



Northeast Aquatic Research

northeastaquaticresearch.net

74 Higgins Highway
Mansfield, CT 06250
(860) 456-3179

Crystal Lake

2017 Aquatic Plant Management Report

Prepared for: Crystal Lake Association & Town of Ellington, CT

Prepared by: Hannah Kyer

October 3rd, 2017

Overview / Conclusions

In 2017, the Crystal Lake Aquatic Plant Management Program continued to focus on the removal of the invasive species Variable milfoil (*Myriophyllum heterophyllum*) from the lake. The removal was conducted in the month of August via diver suction-harvesting by New England Aquatic Services (NEAS). On September 26th, upon completion of the suction-harvesting, Northeast Aquatic Research (NEAR) conducted an aquatic plant survey to evaluate the effectiveness of milfoil removal, as well as to monitor the presence and abundance of all other aquatic plant species present in the lake.

Suction-harvesting of Variable milfoil was conducted in four main areas: outside of the Town Beach swimming area, in the channel leading to the dam (Outlet Cove), off the eastern shore outside of the Northeastern Cove, and at the entrance to Aborn Cove at the northern end of the lake (**Figure 1**). The results from the late September, 2017 survey suggest that the suction harvesting efforts are continuing to minimize the growth and spread of Variable milfoil in the lake. However, during the survey, milfoil plants were still found in all of the management areas. The presence of the plant in September is likely due to a combination of factors, including regrowth/new growth/water column return/missed plants in turbid water, as well as possible insufficient allocation of time to completely remove existing plants in each area (**Figure 2**).

The aquatic plant survey also revealed the continued proliferation of Mud-mat (*Glossostigma*). Mud-mat is the only other invasive species in Crystal Lake and is now growing along the majority of the western shoreline, as well as in scattered patches along the eastern shoreline. While Mud-mat does not appear to pose a risk to the ecological health of the lake at this time, close monitoring of the species should continue.

In 2018, the Outlet Cove and Beach Area should be prioritized for harvesting. Plants in the two wetland coves (Northeastern Cove and Aborn Cove) should be considered secondary priority areas. Pre- and Post- surveys should be conducted to track the removal of milfoil and the presence and abundance of pondweeds and Mud-mat (*Glossostigma*).

2017 Aquatic Plant Survey Results

The suction-harvesters removed Variable milfoil from four main locations in the lake: Outlet Dam, Beach Area, Aborn Cove, and the Northeast Cove.

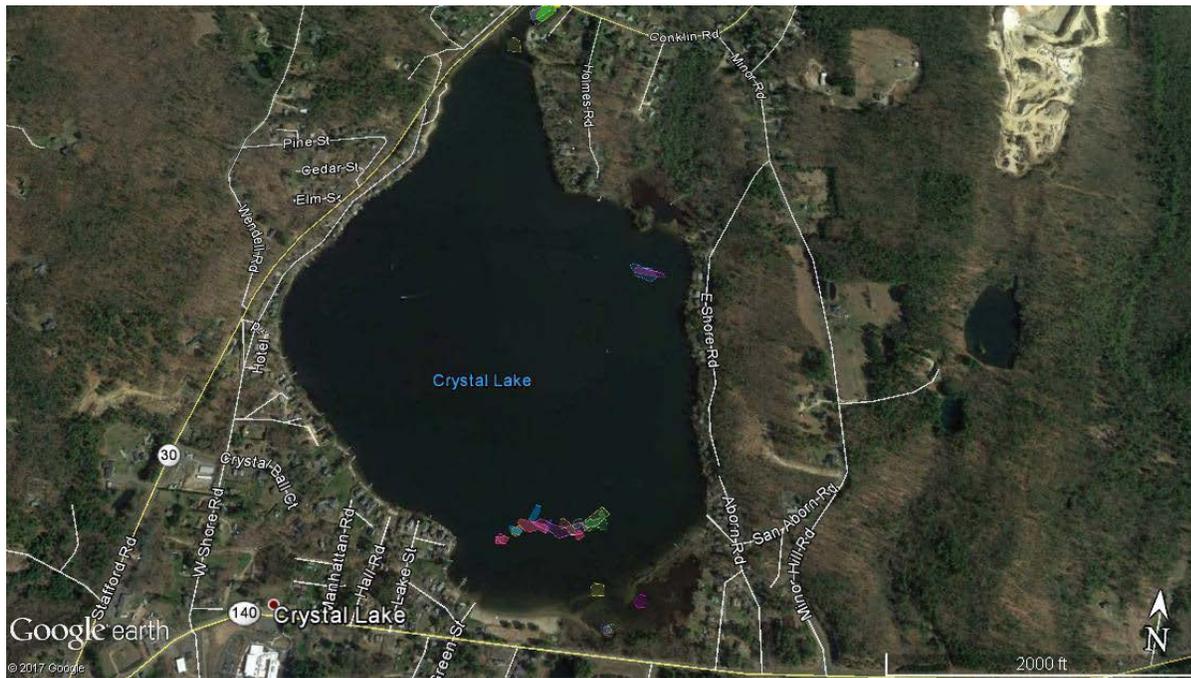


Figure 1. NEAS Variable Milfoil Removal Waypoints (NAES 2017 Report)

2017 Aquatic Plant Survey Results

NEAR documented 24 aquatic plant species during the 2017 survey. Of these, two were invasive species; Variable milfoil (*Myriophyllum heterophyllum*) and Mud-mat (*Glossostigma cleistanthum*) (Table 1). Variable milfoil (Figure 1 below) has been the target weed for several years at Crystal Lake, considered highly invasive with a high propensity to overrun the littoral zone. Mud-mat (Figure 2 below), is considered a less aggressive invasive species, but is spreading quickly in Crystal Lake. Overall, aquatic plants were found sparsely around the lake to a depth of approximately 8.6 feet.

Table 1. List of aquatic plant species identified in 2017 listed in order of frequency of occurrence

Species name		Species name	
1	<i>Glossistigma</i>	13	<i>Eleocharis acicularis</i>
2	<i>Sagittaria terres</i>	14	<i>Brasenia schreberi</i>
3	<i>Myriophyllum heterophyllum</i>	15	<i>Potamogeton amplifolius</i>
4	<i>Nitella sp.</i>	16	<i>Sagittaria graminea?</i>
5	<i>Potamogeton epihydrus</i>	17	<i>Elatine sp.</i>
6	<i>Myriophyllum verticillatum?</i>	18	<i>Potamogeton unknown</i>
7	<i>Utricularia purpurea</i>	19	<i>Pontederia cordata</i>
8	<i>Utricularia radiate</i>	20	<i>Sparganium fluctuans</i>
9	<i>Chara sp.</i>	21	<i>Phragmites</i>
10	<i>Elodea nuttallii</i>	22	<i>Emergent sparganium</i>
11	<i>Lobelia dortmana</i>	23	<i>Ceratophyllum demersum</i>
12	<i>Isoetes sp.</i>	24	<i>Typha sp.</i>

Variable Milfoil

The 2017 aquatic plant survey revealed a total of 5.55 acres of Variable milfoil in the lake. The milfoil was most prevalent in the Northeastern Cove (1.6 acres) and in the Outlet Cove (1 acre). There were also scattered patches of milfoil outside of the Beach Area (total of 2.78 acres) and two patches outside of the Northeastern Cove (0.18 acres) (**Map 1**).

The results of the September 2017 survey suggest that there was a slightly lower coverage and density of Variable milfoil compared to September 2016. Based on the NEAS suction-harvesting maps, divers cleared milfoil outside of the Town Beach area, in the northern cove, and one area off the western shoreline. Milfoil found during the September survey likely resulted from a combination of regrowth from old plants, shoots returned to the water column after being buried by loose sediments disturbed by the removal process, plants that were missed during harvesting due to limited visibility, plants newly germinated since August, and possibly insufficient time spent in the area.

Mud-mat

During the 2017 survey, Mud-mat (*Glossostigma*) was found to have expanded to occur almost continuously along the western shoreline and Small patches were also found along the southern portion of the eastern shoreline (**Map 1**). The map polygons are expanded in order to see, actual plant beds are very small, on the order 5-10 feet wide, although linearly individual beds can be long. All plants found were in the very shallow near shore water to maximum of about 16 inches. Based on the results of the surveys from the past several years, it appears that Mud-mat is spreading fairly rapidly in the lake. While Mud-mat is generally not perceived as a nuisance species, it should be closely monitored to ensure that it does not become an issue in Crystal Lake.

Pondweeds

NEAR identified three pondweed species during the September survey: Large-leaf pondweed (*Potamogeton amplifolius*), Red-leaf pondweed (*Potamogeton epihydrus*), and (*Potamogeton bicupulatus*) Snail-seed pondweed. Red-leaf pondweed was found growing in a handful of small, scattered patches around the lake. Two new patches were found on the eastern shoreline, but the species does not appear to have spread significantly since 2016. Large-leaf pondweed was only found in two locations in the lake (in the Northeastern Cove and outside of the Beach Area) and was growing at a low density in both locations. The unknown pondweed was only found in one location in the lake, growing at a very low density.

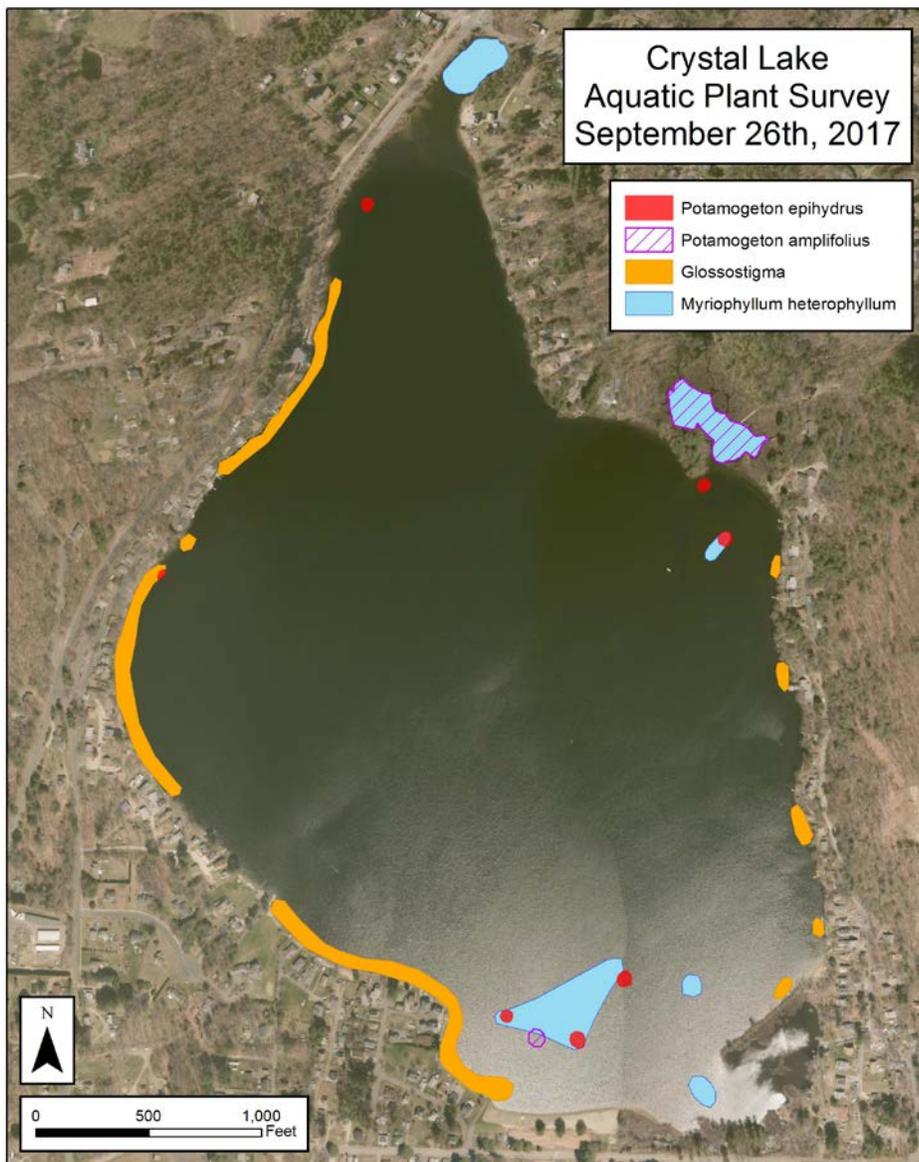


Figure 2. September 26th, 2017 aquatic plant survey results – species of interest.

Recommendations for 2018

- Continue the Variable milfoil suction-harvesting program, focusing mainly on the northern cove and outside the Town Beach swimming area.
- Place bottom barriers over beds of Mud-mat to reduce its growth and spread.
- Conduct pre- and post-treatment aquatic plant surveys to monitor plant growth in the lake and assess the efficacy of the suction-harvesting program.