



Coontail Growth on August 17, 2018 on Upper Prior Lake

Curlyleaf Pondweed Assessment Survey and Summer Point Intercept Surveys for Upper and Lower Prior Lake, Scott County, 2018

No Open Water (>150 ft from shore) CLP Treatment in 2018

Curlyleaf Pondweed Assessment Date: June 18, 2018

Upper Prior Lake Point Intercept Survey: August 17, 2018

Lower Prior Lake Point Intercept Survey: August 21, 2018

Prepared for:

**Prior Lake/Spring Lake
Watershed District
Prior Lake, Minnesota**



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Curlyleaf Pondweed Assessment Survey and Summer Point Intercept Surveys for Upper and Lower Prior Lake, Scott County, 2018

Summary

Curlyleaf Pondweed Assessment: Curlyleaf pondweed (CLP) distribution and abundance were assessed on June 18, 2018. The June 18 curlyleaf assessment found that CLP was found at 71 sites out of 209 sites sampled with mostly light to moderate growth. Two areas in Upper Prior (Mud Bay and the south end) and one area in Lower Prior (southern portion) had curlyleaf growth that occurs nearly every year. No treatment was conducted in Prior Lake by the PLSLWD (Figure S1).

Prior Lake Curlyleaf Pondweed Assessment June 18, 2018

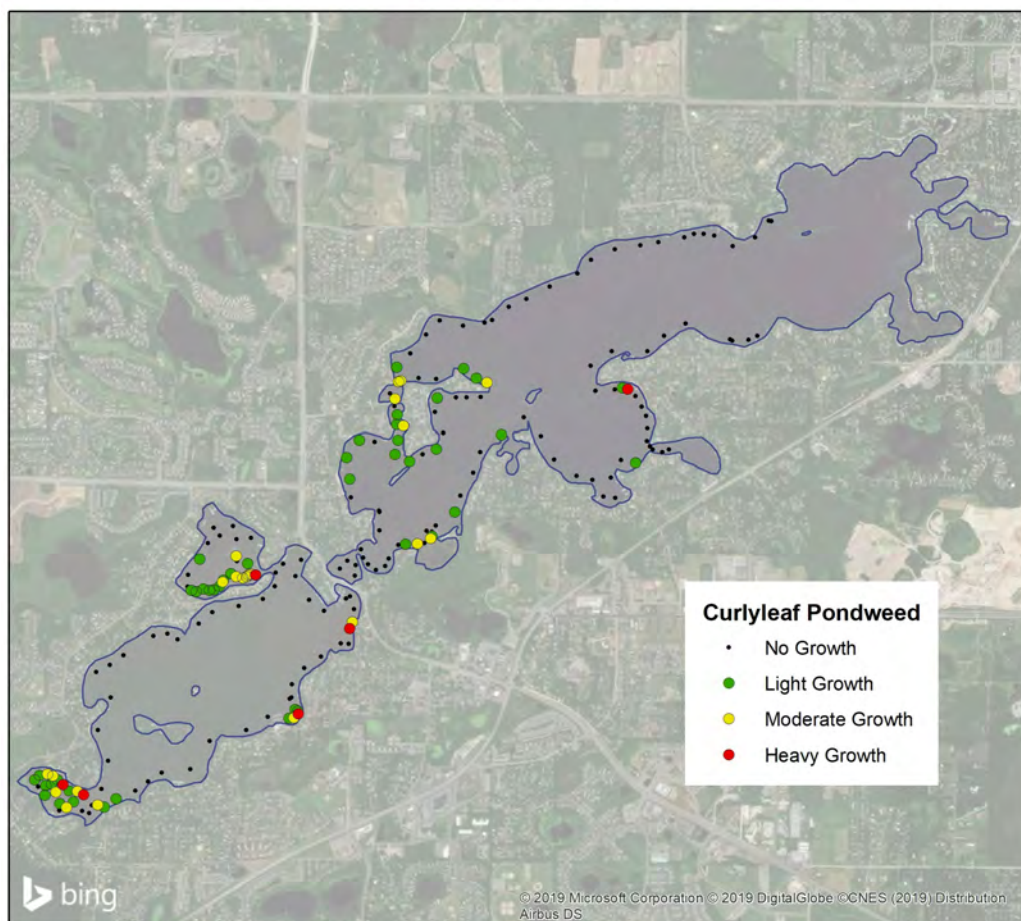
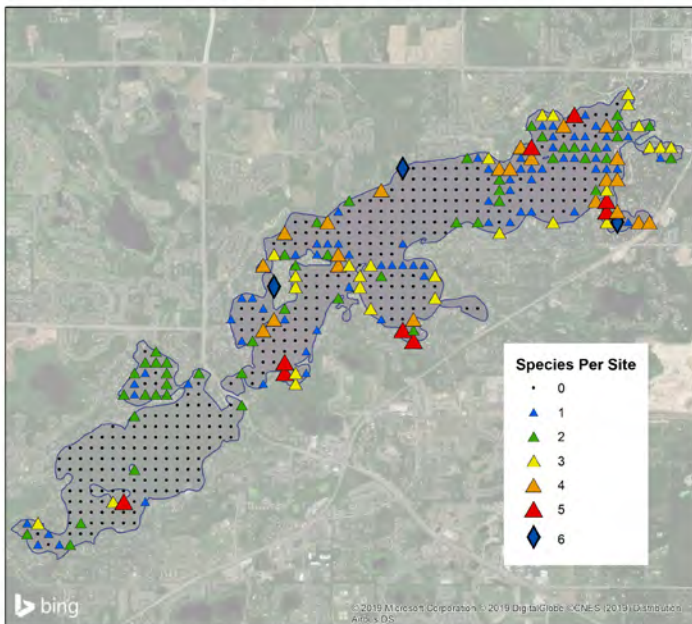


Figure S1. ASSESSMENT: Map of curlyleaf pondweed assessment sites for June 18, 2018. Key: Green = light growth, yellow = moderate growth and red = heavy growth. Black = no CLP.

Point Intercept Survey: A point-intercept aquatic plant survey was conducted on Upper and Lower Prior Lakes on August 17 and 21, 2018. A grid with 100 meter spacing between points was placed on the lake to create 517 points total, of those 384 littoral zone points were sampled for plants. Results of the summer aquatic plant point intercept survey conducted on August 17 and 21, 2018 found 18 submerged aquatic plant species with 15 native plant species and 3 non-native plant species present. Plant distribution and species richness were greater in Lower Prior compared to Upper Prior. Aquatic plants grew to a water depth of 20 feet in Lower Prior and to 8 feet in Upper Prior. Aquatic plants covered approximately 69 acres in Upper Prior and 357 acres in Lower Prior Lake.

Prior Lake Species Richness
August 17 & 21, 2018



Prior Lake Coontail
August 17 & 21, 2018

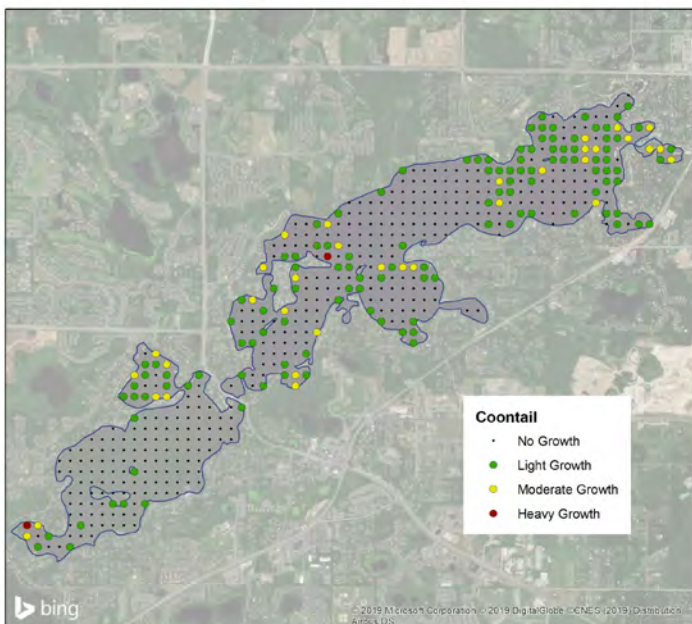


Figure S2. [top] Species richness map for the August 17 and 21, 2018 point intercept survey.

[right] Coontail distribution and abundance for the August 17 and 21, 2018 point intercept survey.

Key: green = light growth, yellow = moderate growth, red = heavy growth, and black dot = no growth.

Curlyleaf Pondweed Assessment Survey and Summer Point-Intercept Surveys for Upper and Lower Prior Lake, Scott County, 2018

	Upper Prior	Lower Prior
Lake ID:	70007200	70002600
Size:	386.26 ac	956.16 ac
Littoral area:	329 ac	373 ac
Maximum depth:	50 feet	60 feet
Shoreline:	6.15 miles	14.73 miles

Introduction

Upper and Lower Prior Lakes combined have an area of 1,342 acres with a total littoral area of 732 acres (MnDNR). A curlyleaf pondweed assessment was conducted on June 18, 2018 to characterize the status of curlyleaf pondweed at it's peak growing period. Sample sites were selected based on areas where curlyleaf had been found over the years. A point intercept survey was conducted on August 17 (Upper Prior) and 21 (Lower Prior), 2018. Sample sites were based on a 100 meter grid placed over Prior Lake.



Figure 1. Some ducks at the landing in Lower Prior Lake on August 21, 2018.

Methods

Meander Assessment Survey: The assessment survey is conducted using a meandering path around the nearshore area of the entire lake. Aquatic plants are sampled using a fixed 14 tine rakehead on a telescoping pole. A plant density rating was assigned to each plant species on a scale from 1 to 3 (Figure 3). A density of a “1” indicated sparse growth and “3” rating indicated heavy plant growth.

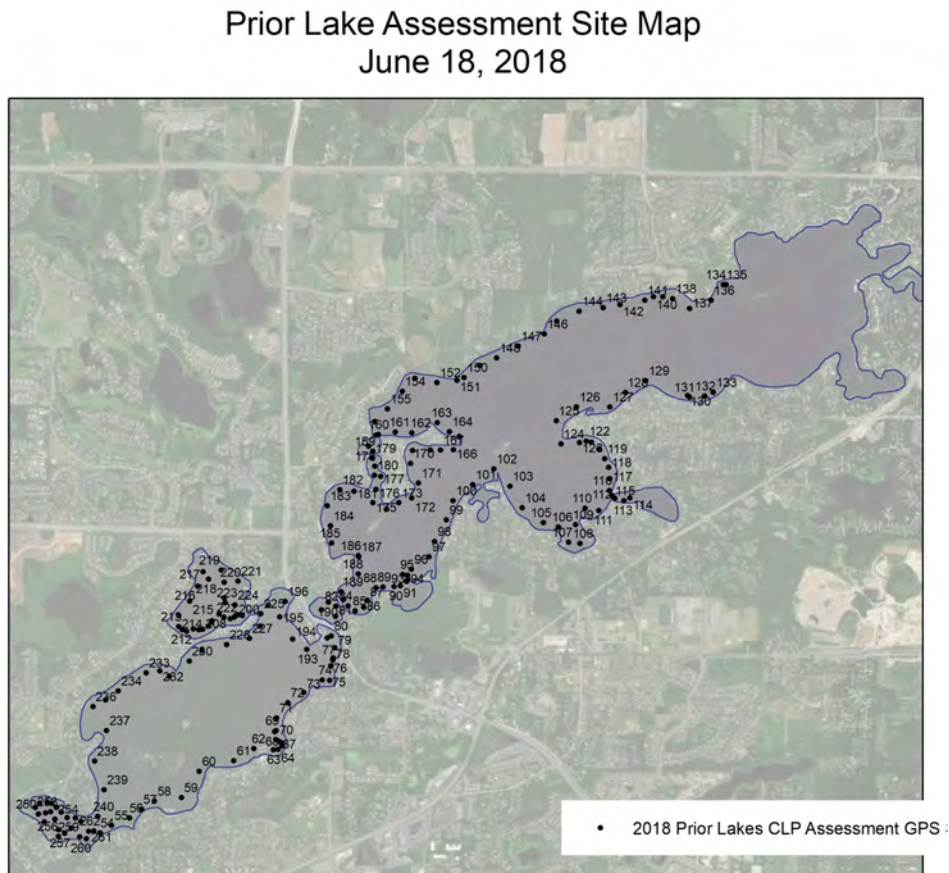


Figure 2. Sample sites for the meandering lake plant surveys are shown with black numbers.

Chart of Aquatic Plant Density Ratings

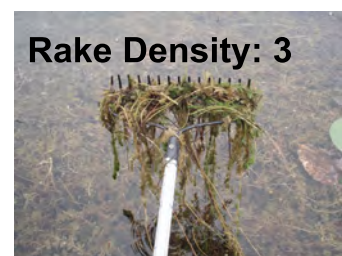
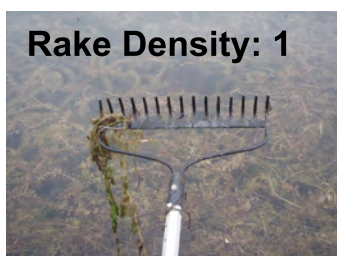


Figure 3. Aquatic plant density ratings from 1 to 3.

Survey Methods for the Point Intercept Survey: An aquatic plant point-intercept survey of Prior Lake was conducted by Blue Water Science on August 17 and 21, 2018. A total 517 samples points were spaced 100 meters apart on a UTM NAD 83 grid that covered Prior Lake (Figure 4) 384 points in the littoral zone were sampled. At each sample point, a fixed-head sampling rake on a telescoping pole 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 3 with 1 being sparse and 3 being heavy growth. Based on these sample sites, a plant distribution map was constructed.

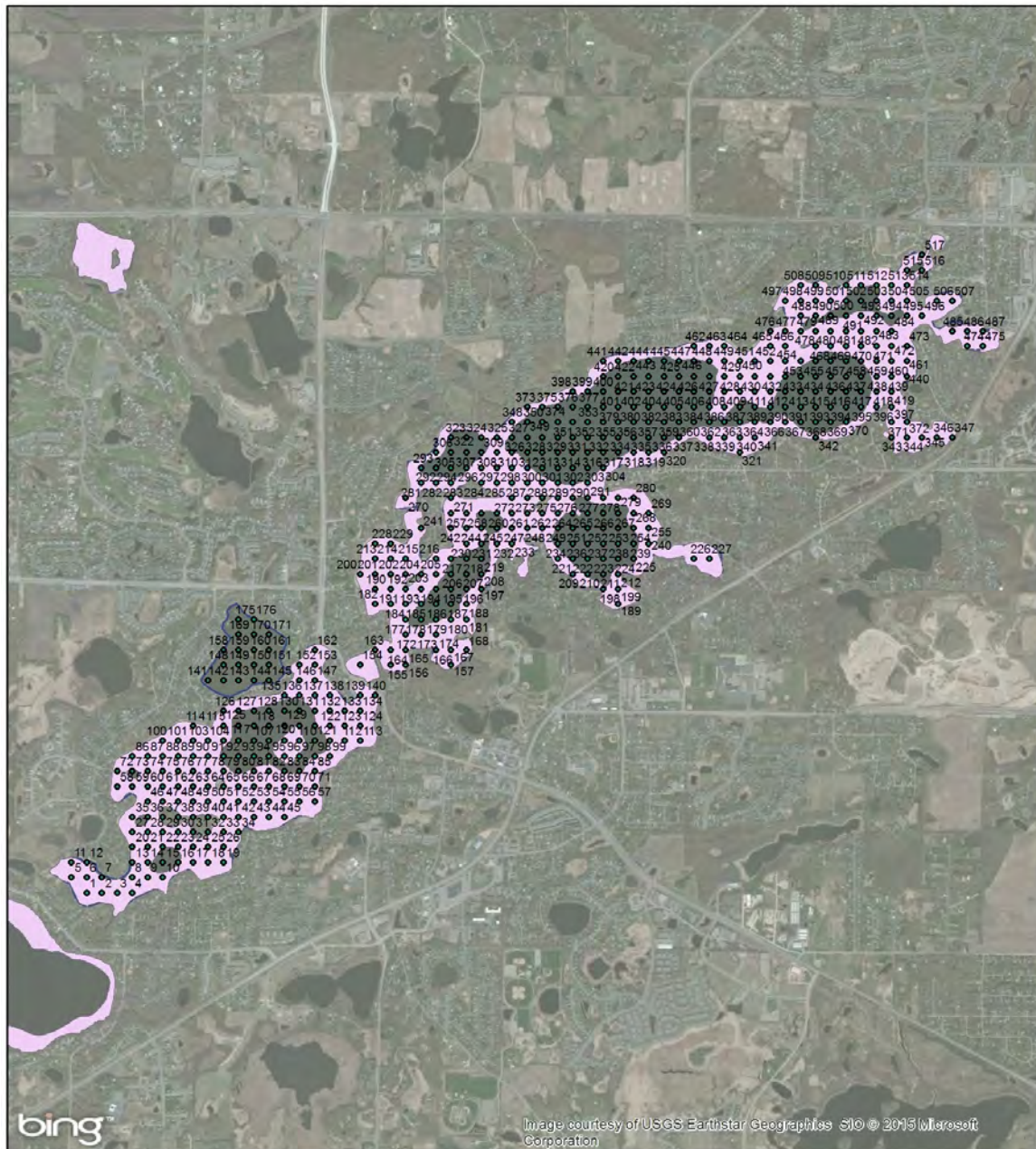


Figure 4. Point-intercept sample sites for Prior Lake in 2018. Sample sites were spaced 100 meters apart.

Curlyleaf Pondweed Assessment on June 18, 2018 in Upper and Lower Prior Lake

A meandering survey consisting of a total of 209 sites around Upper and Lower Prior Lake were sampled with a pole rake on June 18, 2018 to assess curlyleaf pondweed at peak growth. Curlyleaf was found at mostly light to moderate densities at 71 out of 209 sites. Curlyleaf treatments were not conducted by the PLSLWD in 2018. CLP growth was mostly light to moderate and although present at sites where it typically shows up, it was not a significant nuisance.

Prior Lake Curlyleaf Pondweed Assessment June 18, 2018

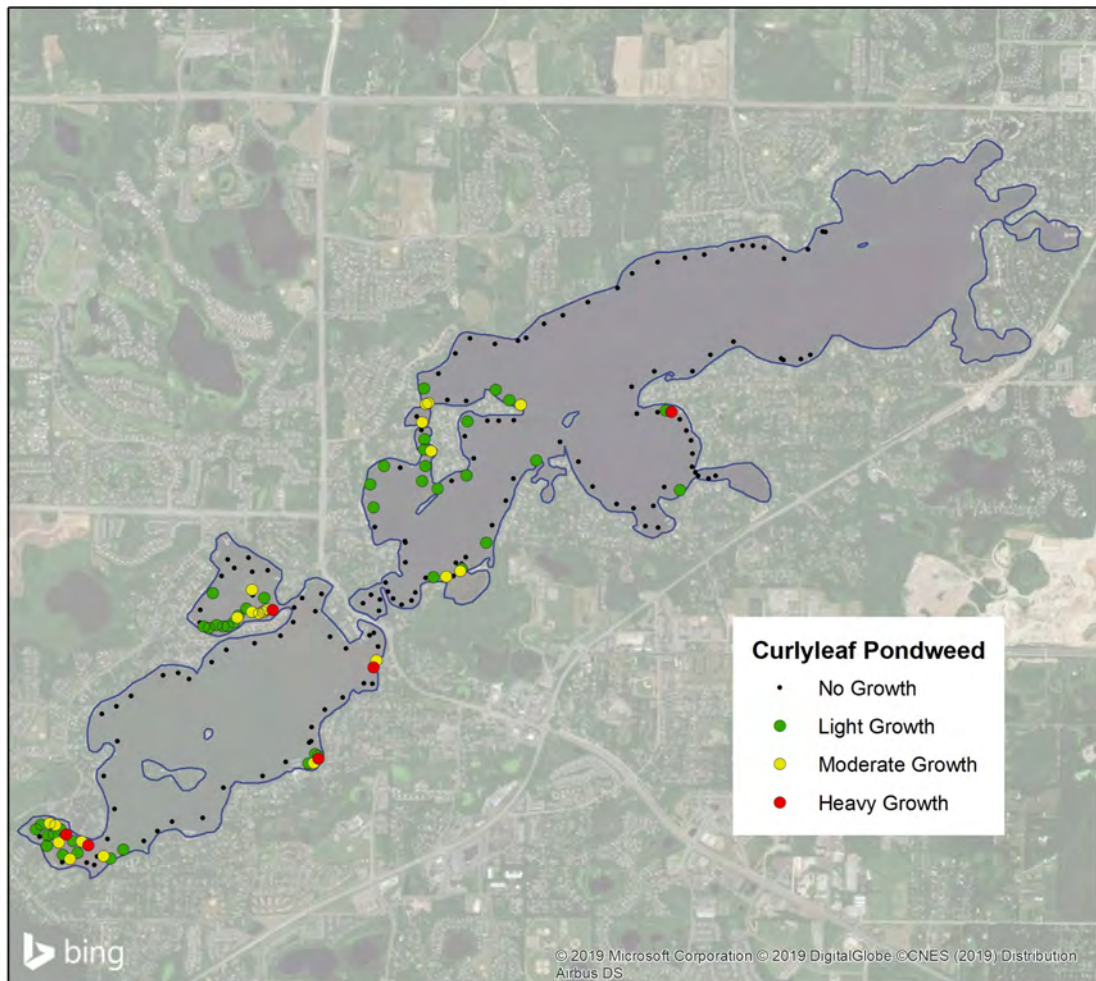


Figure 5. Curlyleaf density on June 18, 2018.

Key: Green = light growth, yellow = moderate growth, red = heavy growth, and black = no growth.

June 18, 2018 Representative Curlyleaf Conditions



Figure 6. Curlyleaf pondweed growth ranged from light to heavy growth on June 18, 2018.

Previous Herbicide Treatments from 2009 - 2018

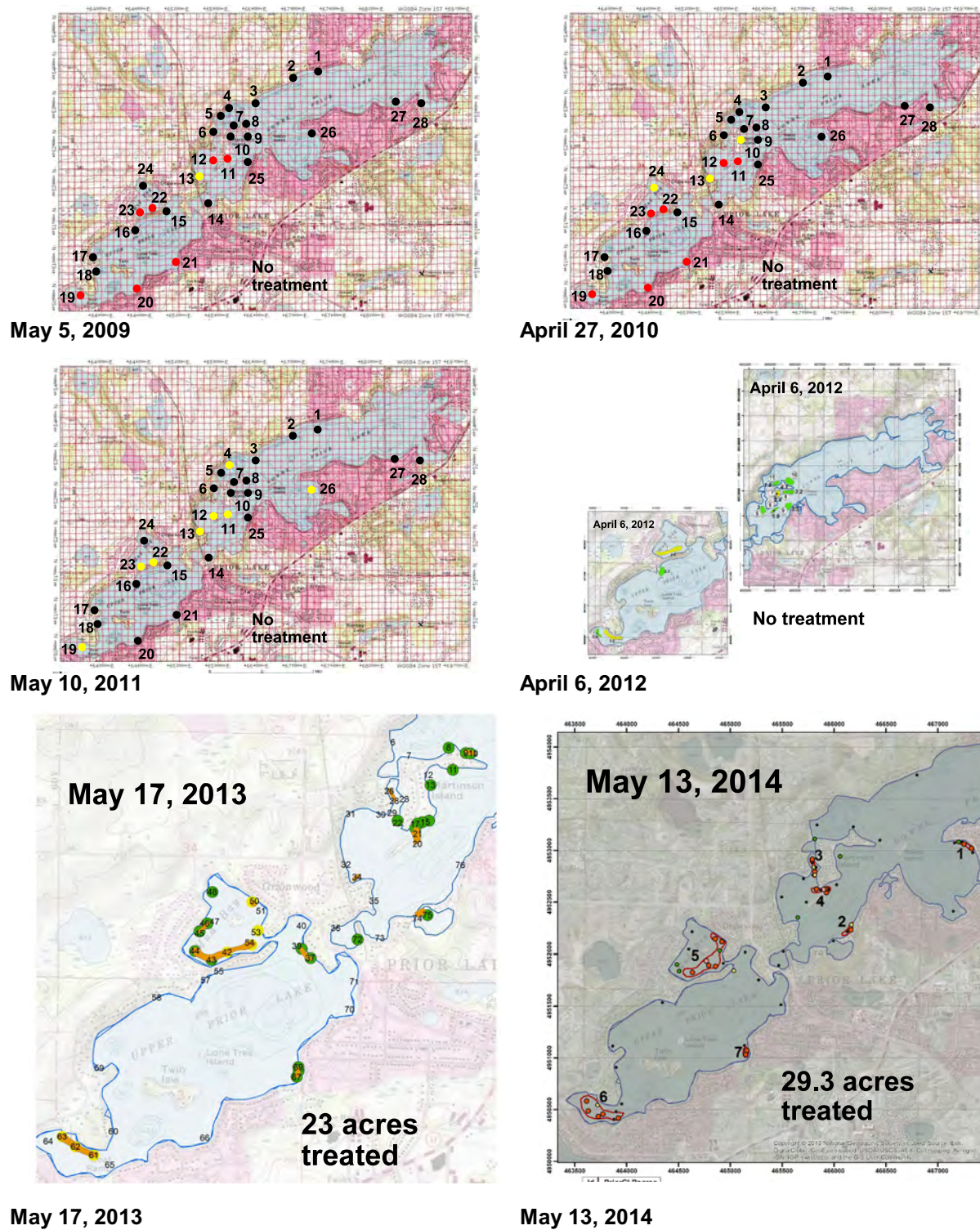
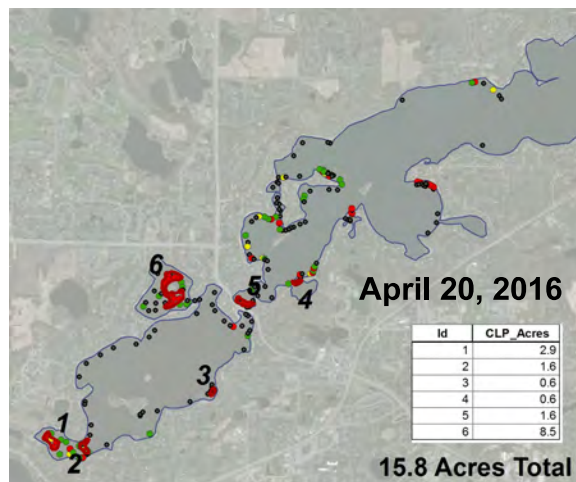
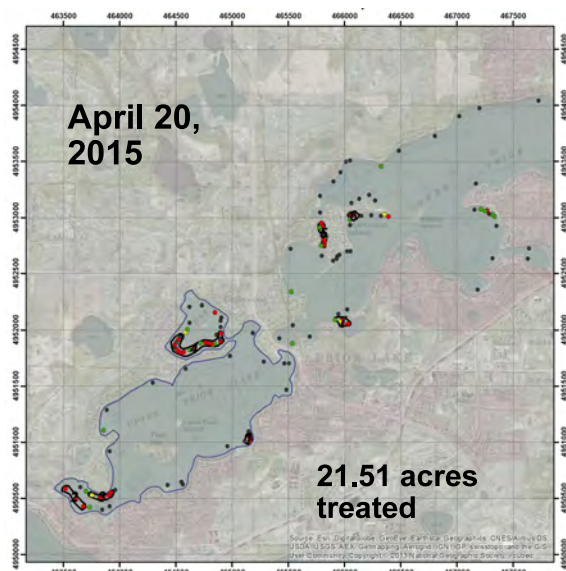


Figure 7. Previous herbicide applications locations from 2009 to 2018 on Upper and Lower Prior Lakes. No PLSLWD sponsored treatment occurred in 2018.



April 20, 2016

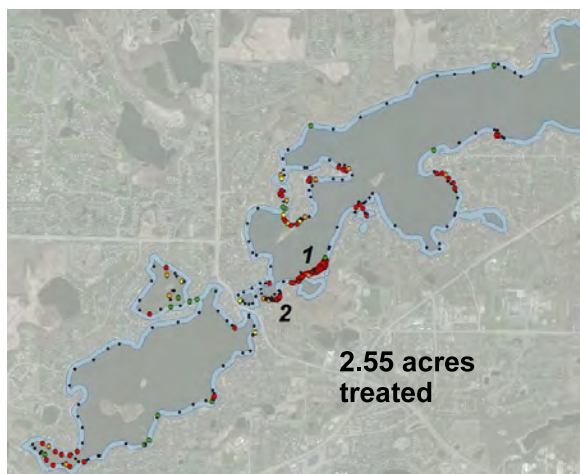


Table 1. Treatment summary from 2009-2018.

Year	Treatment
2009	No treatment
2010	No treatment
2011	No treatment
2012	No treatment
2013	23 acres
2014	29.3 acres
2015	21.5 acres
2016	15.8 acres
2017	2.55 acres
2018	No treatment

Figure 7. Previous herbicide applications locations from 2009 to 2018 on Upper and Lower Prior Lakes. No PLSLWD sponsored treatment occurred in 2018.

Point Intercept Aquatic Plant Survey

Results: A point intercept aquatic plant survey was conducted on Upper and Lower Prior Lakes on August 17 and 21, 2018. Plant distribution and species richness were greater in Lower Prior compared to Upper Prior (Figure 8). Aquatic plants grew to a water depth of 20 feet in Lower Prior and to 8 feet in Upper Prior. Aquatic plants covered approximately 69 acres in Upper Prior and 357 acres in Lower Prior Lake.

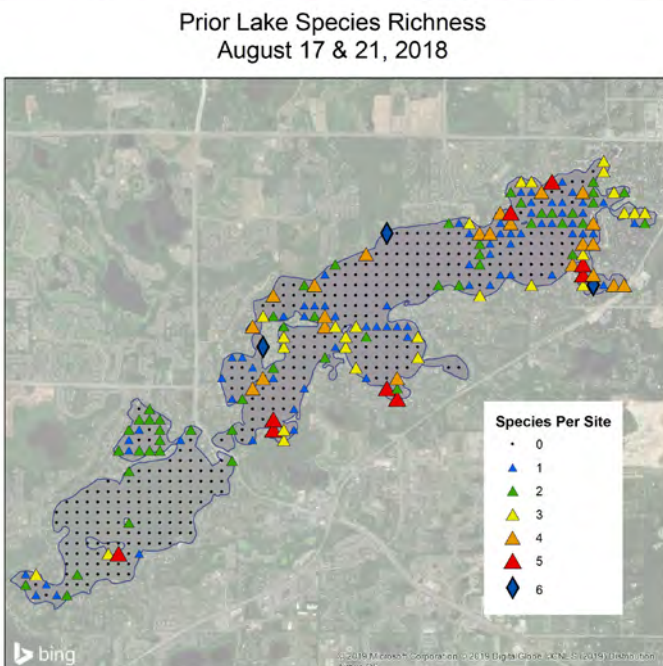
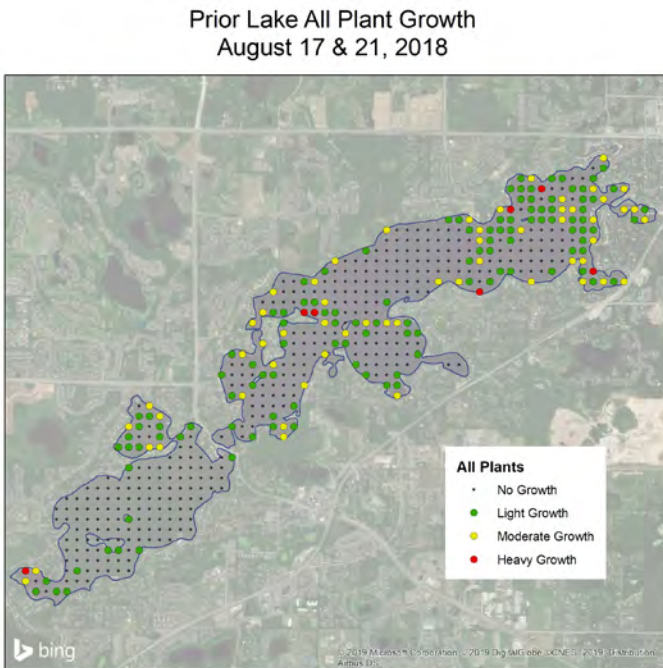


Figure 8. [top] Plant coverage map for August 17 and 21, 2018. [left] Species per site map for August 17 and 21, 2018.

Individual aquatic plant species distribution and abundance in Prior Lake are shown in Figure 9.

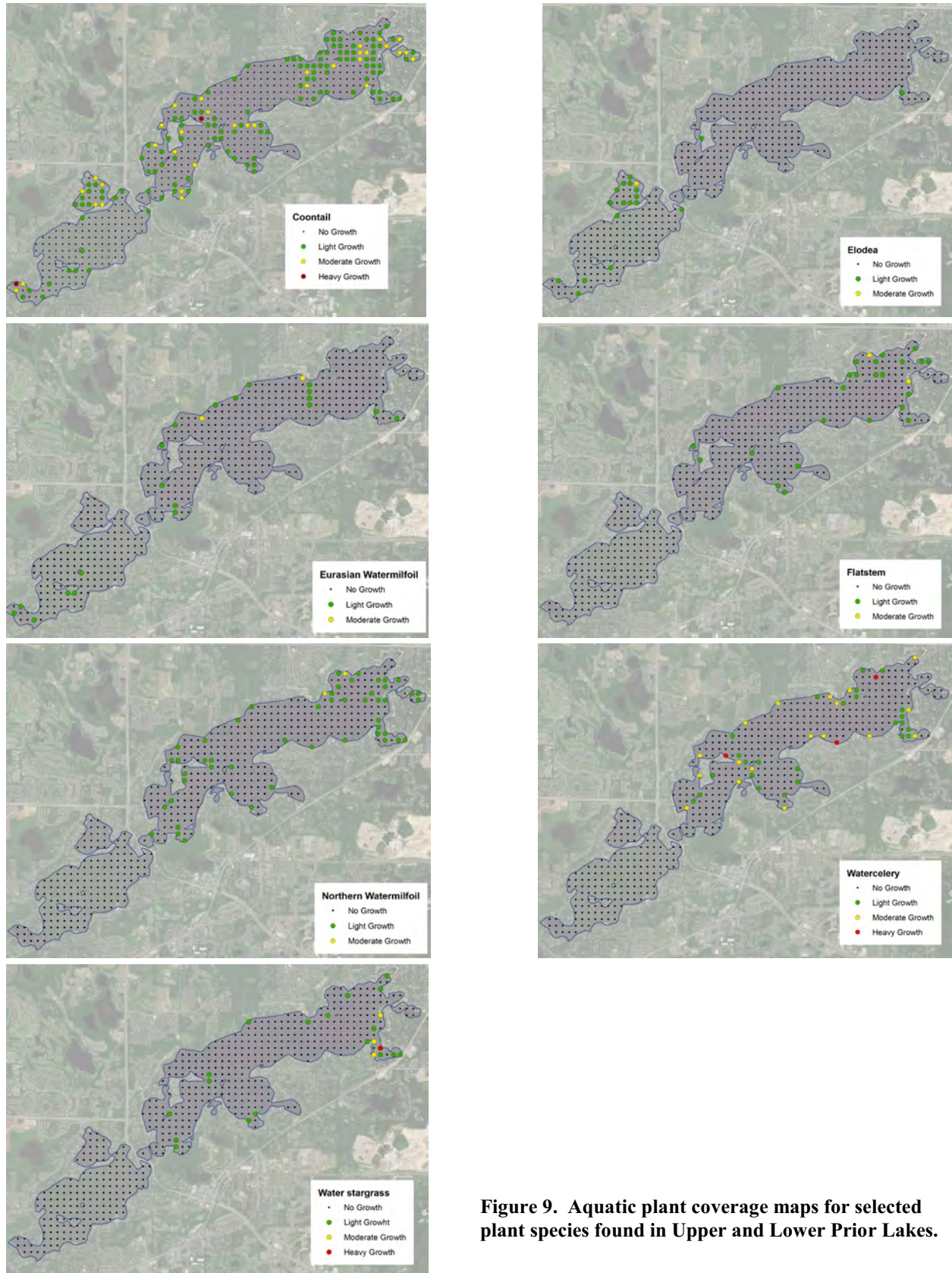


Figure 9. Aquatic plant coverage maps for selected plant species found in Upper and Lower Prior Lakes.

Coontail was the dominant plant in both Upper and Lower Prior (Table 2). A total of 6 species were found in Upper Prior Lake. A total of 18 species were observed in Lower Prior Lake.

Table 2. Upper and Lower Prior aquatic plant occurrence and density for the August 17 and 21, 2018. Density ratings are 1-3 with 1 being low and 3 being most dense.

Upper Prior August 17, 2018	All Stations (n=163)			Lower Prior August 21, 2018	All Stations (n=221)		
	Occur	% Occur	Average Density		Occur	% Occur	Average Density
Duckweed (<i>Lemna sp</i>)				Duckweed (<i>Lemna sp</i>)	1	1	1.0
Coontail (<i>Ceratophyllum demersum</i>)	29	18	1.3	Coontail (<i>Ceratophyllum demersum</i>)	129	58	1.2
Elodea (<i>Elodea canadensis</i>)	17	10	1.1	Elodea (<i>Elodea canadensis</i>)	2	1	1.0
Star duckweed (<i>Lemna trisulca</i>)				Star duckweed (<i>Lemna trisulca</i>)	4	2	1.0
Northern watermilfoil (<i>Myriophyllum sibiricum</i>)				Northern watermilfoil (<i>Myriophyllum sibiricum</i>)	52	24	1.0
hybrid watermilfoil (<i>M. sp</i>)				hybrid watermilfoil (<i>M. sp</i>)	2	1	1.0
Eurasian watermilfoil (<i>M. spicatum</i>)	17	10	1.1	Eurasian watermilfoil (<i>M. spicatum</i>)	16	7	1.1
Naiads (<i>Najas flexilis</i>)	6	4	1.0	Naiads (<i>Najas flexilis</i>)	4	2	1.3
Nitella (<i>Nitella sp</i>)				Nitella (<i>Nitella sp</i>)	2	1	1.0
Cabbage (<i>Potamogeton amplifolius</i>)				Cabbage (<i>Potamogeton amplifolius</i>)	2	1	1.0
Curlyleaf pondweed (<i>P. crispus</i>)				Curlyleaf pondweed (<i>P. crispus</i>)	10	5	1.0
Illinois Pondweed (<i>P. illinoensis</i>)				Illinois Pondweed (<i>P. illinoensis</i>)	11	5	1.3
Whitestem pondweed (<i>P. praelongus</i>)				Whitestem pondweed (<i>P. praelongus</i>)	4	2	1.0
Claspingleaf (<i>P. Richardsonii</i>)				Claspingleaf (<i>P. Richardsonii</i>)	10	5	1.0
Stringy pondweed (<i>P. sp</i>)	2	1	1.0	Stringy pondweed (<i>P. sp</i>)	1	1	1.0
Flatstem pondweed (<i>P. zosteriformis</i>)				Flatstem pondweed (<i>P. zosteriformis</i>)	26	12	1.1
Sago (<i>Stuckenia pectinata</i>)	1	1	1.0	Sago (<i>Stuckenia pectinata</i>)	1	1	1.0
Water celery (<i>Vallisneria americana</i>)				Water celery (<i>Vallisneria americana</i>)	46	21	1.5
Water stargrass (<i>Zosterella dubia</i>)				Water stargrass (<i>Zosterella dubia</i>)	22	10	1.2

Table 3. Prior Lake (combination of Upper and Lower Prior Lakes) aquatic plant occurrence and density for the 2018 point intercept survey. Density ratings are 1-3 with 1 being low and 3 being most dense.

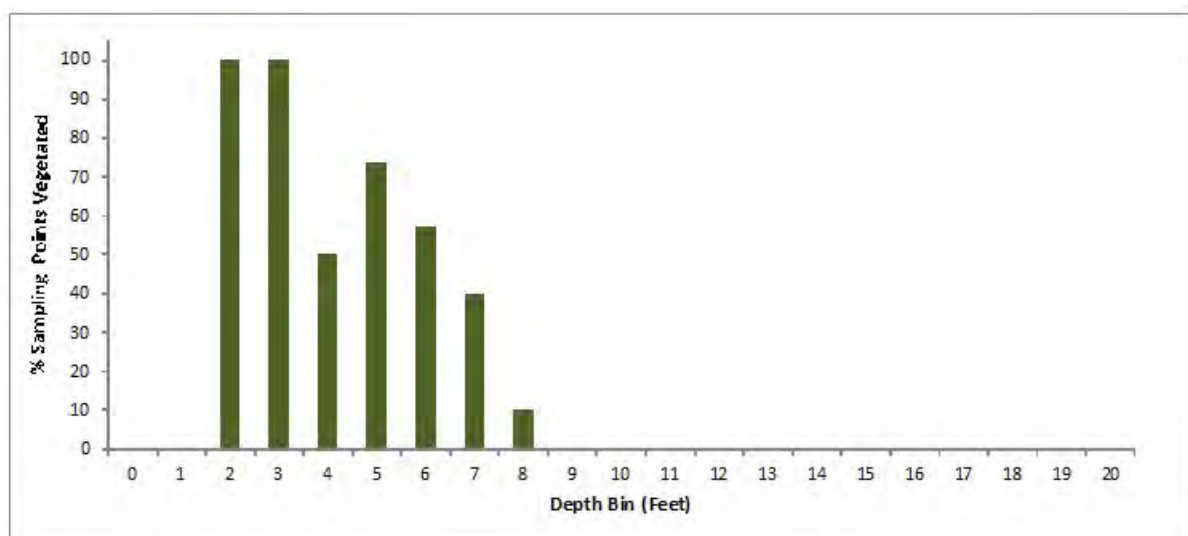
Upper and Lower Prior	All Stations (n=384)		
	Occurrence	% Occurrence	Average Density
Duckweed (<i>Lemna sp</i>)	1	1	1.0
Coontail (<i>Ceratophyllum demersum</i>)	158	41	1.2
Elodea (<i>Elodea canadensis</i>)	19	5	1.1
Star duckweed (<i>Lemna trisulca</i>)	4	1	1.0
Northern watermilfoil (<i>Myriophyllum sibiricum</i>)	52	14	1.0
hybrid watermilfoil (<i>M. sp</i>)	2	1	1.0
Eurasian watermilfoil (<i>M. spicatum</i>)	22	6	1.1
Naiads (<i>Najas flexilis</i>)	5	1	1.2
Nitella (<i>Nitella sp</i>)	2	1	1.0
Cabbage (<i>Potamogeton amplifolius</i>)	2	1	1.0
Curlyleaf pondweed (<i>P. crispus</i>)	10	3	1.0
Illinois Pondweed (<i>P. illinoensis</i>)	11	3	1.3
Whitestem pondweed (<i>P. praelongus</i>)	4	1	1.0
Claspingleaf (<i>P. Richardsonii</i>)	10	3	1.0
Stringy pondweed (<i>P. sp</i>)	3	1	1.0
Flatstem pondweed (<i>P. zosteriformis</i>)	26	7	1.1
Sago (<i>Stuckenia pectinata</i>)	2	1	1.0
Water celery (<i>Vallisneria americana</i>)	46	12	1.5
Water stargrass (<i>Zosterella dubia</i>)	22	6	1.2

Point Intercept Statistics for Upper Prior Lake

Upper Prior

Total # Points Sampled	163
Depth Range of Rooted Veg	2-8 feet
Maximum Depth of Growth (95%) in feet	7.0
# Points in Max Depth Range	46
# Points in Littoral Zone (0-15 feet)	136
% Points w/ Native Submersed Taxa	21
Mean Native Submersed Taxa/Point	0.4
Mean Density of Native Submersed Taxa	1.1
# Submersed Native Taxa	5

Depth Bin (Feet)	# points sampled	% Sampling points with submersed species observed
0	0	0
1	0	0
2	1	100
3	1	100
4	6	50
5	19	74
6	14	57
7	5	40
8	10	10
9	13	0
10	12	0
11	13	0
12	12	0
13	9	0
14	13	0
15	8	0
16	8	0
17	8	0
18	3	0
19	1	0
20	5	0

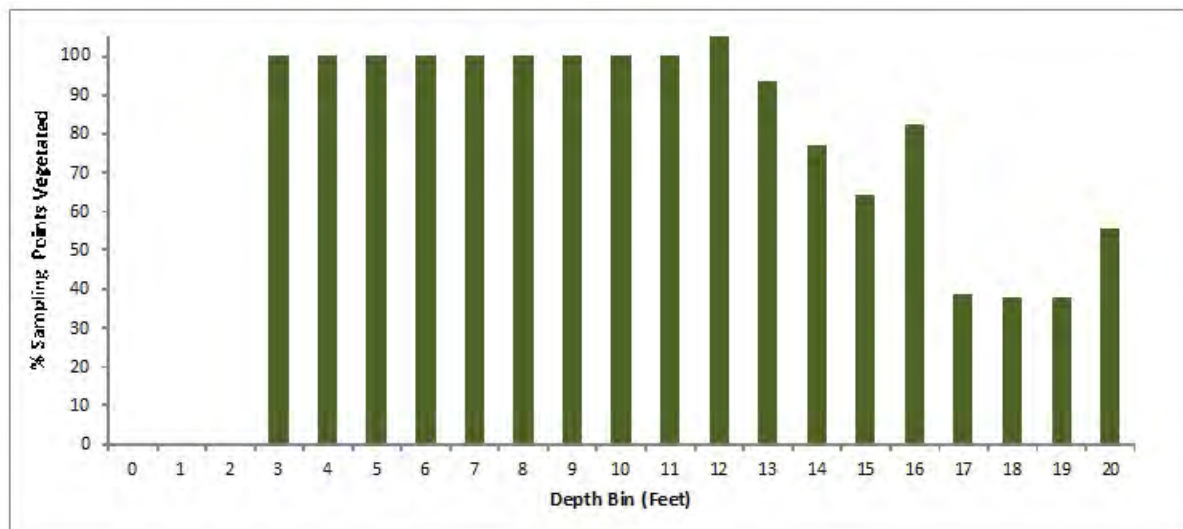


Point Intercept Statistics for Lower Prior Lake

Lower Prior

Total # Points Sampled	221
Depth Range of Rooted Veg	3-22 feet
Maximum Depth of Growth (95%) in feet	20.0
# Points in Max Depth Range	181
# Points in Littoral Zone (0-15 feet)	126
% Points w/ Native Submersed Taxa	92
Mean Native Submersed Taxa/Point	2.2
Mean Density of Native Submersed Taxa	1.1
# Submersed Native Taxa	15

Depth Bin (Feet)	# points sampled	% Sampling points with submersed species observed
0	0	0
1	1	0
2	0	0
3	2	100
4	3	100
5	7	100
6	2	100
7	11	100
8	10	100
9	11	100
10	13	100
11	18	100
12	5	300
13	16	94
14	13	77
15	14	64
16	17	82
17	13	38
18	8	38
19	8	38
20	9	56



Comparison of 2015 and 2018 Point Intercept Results

Table 4. Lower Prior aquatic plant occurrence and density for the 2015 (Aug 27) and 2018 (Aug 21) surveys.

Lower Prior	Occurrence	
	2015	2018
Duckweed (<i>Lemna sp</i>)		1
Coontail (<i>Ceratophyllum demersum</i>)	62	129
Chara (<i>Chara sp</i>)	9	
Elodea (<i>Elodea canadensis</i>)	5	2
Star duckweed (<i>Lemna trisulca</i>)		4
Northern watermilfoil (<i>Myriophyllum sibiricum</i>)	10	52
hybrid watermilfoil (<i>M. sp</i>)		2
Eurasian watermilfoil (<i>M. spicatum</i>)	38	16
Naiads (<i>Najas flexilis</i>)		4
Nitella (<i>Nitella sp</i>)		2
Cabbage (<i>Potamogeton amplifolius</i>)	4	2
Curlyleaf pondweed (<i>P. crispus</i>)		10
Illinois Pondweed (<i>P. illinoensis</i>)	6	11
Whitestem pondweed (<i>P. praelongus</i>)	7	4
Claspingleaf (<i>P. Richardsonii</i>)	6	10
Stringy pondweed (<i>P. sp</i>)		1
Flatstem pondweed (<i>P. zosteriformis</i>)	10	26
Sago (<i>Stuckenia pectinata</i>)		1
Water celery (<i>Vallisneria americana</i>)	37	46
Water stargrass (<i>Zosterella dubia</i>)	3	22

Aquatic plant occurrence increased from 2015 to 2018 in both Upper and Lower Prior lakes (Tables 6). Coontail was the dominant plant in both lakes on both survey dates. The number of plant species increased in Lower Prior but stayed about the same for Upper Prior.

Table 5. Upper Prior aquatic plant occurrence and density for the 2015 (Aug 27) and 2018 (Aug 17) surveys.

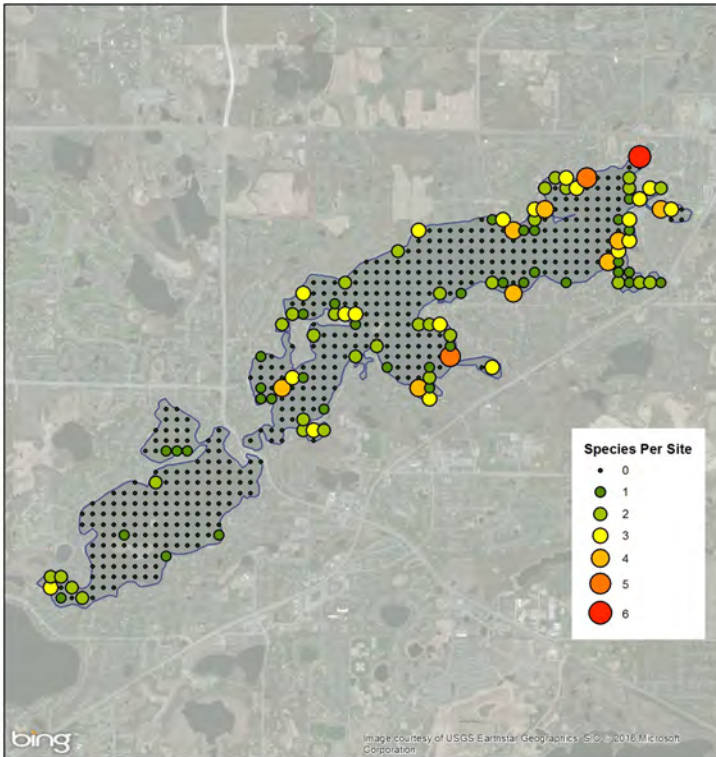
Upper Prior	Occurrence	
	2015	2018
Coontail (<i>Ceratophyllum demersum</i>)	5	29
Elodea (<i>Elodea canadensis</i>)	2	17
Eurasian watermilfoil (<i>Myriophyllum spicatum</i>)	11	17
Stringy pondweed (<i>Potamogeton sp</i>)		2
Sago pondweed (<i>Stuckenia pectinata</i>)	2	1

Table 6. Prior aquatic plant occurrence and density for the 2015 and 2018 surveys.

Prior	Occurrence	
	2015	2018
White lilies (<i>Nymphaea odorata</i>)	1	
Duckweed (<i>Lemna sp</i>)		1
Coontail (<i>Ceratophyllum demersum</i>)	67	158
Chara (<i>Chara sp</i>)	9	
Elodea (<i>Elodea canadensis</i>)	7	19
Star duckweed (<i>Lemna trisulca</i>)		4
Northern watermilfoil (<i>Myriophyllum sibiricum</i>)	10	52
hybrid watermilfoil (<i>M. sp</i>)		2
Eurasian watermilfoil (<i>M. spicatum</i>)	49	22
Naiads (<i>Najas flexilis</i>)		5
Nitella (<i>Nitella sp</i>)		2
Cabbage (<i>Potamogeton amplifolius</i>)	4	2
Curlyleaf pondweed (<i>P. crispus</i>)		10
Illinois Pondweed (<i>P. illinoensis</i>)	6	11
Whitestem pondweed (<i>P. praelongus</i>)	7	4
Claspingleaf (<i>P. Richardsonii</i>)	6	10
Stringy pondweed (<i>P. sp</i>)		3
Flatstem pondweed (<i>P. zosteriformis</i>)	10	26
Sago (<i>Stuckenia pectinata</i>)	2	2
Water celery (<i>Vallisneria americana</i>)	27	46
Water stargrass (<i>Zosterella dubia</i>)	3	22

Aquatic Plant Distribution and Density for 2015 and 2018 Point Intercept Surveys

Prior Lake Species Per Site
August 27, 2015



Prior Lake Species Richness
August 17 & 21, 2018

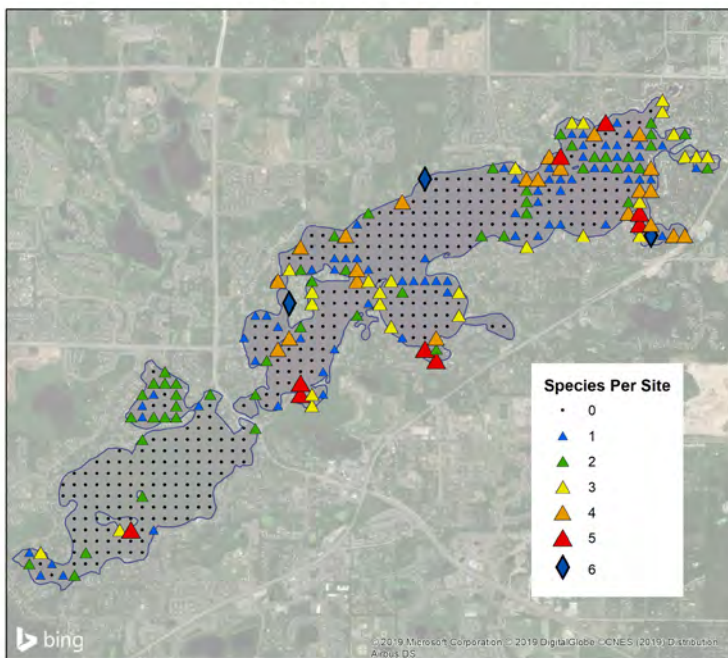


Figure 10. [top] 2015 species richness map.
[bottom] 2018 species richness map.

APPENDIX

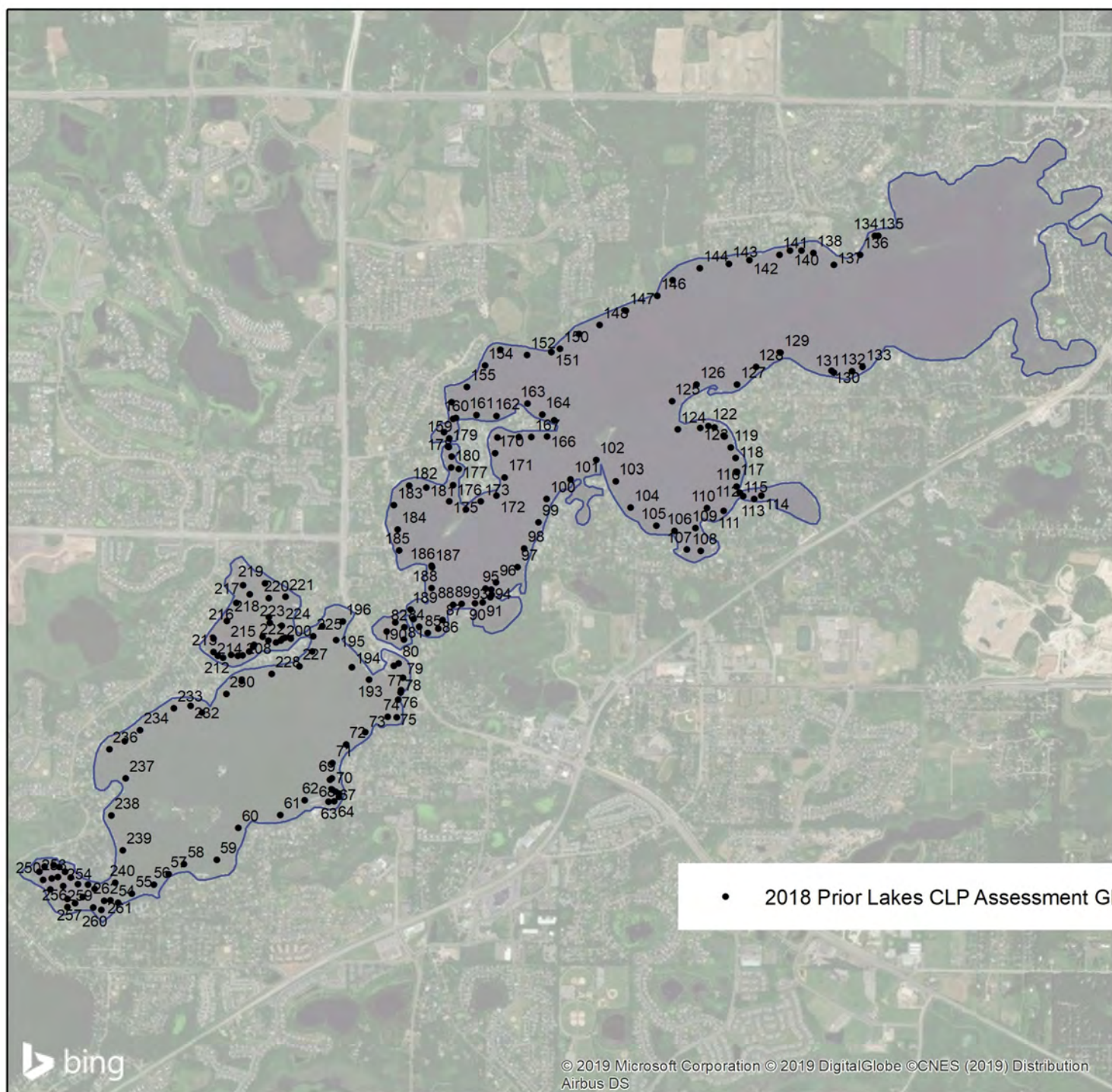
June 18, 2018 Meandering Survey: Aquatic plant densities are based on a scale from 1 to 3 with 3 being the densest.

Site	Depth (ft)	Coon-tail	CLP	Elodea	EWM	Natives	FA	No plants
54	7		1			2		
55	9		1			1		
56	12							1
57	11							1
58	12							1
59	12					1		1
60	12							1
61	13							1
62	14							1
63	9	1	1			1		
64	8		2					
65	7		3					
66	9		1					
67	10		1					
68	11							1
69	11							1
70	12							1
71	14							1
72	17							1
73	16							1
74	12							1
75	12							1
76	9	1	3		1			
77	9	1	2					
78	9	1						
79	13							1
80	13							1
81	11							1
82	12							1
83	14							1
84	15							1
85	11	2						
86	15							1
87	15							1
88	14							1
89	12	1	1		1			
90	8	1	2		1			
91	7	3			1			
92	4	1	2		2			
93	4	1	1		1			
94	12							1
95	13				1			
96	17							1
97	14		1					
98	17							1
99	21							1
100	18							1
101	11		1					
102	15							1
103	20							1
104	17							1
105	25							1
106	14					1		
107	16							1
108	18							1
109	17							1
110	16							1
111	12		1					
112	8							1
113	17							1
114	16							1
115	11					1		
116	9					2		
117	14					1		
118	15							1
119	14				1			
120	12	1			1	1		
121	10		3					
122	10		1			1		
123	14							1
124	14					1		
125	20							1
126	18							1
127	16							1
128	20							1
129	20							1

Site	Depth (ft)	Coon-tail	CLP	Elodea	EWM	Natives	FA	No plants
130	13					1		
131	12				1			
132	13							1
133	13				1			
134	14							1
135	13				1			
136	8				2	1		
137	10					1		
138	16							1
139	15							1
140	14					1		
141	18							1
142	20							1
143	20							1
144	24							1
145	20							1
146	9					1		
147	17							1
148	25							1
149	23							1
150	18							1
151	6				1	1		
152	18							1
153	19							1
154	17							1
155	16							1
156	12		1					
157	7		2					
158	10					1		
159	9		2			1		
160	9		2					
161	15							1
162	16							1
163	10		1			1		
164	13		1					
165	9		2					
166	15							1
167	17							1
168	15							1
169	12		1					
170	9							1
171	15							1
172	17		1					
173	14					1		
174	5		1			1		
175	12		1					
176	12		1					
177	9	1	2			1		
178	9		1			2		
179	9					1		
180	8		1		1	1		
181	15							1
182	13		1			1		
183	13		1					
184	14		1					
185	13	1				1		
186	12	1				1		
187	13							1
188	17							1
189	14							1
190	12							1
191	15							1
192	13							1
193	10							1
194	16							1
195	12							1
196	10					1		
197	101					1		
198	6	1	3	1				
199	6	2	2	2				
200	6	2	2	2				
201	6	2	2	2				
202	6	1	2	3				
203	7	1	2	2				
204	7	1	1					
205	7	2	1	1				

Site	Depth (ft)	Coon-tail	CLP	Elodea	EWM	Natives	FA	No plants
206	7	2	2	1				
207	7	3	1	1				
208	7	3	1					
209	7	3	1					
210	7	3	1					
211	7	3	1					
212	6	1	1					
213	6	2		1				
214	6	2		1				
215	7		1					
216	7			1				
217	7	1						
218	7	2		1				
219	7			2				
220	7	1		3				
221	6	1		1				
222	4	2	2	2				
223	6	1		1				
224	7		1	2				
225	4			2				
226	10							1
227	17							1
228	19							1
229	18							1
230	16							1
231	11							1
232	13							1
233	13							1
234	13							1
235	12							1
236	13							1
237	12							1
238	12							1
239	13							1
240	9	1						
241	8		3					
242	7	3	2				1	
243	8	1	1				2	
244	7	2	3				1	
245	7	2	1	1			1	
246	6	2	2	1			2	
247	6	2	2				2	
248	6	3	1					
249	6	3	1					
250	6	2						
251	6	2	1					
252	7	2	1					
253	8	2	1	2				
254	7	2	2	1				
255	8	1	1					
256	6	2						
257	7	2	2					
258	7	1	1					
259	5	3					2	
260	5	3						
261	7	2						
262	6	1	2					
Average		1.7	1.5	1.5	1.1	1.1	1.6	
Occur (209)		59	71	24	15	31	7	95

Prior Lake Assessment Site Map June 18, 2018



August 17 and 21, 2018: Point intercept aquatic plant densities based on rake sampling. Densities are based on a scale from 1 to 3 with 3 being the densest. UP = Upper Prior Lake and LP = Lower Prior Lake.

Site	Lake	Depth (ft)	Duck-weed	Cab-bage	Clasp-ingleaf	Coon-tail	CLP	Elodea	EWM	Flat-stem	Hybrid WM	Illinois	Naiads	Nitella	NWM	Sago	Star duck-weed	Stringy	Water celery	Water star-grass	White-stem	FA	No plants
1	UP	7				1																	
2	UP	6																					1
3	UP	5							1														
4	UP	8				1		1															
5	UP	5				2			1														
6	UP	7																					1
7	UP	5				1																	
8	UP	8																					1
9	UP	11																					1
10	UP	9																					1
11	UP	4				3																2	
12	UP	4				2		1	1														
13	UP	8																					1
14	UP	6				1		1															
15	UP	20																					1
16	UP	11																					1
17	UP	13																					1
18	UP	8																					1
19	UP	5																					1
20	UP	10																					1
21	UP	8																					1
22	UP	5																					1
23	UP	10																					1
24	UP	10																					1
25	UP	9																					1
26	UP	4																					1
27	UP	6																					1
28	UP	11																					1
29	UP	8																					1
30	UP	20																					1
31	UP	2				1			1							1							
32	UP	4				1		1	1				1					1					
33	UP	12																					1
34	UP	6				1																	
35	UP	6																					1
36	UP	6																					1
37	UP	13																					1
38	UP	14																					1
39	UP	17																					1
40	UP	10																					1
41	UP	11																					1
42	UP	16																					1
43	UP	10																					1
44	UP	7																					1
45	UP	16																					1
46	UP	11																					1
47	UP	10																					1
48	UP	11																					1
49	UP	6																					1
50	UP	11																					1
51	UP	12																					1
52	UP	9																					1
53	UP	9																					1
54	UP	8																					1
55	UP	9																					1
56	UP	6																					1
57	UP	9																					1
58	UP	12																					1
59	UP	15																					1
60	UP	15																					1
61	UP	14																					1
62	UP	10																					1
63	UP	14																					1
64	UP	10																					1
65	UP	6				1			1														
66	UP	9																					1
67	UP	10																					1
68	UP	11																					1
69	UP	11																					1
70	UP	12																					1
71	UP	14																					1
72	UP	17																					1
73	UP	16																					1
74	UP	12																					1
75	UP	12																					1
76	UP	9																					1
77	UP	9																					1
78	UP	9																					1
79	UP	13																					1

August 17 and 21, 2018: Point intercept aquatic plant densities based on rake sampling. Densities are based on a scale from 1 to 3 with 3 being the densest. UP = Upper Prior Lake and LP = Lower Prior Lake.

Site	Lake	Depth (ft)	Duck-weed	Cab-bage	Clasp-ingleaf	Coon-tail	CLP	Elodea	EWM	Flat-stem	Hybrid WM	Illinois	Naiads	Nitella	NWM	Sago	Star duck-weed	Stringy	Water celery	Water star-grass	White-stem	FA	No plants
80	UP	13																					1
81	UP	11																					1
82	UP	12																					1
83	UP	14																					1
84	UP	15																					1
85	UP	11																					1
86	UP	15																					1
87	UP	15																					1
88	UP	14																					1
89	UP	12																					1
90	UP	8																					1
91	UP	7																					1
92	UP	4																					1
93	UP	4																					1
94	UP	12																					1
95	UP	13																					1
96	UP	17																					1
97	UP	14																					1
98	UP	17																					1
99	UP	21																					1
100	UP	18																					1
101	UP	11																					1
102	UP	15																					1
103	UP	20																					1
104	UP	17																					1
105	UP	25																					1
106	UP	14																					1
107	UP	16																					1
108	UP	18																					1
109	UP	17																					1
110	UP	16																					1
111	UP	12																					1
112	UP	8																					1
113	UP	17																					1
114	UP	16																					1
115	UP	11																					1
116	UP	9																					1
117	UP	14																					1
118	UP	15																					1
119	UP	14																					1
120	UP	12																					1
121	UP	10																					1
122	UP	10																					1
123	UP	14																					1
124	UP	14																					1
125	UP	6				1		1															1
126	UP	18																					1
127	UP	16																					1
128	UP	20																					1
129	UP	20																					1
130	UP	13																					1
131	UP	12																					1
132	UP	13																					1
133	UP	13																					1
134	UP	14																					1
135	UP	13																					1
136	UP	8																					1
137	UP	10																					1
138	UP	16																					1
139	UP	15																					1
140	UP	3				1		1															1
141	UP	5				1		1															1
142	UP	5				1																	1
143	UP	5				1		1															1
144	UP	5				2		1															1
145	UP	5				2		1															1
146	UP	9																					1
147	UP	17																					1
148	UP	5				1																	1
149	UP	5																					1
150	UP	5																					1
151	UP	6				1		1															1
152	UP	7				1																	1
153	UP	19																					1
154	LP	13																					1
155	LP	14																					1
156	LP	11				1																	1
157	LP	3	1			2									1		1						1
158	UP	5				2		1															1

August 17 and 21, 2018: Point intercept aquatic plant densities based on rake sampling. Densities are based on a scale from 1 to 3 with 3 being the densest. UP = Upper Prior Lake and LP = Lower Prior Lake.

Site	Lake	Depth (ft)	Duck-weed	Cab-bage	Clasp-ingleaf	Coon-tail	CLP	Elodea	EWM	Flat-stem	Hybrid WM	Illinois	Naiads	Nitella	NWM	Sago	Star duck-weed	Stringy	Water celery	Water star-grass	White-stem	FA	No plants
159	UP	6				1																	
160	UP	9																					1
161	UP	5				1		1															
162	UP	5				1												1					
163	LP	5				1									1								
164	LP	15																					1
165	LP	16																					1
166	LP	5				1			1						1		1			1			
167	LP	7				2					1						1						
168	LP	7				1																	
169	UP	5				1		1															
170	UP	6				1		1															
171	UP	5				2		2															
172	LP	18																					1
173	LP	17																					1
174	LP	10				1			1						1		1			1			
175	UP	5																					1
176	UP	6				2		1															
177	LP	18																					1
179	LP	19																					1
180	LP	18																					1
181	LP	9				1																	
182	LP	11				1																	
183	LP	8				1													2				
184	LP	19																					
188	LP	17																					1
189	LP	8		1		1				1	1								2				
190	LP	15																					1
191	LP	15																					1
192	LP	9				1			1						1				1				
193	LP	16																					1
197	LP	8				2																	
198	LP	7			1	1				1					1					1			
199	LP	20				1								1									
200	LP	11				1																	
201	LP	15																					1
202	LP	17																					1
203	LP	14																					1
204	LP	4										1			1				1	1			
205	LP	11				1																	
208	LP	21																					1
209	LP	14				1																	
212	LP	11				1						1							1	1			
213	LP	15																					1
214	LP	16																					1
215	LP	13				1																	
216	LP	11				2	1																
217	LP	24																					1
220	LP	13				1									1				1				
224	LP	19																					1
225	LP	20																					1
226	LP	21																					1
227	LP	34																					1
228	LP	12				1																	
229	LP	12				2																	
230	LP	17																					1
232	LP	17																					1
233	LP	8				1													2				
234	LP	24																					1
240	LP	11								1					1				1				
241	LP	9			1	1	1	1		1									2				
242	LP	12				1									1				1				
243	LP	20																					1
246	LP	14																					1
247	LP	14				1																	
248	LP	9				1	1												1				
255	LP	17																					1
256	LP	8				2	1								1								
257	LP	18																					1
258	LP	30																					1
259	LP	24																					1
260	LP	18																					1
261	LP	17																					1
262	LP	12				1				1									2				
263	LP	23																					1
264	LP	13				1	1																
268	LP	16				1																	
269	LP	11				1						1							1				
270	LP	8		1		2			1	1													

August 17 and 21, 2018: Point intercept aquatic plant densities based on rake sampling. Densities are based on a scale from 1 to 3 with 3 being the densest. UP = Upper Prior Lake and LP = Lower Prior Lake.

Site	Lake	Depth (ft)	Duck-weed	Cab-bage	Clasp-ingleaf	Coon-tail	CLP	Elodea	EWM	Flat-stem	Hybrid WM	Illinois	Naiads	Nitella	NWM	Sago	Star duck-weed	Stringy	Water celery	Water star-grass	White-stem	FA	No plants
271	LP	10				1	1																
272	LP	7				1									1				2	1			
273	LP	9				1	1												1				
274	LP	land																					
275	LP	9					1								1				1				
276	LP	11				2																	
277	LP	16				1																	
278	LP	14				2																	
279	LP	15				2																	
280	LP	13				1																	
281	LP	11			1										1				2				
282	LP	15				1									1								
283	LP	15				1																	
284	LP	9																	3				
285	LP	11				3									1								
286	LP	3										1			1				1	1			
287	LP	14				1																	1
288	LP	22																					1
295	LP	17																					1
296	LP	16				1																	
297	LP	17				1																	
298	LP	15				2																	
304	LP	20				1																	
305	LP	11				2			1						1			1					
317	LP	26																					1
318	LP	19																					1
319	LP	20																					1
321	LP	11										1			1				3				
322	LP	40																					1
323	LP	27																					1
324	LP	21				1								1									
325	LP	11				2			2						1				1				
337	LP	13													1				2				
338	LP	8								1									2				
339	LP	16				1																	
341	LP	14				1																	
342	LP	10								1					1				2				
343	LP	5			1														1	2			
344	LP	7				1				1					1				1	1	1		
345	LP	7																	2				
346	LP	7				1			1						1					1			
347	LP	6				1							2		1					1			
348	LP	17				1																	
360	LP	26																					1
365	LP	16				1																	
366	LP	17				1																	
367	LP	25																					1
370	LP	22				1																	
371	LP	10				1	1	1	1						1								
372	LP	7				1									1				1	3			
373	LP	11							1										2				
374	LP	24																					1
375	LP	27																					1
386	LP	21				1																	
387	LP	13				2			1														
392	LP	25																					1
395	LP	22																					1
396	LP	5				2						2							1	1			
397	LP	10			1					1					1				1	2			
398	LP	11				1	1		1						1								
399	LP	30																					1
408	LP	21																					1
409	LP	10				1			1														
410	LP	20				1																	
418	LP	13				1						1											
419	LP	6										1			1				1				
420	LP	26																					1
428	LP	22																					1
429	LP	13				2			1														
430	LP	10				1																	
432	LP	19				1																	
438	LP	19																					1
439	LP	10				1						1							1	1			
440	LP	10				1				1									2		1		
441	LP	10				1			1	1					1				2	1			
442	LP	22																					1
443	LP	25																					1
444	LP	26																					1
445	LP	26																					1

August 17 and 21, 2018: Point intercept aquatic plant densities based on rake sampling. Densities are based on a scale from 1 to 3 with 3 being the densest. UP = Upper Prior Lake and LP = Lower Prior Lake.

Site	Lake	Depth (ft)	Duck-weed	Cab-bage	Clasp-ingleaf	Coon-tail	CLP	Elodea	EWM	Flat-stem	Hybrid WM	Illinois	Naiads	Nitella	NWM	Sago	Star duck-weed	Stringy	Water celery	Water star-grass	White-stem	FA	No plants
446	LP	26																					1
447	LP	24																					1
448	LP	23																					1
449	LP	19				1																	
450	LP	8				1			1										2	1			
451	LP	11				1				1					1				1				
452	LP	13				1																	
453	LP	16				1																	
454	LP	17				2																	
457	LP	25																					1
458	LP	20																					1
459	LP	20				1																	
460	LP	17				1																	
461	LP	15				1																	
462	LP	14				1													1				
463	LP	16				1																	
464	LP	9				1			2										2				
465	LP	14				1																	
466	LP	5										1			1				1	1			
467	LP	13				1									1								
468	LP	18				1																	
469	LP	18				1																	
470	LP	13				2									1								
471	LP	20				1																	
472	LP	16				1									1								
473	LP	9			1					2					1					2			
474	LP	9				1																	
475	LP	8				2									1								
476	LP	9				1				1					2				2				
477	LP	4				1				1		3			1				1				
478	LP	25																					1
479	LP	15				1																	
480	LP	15				1				1													
481	LP	14				1				1													
482	LP	10				2																	
483	LP	13				2									1								
484	LP	14				1																	
485	LP	5				2							1								1		
486	LP	4				2							1		1								
487	LP	7				1							1		1								
488	LP	16				1									1								
489	LP	19				1																	
490	LP	25																					1
491	LP	16				1																	
492	LP	16				2																	
494	LP	22				1																	
495	LP	12				1									1								
496	LP	10				2																	
497	LP	16				1				1													
498	LP	18				1																	
499	LP	14				1																	
500	LP	7								1					1				3	1			
501	LP	25																					1
503	LP	16				1																	
504	LP	10			1	1				1					1								
505	LP	13				2									1								
506	LP	13				1				1					1								
507	LP	16				2				1													
508	LP	11				1									1				1				
509	LP	5			1					2					2								
510	LP	8			1					1					1	1			1				
511	LP	15				1																	
512	LP	21																					1
513	LP	21																					1
514	LP	13				1														1			
515	LP	30																					1
516	LP	15				1				1											1		
517	LP	7			1														2	1			
Average			1.0	1.0	1.0	1.2	1.0	1.1	1.1	1.1	1.0	1.3	1.2	1.0	1.0	1.0	1.0	1.0	1.5	1.2	1.0		
Occurrence (384)			1	2	10	158	10	19	22	26	2	11	5	2	52	2	4	3	46	22	4		202
% occurrence			0	1	3	41	3	5	6	7	1	3	1	1	14	1	1	1	12	6	1		

