
PELTIER LAKE, ANOKA COUNTY: 2024 AQUATIC VEGETATION REPORT

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

Lake: Peltier (DOW# 2000400)

Lake Surface Area: 929 acres

Littoral Area: 515 acres

County: Anoka

Survey Type: Point-intercept

Date of Survey (most recent): July 10, 2024

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2024 Summary:

The most recent aquatic vegetation point-intercept survey of Peltier Lake (DOW #2000400) was completed on July 10, 2024 by Minnesota Department of Natural Resources (MnDNR) and Rice Creek Watershed District (RCWD). Submersed plants were identified out to a maximum depth of 2.1 meters (7 feet). Within the littoral zone [zone in the lake from the 0-15 foot depth range (0-4.5 meters)], 39% of sampled points contained native submersed taxa. The average number of native submersed taxa per sample point was 0.71. Eight native submersed plant species and two non-native submersed plant species were observed during the 2024 survey. Offshore herbicide treatments and mechanical treatments targeting curly-leaf pondweed have been organized by the Peltier Lake Association and Peltier Youth Development.

Lake Description:

Peltier Lake is a 929.54-acre eutrophic lake located near Centerville, Minnesota. It has two invasive aquatic plant species: Eurasian watermilfoil (*Myriophyllum spicatum*, abbreviated as EWM) and curly-leaf pondweed (*Potamogeton crispus*, abbreviated as CLP). The maximum depth of water is 4.88 meters (16 feet). Peltier Lake has a DNR shoreline classification of a natural environment lake, restricting the use of pesticides in these waterbodies. Approximately 55% of the lake is littoral.

More information on Peltier Lake water quality can be obtained by contacting your local governmental unit (watershed district, county, city) or by visiting:

<https://webapp.pca.state.mn.us/surface-water/station/02-0004-00-201>

<https://arcgis.dnr.state.mn.us/ewr/whaflakes/lakedetails/02000400/topic/summary>

Management History:

Historically, mechanical harvesting has been used to manage nuisance curly-leaf pondweed growth due to the lakes' DNR shoreline classification. Since 2022, Peltier Lake has used herbicide as a tool to manage curly-leaf pondweed under a variance. Diquat, a contact herbicide, has been used to target CLP the past three years. The most recent herbicide treatment (38.05 acres) targeted curly-leaf pondweed using diquat and was organized by Peltier Lake Association (see **Table 1-Invasive Plant Management Summary**). The treatment area was delineated by Blue Water Science.

Table 1-Invasive Plant Management Summary. Characteristics and history of herbicide treatment for Peltier Lake (DOW# 2000400, Total acres: 929, Littoral acres: 515, 15% Littoral acres: 77.22).

Date	Treatment [W,P,N]	Target Species	Total Acres Treated	Herbicide	Licensed Commercial Applicator
2022	P	CLP	36.51	Diquat	Lake Management Inc.
2023	P	CLP	32.78	Diquat	Lake Management Inc.
2024	P	CLP	38.05	Diquat	Lake Management Inc.

Treatment: W (whole lake), P (partial lake), N (no treatment)
CLP is an abbreviation for curly-leaf pondweed.

Survey Objectives:

Point-intercept surveys were used to assess the distribution of aquatic plants in Lake George. 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 from 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 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 100 meters apart using a Geographic Information System (GIS), allowing for placement of 230 points. 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 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 that is less than 15 feet in depth; see table 1).



Survey Observations:

In the 2024 survey, the maximum depth of rooted vegetation was 2.1 meters (7 feet). Native plant diversity and frequency range from 0.71 mean submersed native taxa/point and 39% native FOO respectively (**Table 2-Point Intercept Metrics**).

Eight native plants were observed during the July 2024 survey. The most common native taxa included coontail, canadian waterweed, and flat-stem pondweed (**See Table 3-Plant Frequency Occurrence**). Lesser abundant aquatic submersed plants included sago pondweed, water stargrass and leafy pondweed.

It should be noted, several rows in the northern most bay were not surveyed due to abundant plant growth at the time of survey and could have impacted our diversity and frequency calculations by excluding species with abundant canopy growth. A visual observation from a distance revealed heavy aquatic plant growth throughout the unsampled area. The plant community was dominated by coontail, Canadian waterweed and curly-leaf pondweed.

Two invasive plants were observed during the 2024 survey (EWM 5% and CLP 15% FOO; see Table 3). Eurasian watermilfoil has stayed consistently under 10% FOO and below recreational nuisance levels. Curly-leaf pondweed was observed at the highest frequency in 2016 (Blue Water Science) but should be monitored if additional herbicide management is considered in the future. The 2016 and 2019 point intercept surveys were conducted by Blue Water Science and are available upon request.

Table 2- Point Intercept Metrics. Summary of point intercepts metrics for Peltier Lake, Anoka County (DOW # 2000400). Shaded values were calculated from littoral depth range.

Survey Metrics	JUNE 2022	JULY 2024
Treated (Y/N)	Y	Y
Surveyor	MN DNR, RCWD	MN DNR, RCWD
Total # Points Sampled	151	163
Max Depth of Growth (95%) in feet	8	7
# Point in Max Depth Range	58	73
# Points in Littoral (0-15 feet)	131	163
% Points w/ Submersed Native Taxa	37	39
Mean Submersed Native Taxa/ Point	0.74	0.71
# Submersed Native Taxa	9	8
# Submersed Non-Native Taxa	2	2

Table 3- Plant Frequency Occurrence. Historic percent frequency of occurrence for submersed vegetation within the littoral zone (0-15 feet) in Peltier Lake, Anoka County (DOW # 2000400). Surveys in 2016, 2018 and 2020 conducted by Bluewater Scientific while 2022 and 2024 were conducted by the MnDNR and RCWD.

Taxonomic Name	Common Name	Aug 2016	May 2018	Aug 2020	June 2022	July 2024
SUBMERSED PLANTS						
<i>Myriophyllum spicatum</i> *	Eurasian watermilfoil	7	0	5	2	5
<i>Potamogeton crispus</i>	Curly-leaf pondweed	*58	*49	*48	33	15
<i>Ceratophyllum demersum</i>	Coontail	49	43	47	27	36
<i>Elodea canadensis</i>	Canadian waterweed	25	20	23	21	18
<i>Potamogeton foliosus</i>	Leafy pondweed	0	13	3	10	1
<i>Potamogeton zosteriformis</i>	Flat-stem pondweed	5	25	23	8	11
<i>Ranunculus aquatilis</i>	White Water-crowfoot	0	0	5	5	0
<i>Stuckenia pectinata</i>	Sago pondweed	3	8	0	2	2
<i>Heteranthera dubia</i>	Water Stargrass	0	0	1	1	2
<i>Utricularia sp.</i>	Bladderwort Species	0	4	0	0	0
<i>Macroalgae</i>	Chara	0	0	0	2	0
<i>Najas spp.</i>	Naiad	0	0	0	1	1

Less common (< 5% frequency) submersed vegetation observed: *Potamogeton friesii* (Fries' pondweed) in 2010, *POTAMOGETON CRISPUS* (CURLY-LEAF PONDWEED)- turions, *Eleocharis acicularis* (Needle spikerush), *Myriophyllum verticillatum* (Whorled watermilfoil), *Potamogeton natans* (Floating-leaf pondweed) in 2010-2015, *Potamogeton pusillus* (Small pondweed) in 2024, *Utricularia macrorhiza* (Common bladderwort), *Utricularia minor* (Small bladderwort) in 2015



Photos 1: Abundant algae and duckweed growth. **Photo 2:** Canadian waterweed sampled from the July 2024 point intercept survey on Peltier Lake (DOW #2000400). Photos taken by MnDNR R3 AIS Staff.

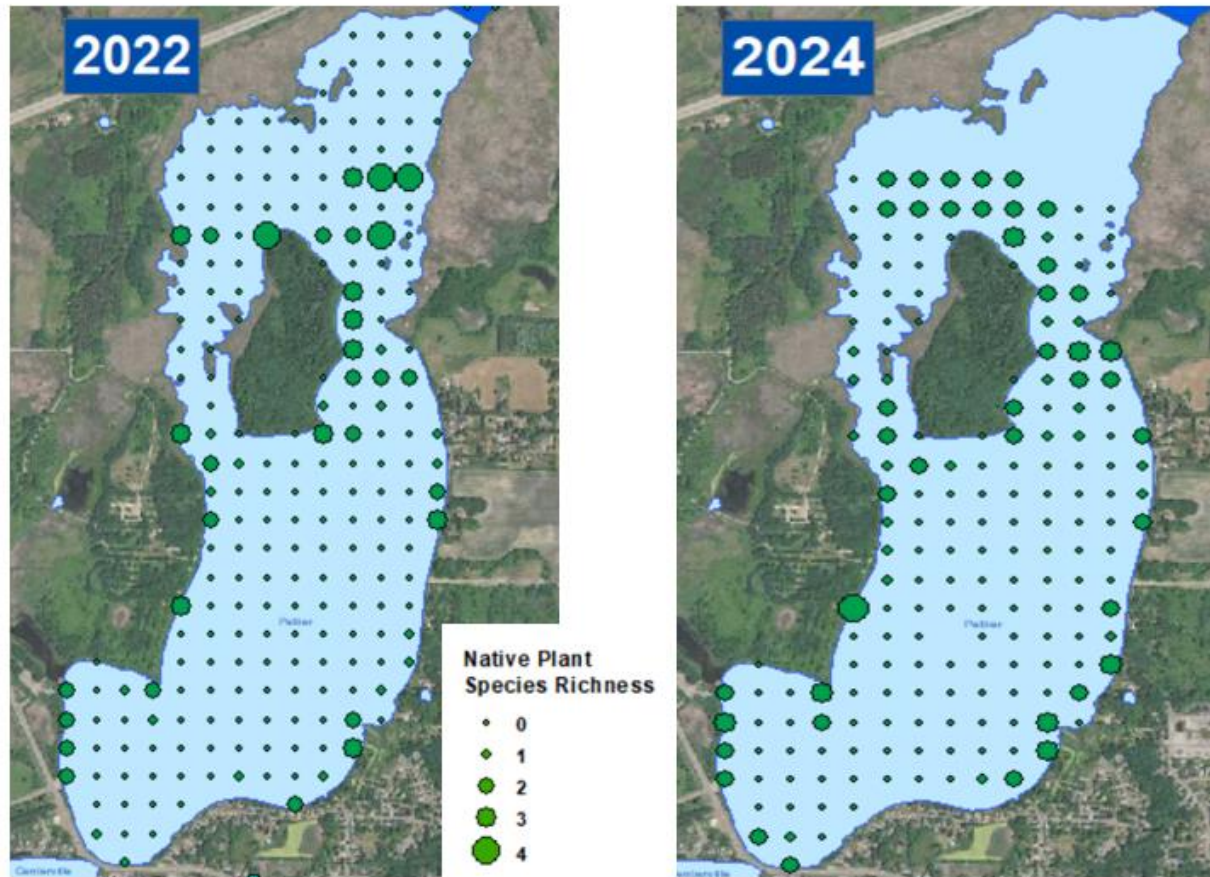


Figure 1. Maps show spatial distribution and species richness (# of native submersed taxa per sample point) for the MnDNR 2022 and 2024 survey. Peltier Lake, Anoka County (DOW # 2000400).

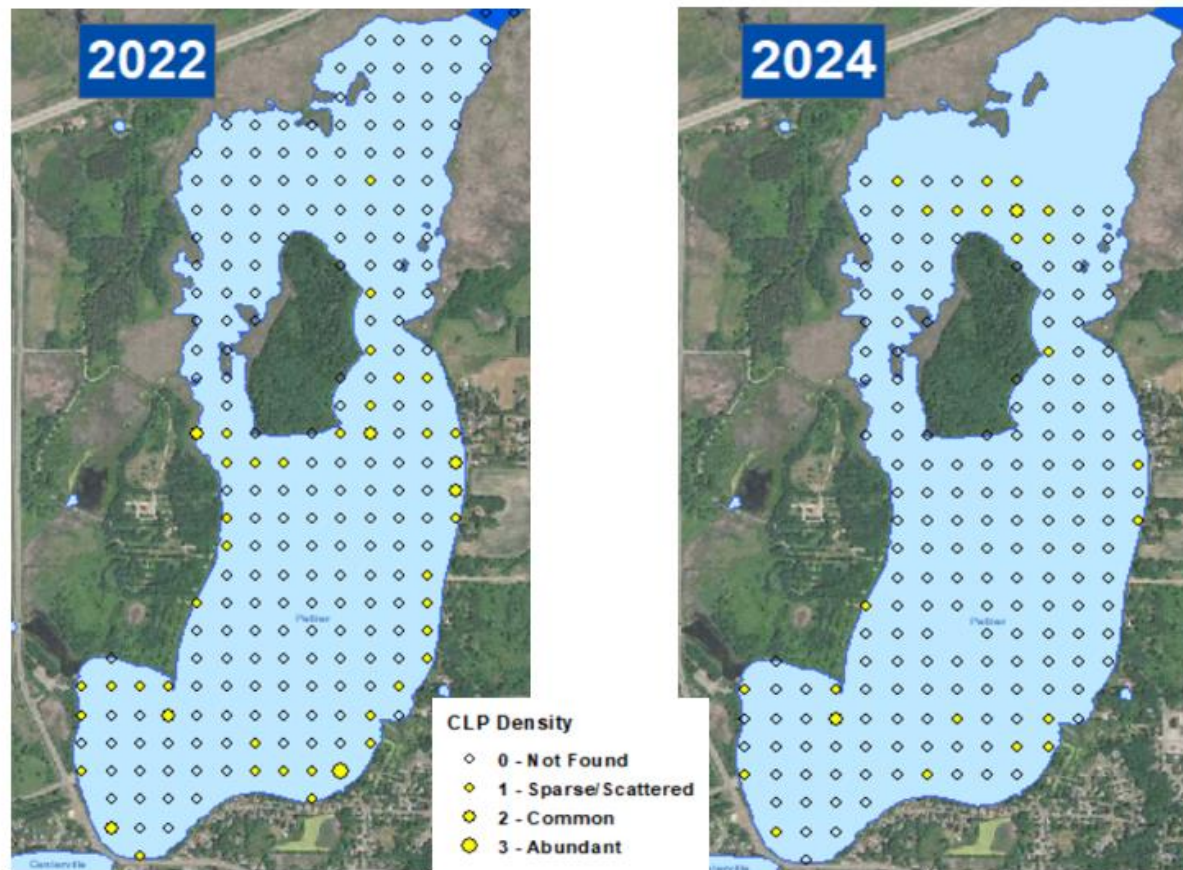


Figure 2. Maps show spatial distribution and curly-leaf pondweed density (sparse, common, and abundant) for the MnDNR 2022 and 2024 survey. Peltier Lake, Anoka County (DOW # 2000400).

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