



McMahon Lake, Scott Co.: 2014 AQUATIC VEGETATION SURVEY

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

Lake: McMahon (DOW#70005000)

Lake Surface Area: 136 acres

Littoral Area: 110 acres

County: Scott

Survey Type: Point-intercept

Date of Inspection (most recent): July 24, 2014

Secchi Depth: Not reported

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2014 Summary: The most recent aquatic vegetation point-intercept survey of McMahon Lake (DOW# 70005000) was completed on July 24, 2014. Plants were present throughout the lake to a maximum depth of 2.7 meters (16 feet). Within the littoral zone (zone in lake from the 0-15 foot depth range (0-4.5 meters), 117 points were sampled and 31% contained native submersed vegetation. The average number of native submersed species per sample point was 0.5. Seven submersed plant species were documented during the 2014 survey and include two invasive plant species: Eurasian watermilfoil and curly-leaf pondweed.

Lake Description:

McMahon Lake is a 136-acre lake located four miles south of Prior Lake, Minnesota in Spring Lake Township in the North Central Hardwoods Forest ecoregion. 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 4.3 meters (14 feet, NOTE- lake levels were higher than average at the time of survey). Approximately 81% of the lake is littoral (water depth from 0 to 15 feet, where aquatic plants are likely to be found). It is a nutrient-rich,

eutrophic to hypereutrophic lake based on its Trophic State Index (TSI) assessment of 66 (ranging from 20 [very clear] to 80 [very green]; provided by the Minnesota Pollution Control Agency). For more information on water quality in McMahan Lake see:

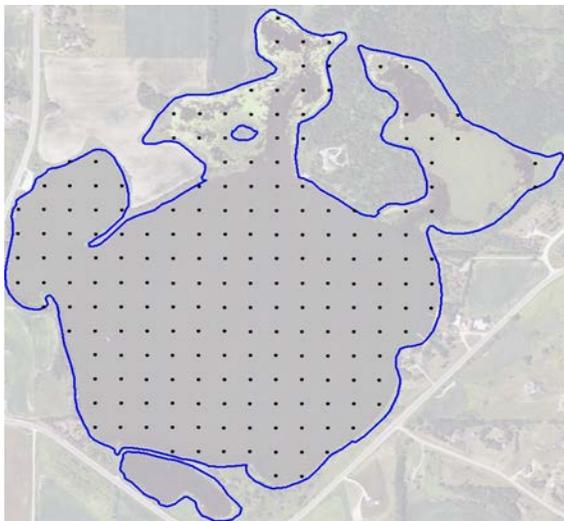
<http://cf.pca.state.mn.us/water/watershedweb/wdip/waterunit.cfm?wid=70-0050-00>

Management History:

McMahan Lake is classified as a natural environment lake. In 2014, the DNR granted a variance to control curly-leaf pondweed using herbicide in 15% of the littoral area of the lake (west bay near the public access). The variance is effective for two years.

Survey Objectives:

Point-intercept surveys were used to assess the distribution of aquatic plants in McMahan Lake. The primary purpose for this type of survey is to: 1) develop baseline knowledge of the current plant community in a lake, and overtime, 2) compare year to year plant variation (in plant presence, spatial location, and density). Potentially, these data can be used to compare lake-to-lake variation on a regional or statewide scale. Moreover, this survey will help monitor native plant communities and evaluate possible responses to herbicide treatments of invasive aquatic plants. 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 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 60 meters apart using a Geographic Information System (GIS). This spacing allowed for placement of 187 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 density (scale of zero [no plants] to 4 [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.

Survey Observations:

See Table 3 for a summary of calculations and Table 4 for plant frequency observations. The MN DNR conducted a point-intercept survey for the first time on McMahon Lake in May 2014. Previous plant surveys (2007 & 2012) organized by Scott County Watershed Management Organization (SWMO) are not presented in this report but are available upon request. In 2014, maximum depth of rooted vegetation was observed at 4.9 meters (16 feet). Of the 117 points sampled within the littoral zone, 31% contained native submersed plants, with an average of 0.5 native plants per point. Seven submersed species were observed, including EWM and CLP. The native taxa were dominated by coontail and flat-stem pondweed.

Table 3. Summary of point intercepts metrics for McMahon Lake, Scott (DOW# 70005000). Values shaded in grey were calculated from littoral depth range.	
	MAY 2014
Treated (Y/N)	Y
Surveyor	MN DNR
Total # Points Sampled	187
Max Depth of Growth (95%)	15 ft
# Point in Max Depth Range	113
# Points in Littoral (0-15 feet)	117
% Points w/ Native Taxa	31%
Mean Native Submersed Taxa/ Point	0.4
# Native Submersed Taxa	3
# Non-Native Taxa	2

Table 4. Percent frequency of occurrence for submersed vegetation within the littoral zone (0-15 feet) in McMahon Lake, Scott (DOW# 70005000).

Taxonomic Name	Common Name	MAY 2014
NON-NATIVE		
<i>Myriophyllum spicatum</i>	Eurasian watermilfoil	7
<i>Potamogeton crispus</i>	Curlyleaf pondweed	65
NATIVE		
<i>Ceratophyllum demersum</i>	Coontail	25
<i>Elodea canadensis</i>	Canadian waterweed	1
<i>Potamogeton foliosus</i>	Leafy pondweed	2
<i>Potamogeton zosteriformis</i>	Flat-stem pondweed	18
<i>Utricularia macrorhiza</i>	Common bladderwort	1