Aquatic Invasive Species
Meandering Visible Littoral Zone Survey
Long Lake (WBIC: 2478200)
Polk County, Wisconsin

Dense mat of canopied NWM in Long Lake's southeast bay (8/19/23)

Aerial photo with survey tracks (8/19/23)

Project Initiated by:

Long Lake Protection and Rehabilitation District, Harmony Environmental, and the Wisconsin Department of Natural Resources – (Grant ACEI20218)

Close-up photo of a dense Northern water-milfoil bed (8/19/23)

Survey Conducted by and Report Prepared by:

Endangered Resource Services, LLC
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St. Croix Falls, Wisconsin
August 19, 2023

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INTRODUCTION:

Long Lake (WBIC 2478200) is a 272-acre seepage lake in central Polk County, Wisconsin in the Town of Balsam Lake (T34N R17W S5-8). It reaches a maximum depth of just over 17ft in the central basin and has an average depth of approximately 11ft (Busch et al. 1969) (Figure 1). The lake is eutrophic and visibility is generally poor with summer Secchi readings averaging 5.1ft since 1992; however, **the 2021 mean reading of 12.0ft (the most recent year available) was the highest since records began** (WDNR 2023). The bottom substrate in the lake's bays and central basin is predominately thick organic muck, while exposed points and most north/south shorelines are dominated by gravel and sand.

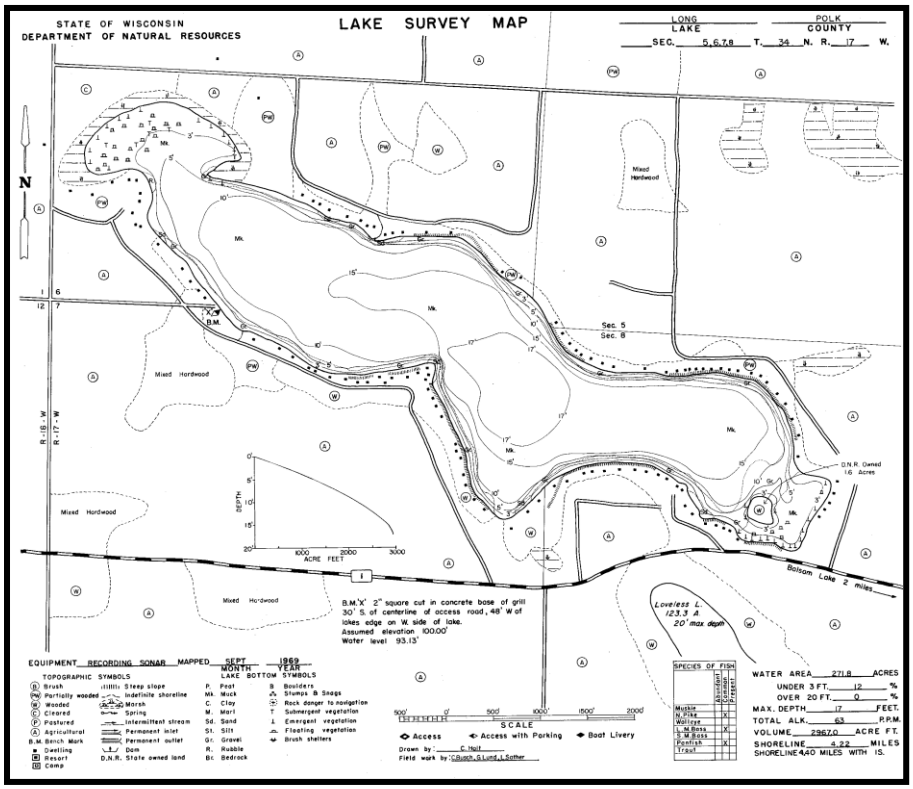

Figure 1: Long Lake Bathymetric Map

BACKGROUND AND STUDY RATIONALE:

Long Lake and the Long Lake Protection and Rehabilitation District (LLPRD) have an extended history of battling Curly-leaf pondweed (*Potamogeton crispus*) (CLP) - an exotic invasive plant species that thrives in the nutrient-rich sediments found in many parts of the lake. In 2023, the LLPRD, under the direction of Harmony Environmental (Cheryl Clemens), updated their Wisconsin Department of Natural Resources (WDNR) approved Aquatic Plant Management Plan (APMP). In addition to establishing minimum treatment thresholds for CLP, the plan also identified monitoring for new Aquatic Invasive Species (AIS) as a management priority. Because of this, we were asked to complete a late-summer meandering shoreline survey to look for any new AIS that might have invaded the lake. Specifically, this timeframe was chosen as it offers the best chance of detecting Purple loosestrife (*Lythrum salicaria*) (PL) and Eurasian water-milfoil (*Myriophyllum spicatum*) (EWM). This report is the summary analysis of that survey conducted on August 19, 2023.

SURVEY METHODS:

We searched the visible littoral zone along the shoreline of the entire lake to look for Eurasian water-milfoil in the zone of plant growth it would most likely be found in. We especially focused on the northwest bay and the northern shoreline as these are places that floating fragments introduced at the main public boat landing would most likely get blown to by the prevailing summer winds before settling to the lake bottom. We also scanned the shoreline of the entire lake as well as adjacent wetlands to search for Purple loosestrife.

RESULTS AND DISCUSSION:

We surveyed transects totaling 6.8km (4.2 miles) throughout the lake's visible littoral zone (Figure 2), but we **did NOT find any evidence of Purple loosestrife or Eurasian water-milfoil anywhere around or in Long Lake**. However, we again noted that the lake has large amounts of Northern water-milfoil (NWM) (*Myriophyllum sibiricum*) – a native species that is closely related to EWM and abundant in <3m of water; especially in the southeast bay (see the cover page of this report). Despite their superficial resemblance, EWM and NWM can be told apart by their number of leaflets – NWM has <24 whereas EWM normally has >26 (Figure 3). EWM also tends to have a bright red growth tip on the top of the plant whereas NWM has a bright lime green growth tip. In the fall, NWM forms winter buds on the tips of shoots whereas EWM has none.

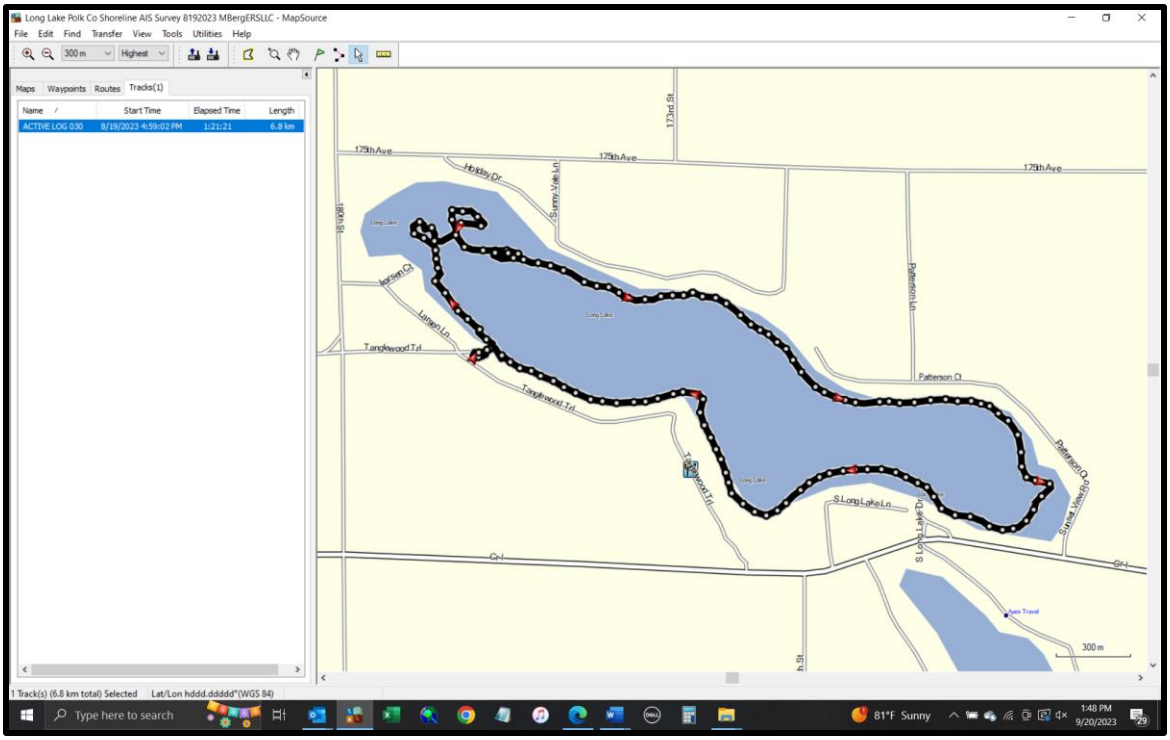

Figure 2: 2023 Shoreline Survey Tracks

Eurasian water- milfoil

Northern water-milfoil

Figure 3: Eurasian and Northern Water-milfoil Identification (Berg 2007)

Coontail (*Ceratophyllum demersum*), another somewhat similar looking beneficial native species, was also present in large numbers. It was especially common in the northwest bay and on the outer edge of the littoral zone in 3-4m of water over sandy and organic muck substrates. Unlike the milfoils, Coontail's leaflets fork and have tiny spines (Figure 4).

Figure 4: Coontail Identification (Hassler 2011)

CONSIDERATIONS FOR FUTURE MANAGEMENT:

Continuing to monitor Long Lake's public boat landings and shoreline with annual inspections is likely a prudent management decision as Eurasian water-milfoil is now present in nine other Polk County waterbodies including Cedar Lake, Half-moon Lake, Horseshoe Lake, the Indianhead Flowage, Long Trade Lake, North Twin Lake, Pike Lake, South Twin Lake, and the St. Croix River's Close Slough. Early detection of EWM or Purple loosestrife provides the best chance to economically contain the plants once an infestation has occurred. If any lake resident or boater discovers a plant they suspect may be EWM or PL, we encourage them to immediately contact Matthew Berg, ERS, LLC Research Biologist at 715-338-7502 for identification confirmation. Although a physical specimen with GPS coordinates can be taken, holding the plant in hand and texting a picture from a smartphone is usually enough to confirm identification and allows for an immediate response.

LITERATURE CITED

Busch, C., G. Lund, L. Sather, and C. Holt. 1969. Long Lake Polk County Map. Available from http://dnr.wi.gov/lakes/maps/DNR/2478200a.pdf (2023, August)

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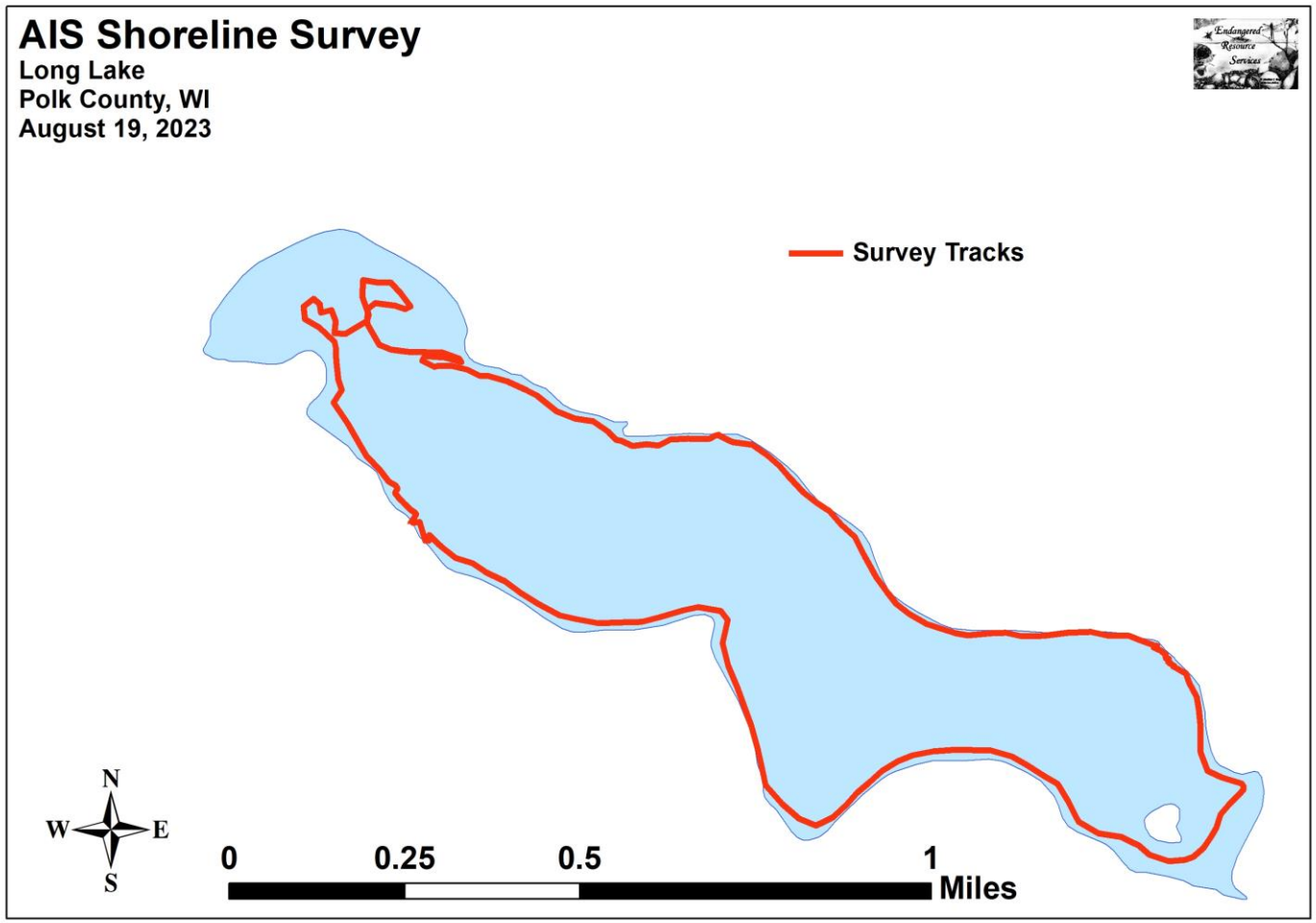
Appendix I: Long Lake Survey Tracks


AIS Shoreline Survey
Long Lake
Polk County, WI
August 19, 2023
Survey Tracks
N
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0.5
1
Miles