



Lake Owasso (375 acres), Ramsey County, MN

Lake Owasso, Ramsey County: 2024 Aquatic Vegetation and AIS Surveys

Point Intercept Survey, Meander Survey, and Public Access Survey:
July 2, 2024

Prepared for:
Lake Owasso Lake
Association
Ramsey Co, MN



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Lake Owasso, Ramsey County: 2024 Aquatic Vegetation and AIS Surveys

Summary

On July 2, 2024, a summer point intercept survey was combined with a meander survey and a public access survey on the 375 acre Lake Owasso, Ramsey County. Plant growth was found to a depth of 11 feet and aquatic plants were estimated to cover 257 acres or 68% of Lake Owasso. The most common submerged aquatic plant was flatstem pondweed and it was observed at 44 sites (64% of the sites out to 11 feet deep). The aquatic plant community in 2024 had 10 species of submerged aquatic plants. This is a fair plant diversity condition for a lake in this North Central Hardwood Forest ecoregion setting. The number of individual plant species observed at sample points ranged from 0 to 4 with an average of 1.7 species/point (Figure 1).

No Eurasian watermilfoil, starry stonewort, or other AIS were found in this survey.

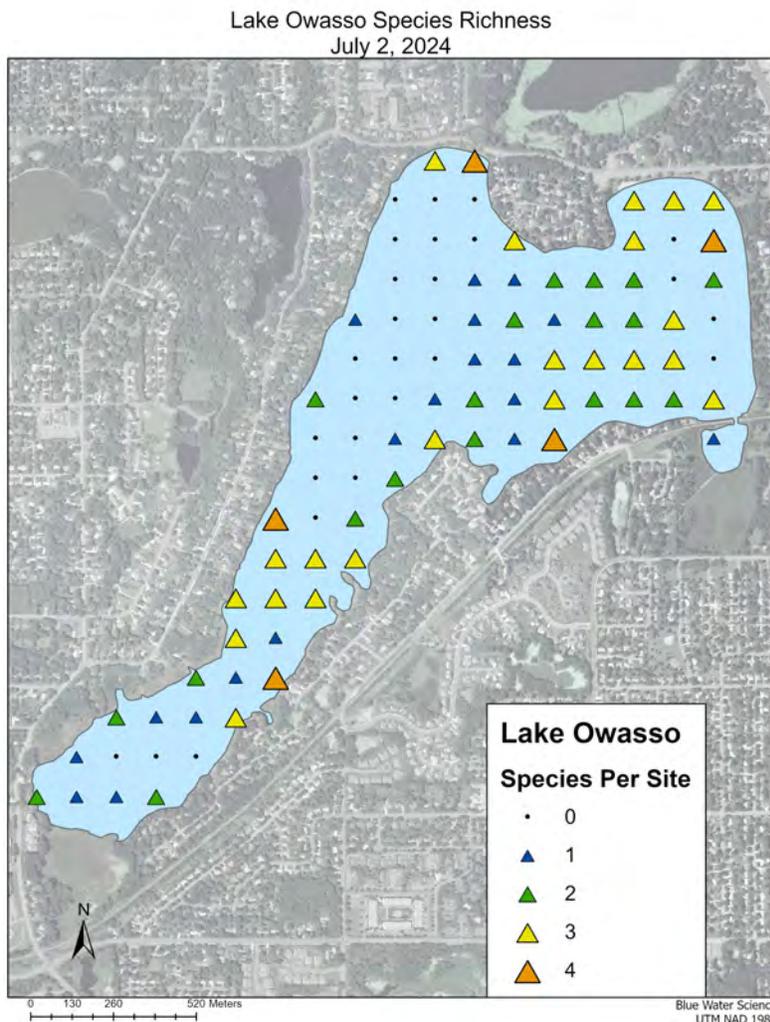


Figure 1. Aquatic plant species richness for each sample site for Lake Owasso on July 2, 2024.

Table 1. Lake Owasso aquatic plant occurrences and densities for the July 2, 2024 survey based on 69 sites in the plant growth zone, out to 11 feet of water depth for Lake Owasso. Density ratings are 1-3 with 1 being low and 3 being most dense.

	All Stations (n=69 out to 11 feet)		
	Occurrence	% Occur	Density
Floatingleaf			
Spatterdock (<i>Nuphar variegata</i>)	3	4	1.3
White lilies (<i>Nymphaea odorata</i>)	11	16	2.5
Submergents			
Coontail (<i>Ceratophyllum demersum</i>)	16	23	1.1
Stonewort (<i>Chara braunii</i>)	6	9	1.2
Elodea (<i>Elodea canadensis</i>)	1	1	1.0
Naiads (<i>Najas sp</i>)	1	1	1.0
Cabbage pondweed (<i>Potamogeton amplifolius</i>)	9	10	1.6
Illinois pondweed (<i>Potamogeton illinoensis</i>)	1	1	1.0
Stringy pondweed (<i>P. strictifolius</i>)	1	1	1.0
Flatstem pondweed (<i>P. zosteriformis</i>)	44	64	1.5
Bladderwort (<i>Utricularia sp</i>)	1	1	1.0
Plant-Like Algae			
Chara (<i>Chara spp</i>)	41	59	1.6
Number of submerged species	10		



Figure 2. Submerged aquatic plants on a sample rake in Lake Owasso.

Conclusions

Lake Owasso has above average water quality. The abundance of a diverse native aquatic plant population will help sustain good water quality in the long term.

Lake Owasso, Ramsey County: 2024 Aquatic Vegetation and AIS Surveys

Lake ID: 62-005600

Size: 375 acres

Littoral area: 293 acres

Maximum depth: 37 feet

Mean depth: 11.2 feet

Introduction

Lake Owasso is located within Ramsey County. An aquatic plant point intercept survey was combined with a nearshore meandering survey in 2024 with the objectives to characterize the aquatic plant community and to identify any new aquatic invasive species (AIS). Aquatic plant surveys also aid in characterizing distribution of native plants which help to sustain good water quality. As a general rule, if plant coverage is 40% or greater of the lake area, good water clarity is likely present. That was one parameter of many to be determined with the plant survey effort.

Lake Owasso 125m Grid- 92 Total Points

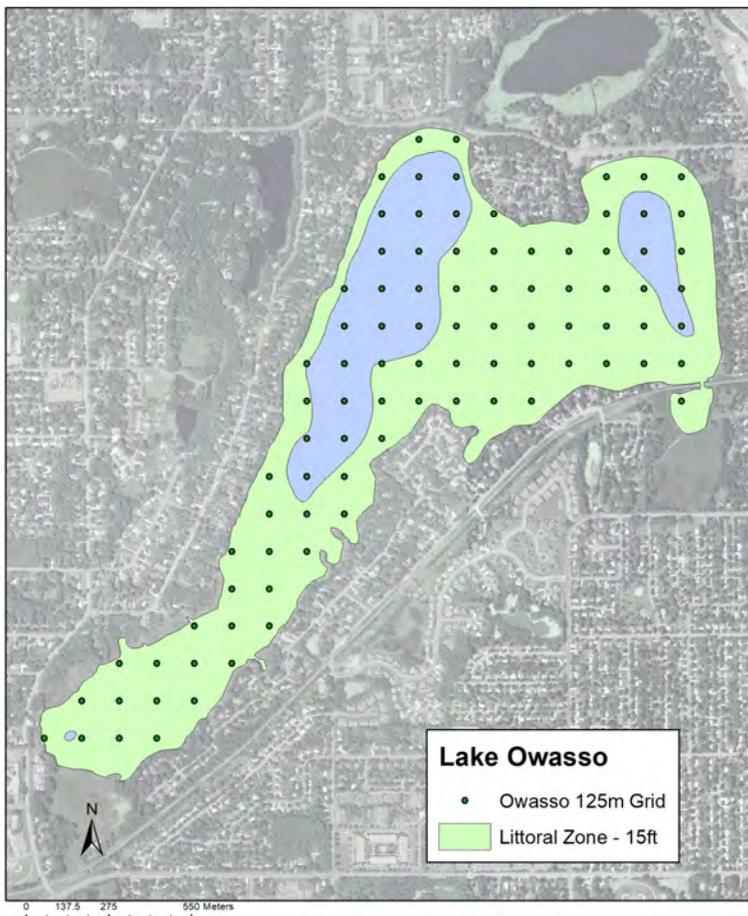


Figure 3. Sample locations for the point intercept aquatic plant survey based on 125 meter spacing. The 15 foot littoral zone shown in green.

Methods - Aquatic Plant Surveys

Point Intercept Survey: An aquatic plant survey of Lake Owasso using a point intercept sampling method was conducted by Blue Water Science on July 2, 2024. A map and sampling grid were prepared by Blue Water Science and consisted of a total of 92 points that were distributed throughout the lake. Points were spaced 125 meters apart. Each point represented about 4.08 acres. At each sample point, plants were sampled with a rake sampler. In water less than 15 feet, a fixed-head rake sampler on a telescoping pole was used. In water deeper than 15 feet, a double-ended rake sampler on a rope was tossed into the lake to sample plants. Plants were sampled to depth of 13 feet. A plant density rating was assigned to each plant species on a scale from 1 to 3 (Figure 4). A density of a “1” indicated sparse growth and a “3” rating indicated heavy plant growth (Figure 4).

Nearshore Meander Survey: A meandering survey consists of using a meandering path around the nearshore area of the entire lake. Visual inspection along with plant sampling was conducted. At each sample point, plants were sampled with a rake sampler. A plant density rating was assigned to each plant species on a scale from 1 to 3 (Figure 4). A density of a “1” indicated sparse growth and “3” indicated heavy plant growth. Only invasive species were recorded in the nearshore meander survey.

Public Access Meander Survey: At each of the public access, an intensive meander survey was conducted. A minimum of 50 points at the access were collected to search for aquatic invasive species (AIS) in general and for starry stonewort in particular.



Figure 4. Aquatic plant density ratings from 1 to 3.



Figure 5. Two different rake samplers used during the Lake Owasso surveys.
[left] Fixed head sampler.
[right] Double headed throw rake.

Point Intercept Survey - July 2, 2024

The submerged aquatic plants were common in Lake Owasso for the July 2, 2024 point intercept plant survey. Flatstem pondweed was the dominant plant in Lake Owasso. Chara was also common. A total of 10 submerged aquatic plants and 2 emergent plant were found (Table 2). Non-native Eurasian watermilfoil is not observed in Lake Owasso.

A summary of plant density and occurrence for individual species is shown in Table 2.

Table 2. Lake Owasso aquatic plant occurrences and densities for the July 2, 2024 survey based on 69 sites in the plant growth zone, out to 11 feet of water depth for Lake Owasso. Density ratings are 1-3 with 1 being low and 3 being most dense.

	All Stations (n=69 out to 11 feet)		
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Aquatic Plant Maps for Lake Owasso

The number of aquatic plant species found at a sample point is referred to as species richness. The species richness in Lake Owasso for each sample site is shown in Figure 6. The number of plant species at a sample point ranged from 0 to 4 with an average of 1.7 species per sample point. This is a fair species richness. Additional aquatic plant maps for individual plant species showing abundance and distribution are shown on the next page. Overall, aquatic plant growth in Lake Owasso is mostly light to moderate.

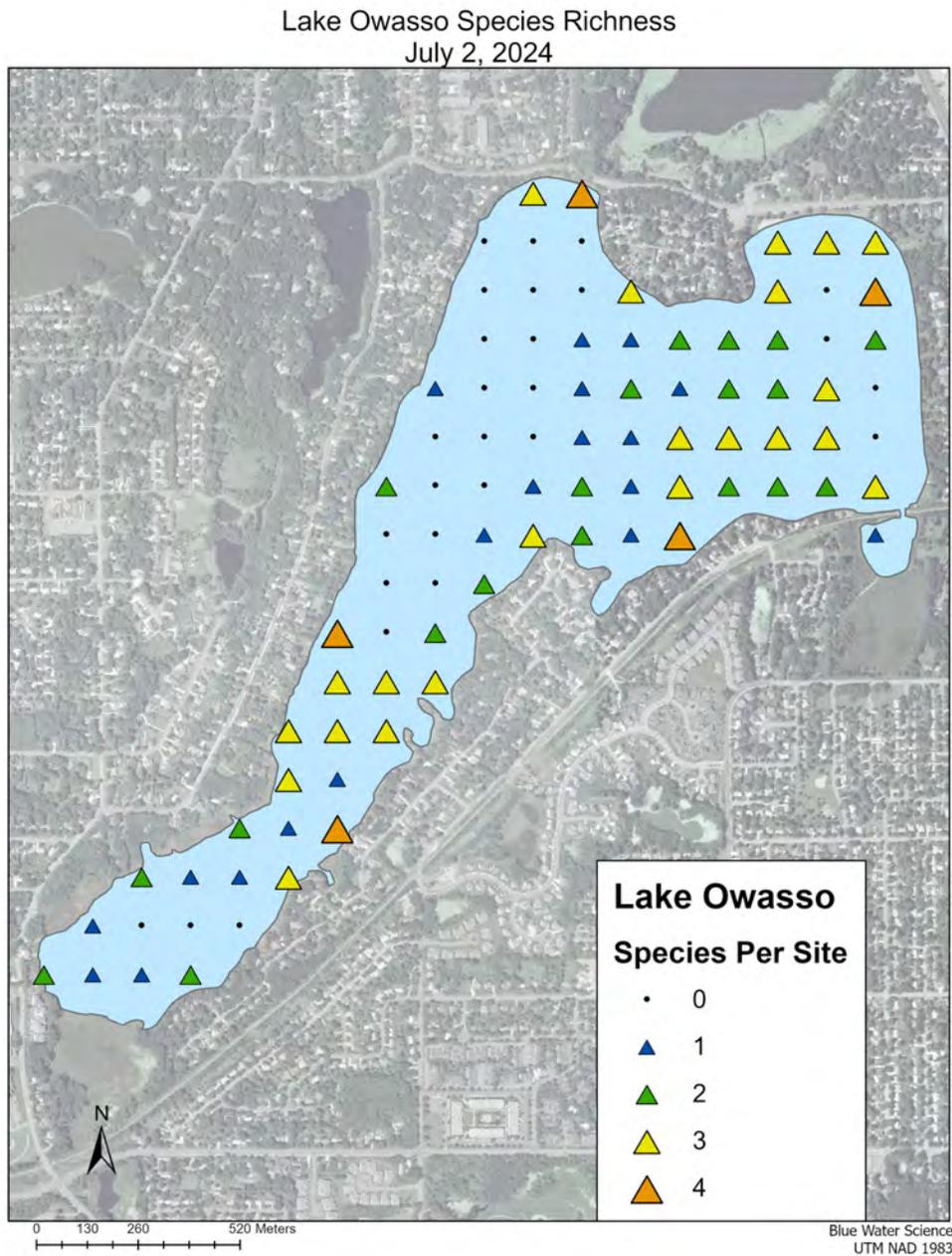
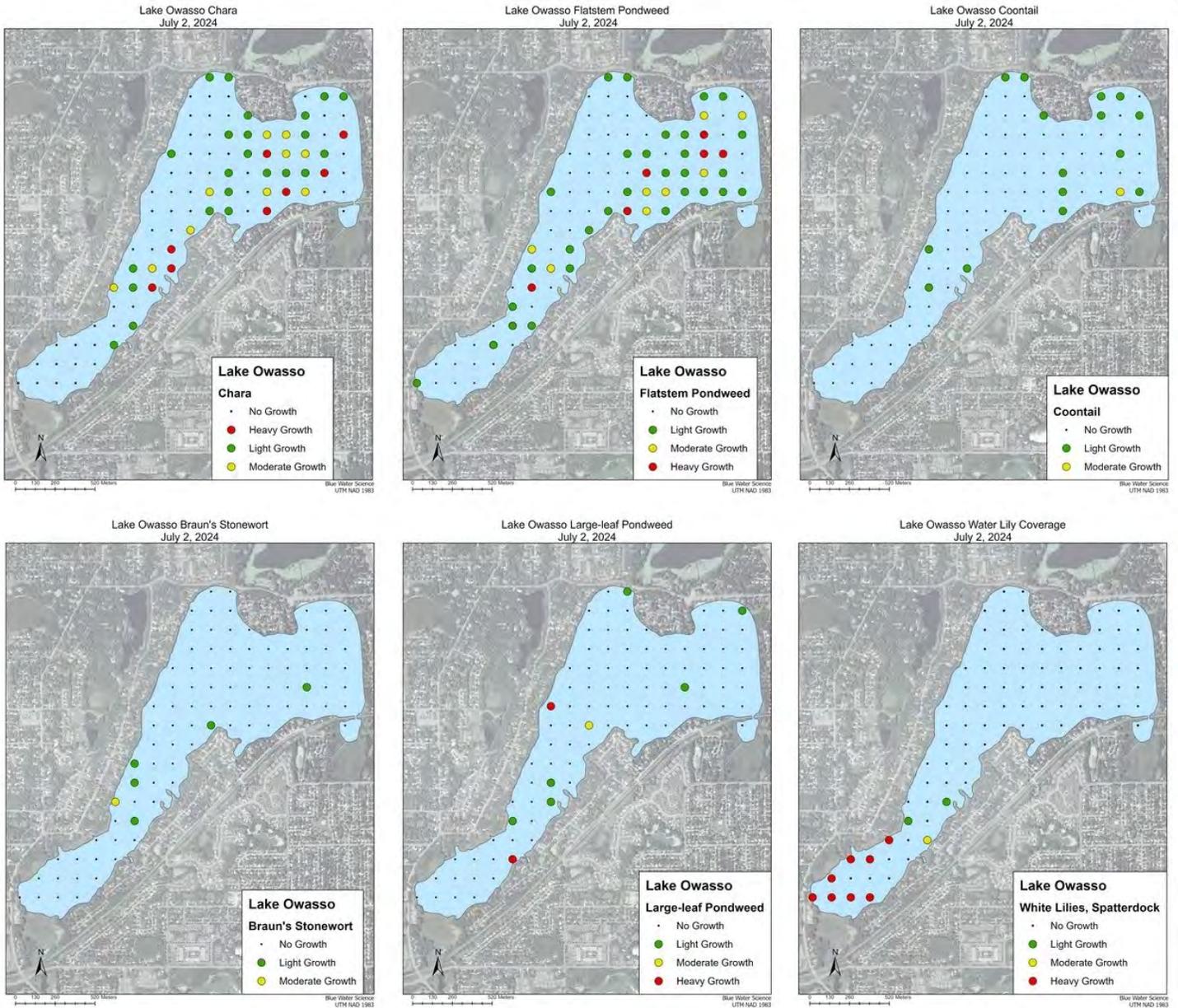


Figure 6. The number of aquatic plant species found at a sample point.

Aquatic Plant Abundance and Distribution

Maps of 6 species of aquatic plants are shown below. No Eurasian watermilfoil nor curlyleaf pondweed were observed in this survey.



Lake Owasso Point Intercept Survey Statistics

A summary of plant statistics from the point intercept survey is shown in Tables 3 and 4 and Figure 7. Plants were observed in depths up to 11 feet and a total of 69 points were sampled from 0 to 11 feet of depth. However, 95% of plant occurrences were recorded from 1 to 11 feet representing 69 points (Table 2).

The aquatic plant coverage of Lake Owasso was estimated at 257 acres or 68% of the lake area. Since plant coverage does exceeds the 40% coverage criterium for good water clarity, Owasso is predicted to good water clarity in most years.

Table 3. Lake Owasso aquatic plant statistics (using MnDNR format).

Total # Points Sampled	80
Depth Range of Rooted Veg	3-11 feet
Maximum Depth of Growth (95%) in feet	11
# Points in Max Depth Range	69
# Points in Littoral Zone (0-15 feet)	72
% Points w/ Submersed Native Taxa	81
Mean Submersed Native Taxa/Point	1.7
# Submersed Native Taxa	10
# Submersed Invasive Taxa	0

Table 4. Aquatic plants sampled by depth.

Depth (feet)	Number of Sites Sampled at that Depth	Percent Occurrence of Plants at that Depth
0	0	0
1	0	0
2	0	0
3	5	40
4	5	40
5	7	71
6	6	83
7	15	100
8	15	100
9	7	100
10	4	75
11	5	80
12	0	0
13	3	0
14	0	0
15	0	0
16	0	0
17	2	0
18	0	0
19	0	0
20	1	0
All sites	75	

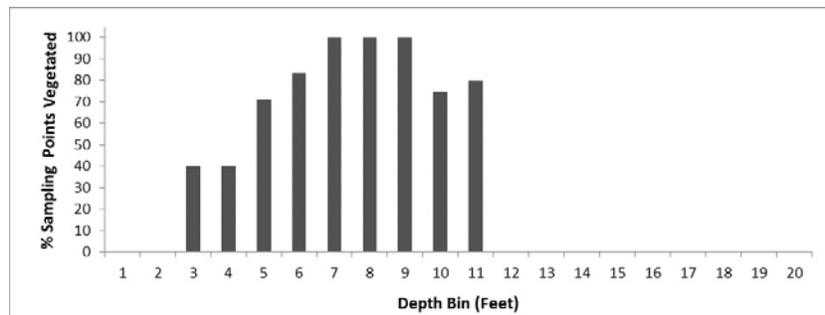


Figure 7. Growth depth of plant colonization out to 11 feet.

Representative Aquatic Plants in Lake Owasso

A total of 10 submerged aquatic plant species were observed in the Lake Owasso aquatic plant surveys. Representative aquatic plant conditions and species are in Figure 6.



View of Lake Owasso.



White waterlilies in Lake Owasso.



Flatstem pondweed on a sample rake.



Cabbage on a sample rake.



Chara on a sample rake.



Native submerged plants on a sample rake.

Figure 8. Representative aquatic plants and conditions in Lake Owasso in 2024.

Conclusions

Lake Owasso has above average water quality. The abundance of a diverse native aquatic plant population will help sustain good water quality in the long term.

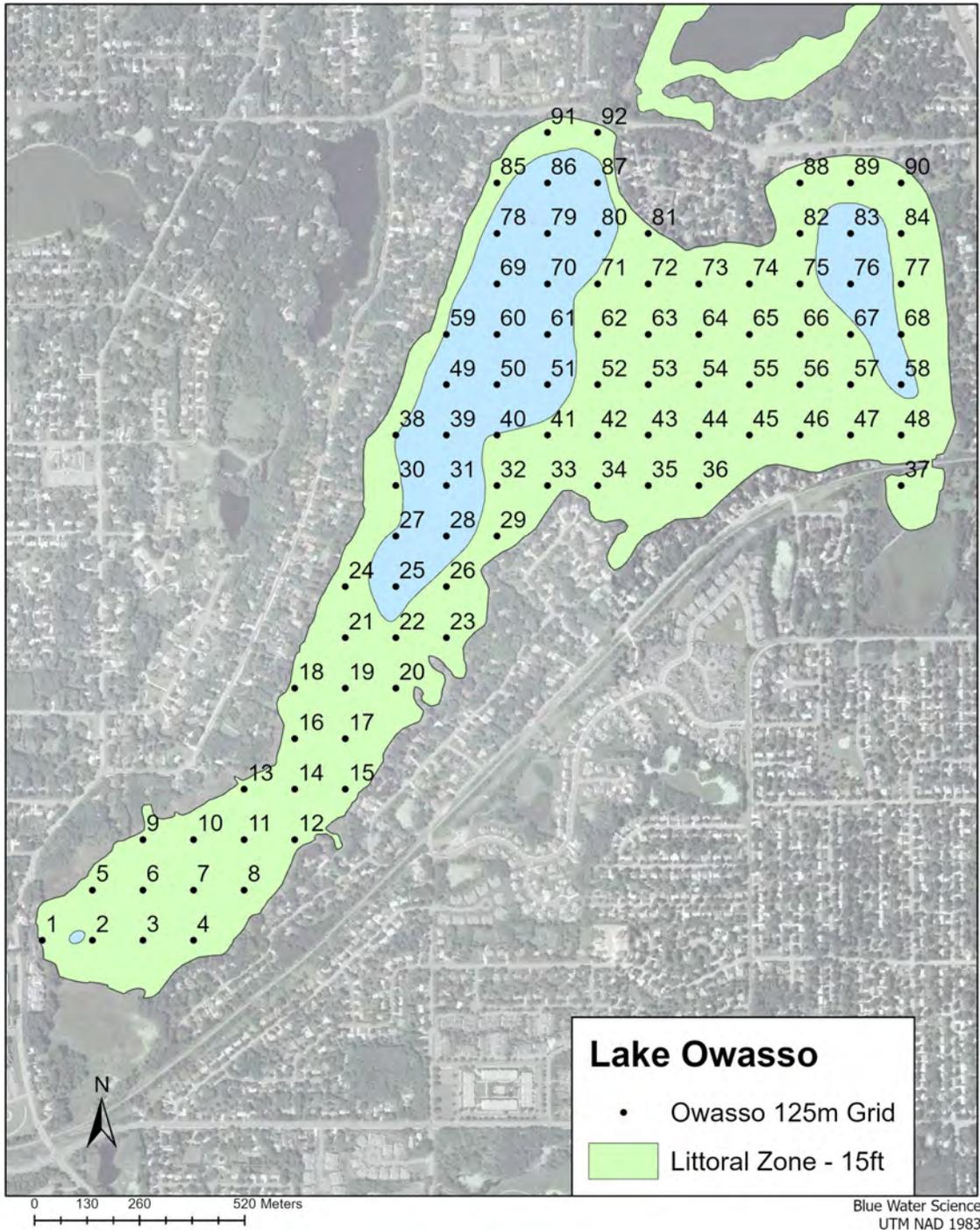


Figure 9. Water lilies grew densely in some locations in Lake Owasso in 2024.

APPENDIX

Individual Site Data for the Point Intercept Survey for Lake Owasso

Lake Owasso 125 Meter Grid



Individual site data for July 2, 2024. Numbers indicate plant density.

Site	Depth (ft)	Spatterdock	White lilies	Bladderwort	Cabbage	Chara	Coontail	Elodea	Flat-stem	Illinois	Naiad	Stone-wort	Stringy	Fila algae
1	4		3						1					
2	4		3											
3	3		3											
4	3		3	1										
5	3		3											
6	5													
7	5													
8	6													
9	4	1	3											
10	4		3											
11	6								1					
12	5				3	1								
13	3	1	3											
14	8								1					2
15	3	2	1			1			1					
16	5		1		1				1					
17	8											1		
18	4					2						2		
19	9					1	1		3					
20	5		1		1	3								
21	7					1			1			1		
22	7				1	2			2					
23	6					3	1		1					
24	7						1		2	1		1		
25	20													
26	10					3			1					
27	21													
28	17													
29	7					2			1					
30	11													
31														
32	8				2									
33	8					1			1			1		
34	8					1			3					
35	8								2					
36	6					3	1		1		1			
37														
38	8				3				1					
39														
40	13													
41	10					2								
42	8					1			1					
43	9								2					
44	7					2	1		2					
45	7					3			1					
46	7					2			1					
47	6						2		1					1
48	7						1		1					
49	26													
50	33													
51														
52	11					1								
53	9								3					
54	8					1	1		1					
55	7				1	1			1					
56	7					1			2			1		
57	7					3		1	1					
58	22													

Individual site data for July 2, 2024. Numbers indicate plant density.

Site	Depth (ft)	Spatter-dock	White lilies	Bladder-wort	Cabbage	Chara	Coontail	Elodea	Flat-stem	Illinois	Naiad	Stone-wort	Stringy	Fila algae
59	11					1								
60														
61														
62	11								1					
63	10					1			1					
64	8					3								
65	7					2			1					
66	7					2			3					
67	8					1	1		3					
68	23													
69														
70														
71	11					1								
72	9					1								
73	7					2			1					
74	7					2			1					
75	9					1			3					
76														
77	9					3			1					
78	17													
79														
80	13													
81	8					1	1							
82	8					1	1		2					
83														
84	9						1		2				1	
85	10													
86														
87	13													
88	6						1		1					
89	8					1	1		1					
90	5				1	1								
91	8					1	1		1					
92	5				1	1	1		1					
Average		1.3	2.5	1.0	1.6	1.6	1.1	1.0	1.5	1.0	1.0	1.2	1.0	1.5
Occur (92 sites)		3	11	1	9	41	16	1	44	1	1	6	1	2
% occur		3	12	1	10	45	17	1	48	1	1	7	1	2