Land & Water Conservation Department

Dorothy Lake

Oneida County, Wisconsin

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Dorothy Lake AIS Monitoring and Water Clarity Report

WBIC:	981200
Previous AIS Findings:	Chinese Mystery Snail
New AIS Findings:	None
Field Date:	July 3, 2020
Field Crew:	Aubrey Nycz, AIS Project Leader, Oneida County Land and Water Conservation Department, and Thomas Boisvert, AIS Coordinator, Burnett County Land Services Department
Report By:	Aubrey Nycz

Purpose of lake monitoring: Water is Wisconsin's most precious resource. It provides an essential lifeline between wildlife, recreation, public trust resources, agriculture, industry, health and safety, and environmental, urban and rural interests throughout the state. With a growing population and a treasured supply of fresh water, the protection of water for designated and beneficial uses is of paramount importance.

The Oneida County AIS program monitors Oneida County waterbodies for the presence of aquatic invasive plants, animals, and organisms and obtains baseline water quality data. Early detection of AIS is crucial for rapid response, containment, and management. Obtaining baseline water quality data provides an indicator of each lake's current health and documents changes in water quality over time. Lake monitoring is in collaboration with the Department of Natural Resources, UW Extension's Citizens Lake Monitoring Network Program, and Great Lakes Indian Fish Wildlife Commission. The AIS Team follows the DNR's monitoring protocols and collected data is entered into the DNR's statewide database.

Data Collected: Suspected invasive species samples, Secchi disk readings, dissolved oxygen, water temperature, water column appearance, water color, and perception of water quality, shoreline and woody habitat notes, and GPS coordinates.

Areas observed: Perimeter of whole lake's littoral zone, including beaches and boat landings, inlets and outlets, and under and around docks and piers.

Methodology: Searching for AIS in the water and along the shoreline is achieved by slowly canoeing around the entire lake's littoral zone, meandering between shallow and maximum rooting depth or 100' from shore (whichever comes first).

Additionally, targeted sites considered high risk for invasive species introductions, such as boat landings, access points, parks, beaches, and inlets receive comprehensive AIS monitoring. Several methods are used to achieve the survey: survey from the canoe, walking along the shoreline and shallows, using aqua view scopes, sifting through vegetation, examining underwater solid surfaces, and analyzing rake tows and D-net samples.

Target invasive species include: Asian clams, banded mystery snails, Chinese mystery snails, Faucet Snails, New Zealand mudsnails, quagga mussels, zebra mussels, rusty crayfish, spiny waterfleas, Eurasian watermilfoil, curly leaf pondweed, flowering rush, non-native phragmites, purple loosestrife, yellow iris, and aquatic forget me nots.

Other priority species include: red swamp crayfish, Japanese knotweed, Japanese hops, European frog-bit, yellow floating heart, water chestnut, Brazilian waterweed, Hydrilla, fanwort, parrot feather, water, hyacinth, water lettuce, and rock snot.

Facts and figures about Dorothy Lake: Dorothy Lake, located in the Town of Lake Tomahawk, Oneida County, is a 96 acre seepage lake with a maximum depth of 35 feet (Figure 1). There is one public boat landing on Dorothy Lake located on Rainbow Road (Figure 2). The substrate is 65% sand, 10% gravel, 15% rock, and 10% muck. Along with reporting the depth and substrate, the Wisconsin Department of Natural Resources (DNR) reports that the lake has panfish, largemouth bass, smallmouth bass, northern pike, and trout.

Notes from the field (weather): The weather while conducting research on Dorothy Lake was ideal. The outside temperature was 85 degrees Fahrenheit, and there was little to no wind.

Notes from the field (aquatic invasive species monitoring): We completed a visual meander survey around the entire lake perimeter, searching both sides of the canoe, and moving in and out between various water depths. Polarized sunglasses were used to aide in looking at the bottom substrate. We looked both in the water and along the shoreline and made note of the plants and animals we observed in the process (see table 1). We did not find any new invasive species while monitoring.

Notes from the field (water quality monitoring): To observe the water clarity and quality on Dorothy Lake, we used a depth finder and maps indicating where data had been collected in the past to locate the deep hole. After locating the deep hole, we used a Secchi disk to measure water clarity and a dissolved oxygen meter to measure water quality. Oxygen is needed for a healthy fish population, and also for plants to respire at night. The measurements from the dissolved oxygen meter can tell us if the organisms in the lake are under stress. The dissolved oxygen measurements on Dorothy Lake were normal. These measurements can be found in table 2. The Secchi disk reading was at 17 feet out of a maximum depth of 35 feet.

Figure 1. Map of Oneida County, WI with Dorothy Lake circled in red.

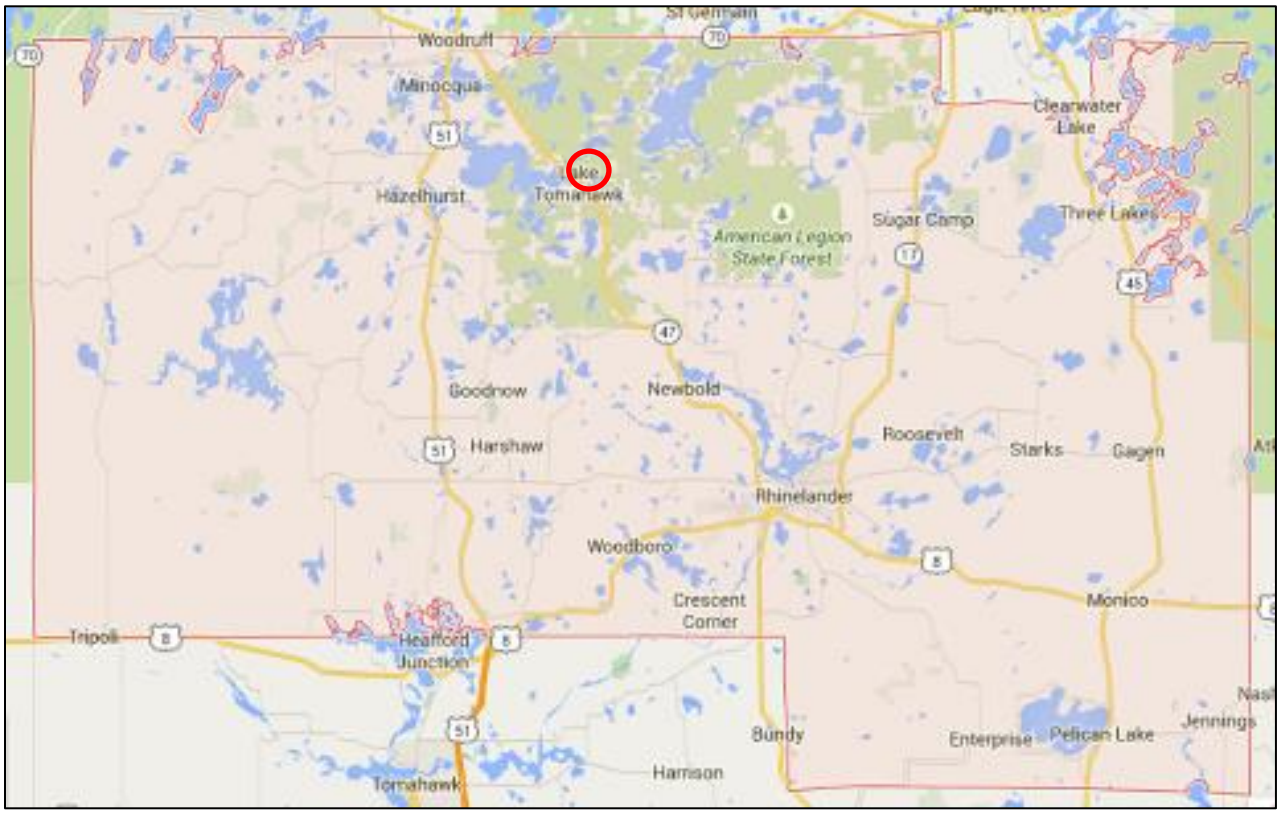

Figure 2. AIS boat launch and shoreline surveillance monitoring location.

Boat Landing

Secchi disk reading

Coordinates where the dissolved oxygen and Secchi disk data was collected:

Latitude: 45.818914

Longitude: -89.582703

Table 1. Common plants found in Dorothy Lake while monitoring.

Bullhead Pond Lily *(Nuphar variegate)* **Description:** An aquatic plant with heart-shaped leaves that can grow to be 15 inches long. This plant also has a yellow, cup-shaped flower. **Status:** Native *Photo Credit: Jomegat's Weblog*	
White Water Lily *(Nymphaea odorata)* **Description:** An aquatic plant that has large, round leaves that can grow to be 12 inches in diameter. White water lilies also have large, white flowers with many petals. **Status:** Native *Photo Credit: Stephanie Boismenue*	
Common Bladderwort *(Utricularia macrorhiza)* **Description:** A submerged aquatic plant. Leaves contain small sacks that trap small invertebrates. This plant usually has unrooted stems that easily tangle with other plants, and tends to look cloudy underwater. **Status:** Native *Photo Credit: frenchhill.org*	

Ribbon-leaved Pondweed *(Potamogeton epihydrus)*

Description: A perrenial, submergent plant with broad, elliptical floating leaves and long, narrow ribbon-like submersed leaves.

Status: Native

Photo Credit: Joanne Kline

Table 2. Dissolved oxygen levels and temperatures at the deep hole.

Depth (Feet)	Dissolved Oxygen Levels (mg/L)	Percent of Dissolved Oxygen	Temperature (°F)
2	7.92	106.0	81.7
4	8.0	105.9	80.5
6	8.21	107.5	79.5
8	8.41	108.4	77.9
10	8.58	108.6	76.2
12	9.23	112.5	72.6
14	10.48	121.6	72.6
16	10.97	121.5	63.9
18	11.11	118.5	60.6
20	9.93	100.3	57.0
22	8.41	83.2	54.4
24	5.98	57.6	52.4
26	2.28	22.2	50.6

Resources: https://dnr.wi.gov/lakes/lakepages/LakeDetail.aspx?wbic=981200&page=facts