Oneida County
Land & Water Conservation Department

Perch Lake

Oneida County, Wisconsin

Page 1: July 22, 2021 Aquatic Invasive Species Monitoring and Water Quality Report

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Perch Lake AIS Monitoring and Water Clarity Report

Field Date:	July 22, 2021
WBIC:	1010800
Previous AIS Findings:	Chinese Mystery Snails
New AIS Findings:	No new AIS found.
Field Crew:	Stephanie Boismenue, AIS Coordinator, and Aubrey Nycz, AIS Lead Program Assistant, Oneida County Land and Water Conservation Department
Report By:	Aubrey Nycz

Purpose: 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.

Each year, the Oneida County Aquatic Invasive Species (AIS) Program staff conducts AIS early detection monitoring and baseline water quality monitoring in Oneida County waterbodies. In addition, staff conducts AIS monitoring at boat landings, rivers, streams, wetlands, roadsides, culverts, and Organisms in Trade. Monitoring takes place from June through September of each year.

AIS early detection monitoring is the most effective approach to locating pioneer populations of WI Chapter NR 40 regulated AIS, species not widely established, and newly introduced species to Wisconsin. Early detection of AIS is crucial for rapid response, containment, management, preventing their spread, and reducing management costs. Implementation of rapid response activities is vital in maintaining the stability of a waterbodies ecosystem services, habitats, fisheries, recreational opportunities, property values, economy, and human health.

Water quality monitoring provides information on the physical, chemical, and biological characteristics of water. Monitoring aims at assessing the environmental state, detecting trends, and identifying potential problems in the water or watershed. The state of water quality is the result of complex natural and manmade conditions and the consequent of those interactions over time. Evaluating trends determines whether water quality is changing relative to land use and natural conditions. Water quality data provides important and useful information to lake groups, local and regional resource managers, community stakeholders, and provides guidance

with protecting and enhancing our waters, watersheds and development to new approaches to water quality management.

Our monitoring program is in collaboration with the DNR, UW Extension's Citizens Lake Monitoring Network Program, and Great Lakes Indian Fish Wildlife Commission. All AIS staff are trained in the in the DNR's AIS monitoring, identification, collection, verification, reporting, and decontamination protocols.

Data Collected: AIS identification, live specimens, photos, population densities, distribution, locations and GPS coordinates. Other observations may include species size, characteristics, and impact to native habitat. Water quality data includes Secchi disc, dissolved oxygen, temperature, water characteristics, 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, and other areas identified as most vulnerable to the introduction of AIS.

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 of invasive species introductions, such as boat landings, access points, parks, beaches, and inlets receive comprehensive AIS monitoring. Several methods and tools are utilized to achieve the survey: survey from the canoe, walking along the shoreline and shallows, using aqua view scopes, snorkeling to examine underwater solid surfaces, sifting through vegetation, and analyzing plant rake samples, veliger tows, and D-net sediment samples.

Targeted Chapter NR40 Invasive Species Include: Asian clams, banded mystery snails, Chinese mystery snails, Faucet Snails, New Zealand mudsnail, quagga mussels, zebra mussels, rusty crayfish, spiny waterfleas, Eurasian watermilfoil, curly leaf pondweed, flowering rush, non-native phragmites, purple loosestrife, yellow iris, and variegated reed manna grass (Glyceria Maxima 'Variegated').

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.

Perch Lake Data: Perch Lake, located in the Town of Woodboro, Oneida County, is a 22-acre seepage lake with a maximum depth of 21 feet (Figure 1.). The water level appeared high on this lake though, and we recorded 25 feet when we were at the reported deep hole. There is one public boat landing on Perch Lake located on the northwest side of the lake off of Trout Creek Road (Figure 2). The substrate is 25% sand, 20% gravel, 15% rock, and 40% muck. Along with reporting the depth and substrate, the Wisconsin Department of Natural Resources (DNR) reports that the lake has panfish, largemouth bass, and trout.

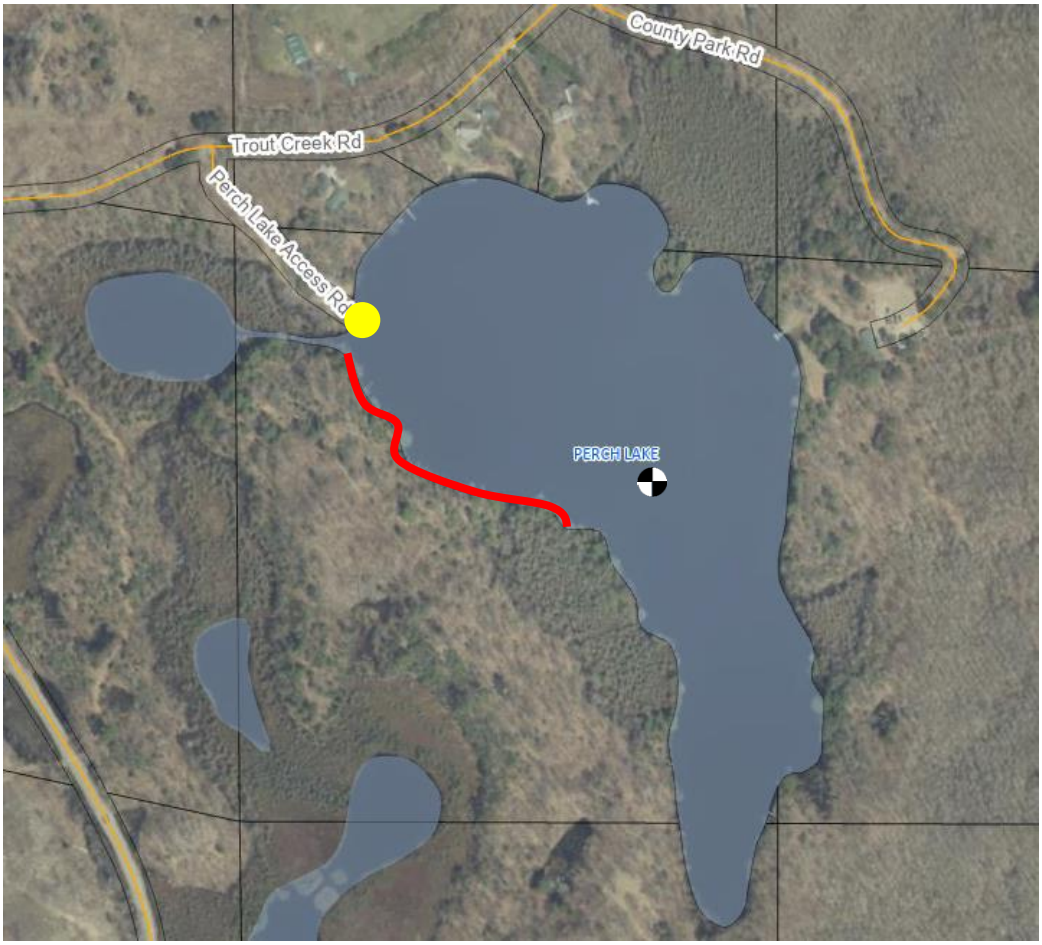
Field Notes (weather): The weather while conducting research on Perch Lake was ideal. It was sunny, and the wind was calm. This made it easier to navigate our canoe and collect water quality and clarity data.

Field Notes (AIS monitoring): We completed a visual meander survey around 75% of the lake's perimeter, searching both sides of the canoe, and moving in and out between various water depths. We plan to complete monitoring the remaining 25% of the shoreline later this summer. Polarized sunglasses were used to aide in looking at the bottom substrate, however, the water clarity was not good. Even with polarized sunglasses, it was difficult to see the bottom substrate clearly. 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).

Field Notes (water quality monitoring): To observe the water clarity and quality on Perch 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 Perch Lake were low beginning at 12 feet. This is because Perch Lake is a small lake that does receive much wind. At this time in the summer, plants begin to decompose, and the decomposition takes oxygen out of the water. With a lack of wind, the oxygen in the top half of the lake is not able to mix with the oxygen in the deeper parts of the lake, causing anoxic water. Even though anoxic water can raise some concern, the water quality results that we obtained on this waterbody are common for smaller waterbodies, such as Perch Lake, at this time of year, as well as in late winter. Oxygen levels will increase and level out on Perch Lake in the fall and in the spring. These measurements can be found in table 2. The Secchi disk reading was at 1.25 feet out of a maximum depth of 25 feet. The small amount of water visibility is most likely due to high algae levels on the lake. This is also typical for this time of the year.

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

Figure 2. Map of Perch Lake.



Map Key

Boat Landing

Portion of the lake that was not monitored

Location of dissolved oxygen and Secchi disk reading
Latitude: 45.631
Longitude: -89.575

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

Blue Flag Iris (Iris versicolor) **Description:** A semi-aquatic to emergent perennial. Flowers are deep blue to purple, 6 parted, 6-8 cm wide. Sepals may have greenish-yellow markings at the base surrounded by a white zone. Leaves are narrow, sword-like; arranged in flattened, fan-like clusters. Flowers stalks (20-80 cm high) are taller than the leaves. **Status:** Native *Photo Credit: Wisconsin Department of Natural Resources* 
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* 
Coontail (Ceratophyllum demersum) **Description:** An aquatic plant that is heavily branched and light green to brown in color. This plant grows to be 2 m tall, has whorled leaves that branch once or twice, and is bushy at the tip. **Status:** Native *Photo Credit: illinoiswildflowers.info* 
Pitcher Plant (Sarracenia purpurea) **Description:** A wetland plant that has a very characteristic “pitcher” or cup-shaped leave. Insects climb down into these leaves and become entrapped by fluid and sticky hairs. Once the insect dies it is slowly ingested by the plant. **Status:** Native *Photo Credit: Stephanie Boismenue* 

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	10.8	119.9%	75.3
4	9.6	112.2%	73.7
6	1.93	21.6%	69.6
8	0.61	6.6%	65.4
10	0.46	4.5%	58.6
12	0.07	0.7%	54.2

14	-0.1	-0.9%	50.4
16	-0.18	-1.6%	48.3
18	-0.22	-1.9%	46.5
20	-0.25	-2.1%	45.9
22	-0.27	-2.2%	45.6

Resources: https://dnr.wi.gov/lakes/lakepages/LakeDetail.aspx?wbic=1010800