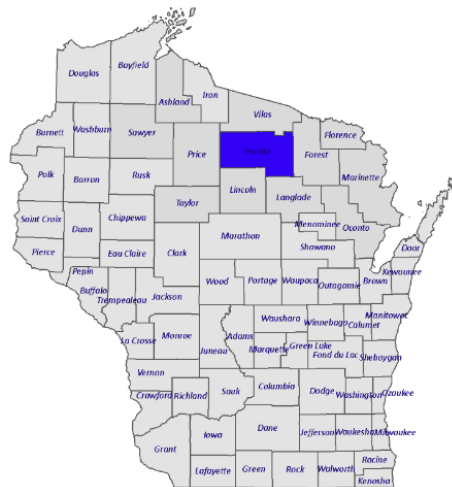




Gilmore Lake

Oneida County, Wisconsin

Page 1: August 3, 2021 Aquatic Invasive Species Monitoring and Water Quality Report





*Michele Sadauskas, County Conservationist
Stephanie Boismenu, 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*

Gilmore Lake AIS Monitoring and Water Clarity Report

Field Date: July 22, 2021
WBIC: 1589300
Previous AIS Findings: Chinese Mystery Snail, Curly Leaf Pondweed, Hybrid Cattail, Narrow-leaf Cattail
New AIS Findings: Banded Mystery Snail
Field Crew: Stephanie Boismenu, 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. Total distance canoed: 4.4 miles.

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.

Gilmore Lake Data: Gilmore Lake, located in the Town of Woodruff, Oneida County, is a 314-acre drainage lake with a maximum depth of 24 feet (Figure 1.). The water level appeared high on this lake though, and we recorded 29 feet when we were at the reported deep hole. There is one public boat landing on Gilmore Lake located off of Hwy E (Figure 2). The substrate is 70% sand, 15% gravel, 0% rock, and 15% muck. Along with reporting the depth and substrate, the Wisconsin Department of Natural Resources (DNR) reports that the lake has panfish, largemouth bass, walleye, northern pike, and musky.

Field Notes (weather): The weather while conducting research on Gilmore Lake was fair. The air temperature was 68 degrees Fahrenheit, and there was 65% humidity in the air. It was partly cloudy outside, and we experienced winds from the west at six miles per hour.

Field Notes (AIS monitoring): We completed a visual meander survey around the entire 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. Additionally, we walked along the shoreline at five locations (see figure 2) that were high risk areas for invasive species. At these locations, we used aquascopes to see in the water and collected water samples to check for spiny waterfleas. While walking along the shoreline, I discovered two banded mystery snails, which is an invasive species that is not currently verified on this waterbody. I collected these specimens to send to the DNR, so a formal verification can be made. Throughout our monitoring, we made note of the plants and animals we observed (see table 1).

Field Notes (water quality monitoring): To observe the water clarity and quality on Gilmore 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 Gilmore Lake were typical for this time of year. These measurements can be found in table 2. The Secchi disk reading was at 5 feet out of a maximum depth of 29 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 Gilmore Lake circled in red.

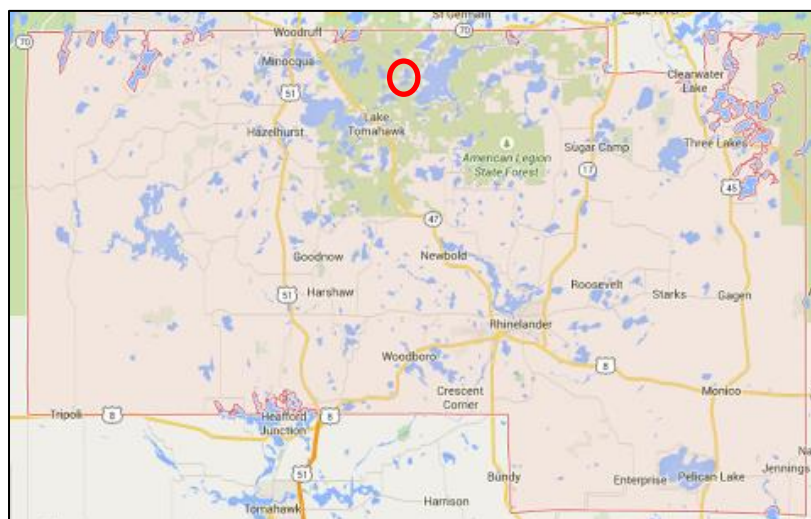


Figure 2. Map of Gilmore Lake.



Map Key











-  Boat Landing
-  Targeted monitoring locations
-  Banded Mystery Snail locations
-  Location of dissolved oxygen and Secchi disk reading
Latitude: 45.85069
Longitude: 089.56304

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

<p>Blue Flag Iris (<i>Iris versicolor</i>)</p> <p>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.</p> <p>Status: Native</p> <p><i>Photo Credit: Wisconsin Department of Natural Resources</i></p>	
<p>Bullhead Pond Lily (<i>Nuphar variegata</i>)</p> <p>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.</p> <p>Status: Native</p> <p><i>Photo Credit: Jomegat's Weblog</i></p>	
<p>Clasping-leaf pondweed (<i>Potamogeton richardsonii</i>)</p> <p>Description: A submerged aquatic plant. Leaves are wavy and smooth leaf edges and pointed tips.</p> <p>Status: Native</p> <p><i>Photo Credit: Paul Skawinski</i></p>	
<p>Coontail (<i>Ceratophyllum demersum</i>)</p> <p>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.</p> <p>Status: Native</p> <p><i>Photo Credit: illinoiswildflowers.info</i></p>	
<p>Joe Pye Weed (<i>Eupatorium maculatum</i>)</p> <p>Description: Pink to purplish flowerheads in a flat cluster 3-5 inches across. Leaves are whorled in groups of 3-6, coarsely toothed, and pointed on both ends. Stems are usually green or purplish with purple spots.</p> <p>Status: Native</p> <p><i>Photo Credit: Beth Zimmer</i></p>	
<p>Large Leaf Pondweed (<i>Potamogeton amplifolius</i>)</p> <p>Description: A submerged aquatic plant. Submergent leaves are very broad (4-7 cm wide and 8-20 cm long), arched and slightly folded. Floating leaves are 2-23cm long, with a petiole longer than the leaf blade.</p> <p>Status: Native</p> <p><i>Photo Credit: Paul Skawinski</i></p>	




<p>Northern Arrowhead (<i>Sagittaria cuneata</i>)</p> <p>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.</p> <p>Status: Native</p> <p><i>Photo Credit: vancouverislandgrows.com</i></p>	
<p>White Water Lily (<i>Nymphaea odorata</i>)</p> <p>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.</p> <p>Status: Native</p> <p><i>Photo Credit: Stephanie Boismenue</i></p>	
<p>Wild Celery (<i>Vallisneria americana</i>)</p> <p>Description: An aquatic plant with ribbon-like leaves that are dark-green. This plant grows below the water surface and then blankets the surface. This plant produces small, whitish-yellow flowers.</p> <p>Status: Native</p> <p><i>Photo Credit: Jacqueline Donnelly</i></p>	

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

Depth (Feet)	Temperature (°F)	Percent of Dissolved Oxygen	Dissolved Oxygen (mg/L)
1	73.2	98.3	8.45
2	73.2	98.0	8.43
3	73.2	98.1	8.44
4	73.2	98.5	8.47
5	73.2	98.6	8.48
6	73.2	98.9	8.5
7	73.1	98.9	8.5
8	73.1	99.1	8.52
9	73.1	98.9	8.51
10	73.1	98.5	8.47
11	71.9	55.4	4.83
12	71.6	50.9	4.46
13	70.9	35.4	3.12
14	69.5	17.4	1.56
15	66.9	8.0	0.73

16	63.4	1.8	0.17
17	61.1	0.7	0.07
18	59.0	0.0	0.00
19	57.3	-0.4	-0.04
20	55.4	-0.7	-0.08
21	54.1	-1.0	-0.11
22	53.4	-1.1	-0.13
23	52.7	-1.3	-0.14
24	52.3	-1.4	-0.16
25	51.6	-1.5	-0.17
26	51.7	-1.6	-0.18
27	51.7	-1.7	-0.19
28	51.6	-1.8	-0.19
29	51.5	-1.8	-0.20

Resources: <https://dnr.wi.gov/lakes/lakepages/LakeDetail.aspx?wbic=1589300>