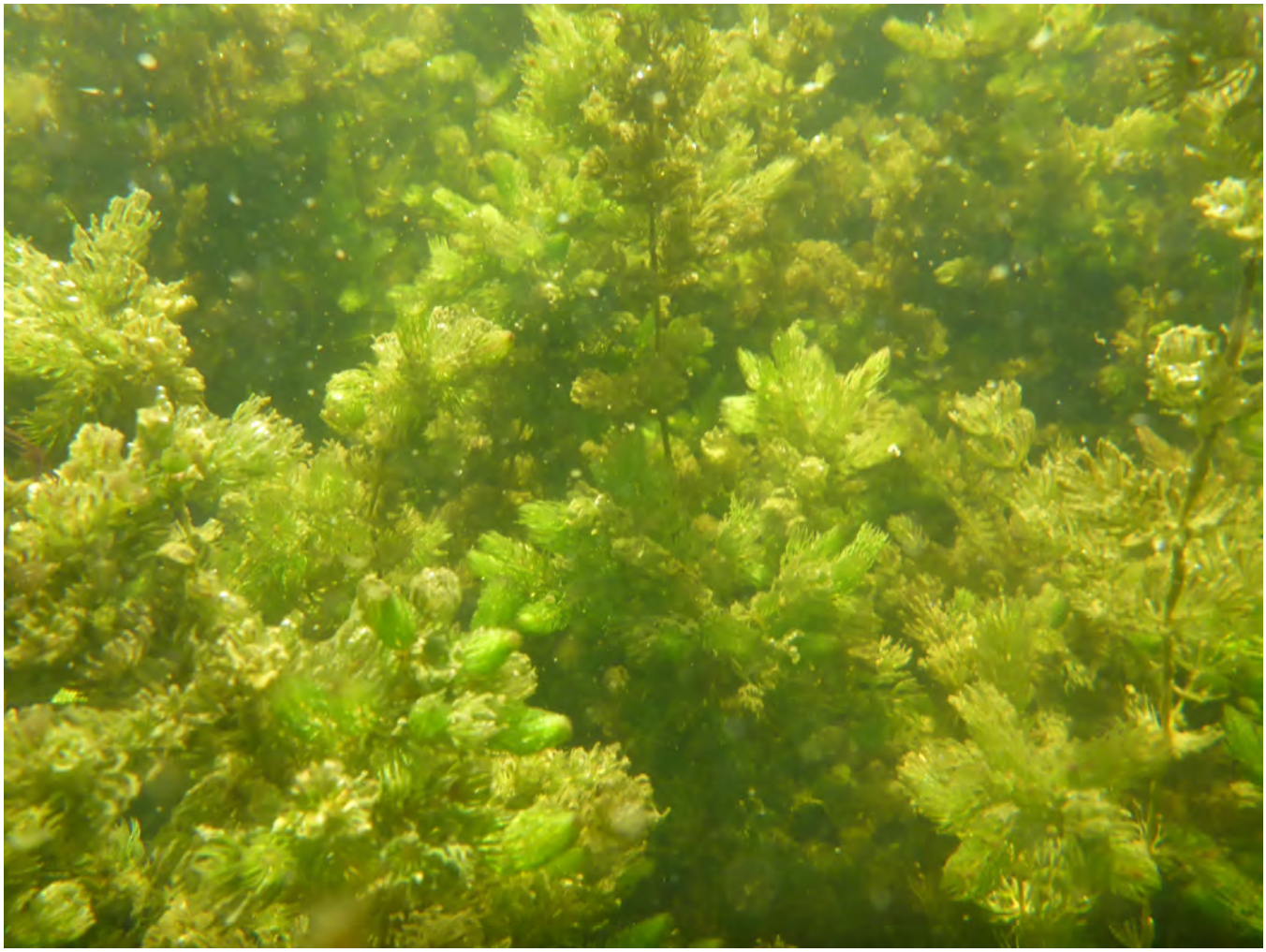


Coontail was abundant in the west basin of Pike Lake, Scott County, Minnesota, August 16, 2024

Aquatic Plant Point Intercept Survey for Pike Lake, Scott County, Minnesota

Point Intercept Plant Survey Conducted August 16, 2024

Prepared for:
Prior Lake/Spring Lake
Watershed District

Prepared by:
Steve McComas
Jo Stuckert
Connor McComas
Blue Water Science

December 19, 2024

Aquatic Plant Point Intercept Survey for Pike Lake, Scott County, Minnesota

Summary

Pike Lake (MnDNR ID #70-007600) is a 49 acre lake located in Scott County, Minnesota. An aquatic plant point intercept survey was conducted in Pike Lake by Blue Water Science in 2024. The aquatic plant survey was conducted on August 16, 2024 to check the status of the native plant community and to check the status of non-native Eurasian watermilfoil (EWM).

In 2024, Pike Lake plant survey results indicated a moderate diversity of submerged aquatic plants with 4 species of submerged plants found in the survey including 1 non-native species found in the point intercept survey. Coontail was the dominant aquatic plant in terms of occurrence. Curlyleaf pondweed was found at 1 sample site (Table 1). The west basin had abundant plants whereas the slightly deeper east basin had few plants (Figure 1). No zebra mussels attached to plants were observed.

EWM was previously found from 2015 through 2021 but was not observed in 2024 (Table 1).

Table 1. The percent occurrence of aquatic plants for Pike Lake in 2012, 2013, 2015, 2017, 2019, 2021, and 2024. 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 % Occur (74 sites)	Sept 7, 2013 % Occur (74 sites)	August 24, 2015 % Occur (74 sites)	August 29, 2017 % Occur (74 sites)	August 6, 2019 % Occur (74 sites)	July 7, 2021 % Occur (74 sites)	August 16, 2024 % Occur (74 sites)
Cattails (*Typha spp*)							1
Duckweed (*Lemna spp*)		3	1				8
Lotus (*Nelumbo lutea*)							1
Coontail (*Ceratophyllum demersum*)	9	23	20	42	40	59	34
Elodea (*Elodea canadensis*)	1		9			3	12
Northern watermilfoil (*Myriophyllum sibiricum*)	1	1					
Eurasian watermilfoil (*Myriophyllum spicatum*)	**0***		**27**	**65**	**16**	**43**	
Curlyleaf pondweed (*Potamogeton crispus*)						**41**	**1**
Stringy pondweed (*P. sp*)						26	
Flatstem pondweed (*P. zosteriformis*)						1	3
Sago pondweed (*Stuckenia pectinata*)	1	11			7	11	
Number of species	4	4	4	2	3	7	7

***Eurasian watermilfoil first observed in 2012 but not on an official sample site.**

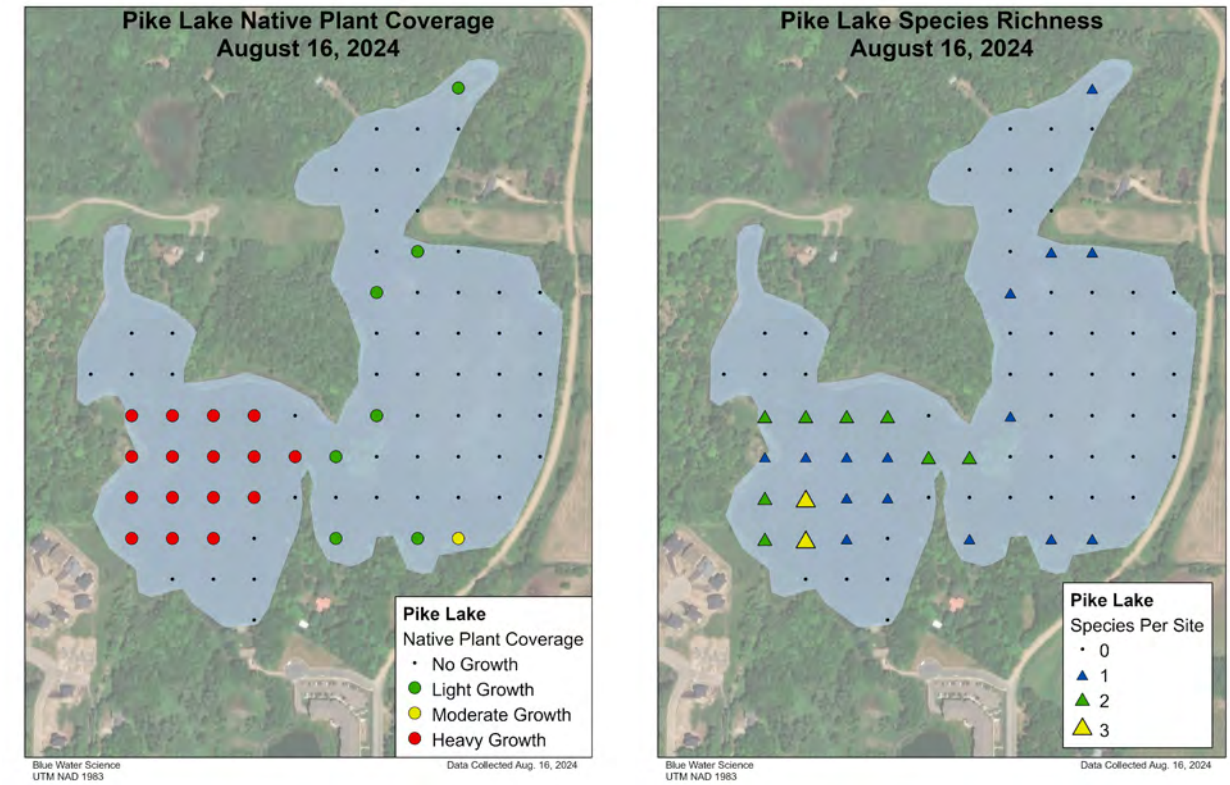


Figure 1. Pike Lake native plant coverage on August 16, 2024 (left) and species richness on August 16, 2024 (right).

Figure 2. [left] Aquatic plant growth was abundant in the west basin and sparse in the east basin (right).

Aquatic Plant Point Intercept Survey for Pike Lake, Scott County, Minnesota

Pike Lake, Scott County (ID: 70-007600)
Size: 49 acres (MnDNR)
Littoral area: 49 acres (MnDNR)
Maximum depth: 9 ft (MnDNR)

Introduction

An aquatic plant point intercept survey was conducted on 49 acre Pike Lake, located in Scott County, on August 16, 2024. The objective of the survey was to characterize and monitor the changing plant community.

Methods

The aquatic plant point intercept survey of Pike Lake was conducted by Blue Water Science. A total of 74 points were sampled and points were spaced 50 meters apart on a grid that covered the lake (Figure 3). 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 3 with 1 being sparse and 3 being heavy growth.

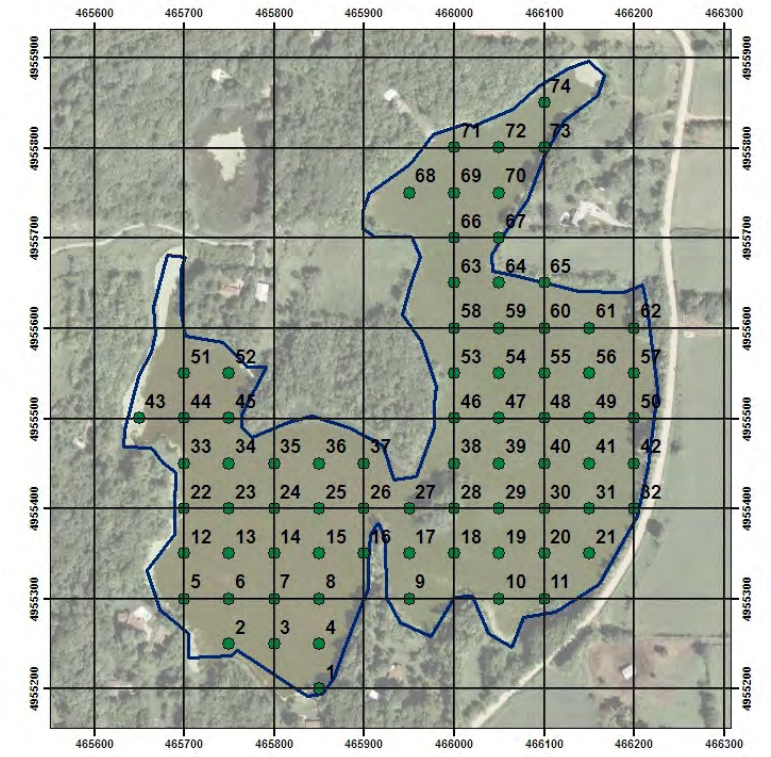


Figure 3. Sample grid map for the aquatic plant survey conducted on Pike Lake.

Results

Aquatic Plant Point Intercept Survey on August 16, 2024: Results of the summer aquatic plant survey conducted on August 16, 2024 found 3 native submerged plant species and 1 non-native plant species in Pike Lake (Table 2). Coverage of curlyleaf pondweed found in the August survey is shown in Figure 3. Coontail was the dominant aquatic plant and was found at 25 sites out to 5 feet of water depth (Table 3). Eurasian watermilfoil (EWM) was not observed in 2024. The lotus lily was observed for the first time in he west basin at one site (Figure 4).

Table 2. Pike Lake aquatic plant occurrence and density for the August 16, 2024 survey. Density ratings are 1-3 with 1 being low and 3 being most dense.

	Whole Lake August 16, 2024 (n=74)		West Basin August 16, 2024 (n=28)		East Basin August 16, 2024 (n=46)	
	Occur	Average Density	Occur	Average Density	Occur	Average Density
Cattails (*Typha spp*)	1	3.0			1	3.0
Duckweed (*Lemna spp*)	6	1.0	5	1.0	1	1.0
Lotus (*Nelumbo lutea*)	1	3.0	1	3.0		
Coontail (*Ceratophyllum demersum*)	25	2.3	17	2.9	8	1.1
Curlyleaf pondweed (*Potamogeton crispus*)	1	1.0			1	1.0
Elodea *(Elodea canadensis)*	9	1.6	8	1.6	1	1.0
Flatstem pondweed (*Potamogeton zosteriformis*)	2	2.0	2	2.0		

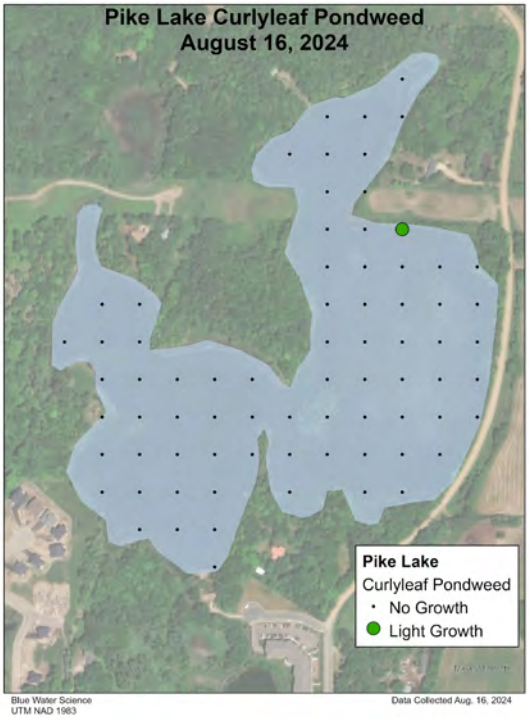
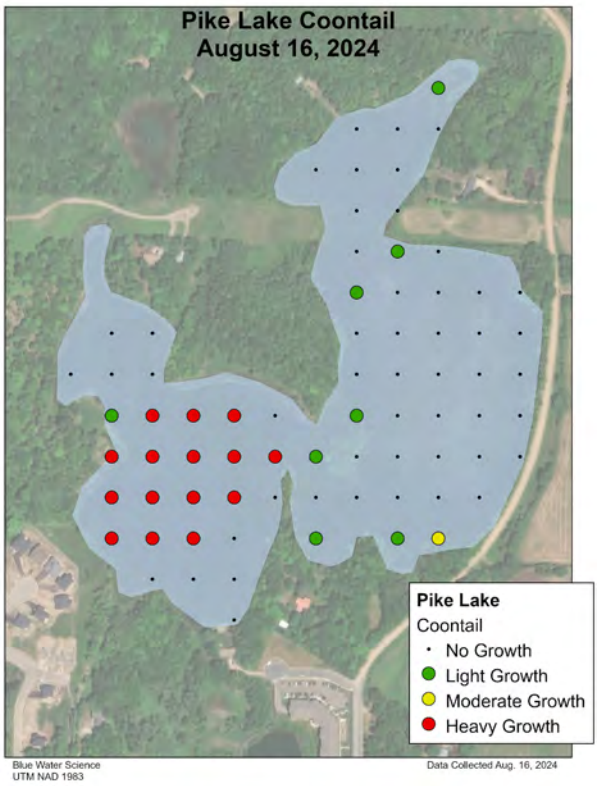
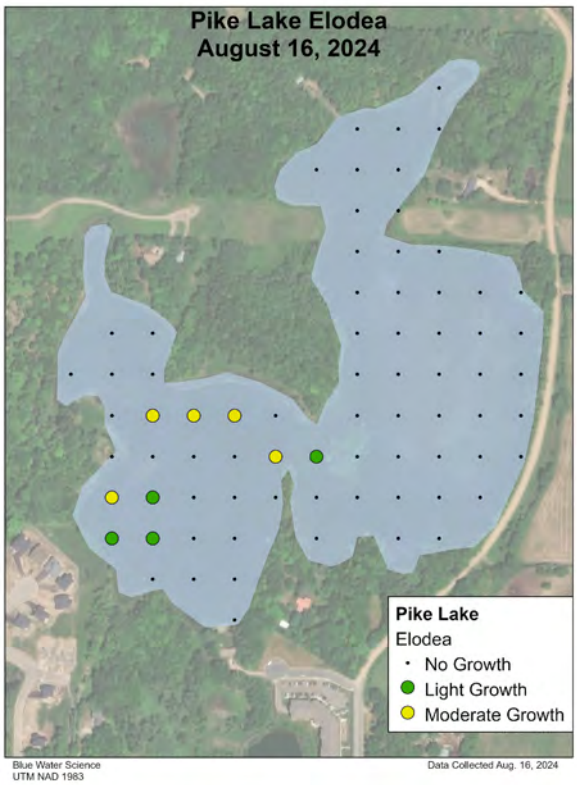


Figure 4. [left] Curlyleaf pondweed coverage was sparse on August 16, 2024.
[right] The American lotus was observed in the west basin.

Native Species Growth in Pike Lake on August 16, 2024





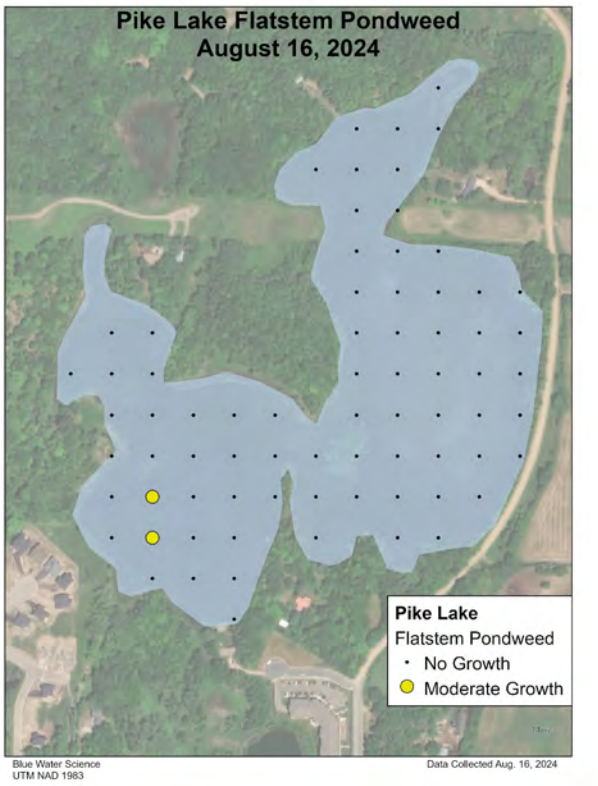


Table 3. Individual site data for Pike Lake on August 16, 2024.

Site	Depth (ft)	Cattails	Duckweed	Lotus	Coontail	Curlyleaf	Elodea	Flatstem	No plants
5	5				3		1		
6	5				3		1	2	
7	5				3				
9	4				1				
10	4		1		1				
11	4				2				
12	4				3		2		
13	5				3		1	2	
14	5				3				
15	5				3				
17	5								1
18	5								1
19	6								1
20	6								1
21	7								1
22	4		1		3				
23	4		1		3				
23	5				3				
24	4		1		3				
25	4		1		3				
26	4		1		3		2		
27	4				1		1		
30	7								1
31	7								1
32	5								1
33	3			3	1				
34	4				3		2		
35	4				3		2		
36	4				3		2		
38	3				1				
40	8								1
41	7								1
42	6								1
46	5								1
48	8								1
50	6								1
53	6								1
57	6								1
58	7				1				
60	7								1
61	6								1
62	4								1
63	7								1
64	5				1				
65	5					1			
66	8								1
67	2	3							
70	7								1
71	6								1
72	6								1
73	3								1
74	3				1				
Average		3.0	1.0	3.0	2.3	1.0	1.6	2.0	
Occur to 7 feet (49 sites)		1	6	1	25	1	9	2	25
% occurrence		2	12	2	51	2	18	4	

Comparison of Aquatic Plant Point Intercept Summer Surveys from 2012-2024

A total of 7 aquatic plant point intercept surveys for Pike Lake have been conducted in the summers of 2012 through 2024. Coontail has been a common native plant in the surveys, but EWM was the most abundant plant in 2015 and 2017. In the summer plant surveys, submerged aquatic plants are often not found deeper than 5-6 feet of water depth due to low light penetration and elevated algae growth. In 2024, plants were found growing to 5 feet of water depth with one occurrence at 7 feet.

Initially, EWM was first found only at one spot in the west basin in 2012 but results from additional surveys indicate EWM has expanded it's range. Since 2012 EWM occurrence has ranged from 16 to 65% of the sample sites. However, EWM was not observed in 2024.

In 2024, 4 submerged plant species were observed. Coontail growth in 2024 was heavy in some areas, especially in the more shallow western basin.

Table 4. The percent occurrence of aquatic plants for Pike Lake in 2012, 2013, 2015, 2017, 2019, 2021, and 2024. 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 % Occur (74 sites)	Sept 7, 2013 % Occur (74 sites)	August 24, 2015 % Occur (74 sites)	August 29, 2017 % Occur (74 sites)	August 6, 2019 % Occur (74 sites)	July 7, 2021 % Occur (74 sites)	August 16, 2024 % Occur (74 sites)
Cattails (*Typha spp*)							1
Duckweed (*Lemna spp*)		3	1				8
Lotus (*Nelumbo lutea*)							1
Coontail (*Ceratophyllum demersum*)	9	23	20	42	40	59	34
Elodea (*Elodea canadensis*)	1		9			3	12
Northern watermilfoil (*Myriophyllum sibiricum*)	1	1					
Eurasian watermilfoil (*Myriophyllum spicatum*)	**0***		**27**	**65**	**16**	**43**	
Curlyleaf pondweed (*Potamogeton crispus*)						**41**	**1**
Stringy pondweed (*P. sp*)						26	
Flatstem pondweed (*P. zosteriformis*)						1	3
Sago pondweed (*Stuckenia pectinata*)	1	11			7	11	
Number of species	4	4	4	2	3	7	7

***Eurasian watermilfoil first observed in 2012 but not on an official sample site.**

EWM Distribution and Density from 2012-2024

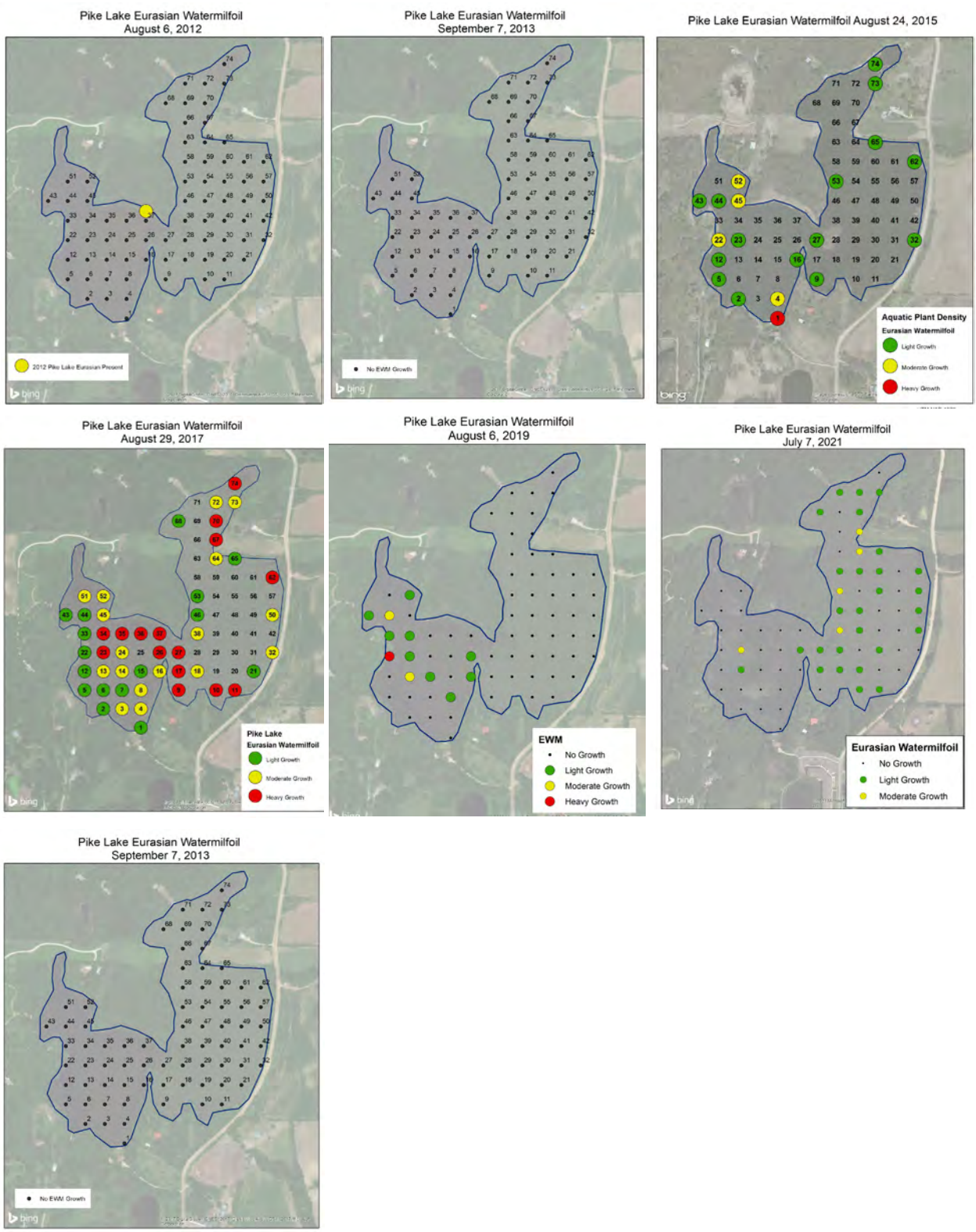
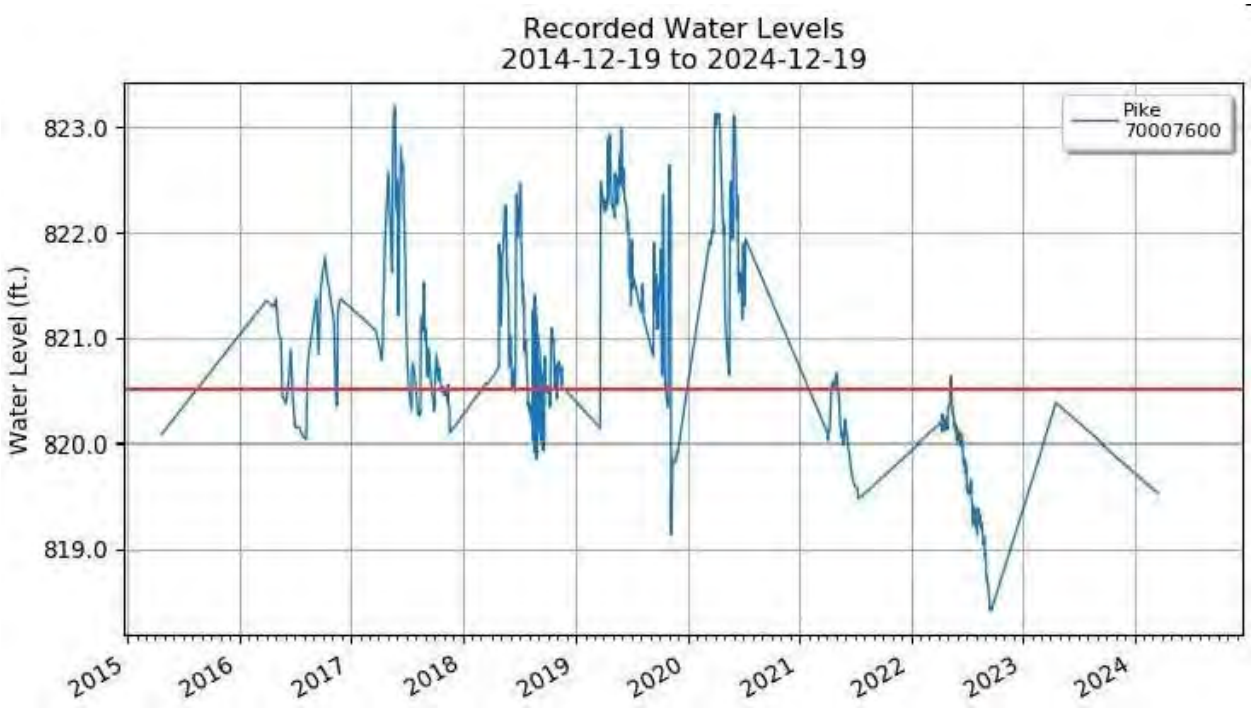


Figure 5. EWM distribution and density from 2012-2024 (no surveys conducted in 2014, 2016, 2018, 2020, 2022, 2023).
Key: green = light growth, yellow = moderate growth, red = heavy growth, and black = no growth.

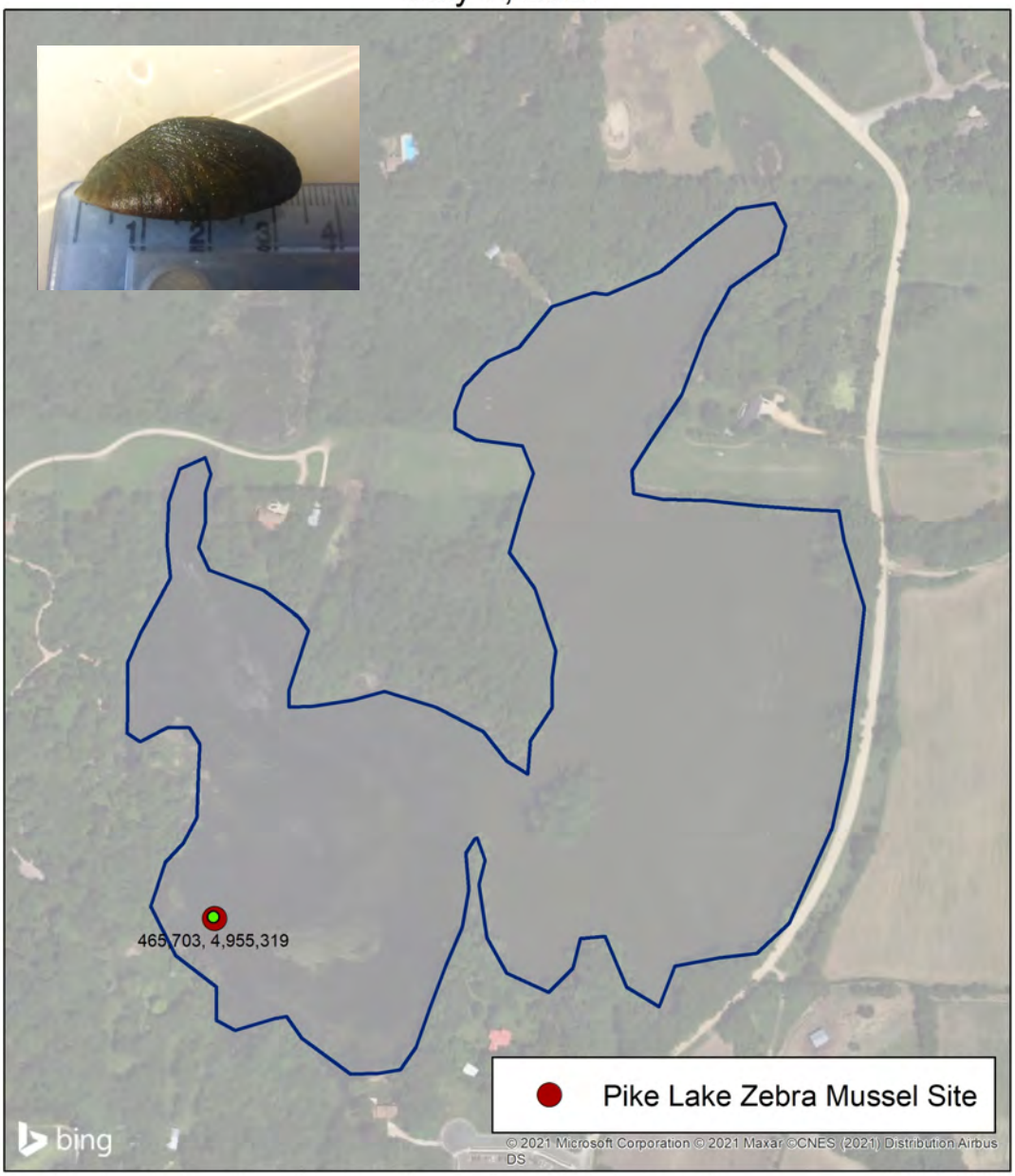
General Findings of This Point Intercept Survey

- Shoreline areas are mostly natural, emergent plants remain healthy and continue to offer good wildlife habitat.
- The west basin of Pike Lake is shallow and plants have been able to establish, growing abundantly throughout the summer leading fairly good water quality.
- The deeper eastern basin had few sites with aquatic plant growth in 2024. Water level changes have fluctuated over 3 feet since 2015 and may influence aquatic plant distribution.
- Coontail was the dominant plant in Pike Lake during the August aquatic plant survey in 2024. Coontail was the dominant native submerged aquatic plant since 2012.
- In 2021, EWM coverage and abundance was less than 2017 but greater than 2019 EWM was the dominant plant in 2015, 2017 and EWM's coverage steadily increased since the first observation of EWM in 2012. However, in 2024, no EWM was observed.
- Curlyleaf pondweed growth was light and was not displaying nuisance conditions in 2024.
- Plants were not observed growing deeper than 5 feet of water depth in Pike Lake.
- A turbid, algae dominated condition is typical for Pike Lake in late summer.
- A single adult zebra mussel was observed and removed from a piece of submerged artificial debris in Pike Lake on July 7, 2021. Zebra mussels were not observed in 2024.



APPENDIX

A single adult zebra mussels was observed and collected from the western basin in Pike Lake on July 7, 2021



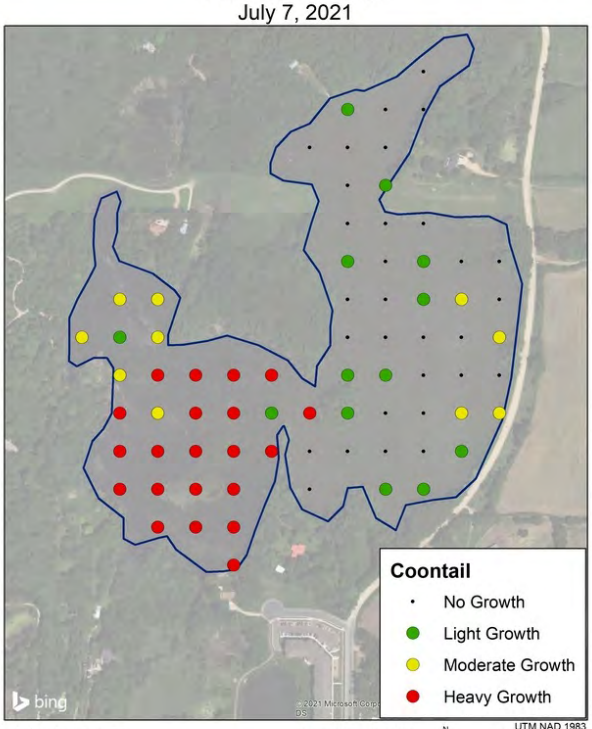
One adult zebra mussel was observed on a piece of large plastic trash (Housewrap material)

Zebra Mussel Observed July 7, 2021

UTM NAD 1983
Blue Water Science
Pike Lake ID: 70007600

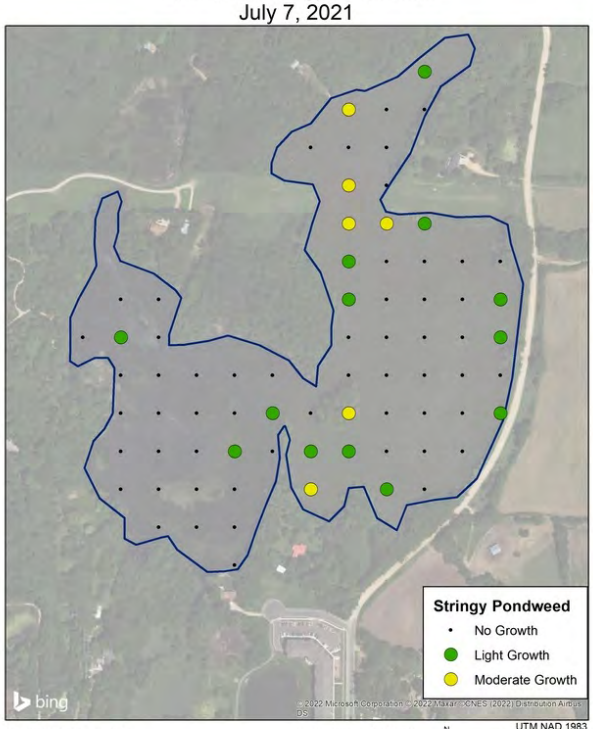
Native Species Growth in Pike Lake on July 7, 2021

Pike Lake Coontail
July 7, 2021



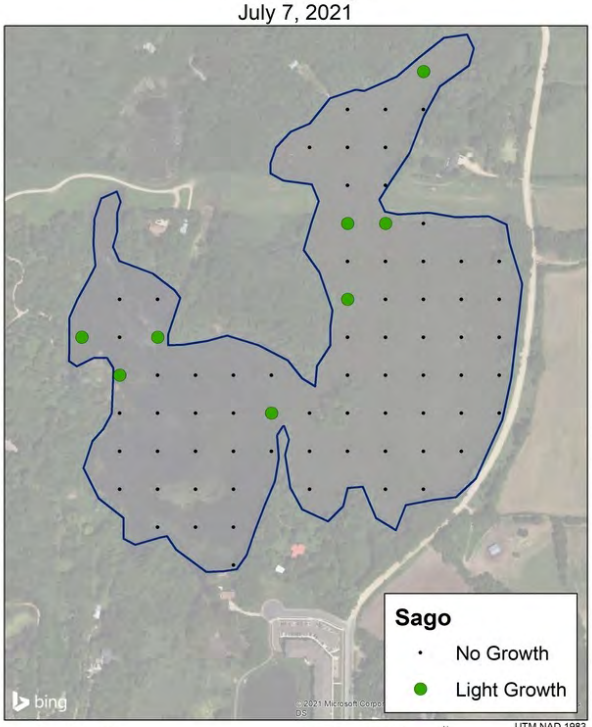
Data Collected July 7, 2021
Map Made July 19, 2021
UTM NAD 1983
Blue Water Science
Pike Lake ID: 70007600

Pike Lake Stringy Pondweed
July 7, 2021



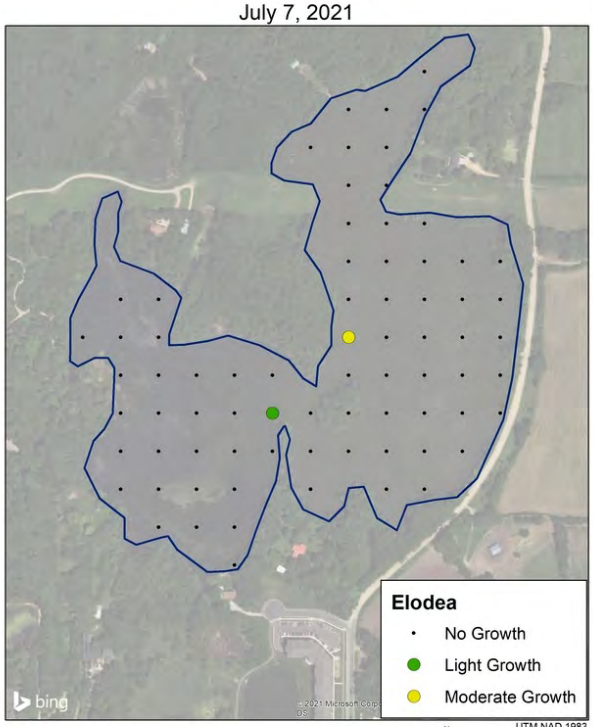
Data Collected July 7, 2021
UTM NAD 1983
Blue Water Science
Pike Lake ID: 70007600

Pike Lake Sago
July 7, 2021



Data Collected July 7, 2021
Map Made July 19, 2021
UTM NAD 1983
Blue Water Science
Pike Lake ID: 70007600

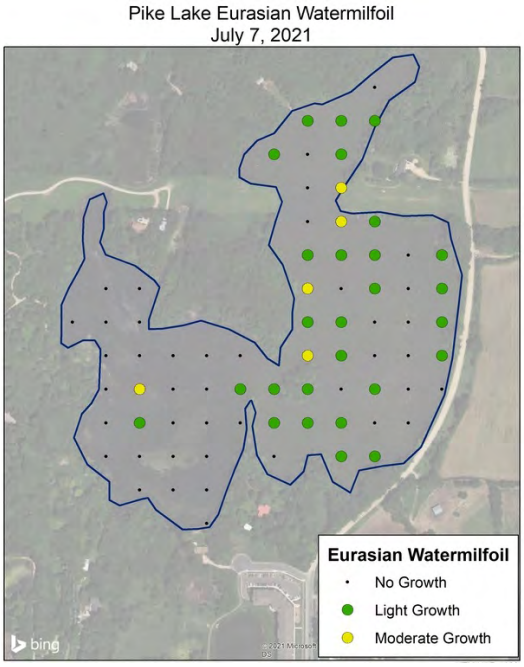
Pike Lake Elodea
July 7, 2021

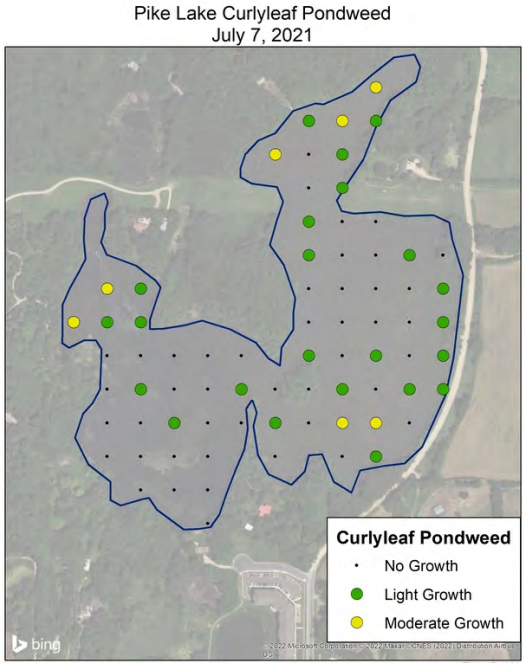


Data Collected July 7, 2021
Map Made July 19, 2021
UTM NAD 1983
Blue Water Science
Pike Lake ID: 70007600

Pike Lake aquatic plant occurrence and density for the 2021 and 2024 surveys. Density ratings are 1-3 with 1 being low and 3 being most dense.

	July 7, 2021 (n=74)		August 16, 2024 (n=49)	
	Occur	Average Density	Occur	Average Density
Cattails (*Typha spp*)			1	3.0
Duckweed (*Lemna spp*)			6	1.0
Lotus (*Nelumbo lutea*)			1	3.0
Coontail (*Ceratophyllum demersum*)	44	2.2	25	2.3
Curlyleaf pondweed (*Potamogeton crispus*)	30	1.2	1	1.0
Elodea *(Elodea canadensis)*	2	1.5	9	1.6
Eurasian watermilfoil (*Myriophyllum spicatum*)	32	1.2		
Flatstem pondweed (*Potamogeton zosteriformis*)	1	1.0	2	2.0
Sago pondweed (*Stuckenia pectinata*)	8	1.0		
Stringy pondweed (*P. sp*)	19	1.3		





[left] Eurasian watermilfoil coverage on July 7, 2021. [right] Curlyleaf pondweed coverage on July 7, 2021.