species from Minnesota Department of Natural Resources point intercept surveys (2019-2025). Bald Eagle Lake, Ramsey County, Minnesota (DOW# 62000200).

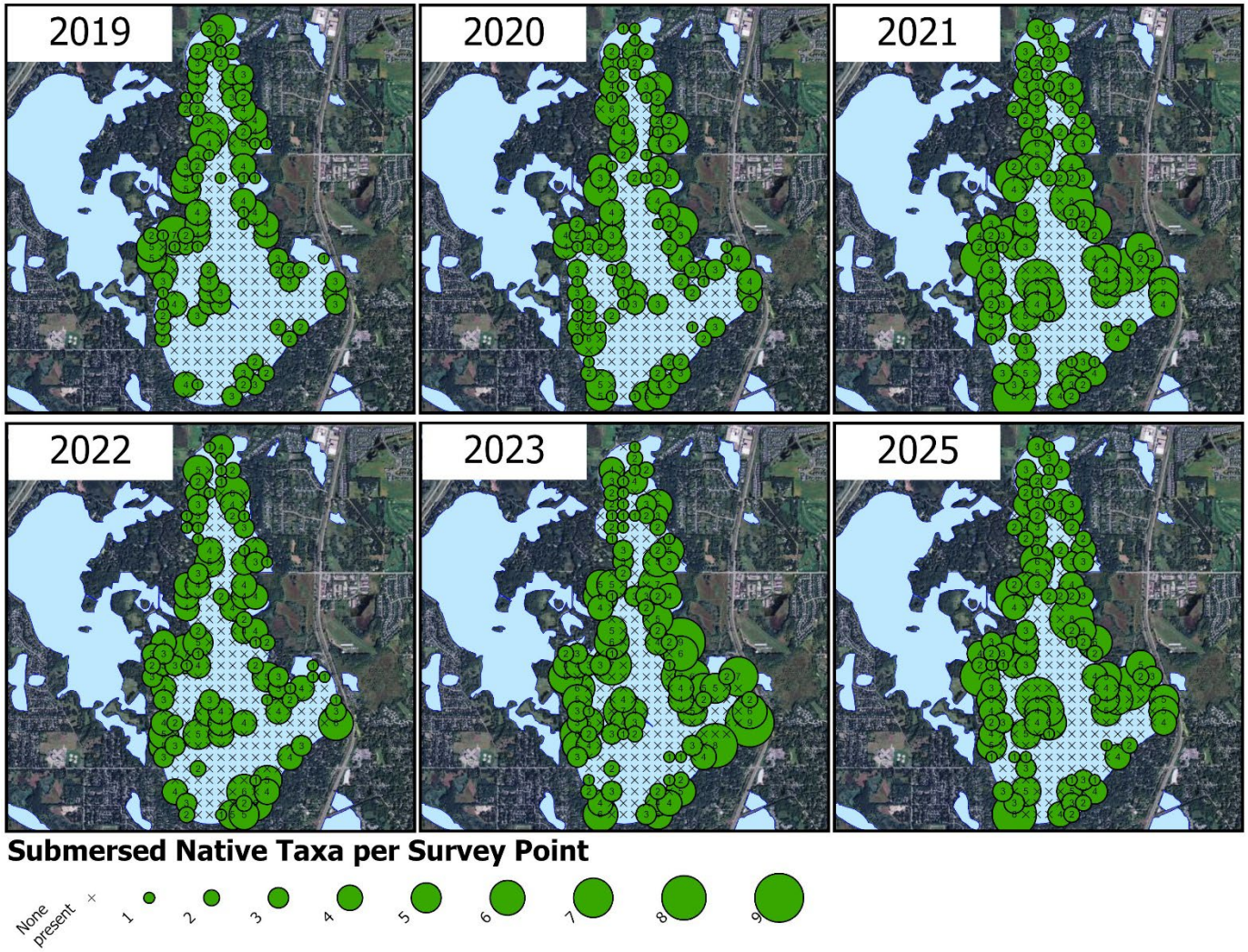
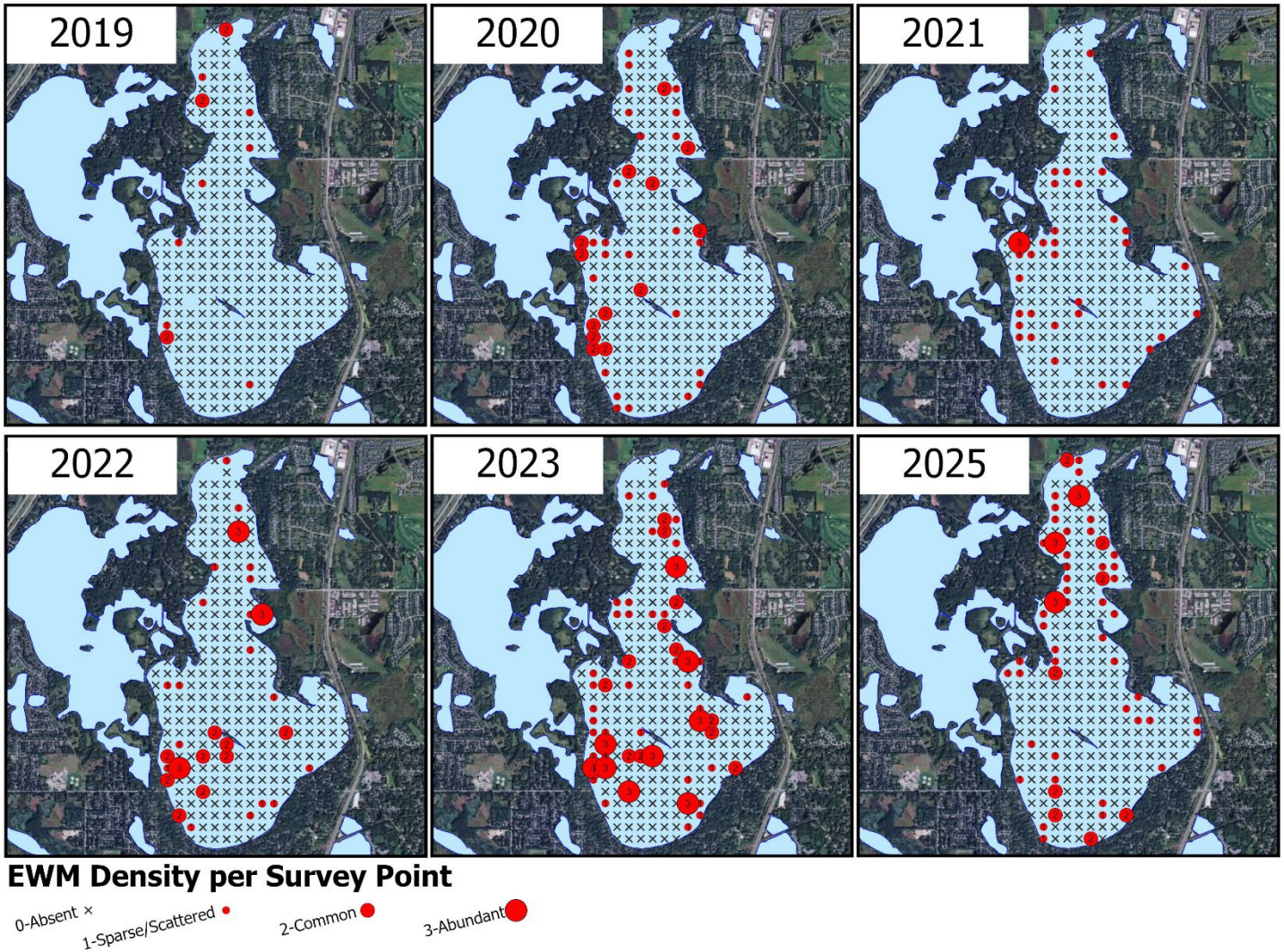


Figure 2 – Eurasian Watermilfoil Density. Spatial distribution and rake density per sample point of Eurasian watermilfoil from Minnesota Department of Natural Resources point intercept surveys (2019-2025). Bald Eagle Lake, Ramsey County (DOW# 62000200).



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