Invasive Species Early Detection and Delineation Report

Steve Henry Aquatic Survey Professionals

Big Lake (DOW# 04-0049-00) County: Beltrami
Surveyed: 6/27&28/2026 Water Temp (°F): 70 Air Temp (°F): 82

Method:

Steve and Sawyer Henry with Aquatic Survey Professionals performed an Aquatic Invasive Species Early Detection and Delineation Survey on Big Lake following the methodology described by Minnesota Department of Natural Resources in the "Guidance for Delineating Invasive Aquatic Plants" (2020). The boat navigates the lake moving from shallow water out to the point where water is deep enough that no vegetation is present. Using visual, sonar, and rake observations populations of Starry Stonewort and any other invasive species encountered are detected and delineated. Observations and waypoints were made every 50 meters with closer spacings when delineating the edges of potential treatment areas. Near the access and edge of the infestation survey points were spaced every 25 feet apart, once beyond this edge the sample points were stratified becoming 50 feet apart, stepping up to 100 feet. Invasive species density was recorded on a 1-3 scale with 3 being Abundant.

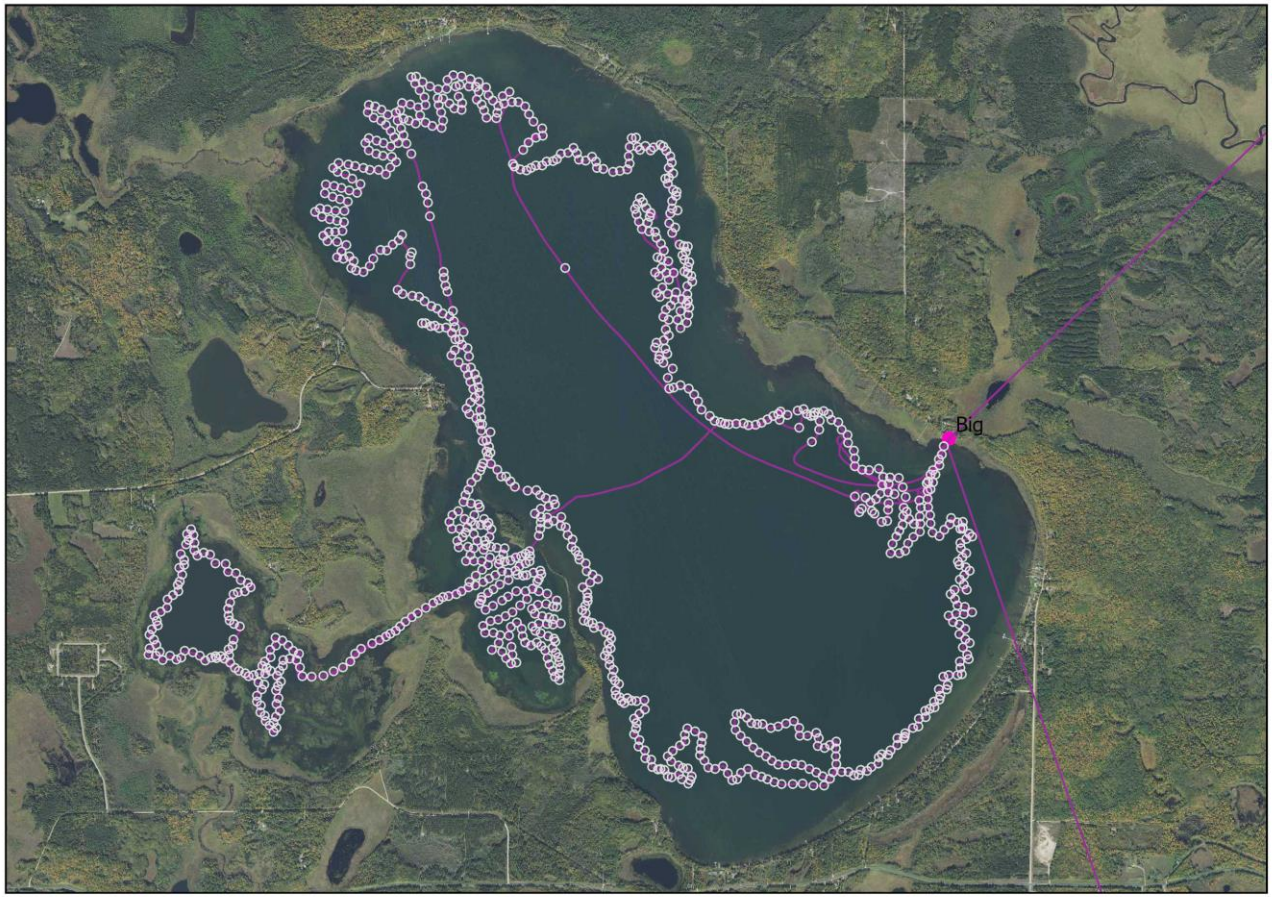
Results:

Invasive species were not detected at any site in Big Lake. The time allotted allowed us to go back through the most likely areas and double check that there were no invasives present. Only a few areas of the lake were highly suitable for the establishment of Curly Leaf Pondweed and/or Eurasian Water Milfoil. Much of the lake is suitable for Starry Stonewort but we did not find it in any of our samples or observations. Most of the lake is sandy with moderate to heavy wave action and steep drop offs. These factors discourage the establishment and persistence of most invasive aquatic plants. Invasive aquatic plants prefer shallow basins from 6 to 15 feet deep with a moderate silt content and reasonable water clarity. When depths transition rapidly from 6 feet directly into depths over 15 feet the seed heads invasive species produce can fall into depths too deep to germinate and grow. Like wise it is difficult for most invasive species to settle and establish on windswept shallow flats.

Quality native plant communities were present in numerous locations around the lake but plants are in general limited in their coverage. Flat Stem Pondweed, Clasping Pondweed, Bushy Pondweed, Canada Waterweed, and Chara were common native species encountered. Flat Stem Pondweed was the most common native and formed tall extensive beds where conditions were suitable such as in front of the public access and just south of there where the drop off turns from north-south to east-west. Each native plant mixture makes a particular signature on the sonar and we sampled many sites that appeared to possible be Curly Leaf Pondweed but each consisted only of natives. Please see the maps and photos for more details.

July 2026

Big Lake - Early Detection Survey Sample Sites



Public Accesses
TracksAfterBig2026
WPAfterBig2026
PostAlexEWM26Track

We meander along the entire shoreline from the shallows to beyond the depth that plants grow at. We use a double sided plant sample rake on a 25 foot to gather aquatic plants to identify by species. We watch side and down scanning sonar dropping waypoints onto any suspicious plants for further inspection and identification.

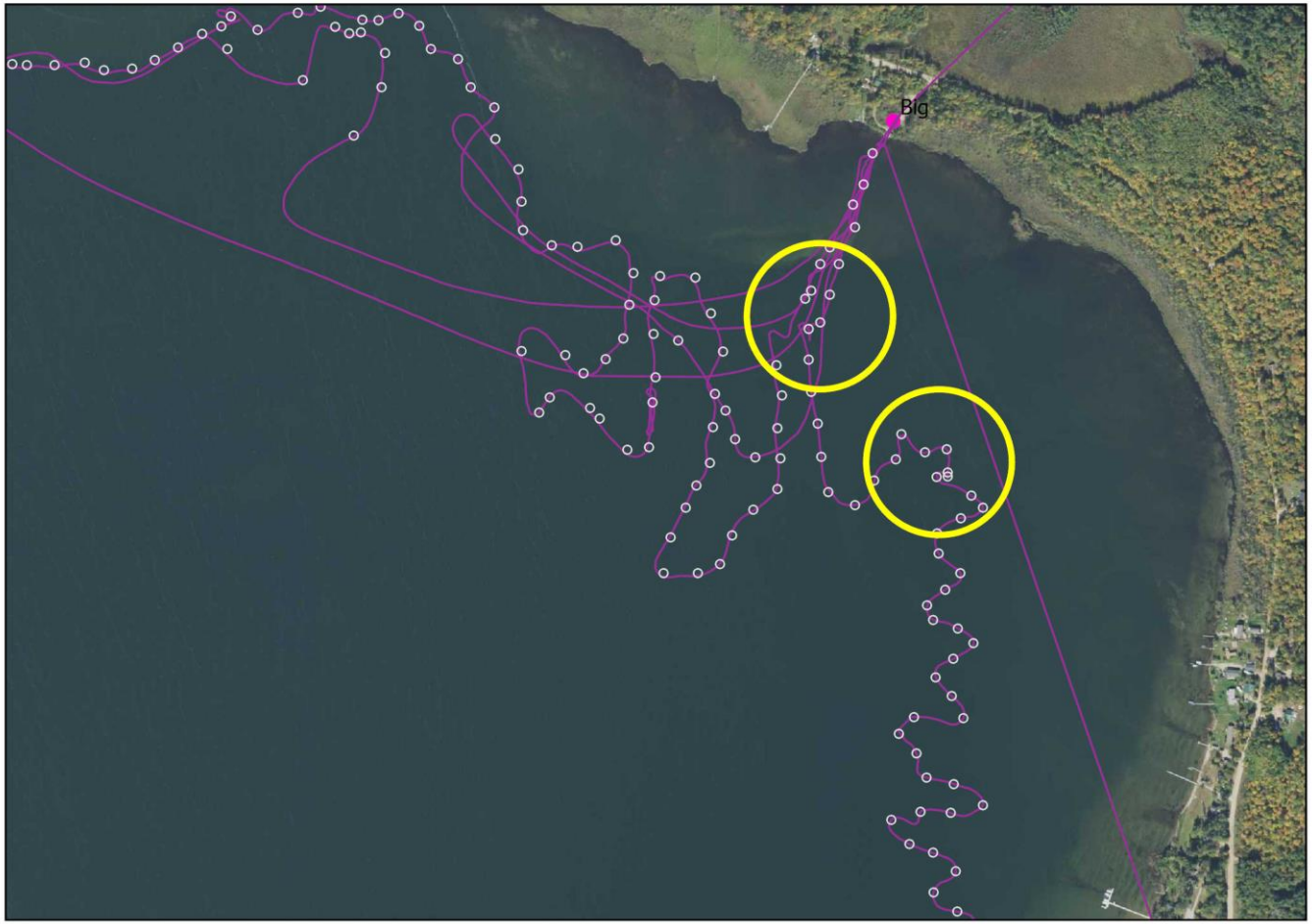
N

0 2,600 5,200 10,400 15,600 Feet

Credits: Steve Henry

July 2026

Big Lake - High Priority Areas



Public Accesses
TracksAfterBig2026
WPAfterBig2026
PostAlexEWM26Track

These areas are the right combination of depth, clarity, bottom composition, bottom morphology, and fertility to be primary host sites for Curly Leaf Pondweed.

Dense native plant growth was present but no invasive species were found.

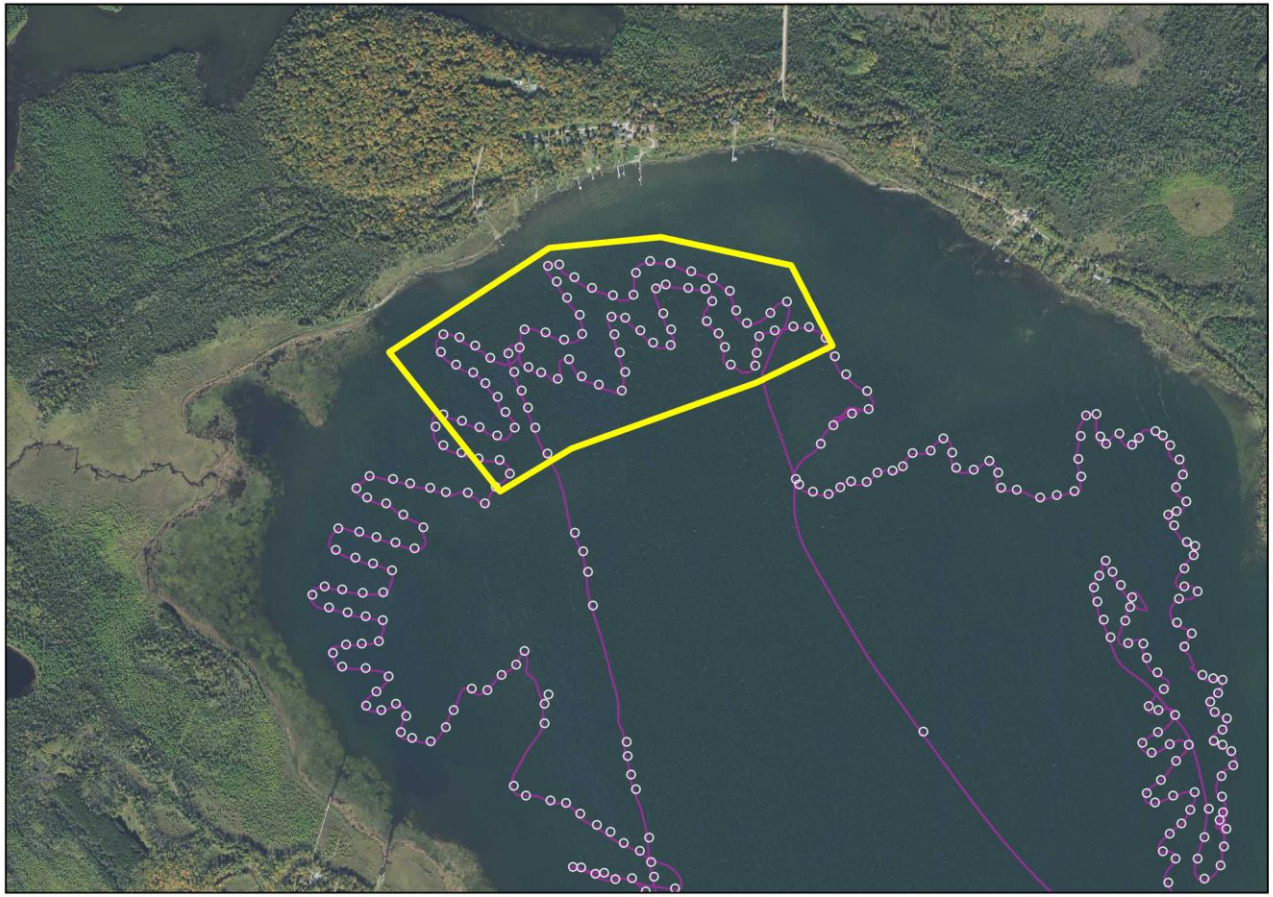
N

0 650 1,300 2,600 3,900 Feet

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July 2026

Big Lake - High Priority Areas



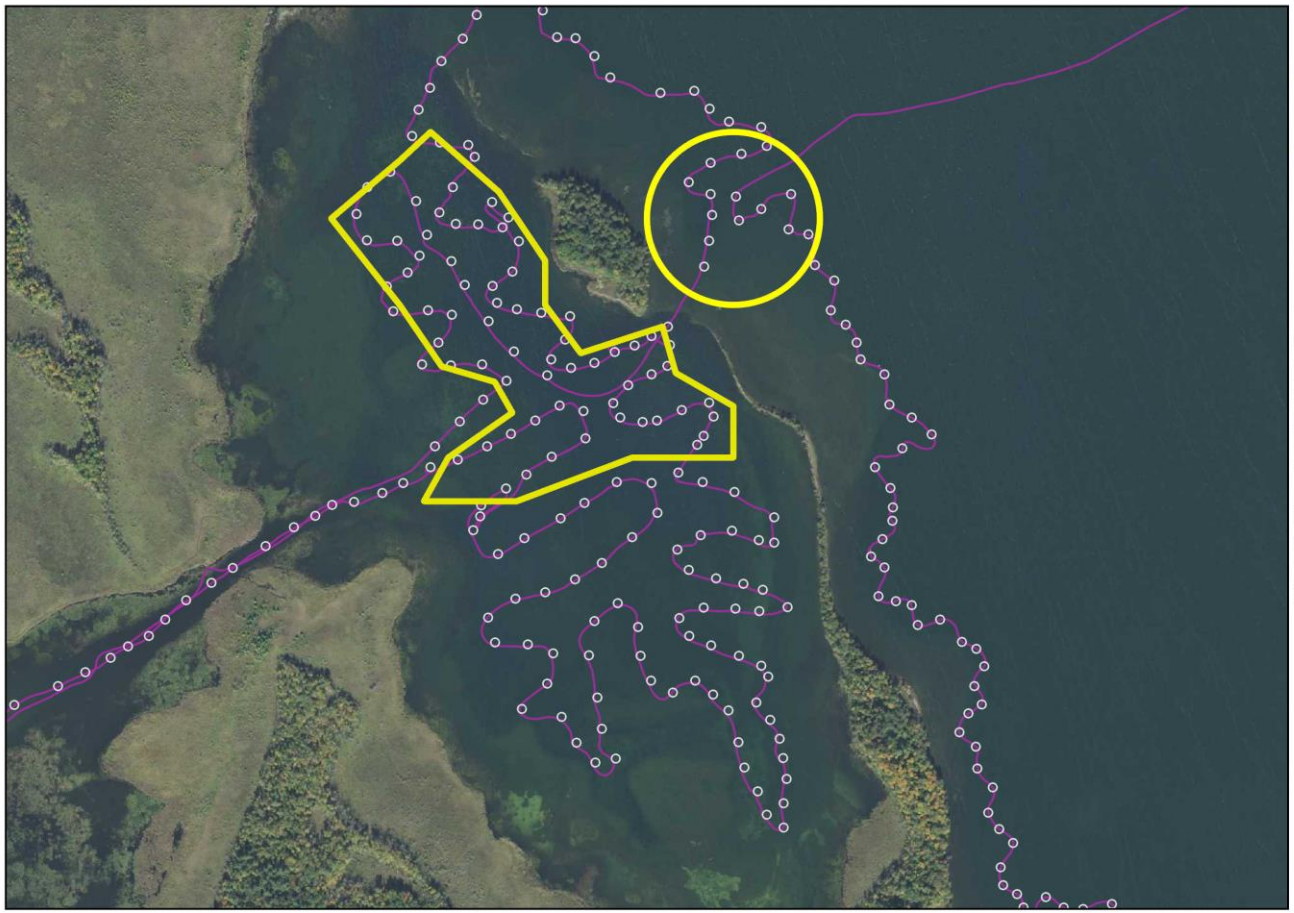
This area has the right combination of depth, clarity, bottom composition, bottom morphology, and fertility to be primary host sites for Curly Leaf Pondweed.

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Big Lake - High Priority Areas



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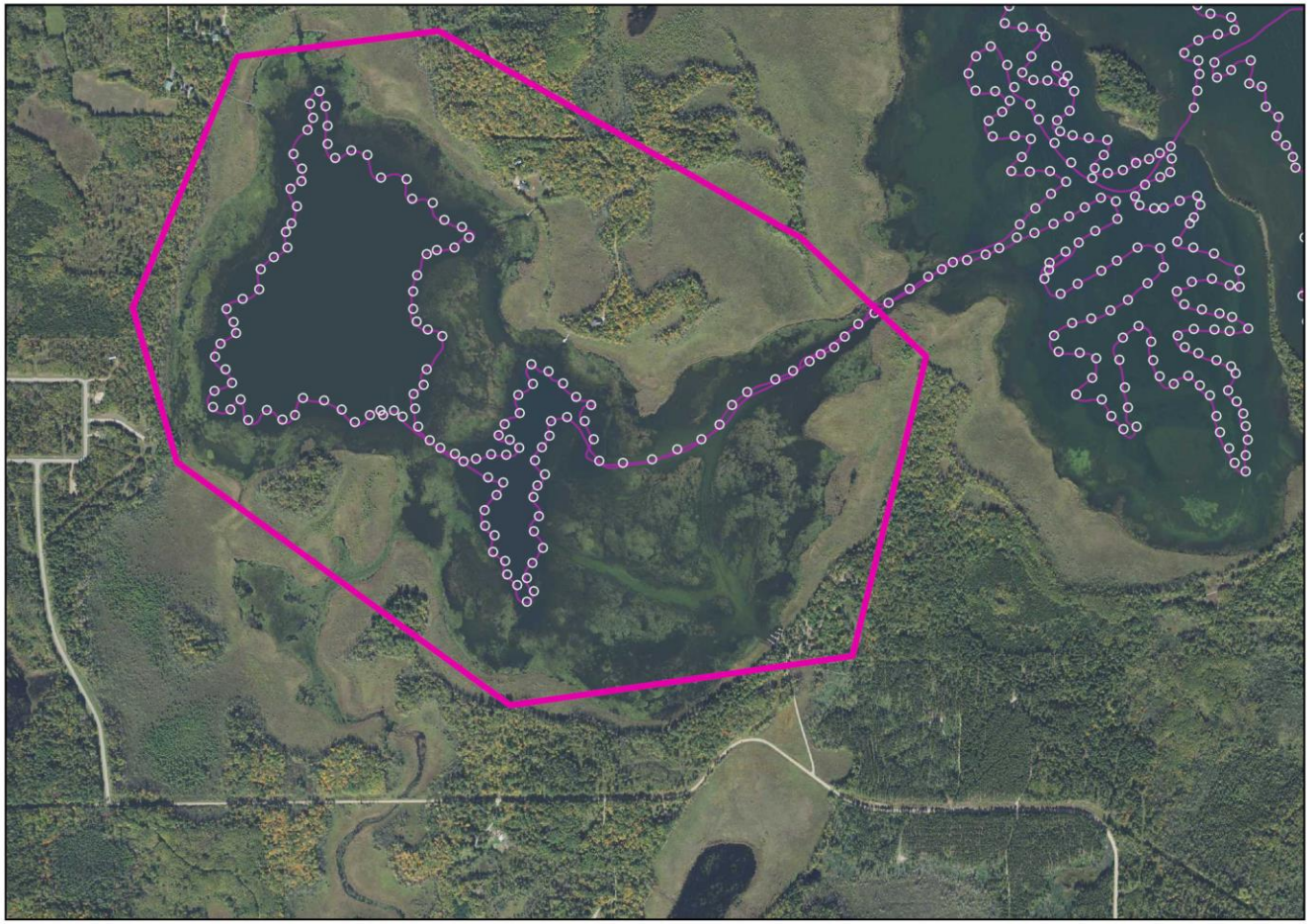
N

0 650 1,300 2,600 3,900 Feet

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July 2026

Big Lake - Low Priority Areas



- Public Accesses
- TracksAfterBig2026
- WPAfterBig2026
- PostAlexEWM26Track

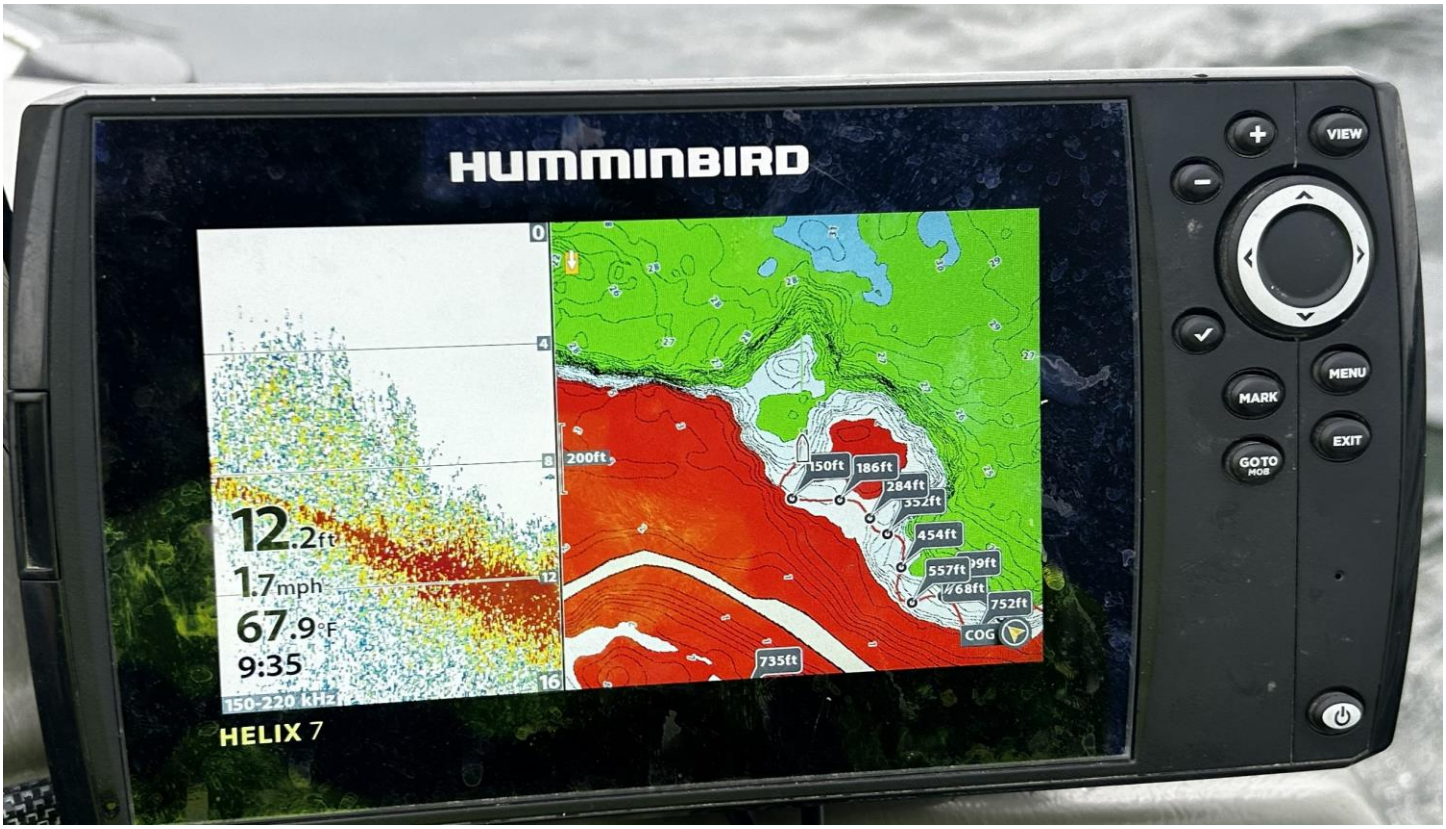
This area was fairly low clarity and a peaty soft bottom. Curly Leaf Pondweed could grow in some places here but likely would not thrive.

No invasive species were observed in this area and native plants were limited to a native band.

N

0 1,050 2,100 4,200 6,300 Feet

Credits: Steve Henry



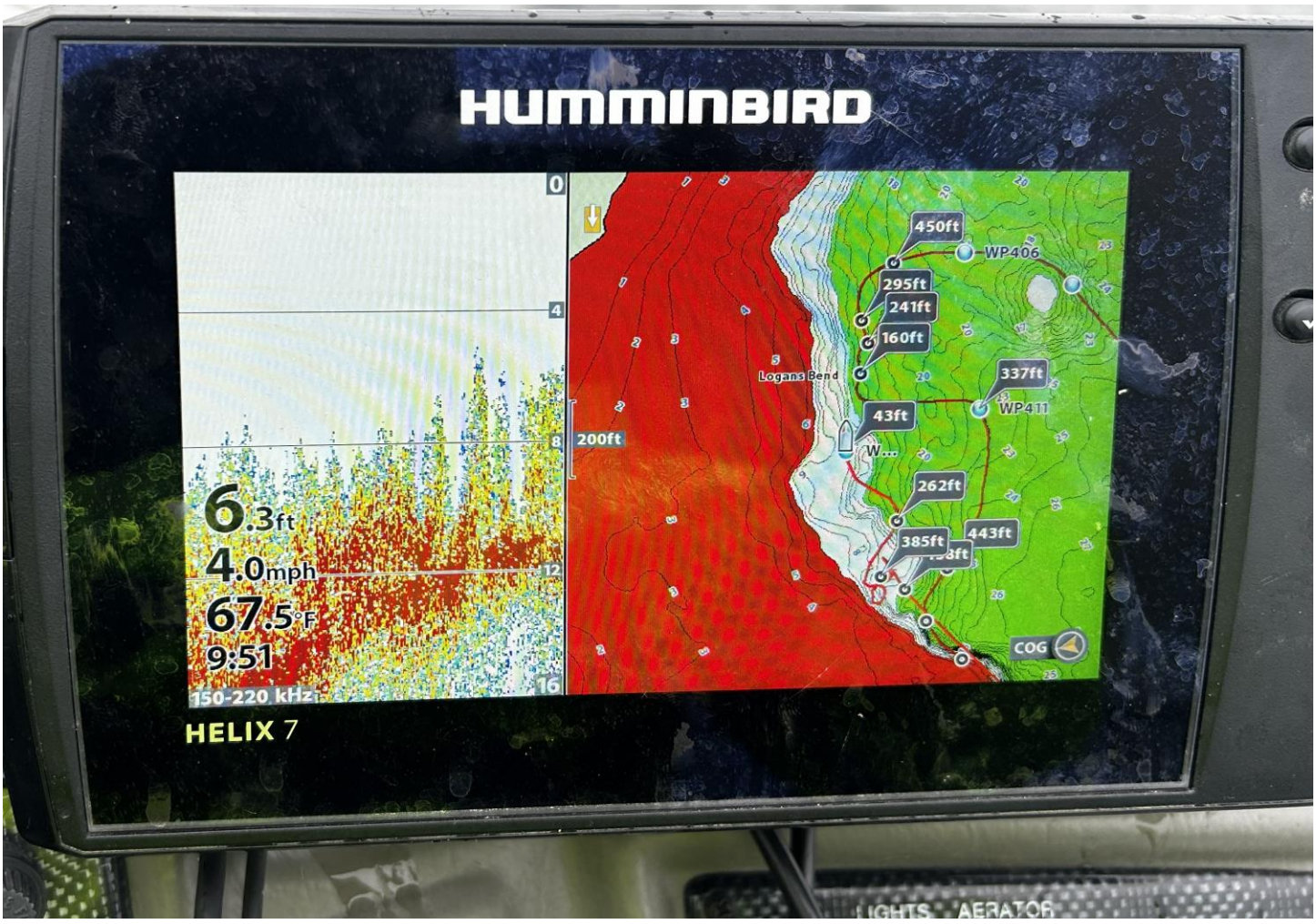
In this image the Flat Stem on the left (tall green and yellow) can be seen transitioning into a lower denser growth (orange and red). This unique community was sampled by rake to ensure invasives were not present.

July 2026



This is the plant community at the site above it is mainly abundant Canada Waterweed and some Flat Stem Pondweed.

July 2026



This site is overdense similar to the previous sonar image. Curly Leaf Pondweed returns a similar signature so this site was also investigated the plant sample rake.



The site above had Bushy Pondweed, Clasping Leaf Pondweed, and Flat Stem Pondweed growing together creating a uniquely dense sonar return.

July 2026