Pike Lake, Scott County, Minnesota, July 7, 2021

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

Point Intercept Plant Survey Conducted July 7, 2021

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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 2021. The aquatic plant survey was conducted on July 7, 2021 to check the status of the native plant community and to check the status of non-native Eurasian watermilfoil.

Pike Lake plant survey results indicated a moderate diversity of submerged aquatic plants with seven species of submerged plants found in the survey including two non-native species found in the point intercept survey. Coontail was the dominant aquatic plant in terms of occurrence and density. Eurasian watermilfoil was found at 32 sample sites.

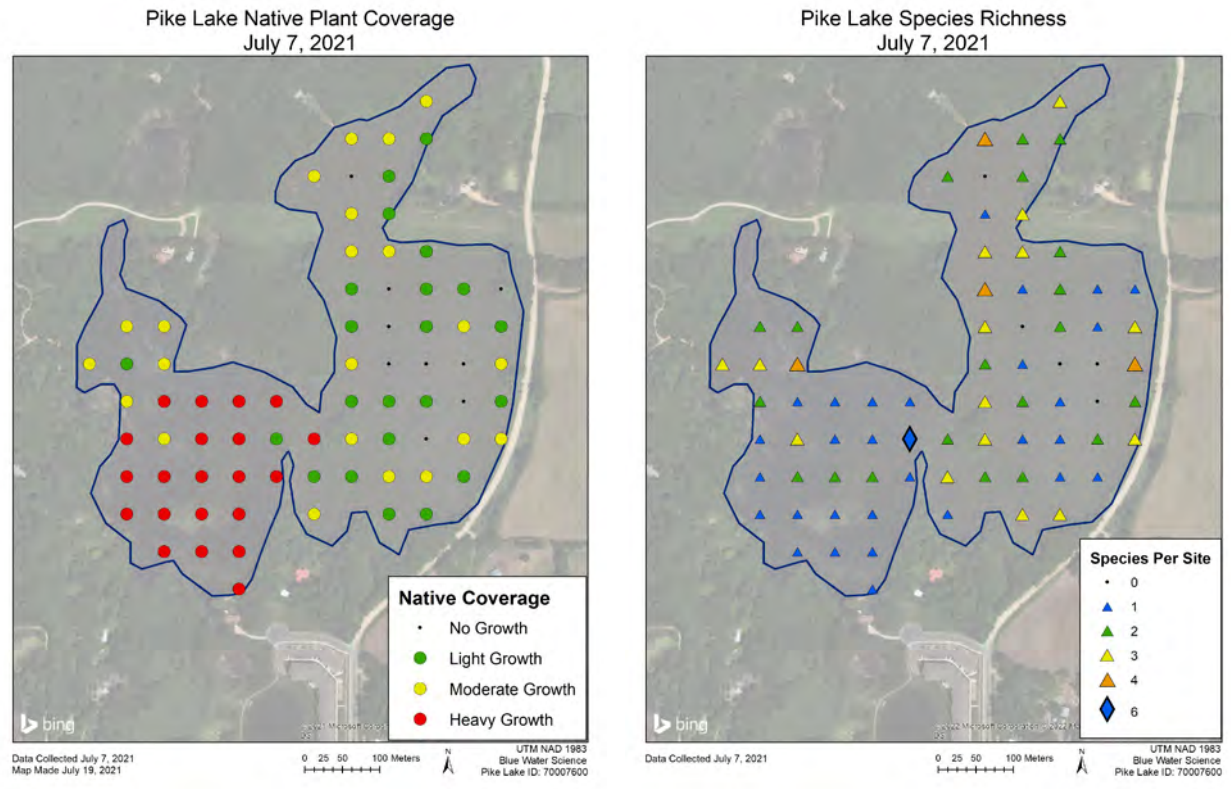

Figure 1. Pike Lake native plant coverage on July 7, 2021 (left) species richness on July 7, 2021 (right).

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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 July 7, 2021. The objective of the surveys 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 2). 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.

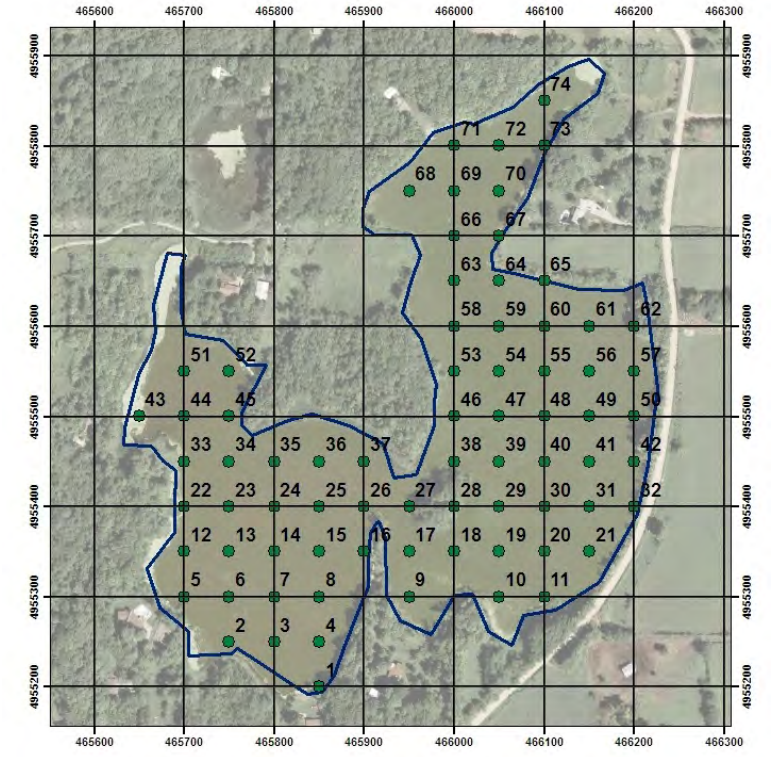


Figure 2. Sample grid map for the aquatic plant survey conducted on Pike Lake.

Results - Aquatic Plant Point Intercept Survey on July 7, 2021

Results of the summer aquatic plant survey conducted on July 7, 2021 found five native submerged plant species and two non-native plant species were present in Pike Lake (Table 1). Coverage of Eurasian watermilfoil and curlyleaf pondweed found in the July survey are shown in Figure 3. Eurasian watermilfoil growth was light to moderate, EWM growth was reduced in western side of the lake compared to the eastern side. Curlyleaf pondweed was found at light to moderate densities scattered around Pike Lake while coontail was the dominant aquatic plant and was found at 44 sites (Figure 3).

Table 1. Pike Lake aquatic plant occurrence and density for the July 7, 2021 survey based on 74 sites. Density ratings are 1-3 with 1 being low and 3 being most dense.

	All Stations (n=74)	
	Occur	Average Density
Coontail (*Ceratophyllum demersum*)	44	2.2
Curlyleaf pondweed (*Potamogeton crispus*)	30	1.2
Elodea *(Elodea canadensis)*	2	1.5
Eurasian watermilfoil (*Myriophyllum spicatum*)	32	1.2
Flatstem pondweed (*Potamogeton zosteriformis*)	1	1.0
Sago pondweed (*Stuckenia pectinata*)	8	1.0
Stringy pondweed (*P. sp*)	19	1.3

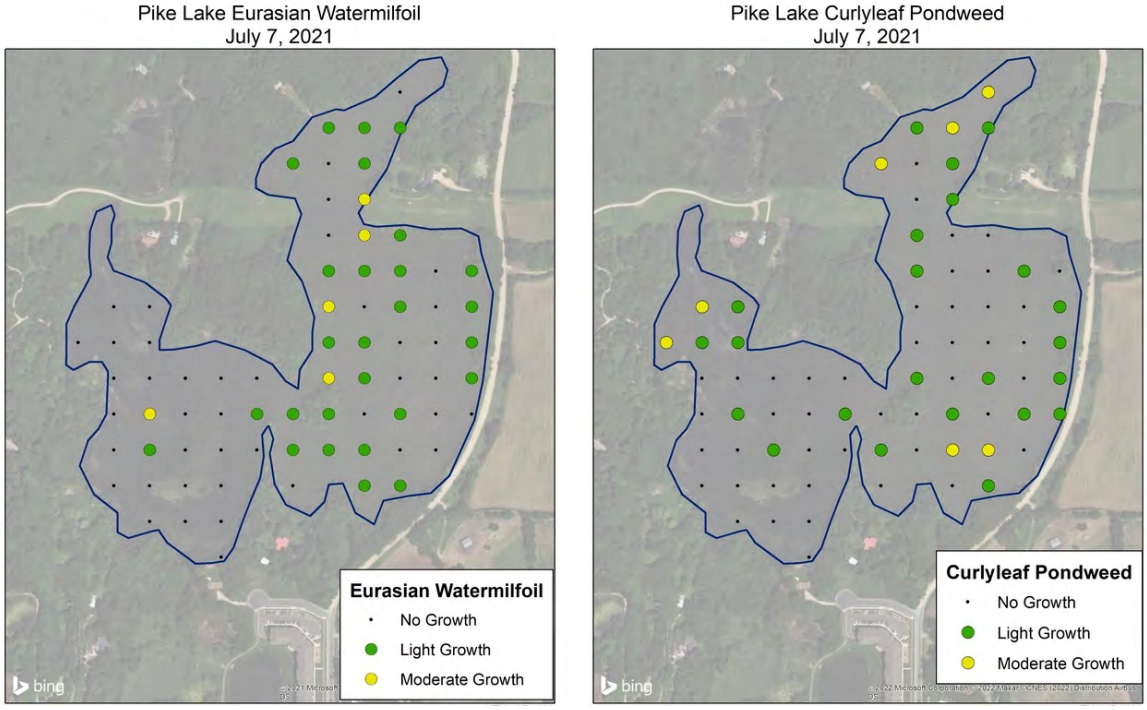
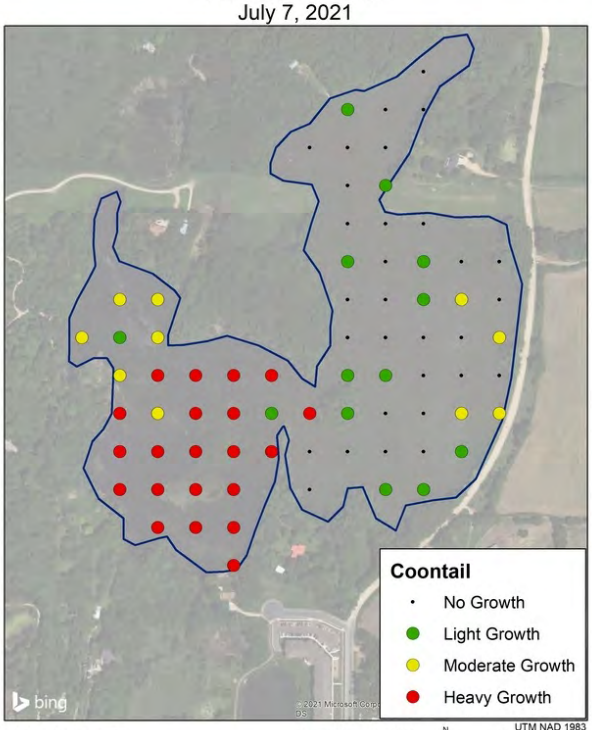


Figure 3. [left] Eurasian watermilfoil coverage on July 7, 2021. [right] Curlyleaf pondweed coverage on July 7, 2021.

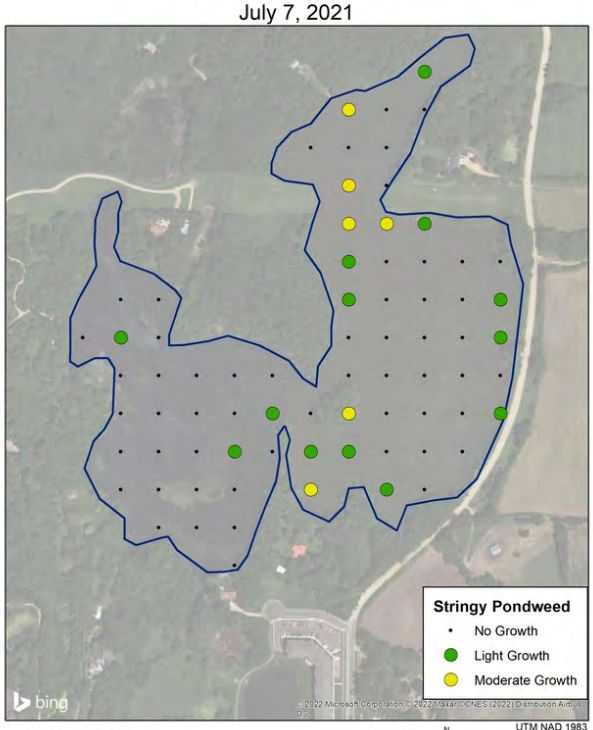
Native Species Growth in Pike Lake on July 7, 2021

Pike Lake Coontail
July 7, 2021



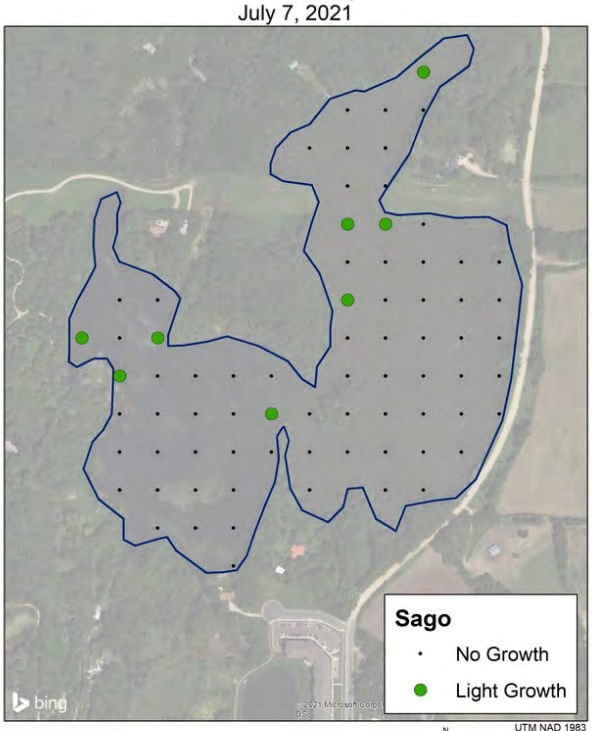
Data Collected July 7, 2021
Map Made July 19, 2021
UTM NAD 1983
Blue Water Science
Pike Lake ID: 70007600

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
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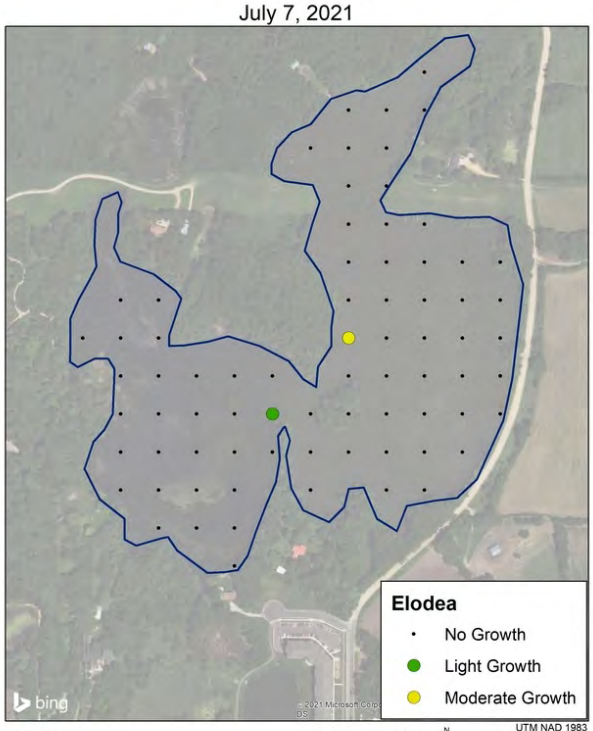
Pike Lake Elodea
July 7, 2021



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

Table 2. Individual site data for Pike Lake on July 7, 2021.

Site	Depth (ft)	Coon-tail	CLP	Elodea	EWM	Flat-stem	Sago	Stringy	FA	No plants
1	2	3							1	
2	2	3								
3	2	3							1	
4	2	3							1	
5	2	3							1	
6	2	3								
7	3	3							1	
8	3	3							1	
9	3							2	1	
10	3	1			1			1	2	
11	3	1	1		1				2	
12	2	3							1	
13	3	3			1					
14	3	3	1							
15	3	3						1	1	
16	2	3							1	
17	3		1		1			1	1	
18	3				1			1		
19	4		2		1				1	
20	5		2						1	
21	5	1								
22	1	3							1	
23	3	2	1		2					
24	3	3								
25	3	3							1	
26	3	1	1	1	1		1	1		
27	2	3			1					
28	3	1			1			2	2	
29	5		1						1	
30	6				1					
31	5	2	1							
32	4	2	1					1	1	
33	1	2					1			
34	2	3								
35	2	3							1	
36	2	3							1	
37	2	3								
38	3	1	1		2					
39	5	1			1					
40	6		1							
41	6									1
42	4		1		1				1	
43	2	2	2				1			
44	2	1	1					1		
45	2	2	1			1	1			
46	4			2	1				1	
47	6				1					
48	6									1
49	6									1
50	4	2	1		1			1		
51	2	2	2						1	
52	2	2	1						1	
53	3				2		1	1		
54	6									1
55	6	1			1					
56	6	2								
57	4		1		1			1	2	
58	5	1	1		1			1	1	
59	6				1					
60	6	1			1					
61	5		1						1	
62	3				1				3	
63	5		1				1	2	1	
64	4				2		1	2	1	
65	3				1			1	3	
66	4							2		
67	3	1	1		2				1	
68	5		2		1					
69	5									1
70	4		1		1					
71	4	1	1		1			2	1	
72	4		2		1				1	
73	5		1		1					
74	5		2				1	1	2	
Average		2.2	1.2	1.5	1.2	1.0	1.0	1.3	1.2	
Occurrence (74 sites)		44	30	2	32	1	8	19	37	5
% occurrence		59	41	3	43	1	11	26	50	

Comparison of Aquatic Plant Point Intercept Summer Surveys from 2012-2021

Aquatic plant point intercept surveys for Pike Lake were conducted in the summers of 2012, 2013, 2015, 2017, 2019, and 2021. Coontail has been a common native plant in the surveys, but Eurasian watermilfoil 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.

Initially, EWM was first found only at one spot in the west basin in 2012 but results from additional surveys indicate Eurasian watermilfoil has expanded it's range. Since 2012 EWM occurrence has ranged from 16 to 65% of the sample sites.

In 2021, seven aquatic plant species were observed, which is the highest number of plant species of the 6 surveys conducted since 2012. Coontail growth in 2021 was heavy in some areas, especially in the more shallow western basin where heavy coontail growth appears to have displaced much of the Eurasian watermilfoil. Eurasian watermilfoil growth and occurrence increased in the deeper eastern basin Lower water levels may have contributed to higher establishment of plants especially in the western basin.

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

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

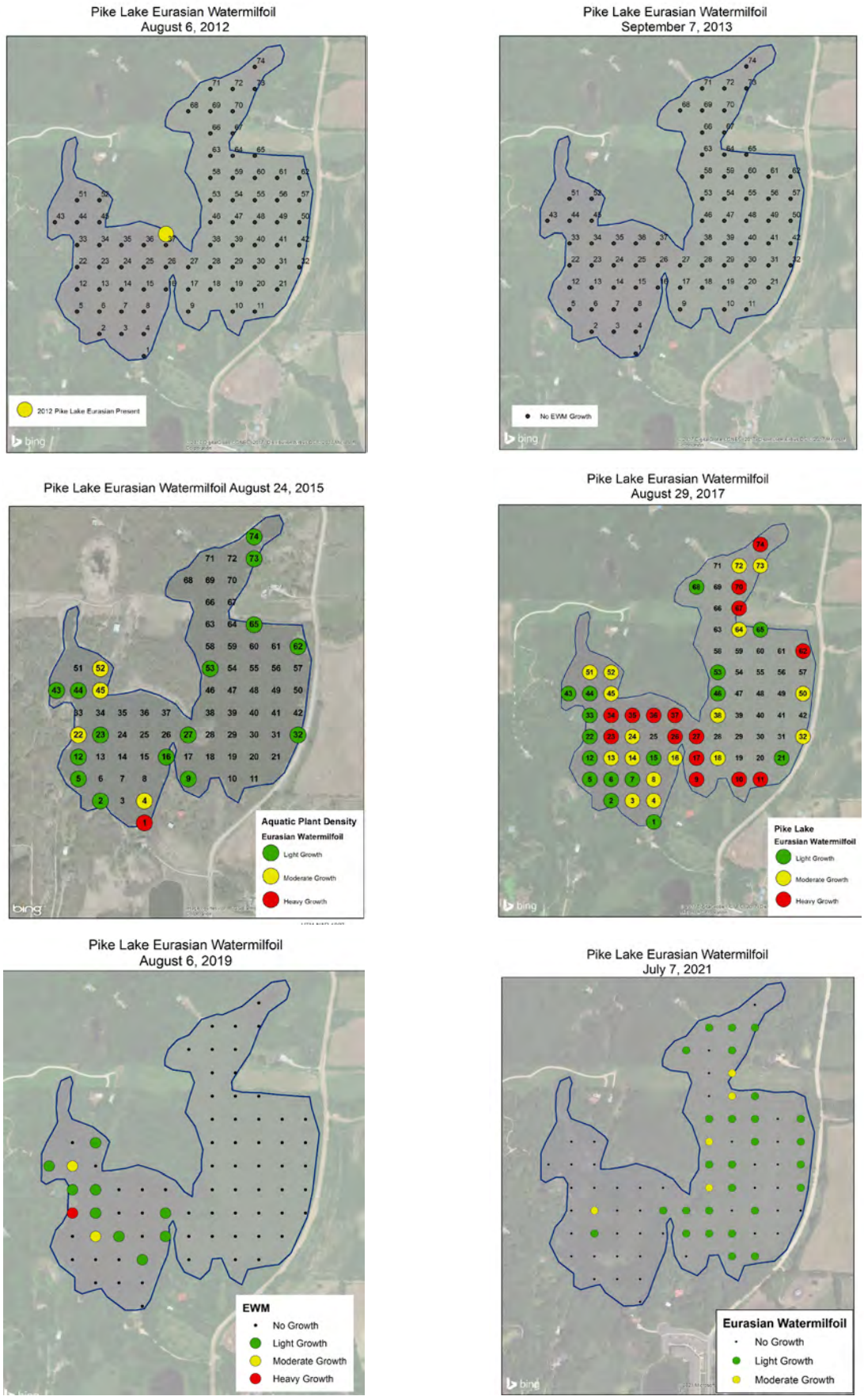


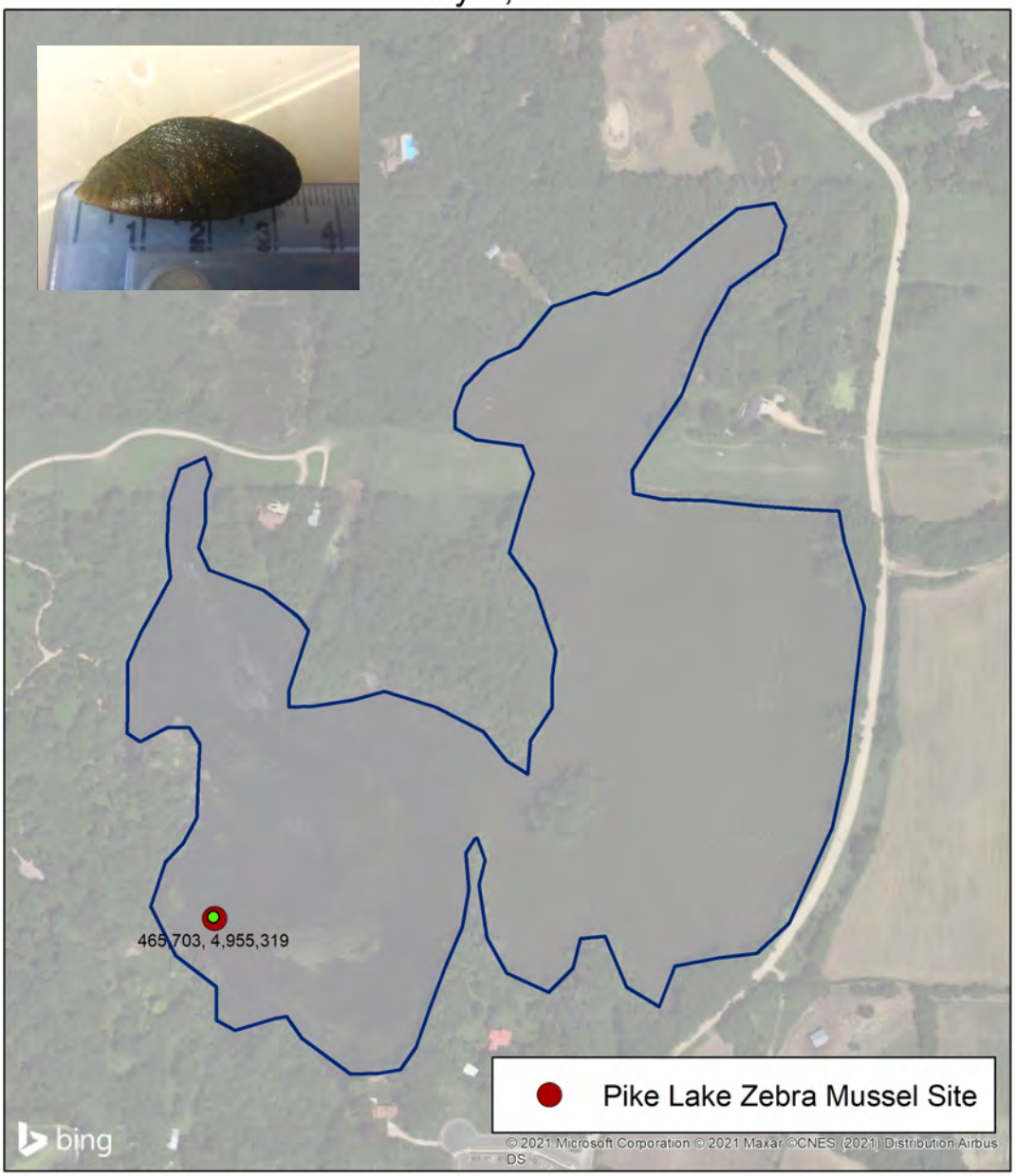
Figure 4. Eurasian watermilfoil distribution and abundance from 2012-2021 (no surveys conducted in 2014, 2016, 2018, 2020).
Key: green = light growth, yellow = moderate growth, red = heavy growth, and black = no growth.

General Findings of This Study

- 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 throughout the summer leading fairly good water quality.
- The deeper eastern basin had more sites with aquatic plant growth in 2021 compared to other years, it may be due in part to lower water levels allowing plants to colonize more lake area.
- Coontail was the dominant plant in Pike Lake during the July aquatic plant survey in 2021. Coontail was also the dominant plant in 2019.
- In 2021, Eurasian watermilfoil coverage and abundance was less than 2017 but greater than 2019 EWM was the dominant plant in 2015, 2017 and Eurasian watermilfoil's coverage had been steadily increasing since the first observation of Eurasian watermilfoil in 2012.
- Curlyleaf pondweed growth was light to moderate and was not displaying nuisance conditions in July 2021.
- Plants were not observed growing deeper than 6 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.

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
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