

---

## COON LAKE WEST, ANOKA COUNTY: 2024 AQUATIC VEGETATION REPORT

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

---

**Lake:** Coon (DOW# 02004200)

**Lake Surface Area:** 1,985 acres

**Littoral Area:** 1,332 acres

**County:** Anoka

**Survey Type:** Point-intercept

**Date of Survey (most recent):** July 31, 2024

**Observer[s]:** April Londo (MnDNR)  
Ashley Halverson (MNDNR)

**Report updated:** October 21, 2024

**Author[s]:** April Londo, Ashley Halverson,  
and Garrett Miller  
Email: [April.londo@state.mn.us](mailto:April.londo@state.mn.us)  
Phone: 651.259.5861



---

### **2024 Summary:**

*The 2024 point-intercept survey to track aquatic vegetation in Coon Lake (DOW # 02004200) was completed in the West Basin only on July 31, 2024. Plants were present to a maximum depth of 8.8 feet (2.7 meters) and 93% of 160 sampled points contained native submersed vegetation. The Coon Lake Improvement District (CLID) has been managing the invasive plants curly-leaf pondweed (CLP) and Eurasian watermilfoil (EWM) for the past 10+ years below the 15% littoral limit (199 acres) in both the East and West Basin. Due to an increase in nuisance Eurasian watermilfoil observed in the West Basin, a variance was issued to allow basin-wide use of fluridone to target EWM in the spring of 2019. Since then, annual CLP and EWM treatments have been conducted using either Diquat, ProcellaCOR, or a combination of the two.*

**Summary Table.** Summary of aquatic submersed plants in Coon Lake (West Basin), Anoka County, Minnesota (DOW# 2004200) as indicated by results of Point-Intercept surveys. Values were calculated from the littoral depth range (0-15 feet).

PI Survey Date	% Frequency of EWM*	Max Depth of Growth in feet [95%] <sup>†</sup>	% Points w/ Native Submersed Taxa	Mean Native Submersed Taxa/ Point	# Submersed Taxa
SEPT 2014	3	8.5	80	2.7	13
AUG 2018	39	8	93	3.4	25
JUN 2019	44	10	96	4.0	27
JUL 2020	1	9	91	2.9	23
AUG 2021	1	8	90	3.5	24
JUL 2024	1	8.8	93	4.0	24

\*EWM is short for Eurasian watermilfoil

<sup>†</sup>95th percentile calculated based on all vegetated sampling points

Taxa refer to groups of submersed aquatic plant species or genera

## Lake Description:

Coon Lake is a 1,985-acre eutrophic (nutrient-rich) lake located in East Bethel, Anoka County, Minnesota. The lake is composed of two basins and for management purposes, are grouped into Coon East and Coon West which represent the main recreational bodies for the lake.

Both basins of Coon Lake are infested with two invasive aquatic plants: Eurasian watermilfoil (*Myriophyllum spicatum*, abbreviated as EWM) and curly-leaf pondweed (*Potamogeton crispus*, abbreviated as CLP). The maximum depth of water is in the East Basin at 27 feet (8.2 meters).

Approximately 67% of the lake is littoral (water depth zone from 0-15 feet where aquatic plants are likely to be found). For information concerning Coon Lake water quality,

see <https://webapp.pca.state.mn.us/surface-water/impairment/02-0042-00> or at [Explore Watershed Lakes: Minnesota Department of Natural Resources \(state.mn.us\)](https://www.dnr.state.mn.us/lakes/).

## Management History:

See below (*Table 1-Invasive Plant Management Summary*) for a recent history of herbicide treatments. Historically, the West Basin had more severe nuisance EWM growth than the East Basin, therefore an approved variance was implemented to treat the whole basin utilizing fluridone in 2019. Fluridone is a selective herbicide that is applied at a low dose (2-4 parts per billion) throughout a growing season (90 days of exposure). Since 2019, Eurasian watermilfoil has been managed with either Diquat or Procellacor in target areas. Due to the lack of plant growth, Eurasian watermilfoil was not treated in 2024.

**Table 1-Invasive Plant Management Summary.** Characteristics and history of Eurasian watermilfoil herbicide treatment for Coon Lake (East and West, DOW# 02004200, Total acres: 1,984.7, Littoral acres: 1,331.9, 15% Littoral acres: 199.8). Acres treated includes both basins for each year unless otherwise noted.

Date	Treatment [W,P,N]	Target Species	Total Acres Treated	Herbicide	Applicator
JUN 2014*	P	EWM	10	2, 4-D	PLM Lake and Land Management Corp.
JUL 2015	P	EWM	26	2, 4-D	PLM Lake and Land Management Corp.
JUL 2016	P	EWM	111	2, 4-D	PLM Lake and Land Management Corp.
JUN 2017	P	EWM	30	2, 4-D	PLM Lake and Land Management Corp.
JUL 2018	P	EWM	13.1	Diquat (Tribune)	PLM Lake and Land Management Corp.
MAY 2019	W <sup>w</sup>	EWM/CLP	960	Fluridone (Sonar A.S)	PLM Lake and Land Management Corp.
AUG 2020	P <sup>w</sup>	EWM	3.4	Diquat (Tribune)	PLM Lake and Land Management Corp.
APR 2021	P <sup>w</sup>	CLP	26.2	Diquat (Tribune)	PLM Lake and Land Management Corp.
JUL 2022	P <sup>w</sup>	EWM	29.5	Procellacor	PLM Lake and Land Management Corp.
MAY 2022	P <sup>w</sup>	CLP	37	Diquat (Tribune)	PLM Lake and Land Management Corp.
APR 2024	P <sup>w</sup>	CLP	39	Diquat (Tribune)	PLM Lake and Land Management Corp.

Treatment: W (whole lake), P (partial lake), N (no treatment)

CLP is an abbreviation for curly-leaf pondweed. EWM is an abbreviation for Eurasian watermilfoil

Superscripts denote basin w(west) and E(east), no superscripts indicate total across both basins

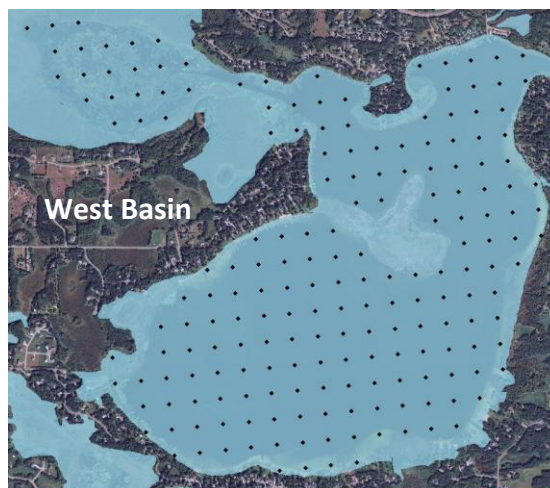
\* LVMP year

## Survey Objectives:

Point-intercept surveys were used to assess the distribution of aquatic plants in Coon 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 DNR 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 and the effects of 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 150 meters apart using a Geographic Information System (GIS). Note: surveys from 2010 were 175 meters apart, respectively. This spacing allowed for the placement of 162-170 points, depending on the year. Plant samples were collected by throwing and dragging a double-sided rake along the lake bottom



at each point for approximately 3 meters. Plant samples were assessed on the boat to determine species and rake fullness as a surrogate for density (scale of zero [no plants] to 3 [dense, matted on the surface]). 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:

The most recent Coon West point intercept survey was completed on July 31, 2024. The West Basin is shallow, allowing for 100% of the littoral points to be sampled unless areas are too shallow. The maximum depth during the 2024 survey was 8.8 feet although rooted plants were observed in 15 feet of water in previous years. From 2014 to 2024 native plants have been stable while EWM has declined after years of management (peak of 44% FOO in 2019 to 0% FOO in 2024).

Following the fluoridone treatment in the spring of 2019, a few plants became less abundant (coontail, naiad, and elodea), which is a consistent finding when compared to other fluoridone-managed lakes. Since, naiads have recovered to pre-fluoridone treatment frequency of occurrences levels, whereas coontail and elodea have still not rebounded fully (**Table 3**). Mean Native Taxa/Point tied its highest record (4.0) in 2024 and remains a diverse metro lake (**Table 2**; 24 native submersed plant species observed in 2024).

As part of a University of Minnesota/MAISRC study, hybrid milfoil (*Myriophyllum spicatum* [EWM] x *Myriophyllum sibiricum* [northern watermilfoil]) was confirmed in Coon Lake in 2018. During the 2020 and 2021, hybrid milfoil (interchangeably referred to as EWM in this report as they are both considered invasive milfoils in the State) was observed at significantly lower frequencies than in previous years (from 44% to 1%, and 1% FOO respectively; **Table 3** and **Figure 3**). Eurasian watermilfoil was not detected in the 2024 survey. It is likely not eradicated from the lake, rather, it is probably at such low abundances making it undetected during the most recent point intercept survey. No significant observations of CLP were found in these surveys, as would be expected given the survey date as CLP senesces in early July. Subsequent surveys will document the presence of aquatic plants and temporal changes.

**Table 2- Point Intercept Metrics.** Summary of point intercepts metrics for Coon Lake (West Basin), Anoka County (DOW# 02004200). Values shaded in blue were calculated from the littoral depth range.

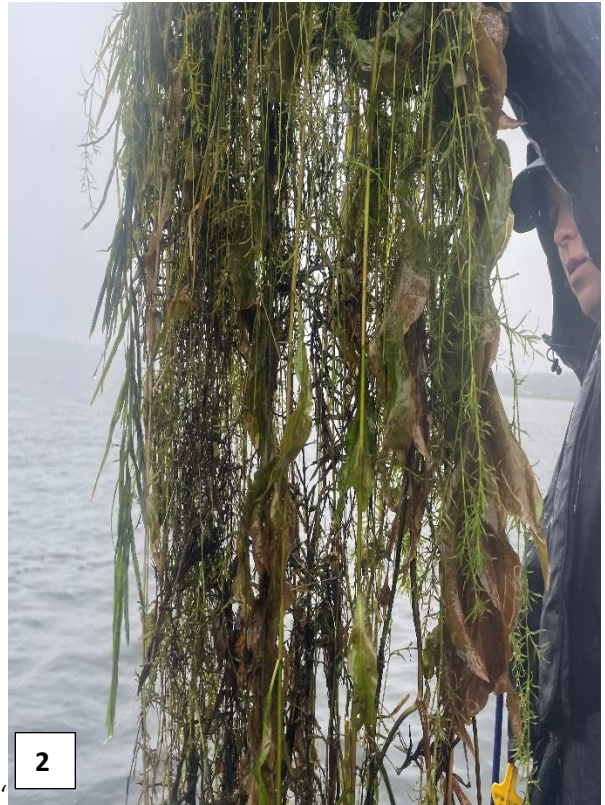
<b>Survey Metrics</b>	<b>SEPT 2014</b>	<b>AUG 2018</b>	<b>JUL 2019</b>	<b>JUL 2020</b>	<b>AUG 2021</b>	<b>JUL 2024</b>
Treated (Y/N)	Y	Y	Y	Y	Y	Y
Surveyor	MN DNR	MN DNR	MN DNR	MN DNR	MN DNR	MNDNR
Total # Points Sampled	166	166	166	167	153	160
Max Depth of Growth (95%) in feet	9	8	10	9	7.5	8.8
# Point in Max Depth Range	136	151	149	148	137	146
# Points in Littoral (0-15 feet)	164	166	165	167	153	160
% Points w/ Native Taxa	84	93	96	91	90	93
Mean Native Taxa/ Point	2.7	3.4	4.0	2.9	3.5	4.0
# Native Taxa	18	23	25	21	22	24
# Non-Native Taxa	1	2	2	2	2	1

**Table 3- Plant Frequency Occurrence.** Percent frequency of occurrence for submersed vegetation within the littoral zone (0-15 feet) in Coon Lake (West Basin), Anoka County (DOW# 02004200).

Taxonomic Name	Common Name	AUG 2010	SEPT 2012	SEPT 2014	AUG 2018	JUL 2019	JUL 2020	AUG 2021	JUL 2024
<b>SUBMERSED PLANTS</b>									
<i>Myriophyllum spicatum</i> *	Eurasian watermilfoil	22	4	3	39	44	1	1	0
<i>Potamogeton crispus</i> *	Curly-leaf pondweed				1	4	5	1	1
<i>Ceratophyllum demersum</i>	Coontail	55	42	45	54	61	26	29	31
<i>Macroalgae</i>	Muskgrass and Stonewort	9	10	9	14				
<i>Chara spp.</i>	Muskgrass					19	27	23	19
<i>Nitella spp.</i>	Stonewort					18	16	8	14
<i>Elodea canadensis</i>	Canadian waterweed	60	60	35	30	51	4	3	28
<i>Megalodonta beckii</i>	Water marigold	6	-	5	1	1	-	-	-
<i>Myriophyllum sibiricum</i>	Northern watermilfoil	1	-	-	8	-	-	-	6
<i>Najas sp</i>	Naiad	39	33	45	72	51	18	42	60
<i>Potamogeton amplifolius</i>	Large-leaf pondweed	16	10	5	8	12	15	23	29
<i>Potamogeton foliosus</i>	Leafy pondweed	-	-	-	8	8	14	26	1
<i>Potamogeton gramineus</i>	Variable-leaf pondweed	2	2	5	8	8	5	10	10
<i>Potamogeton illnoensis</i>	Illinois pondweed	17	19	23	12	12	6	23	23
<i>Potamogeton praelongus</i>	White-stem pondweed	1	3	4	3	5	-	1	31
<i>Potamogeton richardsonii</i>	Clasping-leaf pondweed	4	2	5	9	15	4	28	16
<i>Potamogeton robbinsii</i>	Fern pondweed	59	28	20	28	31	42	29	46
<i>Potamogeton zosteriformis</i>	Flat-stem pondweed	57	4	29	31	66	70	71	64
<i>Utricularia gibba</i>	Creeping bladderwort	-	-	5	9	4	12	1	-
<i>Vallisneria americana</i>	Water celery	20	24	27	30	28	25	26	25

**Floating and emergent plants observed:** *Brasenia schreberi* (Watershield), *Juncus pelocarpus* (Brown-fruited rush), *Lemna minor* (Small duckweed), *Lemna trisulca* (Star duckweed), *Nuphar advena* (Yellow pond lily), *Nuphar variegata* (Bullhead pond lily), *Nymphaea odorata* (White water lily), *Sagittaria spp.* (Arrowheads), *Schoenoplectus acutus* (Hardstem bulrush), *Schoenoplectus americanus* (Olney's three-square bulrush), *Schoenoplectus subterminalis* (Water bulrush), *Schoenoplectus tabernaemontani* (Softstem bulrush), *Typha spp.* (Cattails).

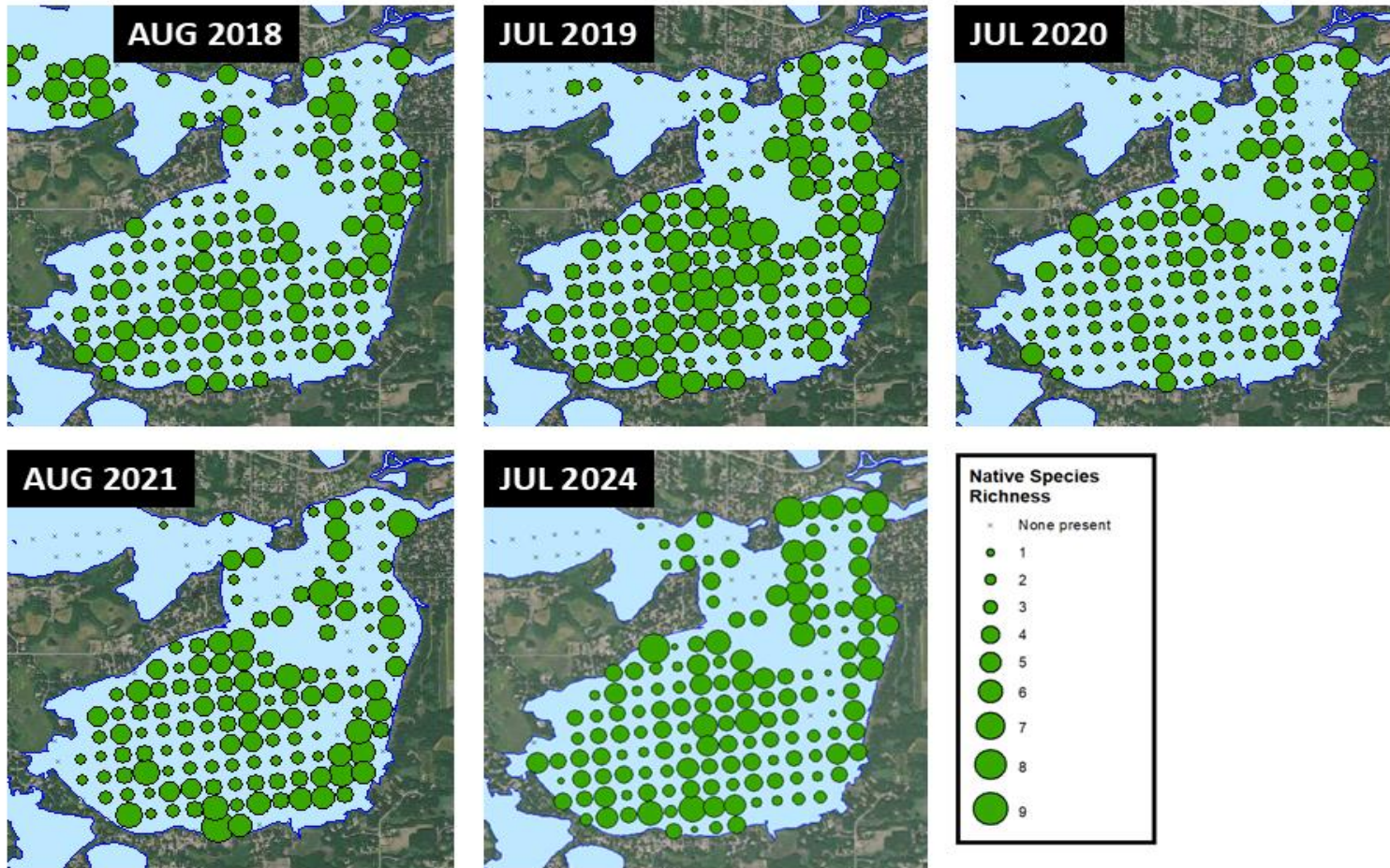
**Less common (<5% frequency) submersed vegetation observed:** *Utricularia macrorhiza* (Common bladderwort) in 2010, 2014, 2019-2020, *Ranunculus aquatilis* (White water crowfoot) in 2010, 2014, 2018, 2020, and 2024, *Heteranthera dubia* (Water stargrass) and *Stuckenia pectinata* (Sago pondweed) in 2010, 2014, 2018-2021, and 2024, *Eleocharis acicularis* (Needle spikerush) in 2014, 2018-2021, and 2024, *Lychnothamnus barbatus* (Bearded stonewort) in 2018, 2021, and 2024, *Potamogeton friesii* (Fries' pondweed) in 2018, 2020, and 2024, *Potamogeton pusillus* (Small pondweed) and *Potamogeton strictifolius* (Stiff pondweed) in 2019, and *Utricularia minor* (Lesser bladderwort) in 2020.



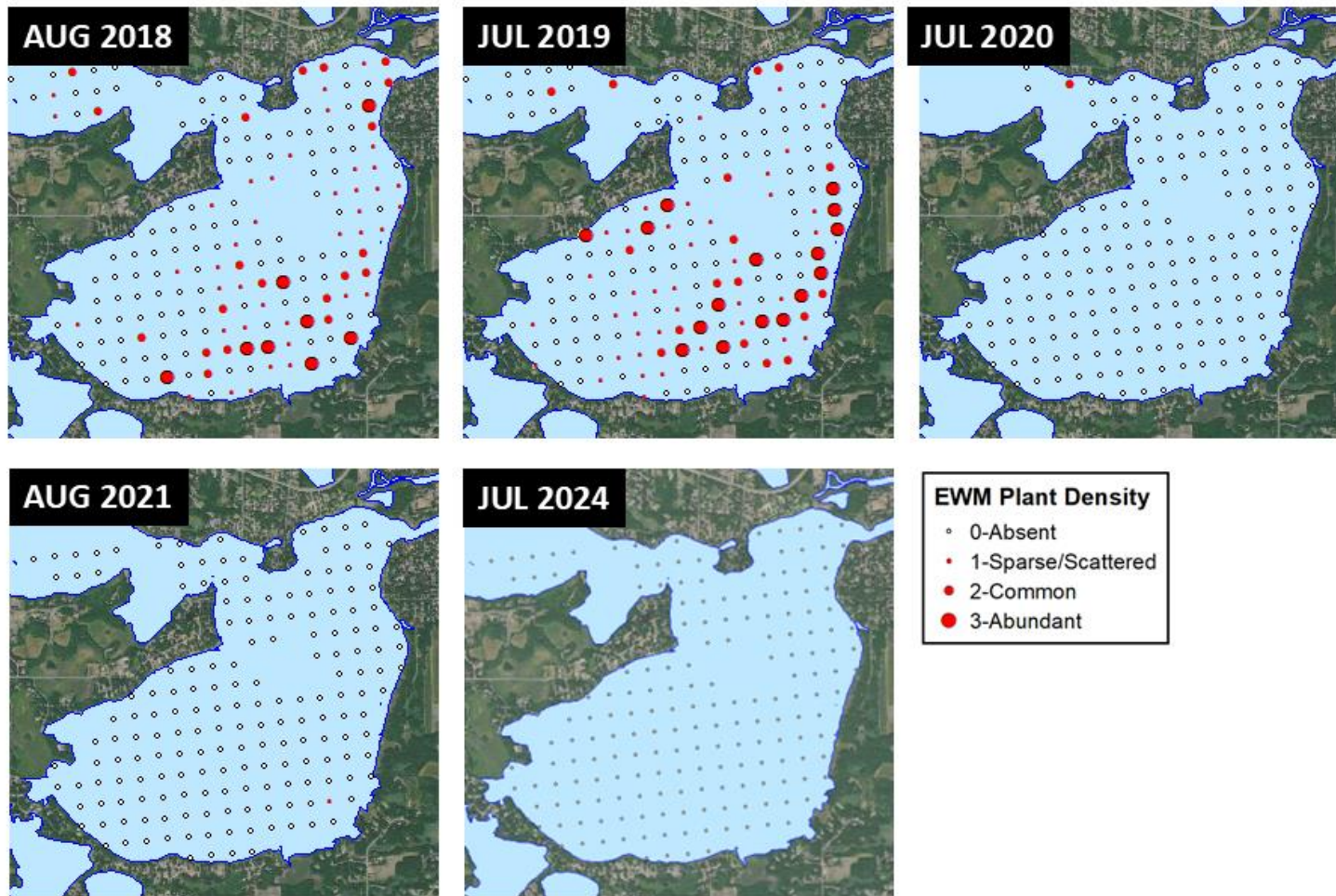
**Photo 1.** Rake throw showing EMW growing in high densities in 2018. **Photo 2.** July 2024- Diverse native plants during the summer survey. **Photo 3.** July 2019 - Plants showing signs of degradation and discoloration impacted by the fluridone treatment Coon Lake, West Basin, Anoka County.







**Figure 2.** Spatial distribution and species richness (# of native submersed taxa per sample point) in the West Basin. Dates correspond to the month of point intercept survey. Coon Lake, Anoka County (DOW # 02004200).



**Figure 3.** Spatial distribution and density of Eurasian watermilfoil per sample point for 2018-2021 in the West Basin. Dates correspond to the month of point intercept survey. Density rake was rated on a 1-3 density rake rating. In 2024, Eurasian watermilfoil was not detected during the July 31<sup>st</sup> point intercept survey. Coon Lake, Anoka County

This information can be made available in alternative formats such as large print, braille or audiotape by emailing [info.dnr@state.mn.us](mailto:info.dnr@state.mn.us) or by calling 651-259-5016.