



Pike Lake, Scott County, Minnesota, 2013

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# Aquatic Plant Surveys for Pike Lake, Scott County, Minnesota

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[Plant Surveys Conducted June 13 and September 7, 2013]

Prepared for:  
Prior Lake/Spring Lake  
Watershed District



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Blue Water Science

**February 2014**

# Aquatic Plant Surveys for Pike Lake, Scott County, Minnesota

## Summary

Pike Lake (MnDNR ID #70-0076) is a 43 acre lake located in Scott County, Minnesota. Two aquatic plant point-intercept surveys were conducted in Pike Lake by Blue Water Science in 2013. The first survey was conducted on June 13, 2013 to examine the distribution and abundance of curlyleaf pondweed and the second survey occurred on September 7, 2013 to characterize conditions of native aquatic plants and to look for the non-native Eurasian watermilfoil.

In the early season survey, Pike Lake had a low diversity of submerged aquatic plants with four species of submerged plants found in the survey. The submerged plants observed on June 13, 2013 were coontail, curlyleaf pondweed, sago pondweed, and stringy pondweed. Native plant coverage for June 13, 2013 is shown in Figure S-1.

The late season survey was conducted on September 7, 2013. Only three submerged aquatic plant species were observed in the survey and they were coontail, northern watermilfoil, and sago pondweed. Native plant coverage for September 7, 2013 is shown in Figure S-1. Eurasian watermilfoil, was not found in 2013 although Eurasian watermilfoil was found in Pike Lake for the first time in 2012.

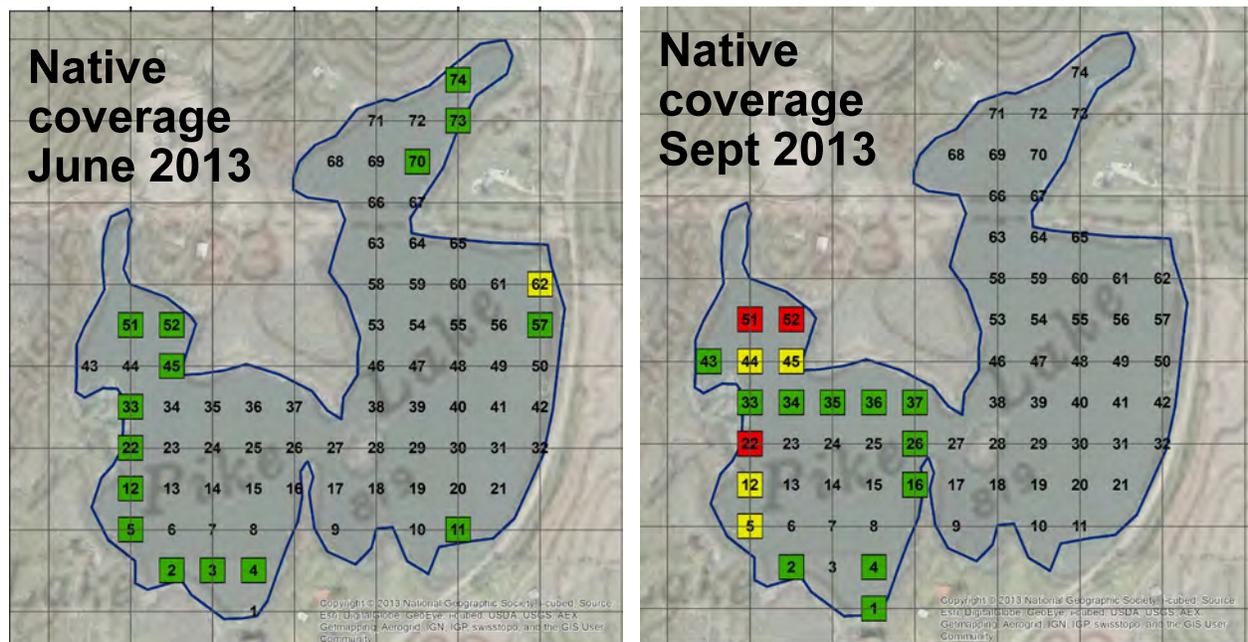


Figure S-1. Submerged aquatic plant coverage for Pike Lake on June 13, 2013 (left) and September 7, 2013 (right). Key: Green squares = light growth, yellow squares = moderate growth, and red squares = heavy growth.

# Aquatic Plant Surveys for Pike Lake, Scott County, Minnesota

**Pike Lake, Scott County (ID: 70-0076)**

**Size: 43 acres (MnDNR)**

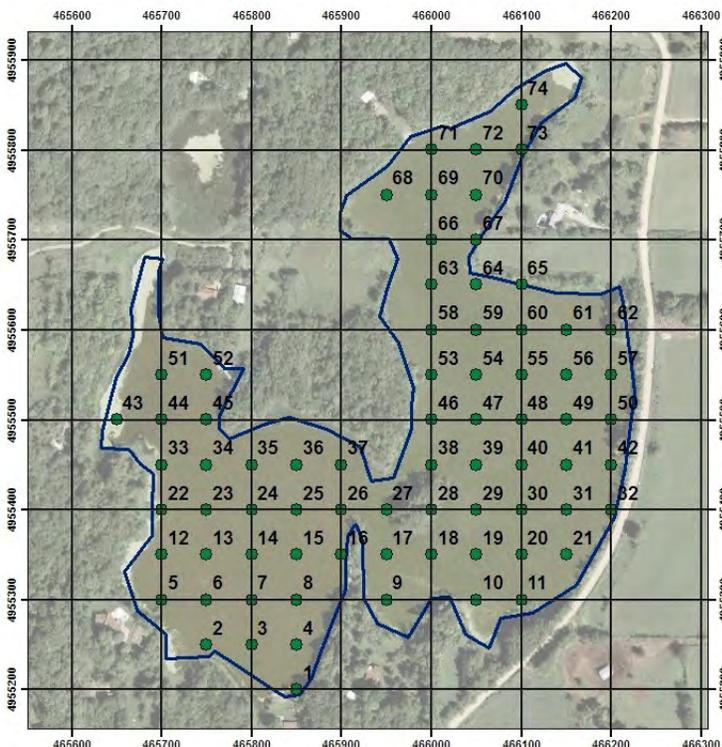
**Maximum depth: 9 ft (MnDNR)**

## Introduction

Two aquatic plant point-intercept surveys were conducted on 43 acre Pike Lake, located in Scott County, on June 13 and September 7, 2013. The objectives of the surveys were to characterize the aquatic plant community.

## Methods

Aquatic plant point-intercept surveys of Pike Lake were conducted by Blue Water Science and 74 points were sampled. Sample points were spaced 50 meters apart on a grid that covered the lake (Figure 1). At each sample point, a sampling rake was lowered into the water and a plant sample was taken. The plant species were recorded and the density of each species was assigned. Densities were based on the coverage on the teeth of the rake. Density ratings ranged from 1 to 5 with 1 being sparse and 5 being heavy growth. Based on these sample sites, a plant distribution map was constructed.



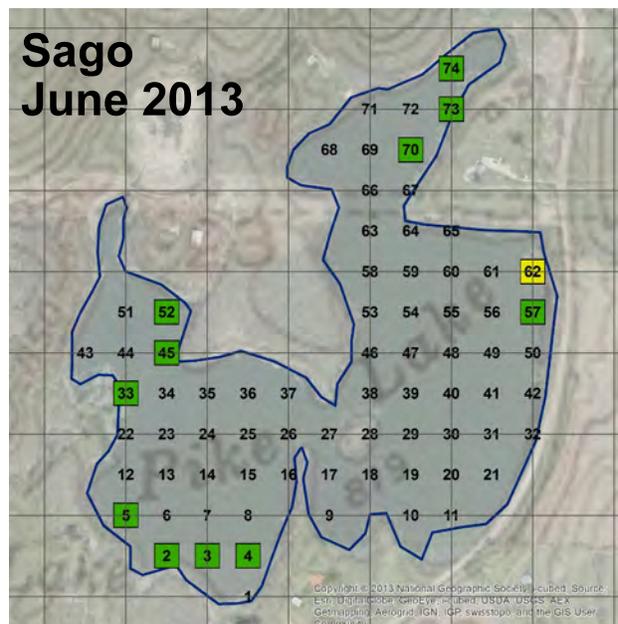
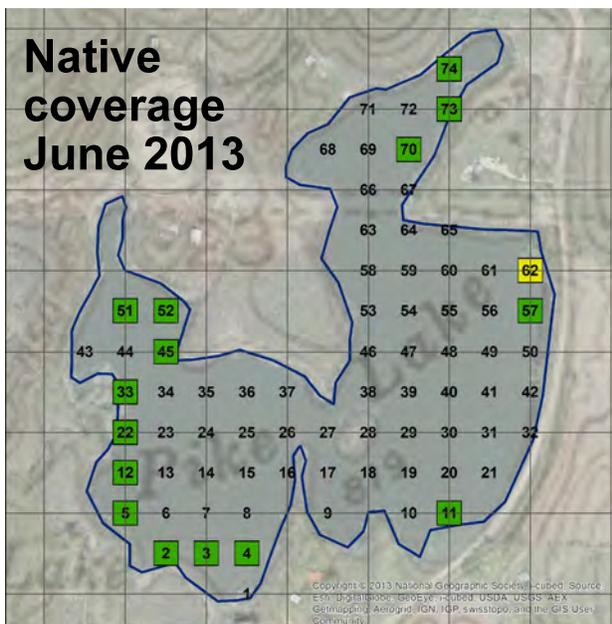
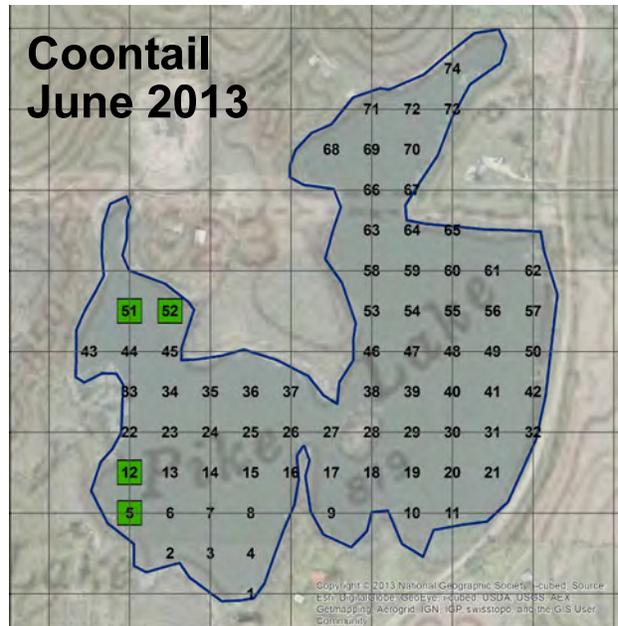
**Figure 1. Sample location map for the aquatic plant surveys conducted on Pike Lake.**

## Results - Aquatic Plant Survey on June 13, 2013

Results of the early summer aquatic plant survey conducted on June 13, 2013 found that four submerged plant species were present and were restricted to water depths of 6 feet or less in Pike Lake (Tables 1 and 2). Coverage of the native plants species found in the June survey are shown in Figure 2. Most of the native plants were found around the perimeter of Pike Lake. Plant distribution and abundance for coontail and sago pondweed are shown in Figure 2.

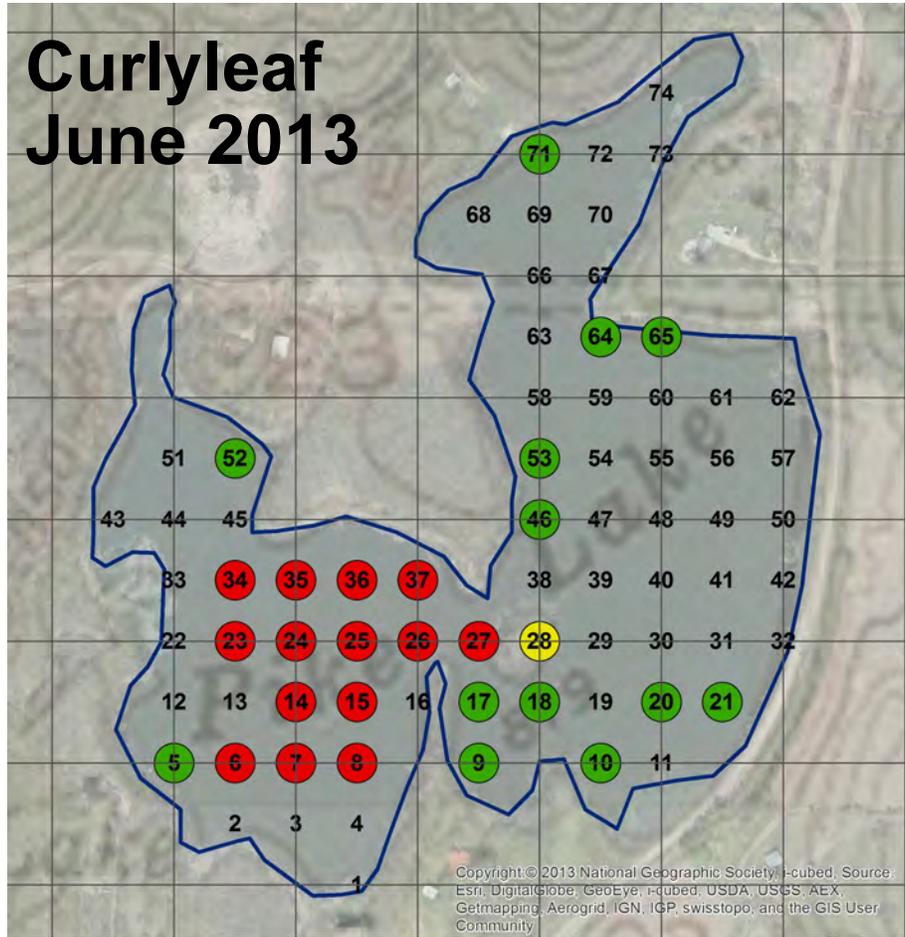
**Table 1. Pike Lake aquatic plant occurrence and density for the June 13, 2013 survey based on 74 sites. Density ratings are 1-5 with 1 being low and 5 being most dense.**

	All Stations (n=74)	
	Occur	Average Density
Cattails ( <i>Typha sp</i> )	1	5.0
Coontail ( <i>Ceratophyllum demersum</i> )	4	1.3
Curlyleaf pondweed ( <i>Potamogeton crispus</i> )	28	3.2
Stringy pondweed ( <i>P. sp</i> )	3	1.0
Sago pondweed ( <i>Stuckenia pectinata</i> )	12	1.5



**Figure 2. [left] Native submerged aquatic plant coverage for Pike Lake on June 13, 2013. [top-right] Coontail distribution and abundance on June 13, 2013. [bottom-right] Sago pondweed distribution and abundance on June 13, 2013. Key: Green squares = light growth and yellow squares = moderate growth.**

**Curlyleaf Pondweed on June 13, 2013:** Curlyleaf was had two very different growth patterns in Pike Lake in 2013. The west basin had very heavy growth and the east basin had very light growth (Figure 3).



**Figure 3. [top] Curlyleaf pondweed distribution and abundance on June 13, 2103. [bottom] Curlyleaf pondweed growing to the lake surface on June 13, 2013. Key: Green shading = light growth, yellow shading = moderate growth, and red shading = heavy growth.**

**Table 2. Occurrence of submerged plants by sites in Pike Lake.**

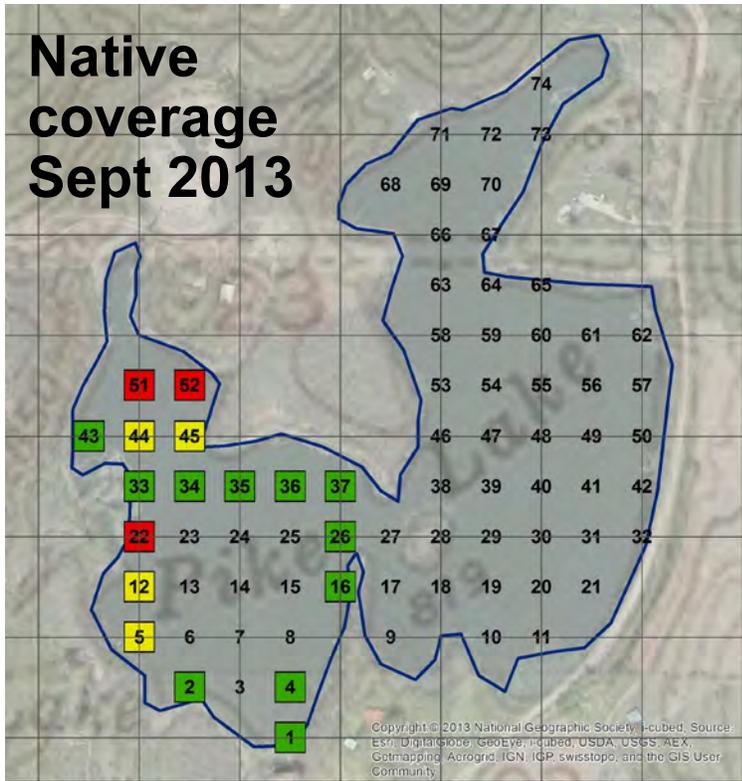
Site	Depth (ft)	Cattails	Coontail	Curlyleaf	Curlyleaf-stems	Sago	Stringv	No plants
1	1	5						
2	4					1	1	
3	4					2		
4	4					2		
5	5		2	1		1		
6	5			5				
7	5			5				
8	5			5				
9	5			1	2			
10	6			1	3			
11	4						1	
12	5		1					
13	6							1
14	5			5				
15	5			5				
16	3							1
17	5			2	6			
18	5			2				
19	5							1
20	5			2				
21	5			1	2			
22	3						1	
23	5			5				
24	5			5				
25	5			5				
26	5			5				
27	5			5				
28	5			4				
29	9							1
30	9							1
31	9							1
32	8							1
33	5					1		
34	5			5				
35	5			5				
36	5			5				
37	5			5				
38	4							1
39								1
40								1
41								1
42	7							1
43	3							1
44	4							1
45	4					2		
46	5			1				
47								1
48								1
49								1
50	5							1
51	5		1					
52	5		1	1		1		
53	5			1	2			
54								1
55								1
56								1
57	5					1		
58	7							1
59	8							1
60	8							1
61	6							1
62	2					3		
63	7							1
64	6			1				
65	3			1	4			
66	7							1
67	3							1
68	6							1
69	9							1
70	4					1		
71	4			1	2			
72	4							1
73	2					2		
74	2					1		
<b>Average</b>		5.0	1.3	3.2		1.5	1.0	
<b>occurrence (74 sites)</b>		1	4	28		12	3	31
<b>% occurrence</b>		1	5	38		16	4	

## Results - Aquatic Plant Survey on September 7, 2013

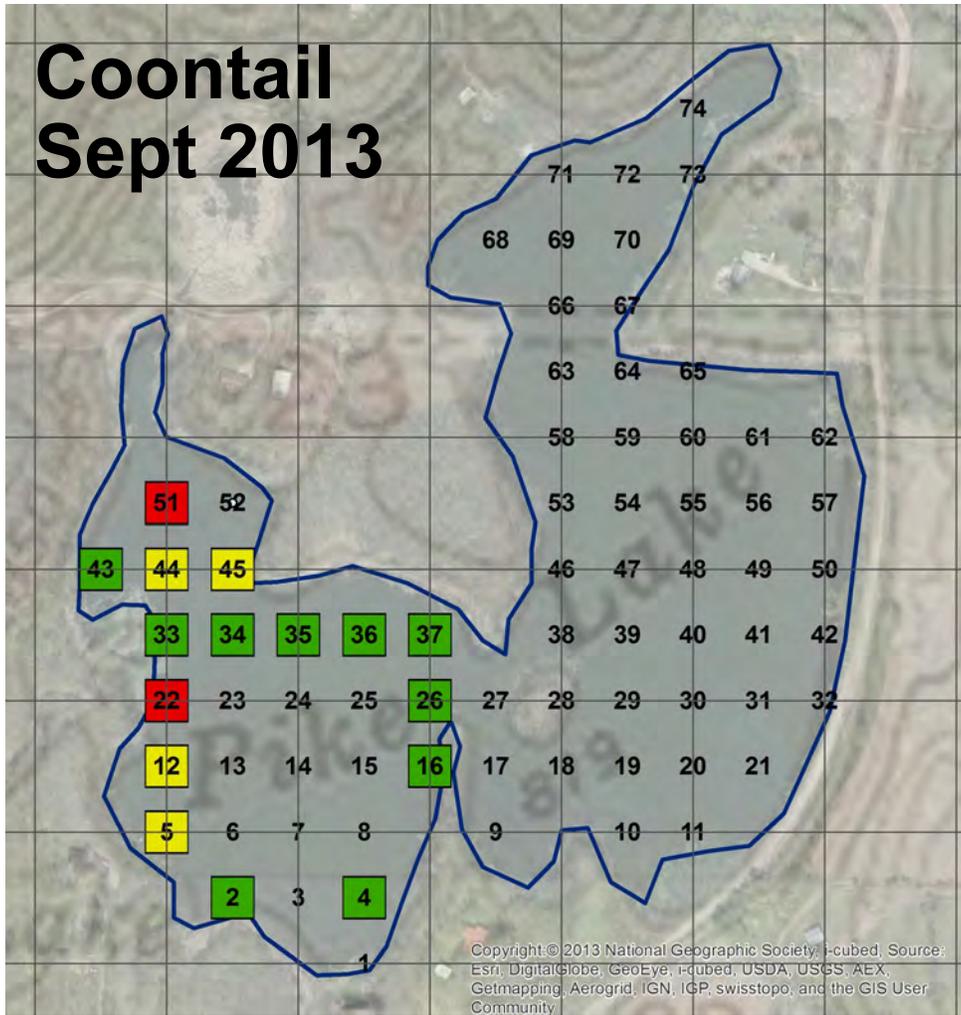
Results of the summer aquatic plant survey conducted on September 7, 2013 found that three submerged plant species were present and were restricted to water depths of 3 feet or less in Pike Lake (Tables 3 and 4). Coverage of the native plants species found in the September survey are shown in Figure 4. Aquatic plants were only observed in the west basin. No plants were found in the east basin. Native plants were found around the perimeter of the west basin of Pike Lake. Plant distribution and abundance for coontail are shown in Figure 5.

**Table 3. Pike Lake aquatic plant occurrence and density for the September 7, 2013 survey based on 74 sites. Density ratings are 1-5 with 1 being low and 5 being most dense.**

	All Stations (n=74)	
	Occur	Average Density
Cattails ( <i>Typha sp</i> )	1	4.0
Duckweed ( <i>Lemna sp</i> )	2	1.0
Coontail ( <i>Ceratophyllum demersum</i> )	17	2.4
Northern watermilfoil ( <i>Myriophyllum sibiricum</i> )	1	1.0
Sago pondweed ( <i>Stuckenia pectinata</i> )	8	1.1



**Figure 4. Native submerged aquatic plant coverage for Pike Lake on September 7, 2013. Key: Green squares = light growth, yellow squares = moderate growth, and red squares = heavy growth.**



**Figure 5. [top] Coontail distribution and abundance on September 7, 2013.**

**[bottom-left] Coontail growing to the lake surface on September 7, 2013.**

**[bottom-right] Coontail on a sample rake at a density of a “2”.**

**Key: Green shading = light growth, yellow shading = moderate growth, and red shading = heavy growth.**

**Table 4. Occurrence of submerged plants by sites in Pike Lake.**

Site	Depth (ft)	Cattails	Duckweed	Coontail	NWM	Sago	No plants
1	1	4				1	
2	2			2			
3	4						1
4	3			1			
5	3			3		2	
6	5						1
7	5						1
8	5						1
9	5						1
10	6						1
11	4						1
12	3			3			
13	6						1
14	5						1
15	5						1
16	2			1		1	
17	5						1
18	5						1
19	5						1
20	5						1
21	5						1
22	1			4			
23	5						1
24	5						1
25	5						1
26	2			1			
27	5						1
28	5						1
29	9						1
30	9						1
31	9						1
32	8						1
33	2			2	1	1	
34	3			1			
35	3			1			
36	3			2			
37	3			2			
38	4						1
39							1
40							1
41							1
42	7						1
43	2		1	2		1	
44	3		1	3		1	
45	3			3		1	
46	5						1
47							1
48							1
49							1
50	5						1
51	3			4			
52	3			5		1	
53	5						1
54							1
55							1
56							1
57	5						1
58	7						1
59	8						1
60	8						1
61	6						1
62	2						1
63	7						1
64	6						1
65	3						1
66	7						1
67	3						1
68	6						1
69	9						1
70	4						1
71	4						1
72	4						1
73	2						1
74	2						1
<b>Average</b>		4.0	1.0	2.4	1.0	1.1	
<b>occurrence (74 sites)</b>		1	2	17	1	8	56
<b>% occurrence</b>		1	3	23	1	11	

# Comparison of Early and Late Summer Aquatic Plant Surveys in 2013

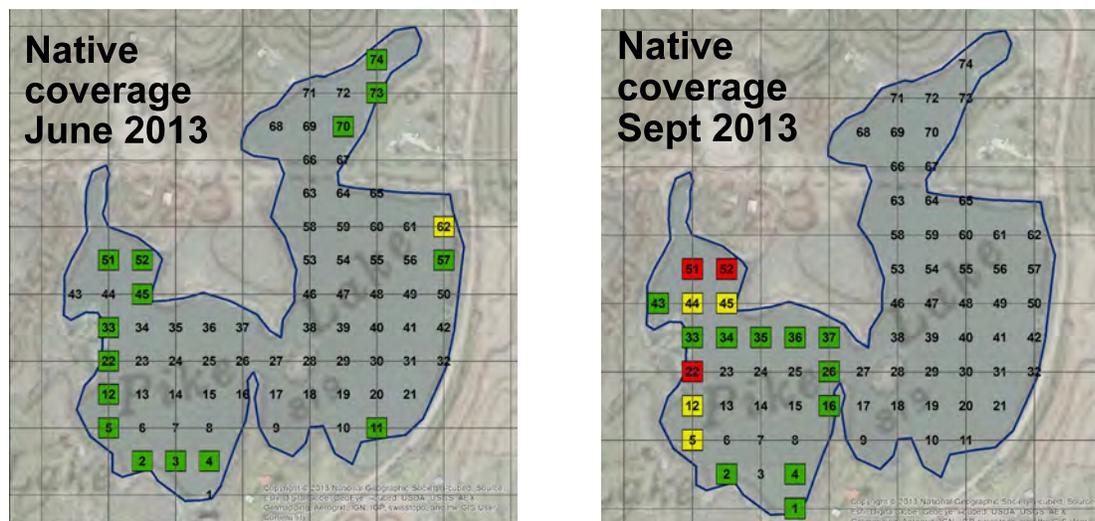
In the early summer of 2013, curlyleaf pondweed was the dominant plant in Pike Lake (Table 5) and was found growing out to about 6 feet of water with the heaviest growth in the west basin.

In September, coontail was the most abundant plant (Table 5) and was found growing out to 3 feet of water depth.

The acreage of coontail increased in Pike Lake from early to late summer (Figure 6). Curlyleaf declined significantly, which is typical. There were slight declines in stringy pondweed and in sago pondweed.

**Table 5. The percent occurrence of aquatic plants for Pike Lake in 2013. Percent occurrence is calculated based on the number of times a plant species occurs at a sampling station divided into the total number of stations for the survey. For example, if milfoil was found in 25 out of 50 stations, its percent occurrence would be 50%.**

	June 13, 2013 % Occurrence (74 sites)	September 7, 2013 % Occurrence (74 sites)	Changes from June to September (+/-)
Cattails ( <i>Typha sp</i> )	1	1	0
Duckweed ( <i>Lemna sp</i> )	0	3	+
Coontail ( <i>Ceratophyllum demersum</i> )	5	23	+
Northern watermilfoil ( <i>Myriophyllum sibiricum</i> )	0	1	+
Curlyleaf pondweed ( <i>Potamogeton crispus</i> )	38	0	-
Stringy pondweed ( <i>P. sp</i> )	4	0	-
Sago pondweed ( <i>Stuckenia pectinata</i> )	16	11	-



**Figure 6. Native plant coverage in June and September in Pike Lake.**

## Comparison of 2012 and 2013 Surveys

Aquatic plant surveys were conducted in the late summer of 2012 and 2013. Coontail was the most common plant in both surveys. Coontail was more abundant in 2013 compared to 2012 (Table 6).

**Table 6. The percent occurrence of aquatic plants for Pike Lake in 2012 and 2013. Percent occurrence is calculated based on the number of times a plant species occurs at a sampling station divided into the total number of stations for the survey. For example, if milfoil was found in 25 out of 50 stations, its percent occurrence would be 50%.**

	August 6, 2012 % Occurrence (74 sites)	September 7, 2013 % Occurrence (74 sites)
Cattails ( <i>Typha sp</i> )	0	1
Duckweed ( <i>Lemna sp</i> )	0	3
Coontail ( <i>Ceratophyllum demersum</i> )	9	23
Elodea ( <i>Elodea canadensis</i> )	1	0
Northern watermilfoil ( <i>Myriophyllum sibiricum</i> )	1	1
Sago pondweed ( <i>Stuckenia pectinata</i> )	1	11

## General Findings of This Study

- Emergent plants along the shoreline were abundant and offer good wildlife habitat.
- In the early survey, curlyleaf was found in water depths of six feet or less and growth was heavy in the west basin. Sago pondweed was the dominant plant in June although coontail in the shallow northwest bay was growing to the surface in shallow water.
- Coontail was the dominant plant in the lake in the late season plant survey.
- Eurasian watermilfoil was not observed in 2013, although it was found in 2012 (details are in the Appendix).
- The reasons for low plant abundance are likely a combination of low light penetration and the impact of bottom feeding fish such as carp.
- An increase in submerged plants probably will not occur unless the roughfish population in Pike Lake is reduced.

# APPENDIX

## Eurasian Watermilfoil Was Collected from a Site North of Point 37 in Pike Lake in 2012

### Pike Lake, Scott County DOW 70-007600

Suspected Eurasian watermilfoil, *Myriophyllum spicatum*, observation



Collected by:  
Steve McComas,  
Blue Water  
Science

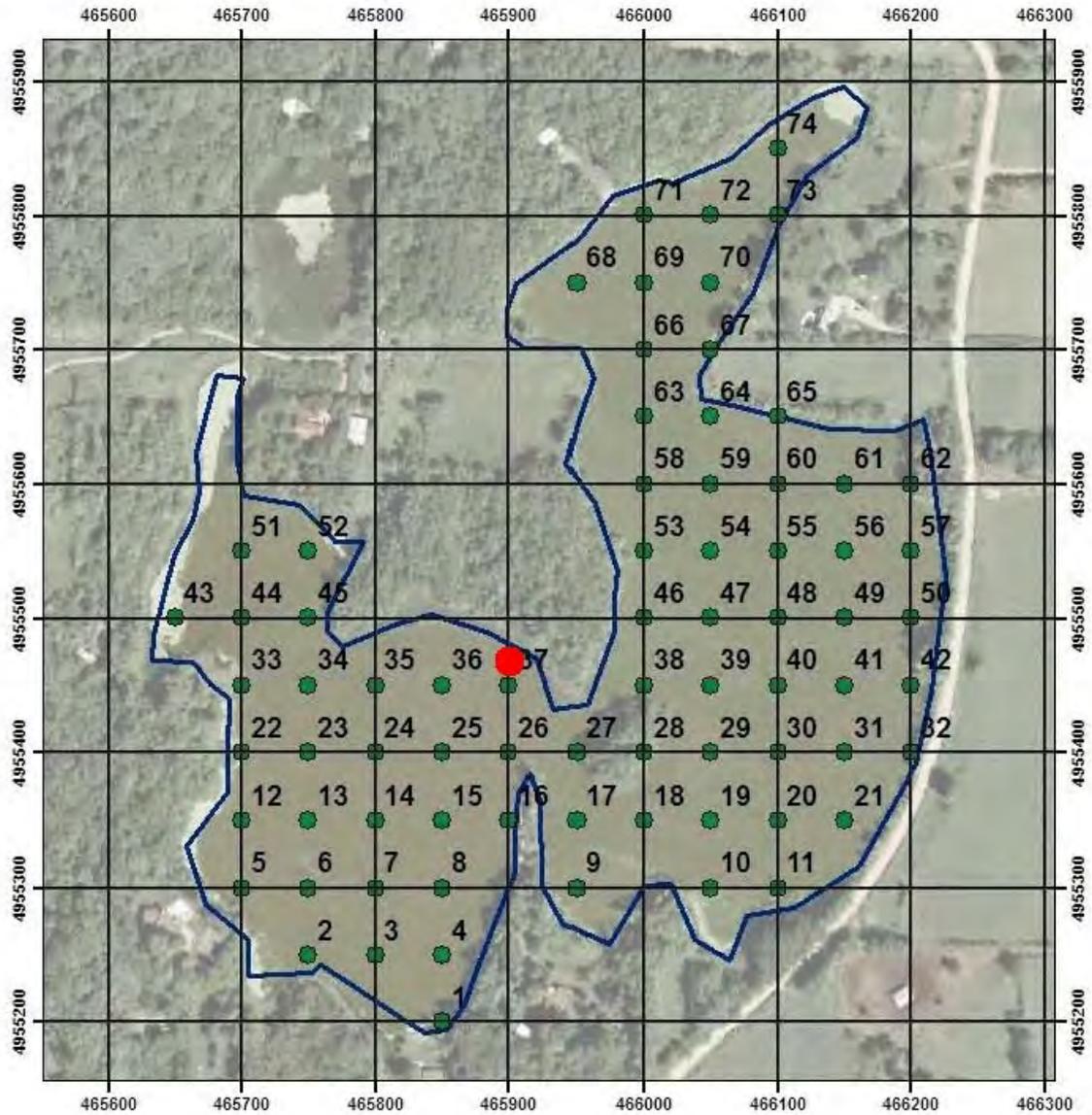
August 6, 2012





**Eurasian watermilfoil collected in Pike Lake on August 6, 2012.**

# Pike Lake



Red dot indicates location of suspected Eurasian watermilfoil occurrence.

UTM NAD 1983  
Blue Water Science