



Arctic Lake, Scott County, Minnesota, 2022

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

[Plant Survey Conducted August 22, 2022]

Prepared for:
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Aquatic Plant Point Intercept Survey for Arctic Lake, Scott County, Minnesota

Summary

Arctic Lake (MnDNR ID #70-0085) is a 33 acre lake located in Scott County, Minnesota. An aquatic plant survey was conducted on August 22, 2022 by Blue Water Science to characterize conditions of native aquatic plants and to look for the non-native Eurasian watermilfoil.

A total of 39 points were surveyed, one aquatic plant was observed at one nearshore site. Aquatic moss was found in four feet of water depth. Arctic Lake shoreline is ringed with native wetland plant species and provides excellent habitat.



Figure 1. The shoreline of Arctic Lake was mostly undeveloped.

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Arctic Lake, Scott County (MnDNR ID: 70-008500)

Size: 33 acres (source: PLSLWD website)

Average depth: 9.5 feet (source: PLSLWD website)

Maximum depth: 30 feet (source: PLSLWD website)

Introduction

An aquatic plant survey was conducted on 33 acre Arctic Lake, located in Scott County, on August 22, 2022. The objective of the survey was to characterize the aquatic plant community.

Methods

An aquatic plant point-intercept survey of Arctic Lake was conducted by Blue Water Science on August 22, 2022 and all points were sampled. Sample points were placed 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 were from 1 to 3 with 1 being sparse and 3 being a nuisance. Based on these sample

sites, a plant distribution map was constructed.

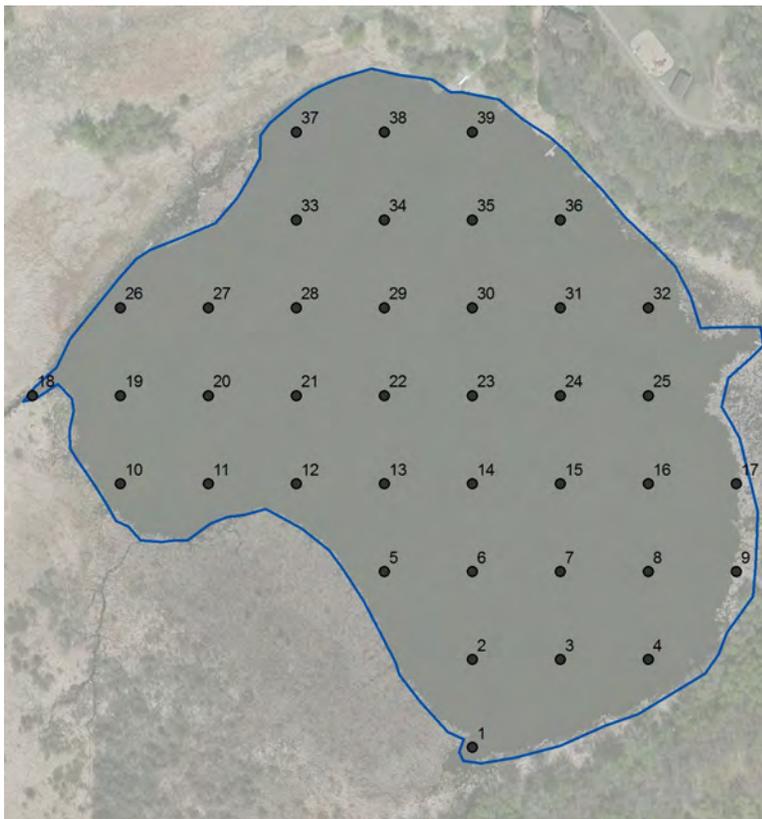


Figure 2. Sample location map for the aquatic plant survey conducted on Arctic Lake.

Results

Results of the summer aquatic plant survey conducted on August 22, 2022 found aquatic moss at one site (Table 1). No other plants were observed in the lake. Arctic Lake water depths drop off relatively quickly after 8 feet (Figure 3). There is a narrow shelf where water depth is shallow enough to allow plants to establish under current conditions. Signs of carp were observed in the lake in 2022.

Results from plant surveys in 2012, 2016, 2019, and 2022 are shown in Table 1. Aquatic plants in Arctic Lake have been rare in all 4 surveys.

Table 1. Arctic Lake aquatic moss occurrence and density for the August 22, 2022 survey based on 39 sites. Density ratings are 1-3 with 1 being low and 3 being most dense.

	September 5, 2012 All Stations (n=39)		August 29, 2016 All Stations (n=39)		July 12, 2019 All Stations (n=39)		August 22, 2022 All Stations (n=39)	
	Occur	Average Density	Occur	Average Density	Occur	Average Density	Occur	Average Density
Aquatic moss	2	1.0					1	1.0
Sago Pondweed					1	1.0		
No plants	37		39		38		38	

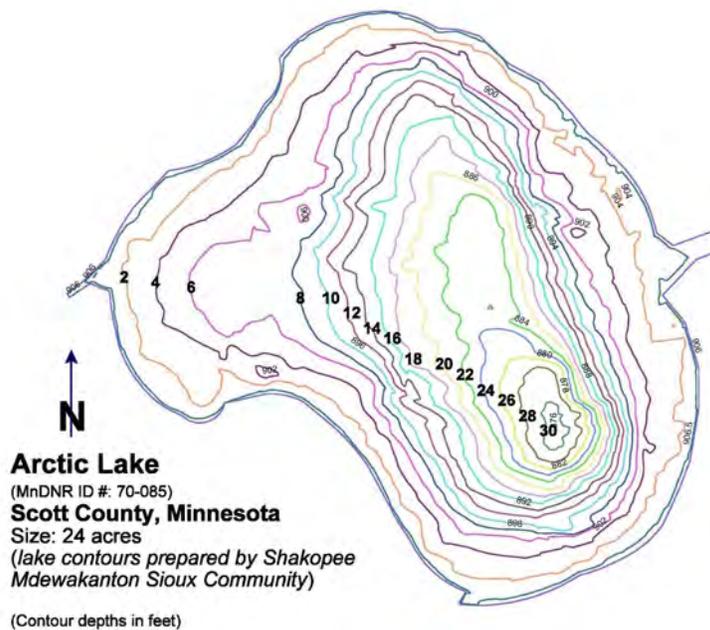


Figure 3. Arctic Lake contour map.

Arctic Lake Aquatic Moss
August 22, 2022

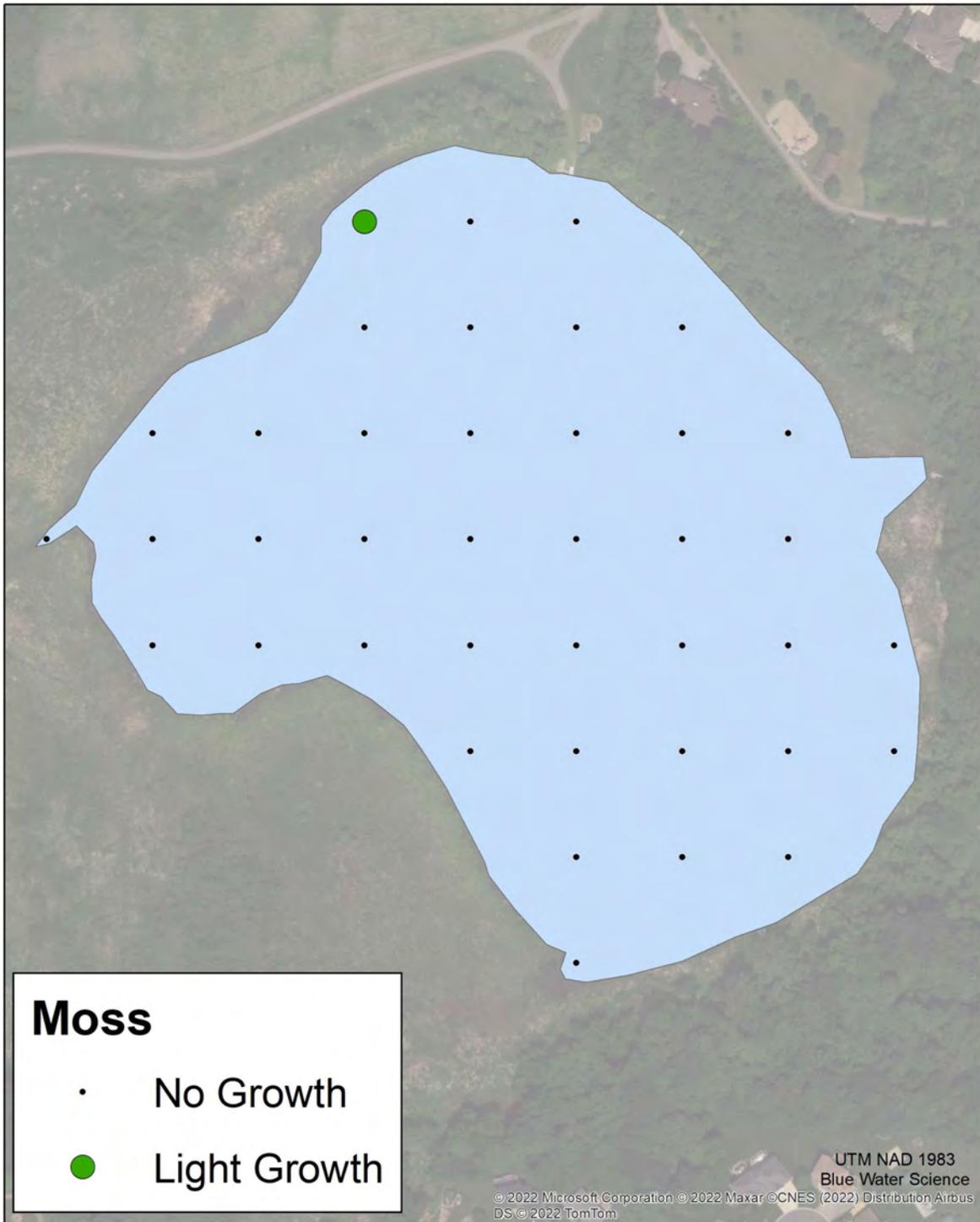


Figure 4. Aquatic moss growth in Arctic Lake. Sago was the only aquatic plant observed in Arctic Lake on August 22, 2022.

General Findings of This Study

- Emergent plants along the shoreline were abundant and offer good wildlife habitat and viewing. Smartweed in particular was growing in shallow nearshore areas.
- Algae bloom conditions were limiting water clarity and plant establishment in Arctic lake.
- Multiple signs of carp activity were observed on August 22, 2022, indicating the presence of adult carp.
- Submerged plants were rare, one submerged species was observed. The reasons for low plant abundance are likely a combination of low light penetration, the impact of bottom feeding fish such as carp, and the basin morphology which has relatively steep dropoffs.
- Fish stocking may be considered as a low cost option to enhance the fishing opportunities and work toward a balanced fish community.



Figure 5. Arctic Lake emergent plant smartweed growing close to shore.

Appendix

Arctic Lake submerged aquatic plant individual site data for August 22, 2022.

Site	Depth (ft)	Moss	Fila Algae - benthic	No Plants
1	2		1	1
2	9			1
3	8			1
4	6			1
5	5			1
6	7			1
7				1
8	11			1
9	2			1
10	2			1
11	4			1
12	4			1
13				1
14				1
15				1
16	8			1
17	2			1
18	1		1	1
19	6			1
20				1
21				1
22				1
23				1
24				1
25	7			1
26	7			1
27	6			1
28				1
29				1
30				1
31	10			1
32	5			1
33	7			1
34				1
35	18			1
36	7			1
37	4	1		
38	8			1
39	9			1
Average		1.0	6.2	
Occurrence (39 sites)		1	26	38
% occurrence		3	67	