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Point Intercept Survey: Cedar Lake, 2012
Invasive Species Program
Division of Ecological Resources
Minnesota Department of Natural Resources

Lake: Cedar	DOW Number: 70009100	Dates of inspection: September 14th, 2012
County: Scott		Observer[s]: K. Lund, R. Roche
Type of inspection: Point intercept survey of whole lake		
Author[s] of report: Keegan Lund & Rochelle Roche		Date of report: September 17 th , 2012

Abstract: Cedar Lake is a 793 acre (779 littoral acres) lake in Scott County that possesses a sparse aquatic plant community. Cedar is also infested with a non-native invasive aquatic plant: curly-leaf pondweed (*Potamogeton crispus*). In response to the curly-pondweed (CLP) infestation, Scott County Watershed Management Organization (SCWMO) was permitted to chemically treat 100 acres of the littoral area for CLP in 2012.

The purpose of this point intercept survey was to identify the general abundance and location of native and invasive aquatic plants in Cedar Lake. The point intercept surveys provide a general idea as to the overall composition of the aquatic plant community and may help monitor change over time. The MnDNR and partners such as SCWMO will utilize this data to evaluate the efficacy of management treatments and thus help shape future decisions regarding lake-wide aquatic invasive plant management.

Methods

Aquatic Vegetation Sampling

The point intercept survey method (Madsen 1999) was used for sampling the aquatic vegetation. This method consisted of the following:

- Placed a grid of points (evenly spaced 150 meters apart) across the entire lake.
- Staff navigated to each point using a global positioning system (GPS) where a double-sided rake attached to a rope was tossed from a pre-designated side of the boat and retrieved to obtain a sample of aquatic vegetation (Figure 1).
- Staff identified all species of aquatic vegetation based on Crow and Hellquist (2000) and assigned each species a ranking from 1 to 4 (1 = rare R, 2 = scattered S, 3 = common C, 4 = abundant A) depending on abundance on the double headed rake (R= 1-2 plants on the rake, S = plants cover ½ of the rake, C = plants cover ¾ of the rake, A = plants completely cover the rake).
- Water depth was recorded at each sampling location to the nearest tenth of a foot.



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Frequency of occurrence was calculated for each species as the number of sites in which a species occurred divided by the total number of sites sampled within the littoral zone of the lake. The littoral zone for this survey was defined as any area of the lake of 15.0 feet of depth or less. The average number of native submersed plants per rake sample was calculated as the total number of plants sampled divided by the number of sample locations within the littoral zone.

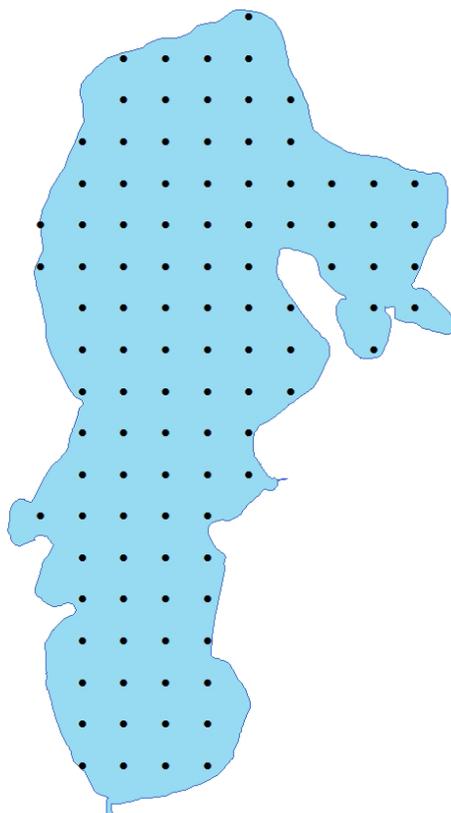
Results:

2012 Point-Intercept Survey

Points for this survey were placed 150 meters apart (figure 2) and totaled 103 possible sample sites. Points that were inaccessible by boat or greater than 15 feet in depth were not included in the following frequencies. As a result, 102 of the possible 103 potential sample sites were located within the littoral zone. In order to determine the greatest depth that plants occurred, many points were sampled deeper than the 15-foot littoral zone. The greatest depth of plants recorded however, was 8.5 feet. Based on this survey, 4 species of native plants were found representing a low diversity for metro area lakes. On average, each point had 1.20 native submersed plant species. Submersed native plants were also recorded at 52% of the sampled sites within the littoral zone. The secchi depth was 2 feet.

Cedar Lake is dominated by coontail, located at 42% of the sites containing plants. The remaining frequencies of submersed plants are as follows: Canada waterweed (37%), sago pondweed (26%), water stargrass (16%), curly-leaf pondweed (5%).

Figure 2: Sample points for Cedar Lake, Scott County. Points placed 150 meters apart.



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Table 1: Percent Frequencies of occurrence of plants sampled from Cedar Lake, Scott County in 2012.

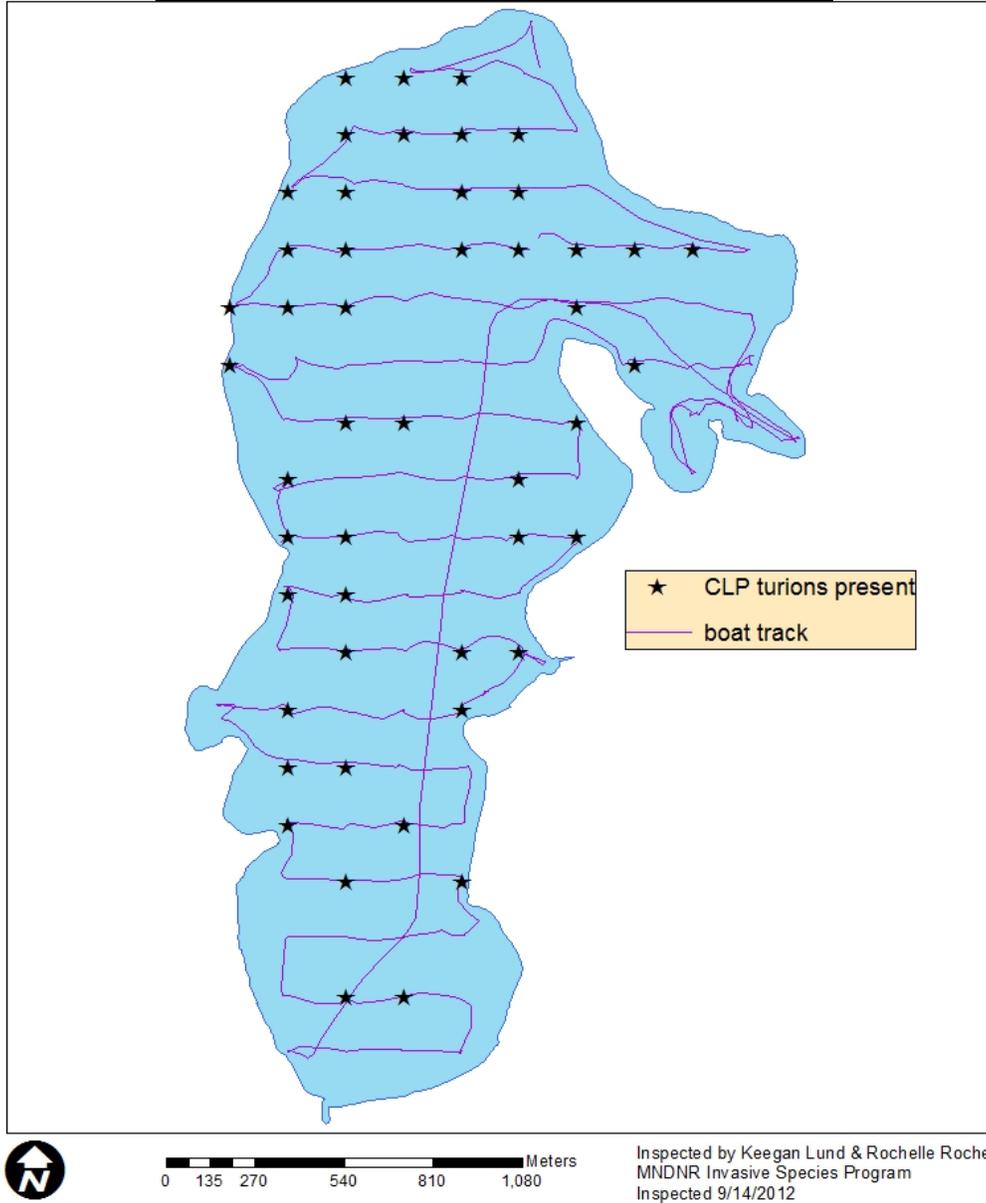
Life Forms	Common Name	Scientific Name	Frequency
INVASIVE SPECIES Invasive species are species that are not native to Minnesota <i>and</i> cause economic or environmental harm.	Curly-leaf pondweed	<i>Potamogeton crispus</i>	5%
SUBMERGED These plants grow primarily under the water surface. Upper leaves may float near the surface and flowers may extend above the surface. Plants are usually rooted or anchored to the lake bottom	Coontail	<i>Ceratophyllum demersum</i>	42%
	Sago pondweed	<i>Stuckenia pectinata</i>	26%
	Water stargrass	<i>Heteranthera dubia</i>	16%
	Canada waterweed	<i>Elodea canadensis</i>	37%

Another observation on Cedar Lake was the presence of curly-leaf pondweed turions. A turion is a small dark colored shoot found on the bottom of the lake from which the plant develops. Turions were present in 49% of the sampled sites

Picture 1: Curly-leaf pondweed turion



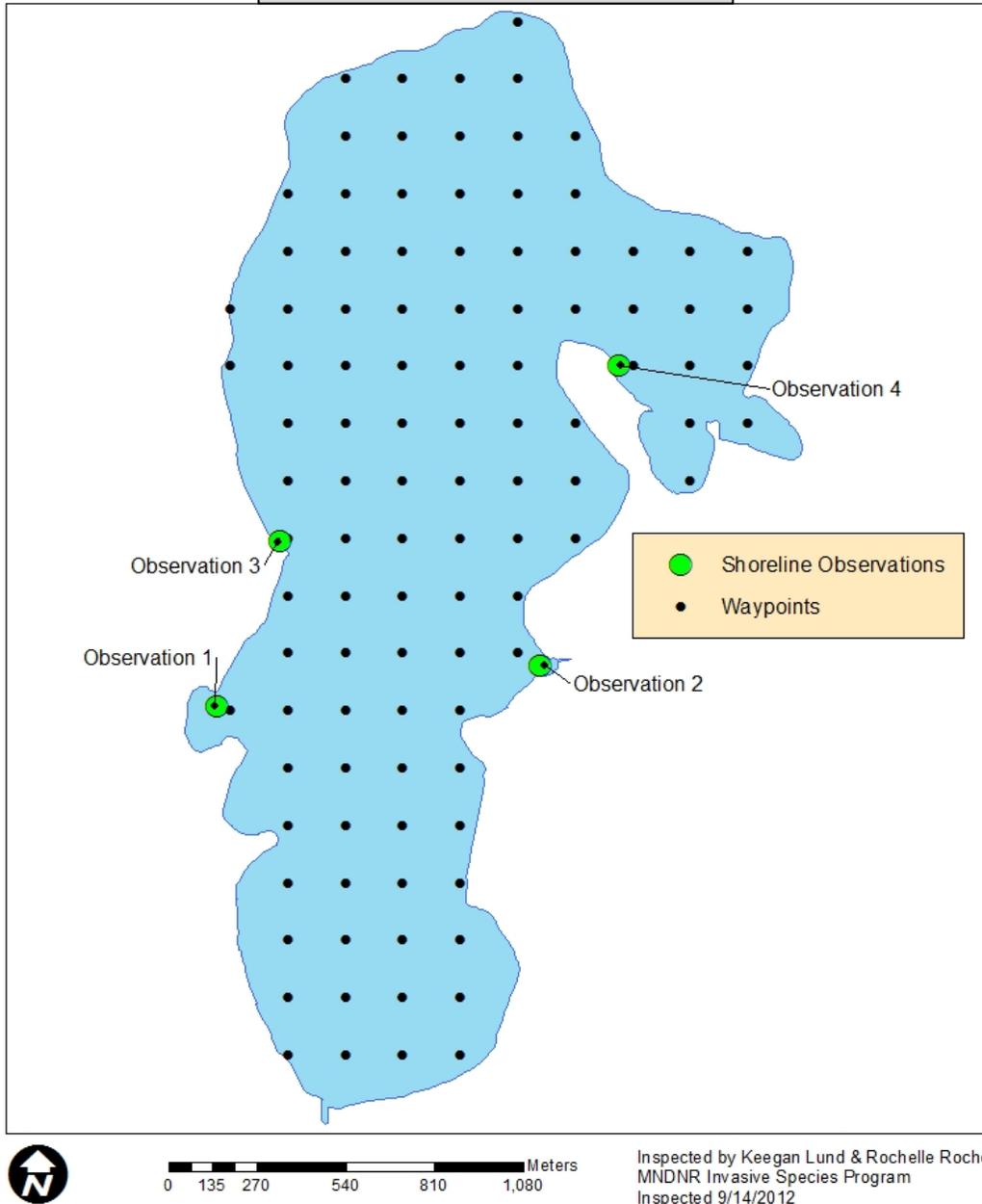
Figure 3: Distribution of curly-leaf pondweed turions



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Also included in this survey were four shoreline observations of plant species in the lake. At observation point 1, sago pondweed, coontail, and star duckweed were present. At observation point 2, water stargrass, coontail, sago pondweed, slender naiad, star duckweed, and turions were present. At observation point 3, coontail, star duckweed, and sago pondweed were present. At observation point 4, coontail, Canada waterweed, slender naiad, sago pondweed, and water stargrass were present.

Figure 4: Shoreline observation points



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Picture 1: Abundant coontail hooked on a sampling rake.



Picture 2: Curly-leaf pondweed



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References cited

Crow, G.E. and C.B. Hellquist. 2000. Aquatic and wetland plants of Northeastern North America. 2 volumes. The University of Wisconsin Press.

Madsen, J. D. 1999. Point intercept and line intercept methods for aquatic plant management. *APCRP Technical Notes Collection* (TN APCRP-M1-02). U.S. Army Engineer Research and Development Center, Vicksburg, MS.
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