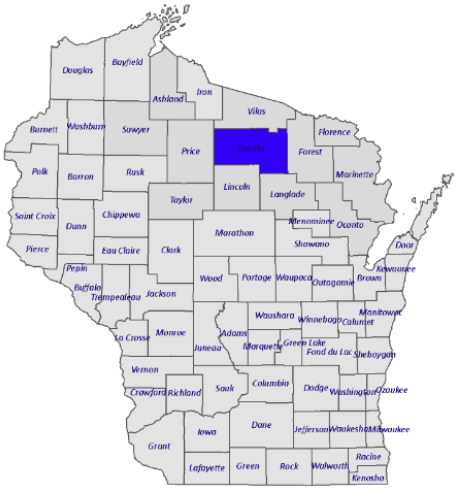
Oneida COUNTY
Land & Water Conservation Department

Townline Lake

Oneida County, Wisconsin

Page 1: July 29, 2021 Aquatic Invasive Species Monitoring and Water Quality Report



Michele Sadauskas, County Conservationist
Stephanie Boismenue, AIS Coordinator
Jonna Stephens Jewell, Program Assistant

Oneida County Courthouse
P O Box 400, Rhinelander, Wisconsin 54501
Phone (715) 369-7835 Fax (715) 369-6268

Townline Lake AIS Monitoring and Water Clarity Report

Field Date:	July 29, 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 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: Townline Lake, located in the Town of Newbold, Oneida County, is a 61-acre seepage lake with a maximum depth of 25 feet (Figure 1.). There is one public boat landing on Townline Lake located near the Townline Lake Park on the southwestern shoreline of the lake (Figure 2). The substrate is 35% sand, 5% gravel, 15% rock, and 35% muck. Along with reporting the depth and substrate, the Wisconsin Department of Natural Resources (WDNR) reports that the lake has panfish and largemouth bass.

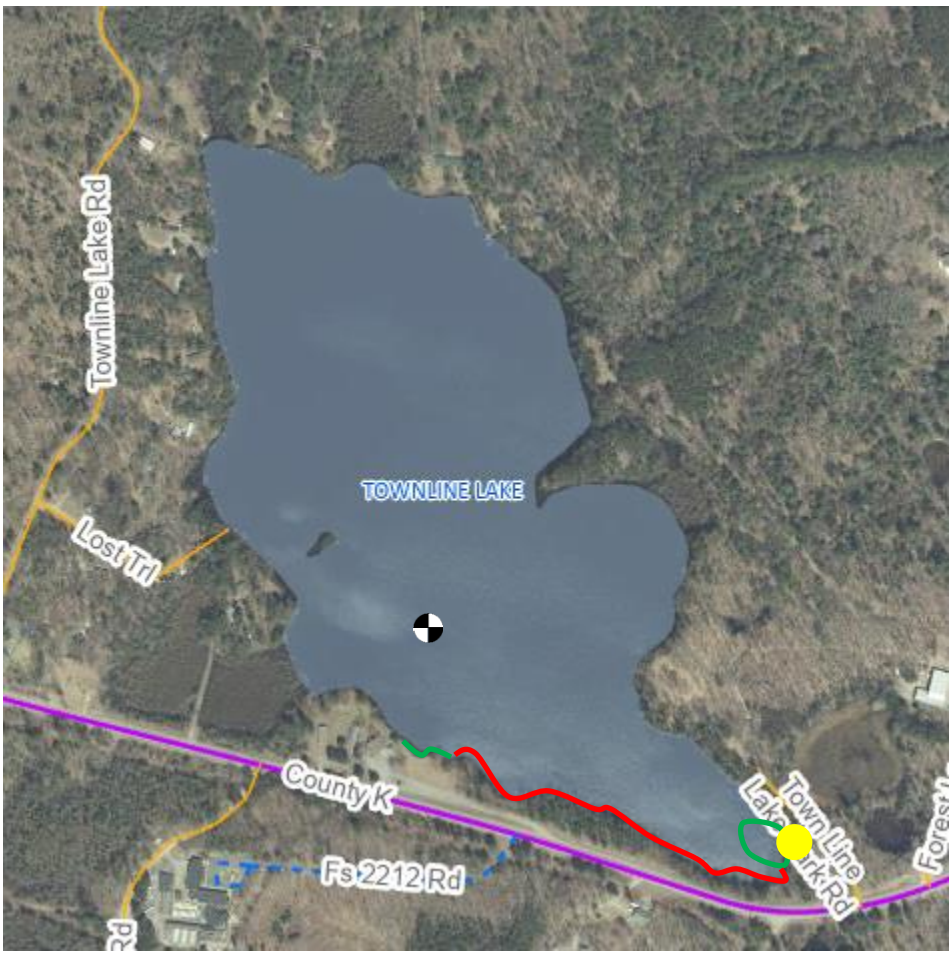
Field Notes (weather): The weather while conducting research on Townline Lake was fair. The air temperature was 76 degrees Farhenheit, and there was 55% humidity. The wind was blowing at 10 miles per hour from the north.

Field Notes (AIS monitoring): We completed a visual meander survey around 15% of the lake's perimeter, searching both sides of the canoe, and moving in and out between various water depths. Polarized sunglasses and aquascopes were used to aide in looking at the bottom substrate. Along with doing a visual meander survey via canoe, we also walked along the shoreline at the boat landing and the public beach as these are both high risk areas for invasive species (see figure 2). Throughout our monitoring, we 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 Townline 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 Townline Lake were low beginning at 18 feet. At this time in the summer, plants begin to decompose, and the decomposition takes oxygen out of the water. With a lack of wind and boat traffic, the oxygen in the top half of the lake is not able to mix with the deeper parts of the lake where the plants began to decompose. This causes anoxic water in the deeper parts of the lake. 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 Townline Lake at this time of year, as well as in late winter. Oxygen levels will increase and level out on Townline Lake in the fall and in the spring. These measurements can be found in table 2. The Secchi disk reading was at 6 feet out of a maximum depth of 23 feet. The reduced amount of water visibility is most likely due to raised algae levels on the lake. This is also typical for this time of the year.

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

Figure 2. Map of Townline Lake.



Map Key

- Boat landing
- Section of lake that was monitored by canoe
- Section of lake that was monitored by foot
- Location of dissolved oxygen and Secchi disk reading
  Latitude: 45.64450
  Longitude: 089.46276

Table 1. Common plants found in Townline 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

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

Large Purple Bladderwort *(Utricularia purpurea)*
Description: long stems up to several feet long, often forming large patches. Leaves fine, arranged in whorls of 5-7, with scattered tiny bladders on the tips of the leaves. Flowers are purple, 5-parteed, 2-lipped, the lower lip having three lobes and a yellow spot.
Status: Native
Photo Credit: Shirley Denton

Northern Arrowhead *(Sagittaria cuneata)*
Description: Submergent leaves are 1-5cm wide, up to 60cm long, and have a prominent midvein. Floating leaves when present are arrow-shaped with two short lobes. Flowers are white with 3 petals.
Status: Native

Photo Credit: vancouverislandgrows.com

Water Shield *(Brasenia schreberi)*
Description: An aquatic plant with stems up to 2 meters long. This plant has small floating leaves and reddish purple flowers that have 6-8 petals.
Status: Native

Photo Credit: Shannon Sharp

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

Depth (Feet)	Temperature (°F)	Percent of Dissolved Oxygen	Dissolved Oxygen Levels (mg/L)
2	79	94	7.63
4	78.2	93.6	7.64
6	78	93.4	7.63
8	78	93.2	7.63
10	77.9	93	7.62
12	76.9	85.9	7.11
14	71.5	66.7	5.84
16	65.6	29.3	2.75
18	61.7	8.1	0.79
20	59.7	2.9	0.29
22	59.2	1.5	0.15

Resources: https://dnr.wi.gov/lakes/lakepages/LakeDetail.aspx?wbic=1023100