Natural Shoreline on Arctic Lake, Scott County, Minnesota, 2019

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

[Plant Survey Conducted July 12, 2019]

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Summary

Arctic Lake (MnDNR ID #70-0085) is a 33 acre lake located in Scott County, Minnesota. An aquatic plant survey was conducted on July 12, 2019 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, sago pondweed was the only aquatic plant species sampled. Sago was found at one nearshore site, however, the entire shoreline was ringed with native wetland plant species.

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 July 12, 2019 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 July 12, 2019 and all points were sampled. Sample points were placed 50 meters apart on a grid that covered the lake (Figure 1). 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.

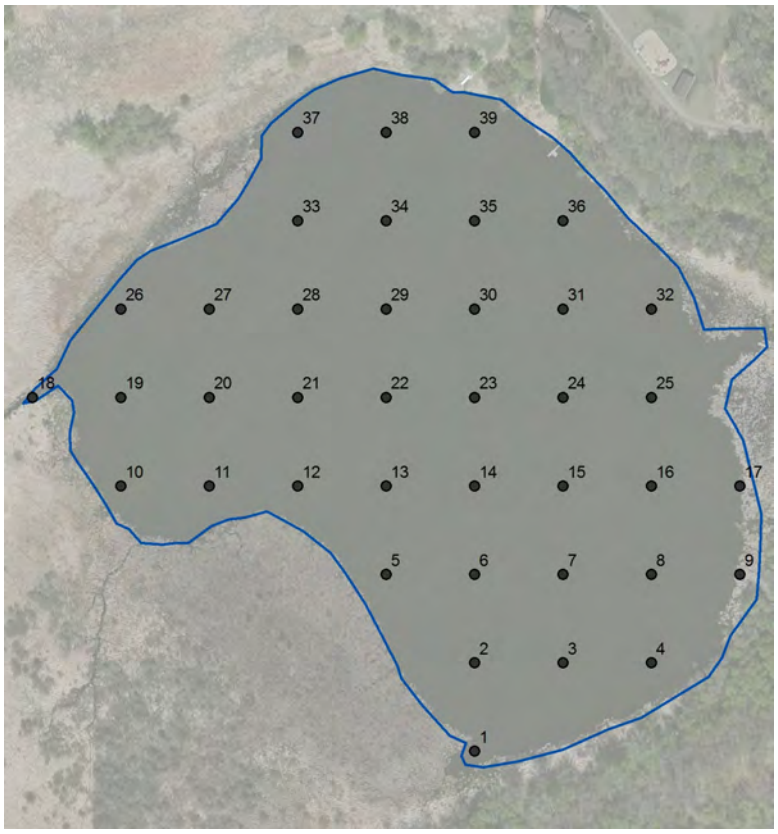

Figure 1. Sample location map for the aquatic plant survey conducted on Arctic Lake.

Results

Results of the summer aquatic plant survey conducted on July 12, 2019 found sago pondweed at one site (Table 1). No other plants were observed in the lake. Arctic Lake water levels drop off relatively quickly after 8 feet (Figure 2). There is a narrow shelf where water depth is shallow enough to allow plants to establish under current conditions. Carp were observed jumping out of the water indicating the presence of numerous adult carp in the lake.

Results from previous surveys in 2012 and 2016 along with 2019 are shown in Table 1. Aquatic plants in Arctic Lake have been rare in all 3 surveys.

Table 1. Arctic Lake aquatic moss occurrence and density for the July 12, 2019 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)	
	Occur	Average Density	Occur	Average Density	Occur	Average Density
Aquatic moss	2	1.0				
Sago Pondweed					1	1.0
No plants	37		39		38	

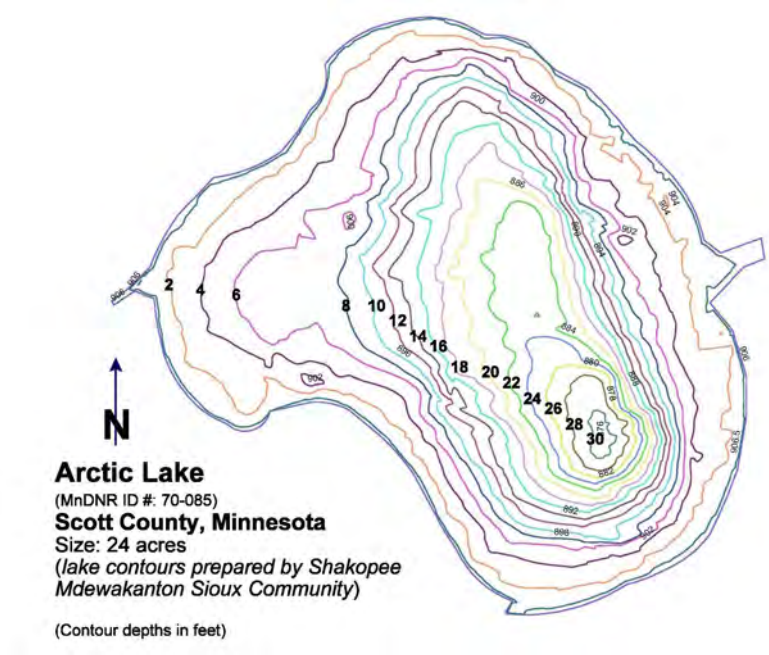

Figure 2. Arctic Lake contour map.

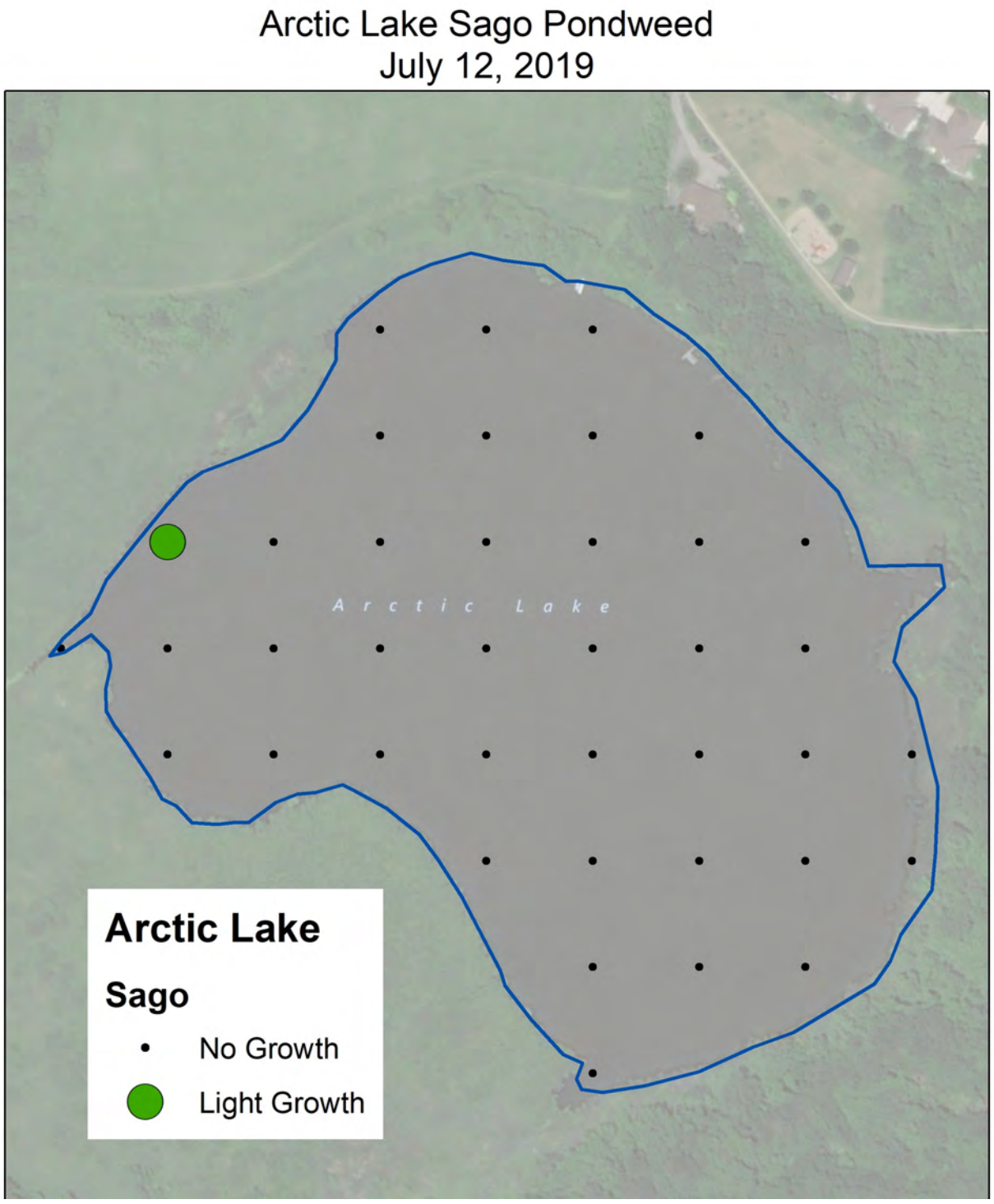

Figure 3. Sago pondweed growth in Arctic Lake. Sago was the only aquatic plant observed in Arctic Lake on July 12, 2019.

General Findings of This Study

- Emergent plants along the shoreline were abundant and offer good wildlife habitat.
- 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
- Multiple carp were seen jumping out the water on July 12, 2019, indicating at the presence of adult carp.
- An increase in submerged plants probably will not occur unless the carp population in Arctic Lake is reduced.
- Fish stocking may be considered as a low cost option to enhance the fishing opportunities and work toward a balanced fish community.

Figure 4. Arctic Lake entry point. The lake access was recently renovated and there is now a fishing pier.