

## Early-Spring Curlyleaf Pondweed Delineation

**Crooked Lake (# 02-0084)**  
Anoka County, MN

Surveyed May 10, 2018



### Survey, Analysis, and Reporting by:

James A. Johnson – *Aquatic Ecologist, Freshwater Scientific Services, LLC*



**Certified Lake Manager**  
[www.NALMS.org](http://www.NALMS.org)

## Purpose of Survey

This early-spring survey was designed to locate and delineate areas of curlyleaf pondweed (CLP) throughout Crooked Lake (#02-0084) to identify areas of CLP that may be considered for treatment in 2018. This information will help to guide CLP management in Crooked Lake, and is required as a part of the DNR permitting process.

## Survey Method

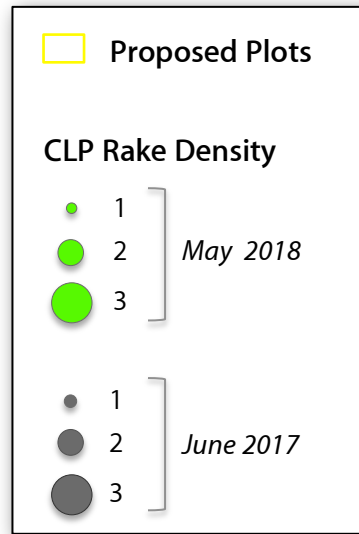
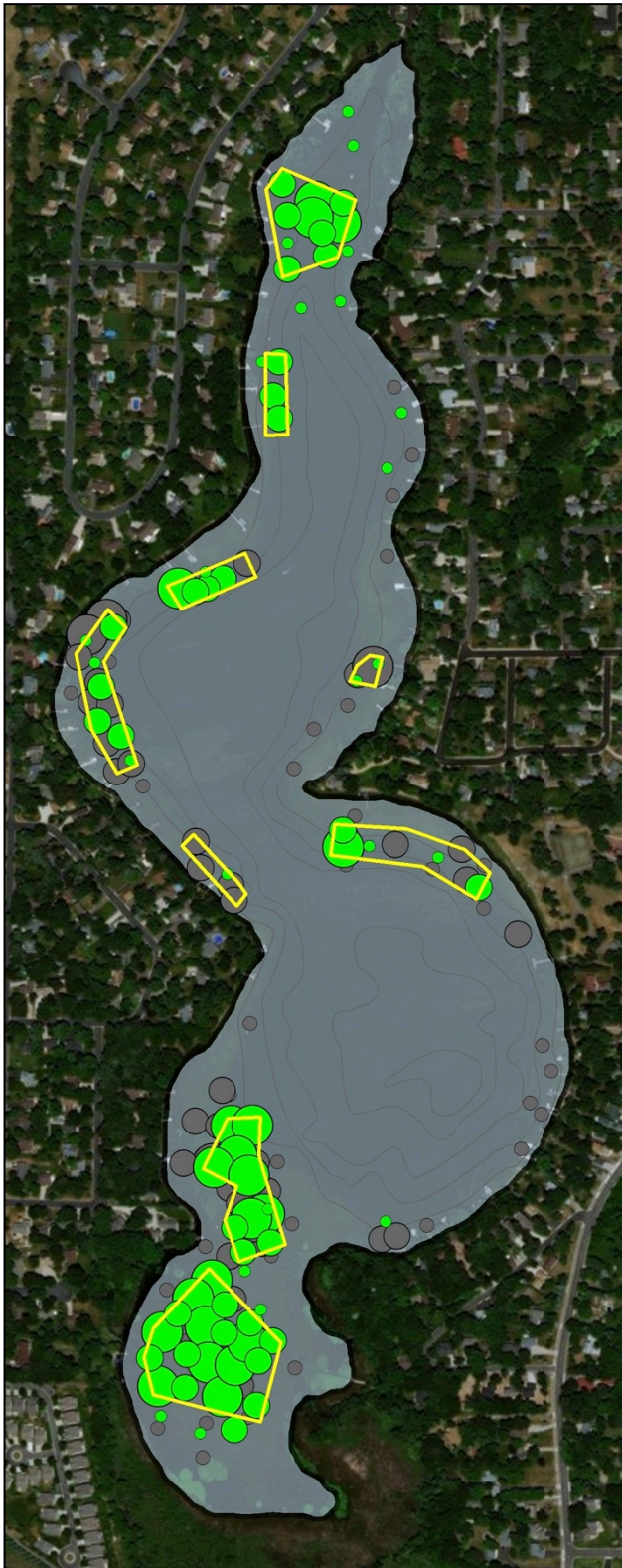
### Delineation Surveys

Freshwater Scientific Services surveyed nearshore areas out to the deep edge of plant growth in Crooked Lake on May 10, 2018. During this survey, we navigated a meandering search path through the search area while using a combination of surface observations, sonar readings, and rake tosses to locate and delineate areas of CLP growth. When we encountered CLP, we marked the location, recorded the water depth, and rated the density of the growth using visual and rake density scores as described in the table below.

Score	Visual	Rake
1	Light / Solitary plants	1-2 stems
2	Moderate / Scattered dense patches	3 to 9 stems
3	Dense / Uniform dense growth	10+ stems

For rake samples, we dragged a sampling rake over approximately 10 square feet of lake bottom and recorded the CLP density based upon the number of plants retrieved on the rake (stem count). The recorded water depths and density scores were linked to the appropriate GPS locations and then mapped using desktop GIS software.

## 2018 Early-Spring Delineation of Curlyleaf Pondweed Crooked Lake (# 02-0084)



Surveyed: May 10, 2018 / Jun 14, 2017  
Methods: Visual, Sonar, Rake  
Surveyor: JA Johnson



Map produced for the  
Crooked Lake Area Association by:



15771 Creekside Lane  
Osseo, MN 55369  
fixmylake.com  
(651) 336-8696



## 2018 Early-Spring Delineation of Curlyleaf Pondweed Crooked Lake (# 02-0084)



 Potential Management Plots

Plot	Area (acres)	Mean Depth (ft)	Mean EWM Density (1-3)
1	2.1	5.4	2.2
2	0.6	7.3	2.0
3	0.7	6.3	2.0
4	1.5	5.5	1.6
5	0.2	3.6	1.0
6	0.4	7.5	1.0
7	1.8	5.1	1.8
8	2.1	3.4	2.5
9	4.4	2.7	2.5

**Total 14.8**

Surveyed: May 10, 2018 / Jun 14, 2017  
 Methods: Visual, Sonar, Rake  
 Surveyor: JA Johnson



Map produced for the  
 Crooked Lake Area Association by:



15771 Creekside Lane  
 Osseo, MN 55369  
 fixmylake.com  
 (651) 336-8696

## ***Online Resources & Contacts***

Minnesota Administrative Rules for Aquatic Plant Management

<https://www.revisor.mn.gov/rules/?id=6280>

Minnesota DNR – Aquatic Plant Management Regulations & Permit Application Forms

<http://www.dnr.state.mn.us/apm/index.html>

### **Keegan Lund**

Invasive Species Specialist

Minnesota DNR

[keegan.lund@state.mn.us](mailto:keegan.lund@state.mn.us)

(651) 259-5828

### **Wendy Crowell**

ALS Management Coordinator

Minnesota DNR

[wendy.crowell@state.mn.us](mailto:wendy.crowell@state.mn.us)

(651) 259-5085