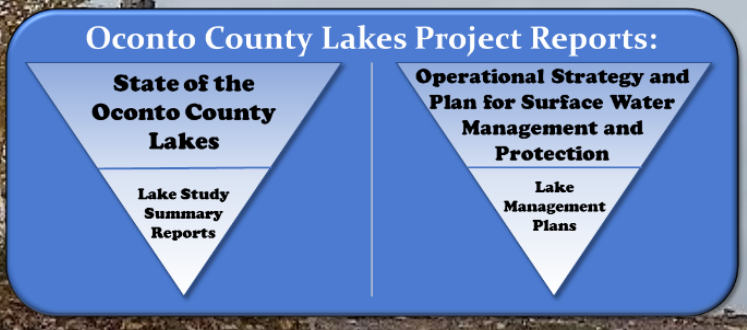
Oconto County Lakes Project

BASS LAKE (Riverview)STUDY

SUMMARY REPORT

2025



Center for Watershed Science and Education
College of Natural Resources
University of Wisconsin-Stevens Point

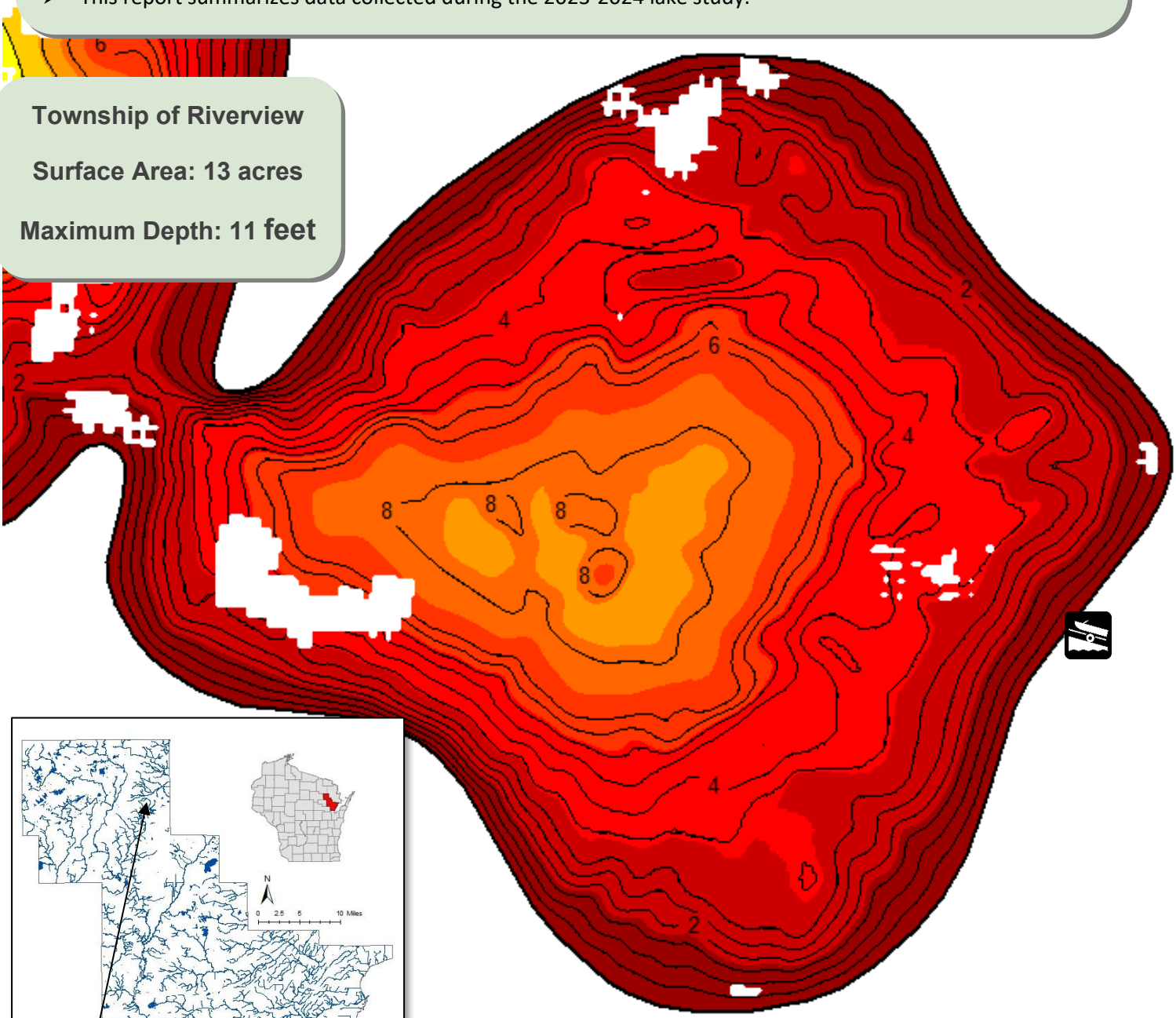
Background

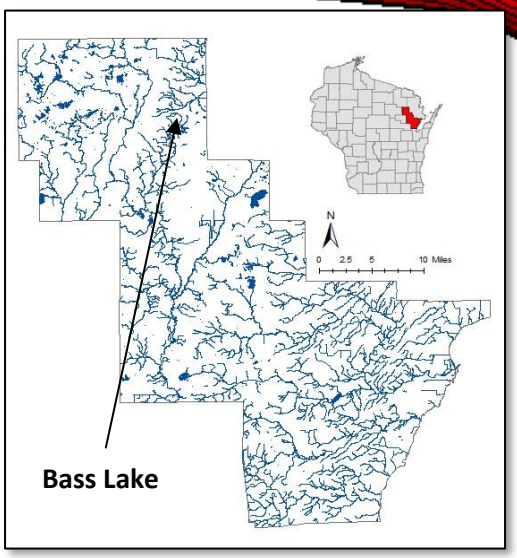
- Bass Lake is a 13-acre spring lake (part of the Crooked Lake chain) in northeast Oconto County with a maximum depth of 11 feet.
- Most water enters and leaves Bass Lake through groundwater and its connection to Crooked Lake. Direct precipitation and surface runoff also contribute water.
- Visitors have access to the lake from one public boat launch located on the lake's east side.
- This report summarizes data collected during the 2023-2024 lake study.

Township of Riverview

Surface Area: 13 acres

Maximum Depth: 11 feet



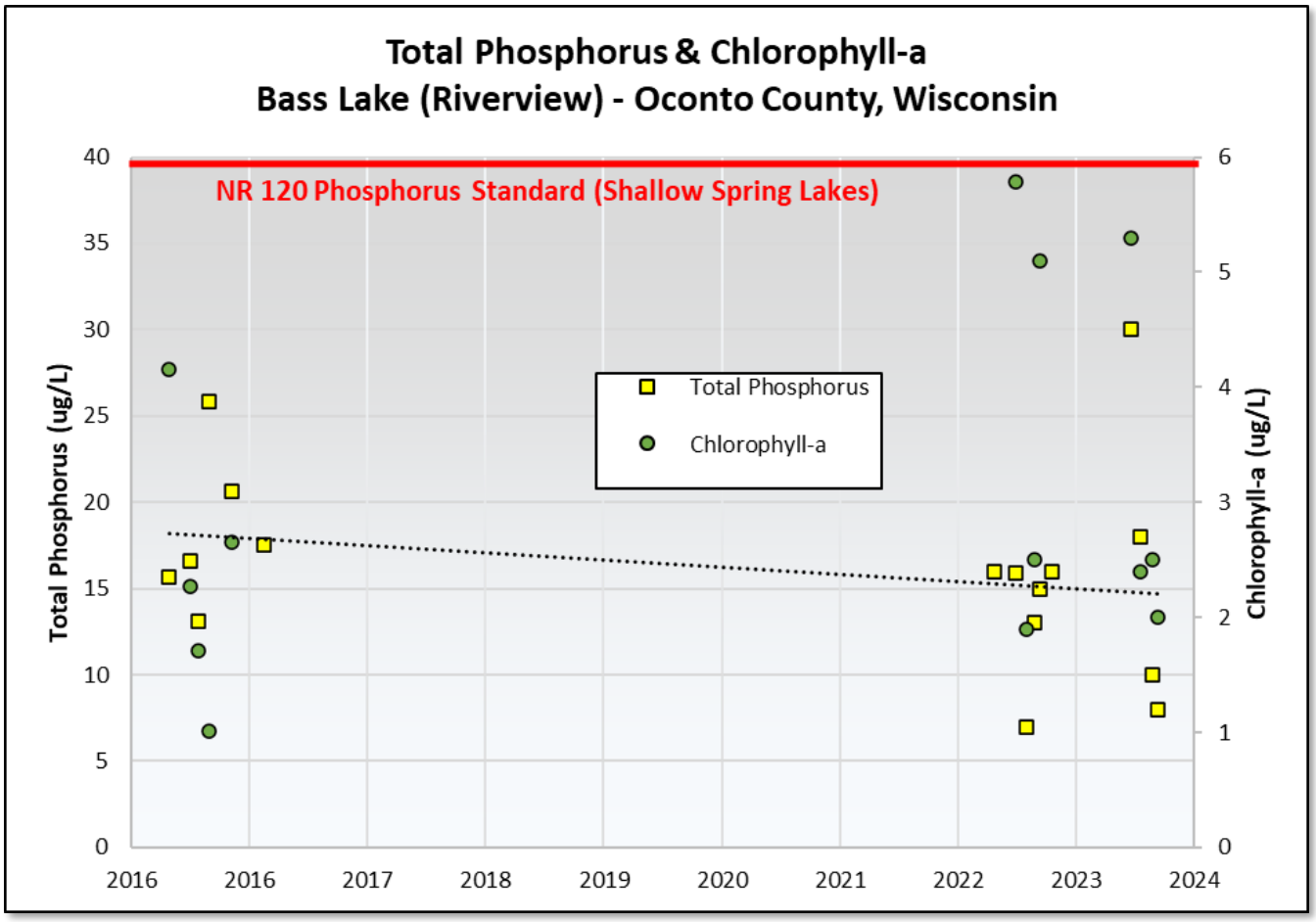


Map created by WDNR.

Water Quality

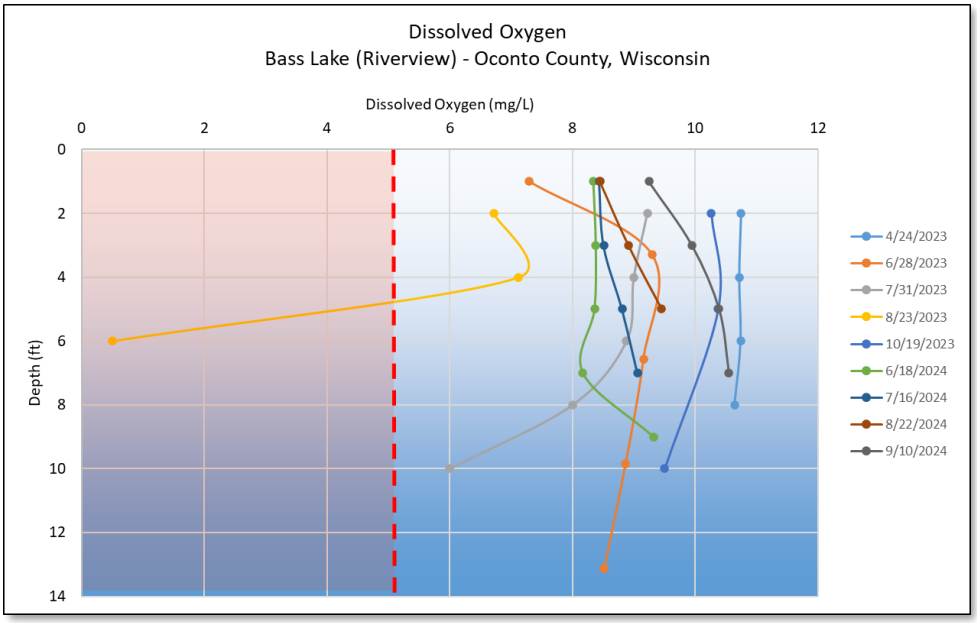
Nutrients such as phosphorus and nitrogen are what feed aquatic plants and algae in a lake. Excessive amounts of nutrients delivered to a lake will result in abundant plant and algae growth. Disturbance within a watershed combined with the landscape's inability to infiltrate and filter runoff is what primarily delivers nutrients to a lake.

- Total Phosphorus remained below the Wisconsin state standard of 40 ug/L for shallow spring lakes during the two-year study. Limited data suggests this average concentration is coming down.
- Inorganic nitrogen remained below the threshold of 0.3 mg/L when algal blooms increase.
- Chlorophyll-a, an indirect measure of algae, remained below the threshold of 6 ug/L during the study.



Water Quality

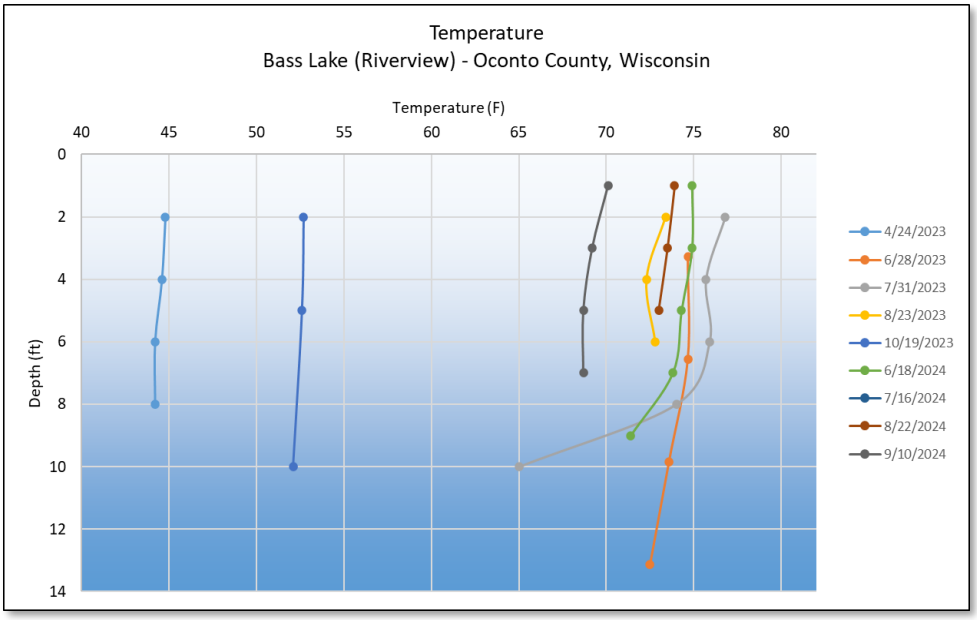
Sufficient **dissolved oxygen** in lake water is essential to the survival of aquatic organisms. The amount of dissolved oxygen present within a lake varies by season and depth. It is determined by the biological activity that consumes or produces oxygen, by water mixing through wind, changes in temperature, and inputs of surface and groundwater. Generally, at least 5 mg/L oxygen is required for fish.



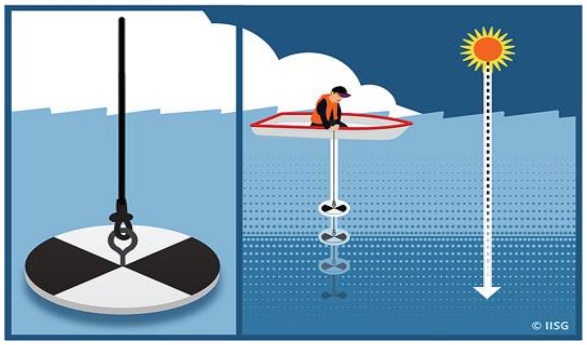
- Sufficient **dissolved oxygen** is available in the water column of Bass Lake throughout the year. Generally, the top 5 feet maintains enough oxygen to support most fish species.

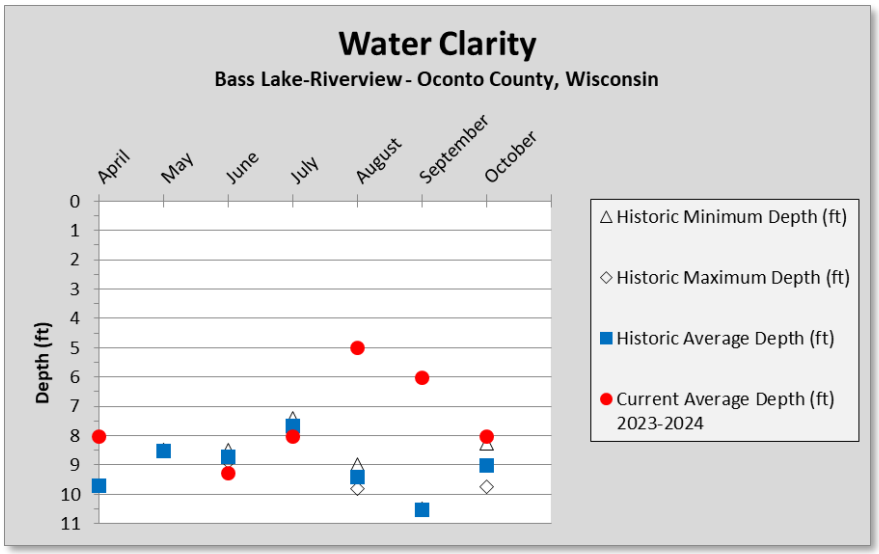
Lake water **temperature** has a significant impact on water chemistry, spatial distribution of fish, microbial growth and oxygen content.

- Temperature profiles in Bass Lake are typical for a shallow, mixed lake having similar temperature with depth at each sample event.



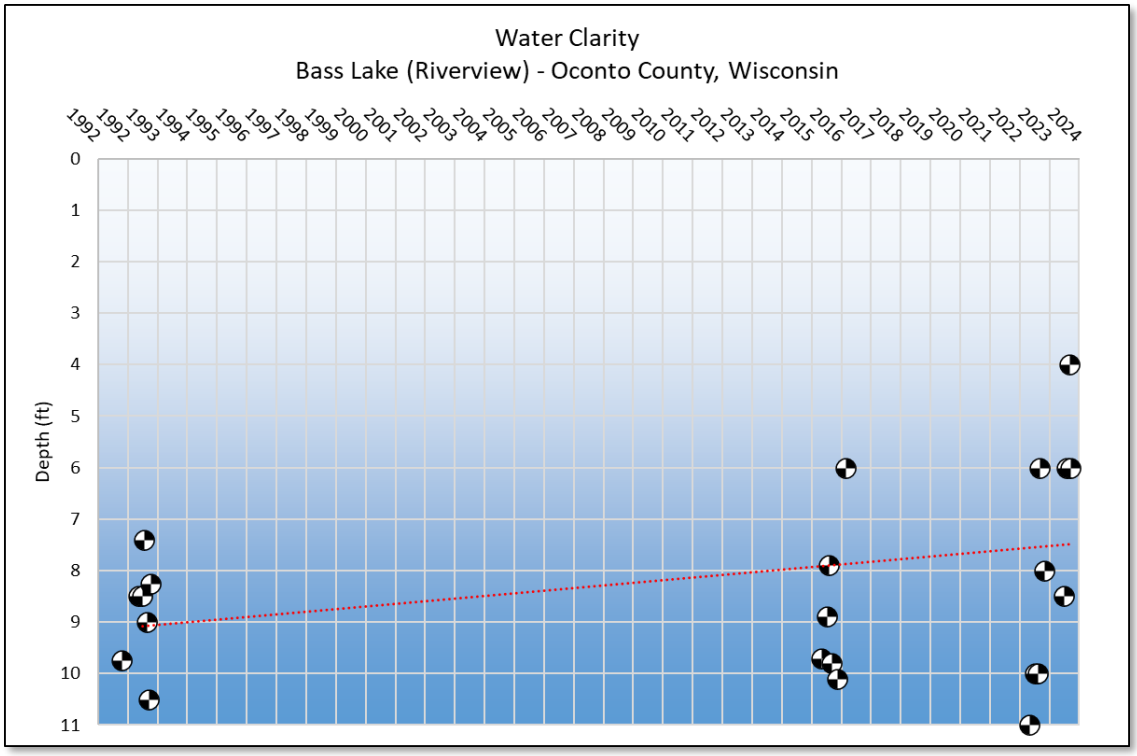
Water Quality





Water clarity is a measure of how deep light can penetrate (Secchi depth). Clarity is affected by water color, turbidity (suspended sediment), and algae. Water clarity helps determine where rooted aquatic plants can grow. It is typical for water clarity to vary throughout the year.

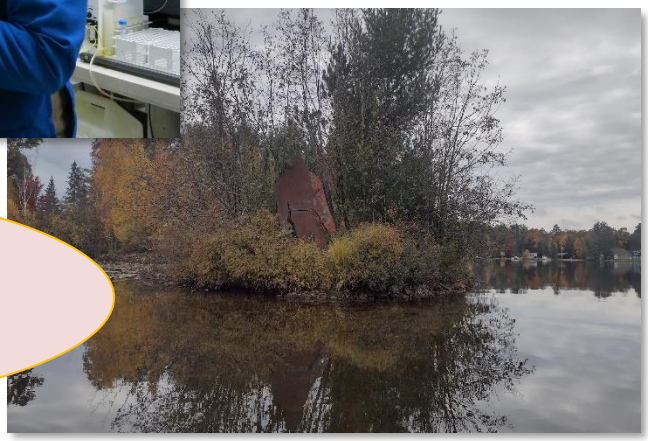
- The graphs below show water clarity measurements taken between May and November. Limited data suggests a long-term trend of slightly decreasing depths.
- During 2023-24, water clarity was best in June and worst in August. These averages are generally worse than historical averages.



Water Quality

Other chemistry data was collected from lake water samples, such as basic cations, pollutants and acid rain input, and physical parameters. Results of such analyses can provide insights into a variety of other potential impacts to the lake. While concentrations of these compounds in lake water is usually low, higher concentrations can be indicators of other potential issues.

- Concentrations of potassium (0.83 mg/L) were low, but chloride (6.4 mg/L) and sodium (5.5 mg/L) were slightly elevated. This suggests some low level impacts from human activity such as septic systems, road salt, animal waste and fertilizers.
- DACT, a screening tool to determine if your lake is being impacted by pesticides, was not detected.
- Water in Bass Lake is moderately hard (67 mg/L CaCO3), having a reduced level of dissolved minerals making it more vulnerable to algae blooms and the effects of acid rain.

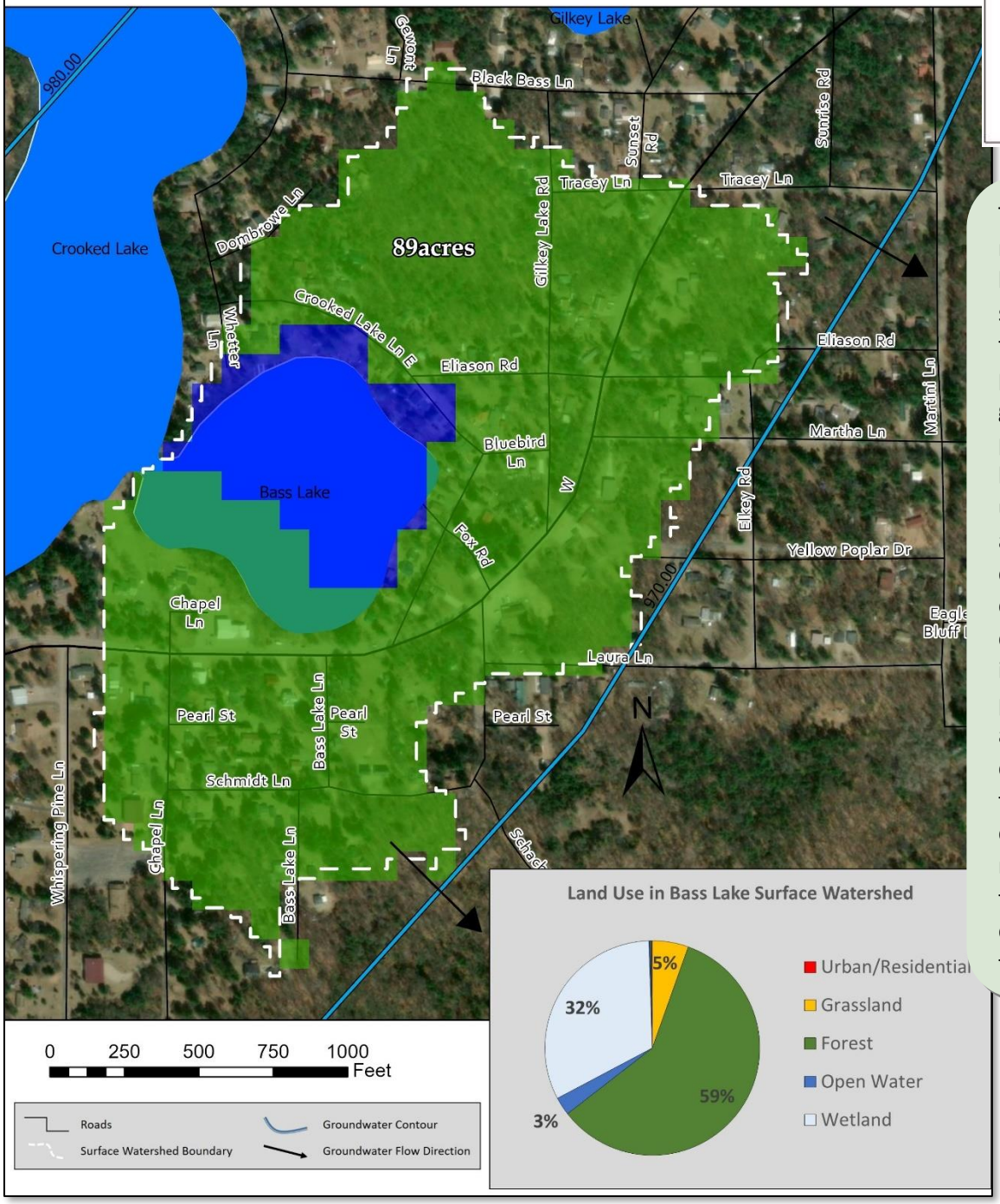


For more information on how to interpret your lake's water quality data, please refer to the "State of the Oconto County Lakes Report" that is on file with Oconto County.

Watershed

Groundwater provides water to lakes in Oconto County throughout the entire year. Hard surfaces on the landscape prevent water from soaking into the ground and becoming groundwater. This results in less water flowing to the lake during snowmelt and rain events. Water that does not infiltrate to groundwater becomes **surface runoff** flowing across the surface of the landscape where it can move sediment and contaminants to the lake from within its watershed.

Bass Lake Surface Watershed & Groundwater Flow



The quality of lake water reflects what is happening on the land surface. Precipitation falling on forests produces clean groundwater, whereas precipitation falling on land that has chemical use can produce runoff and groundwater that contains these chemicals. Groundwater contamination may include nitrogen, pesticides, herbicides and other soluble chemicals originating from septic systems, crops, barnyards, and road de-icing. Once in the groundwater, these chemicals move slowly towards a lake or river.

Shorelands

Shoreland vegetation is critical to a healthy lake's ecosystem. It provides habitat for many aquatic and terrestrial animals including birds, frogs, turtles, and many small and large mammals. It also helps to improve the quality and quantity of the runoff that flows across the landscape towards the lake. Healthy shoreland vegetation includes a mix of tall, native grasses/flowers, shrubs and trees.

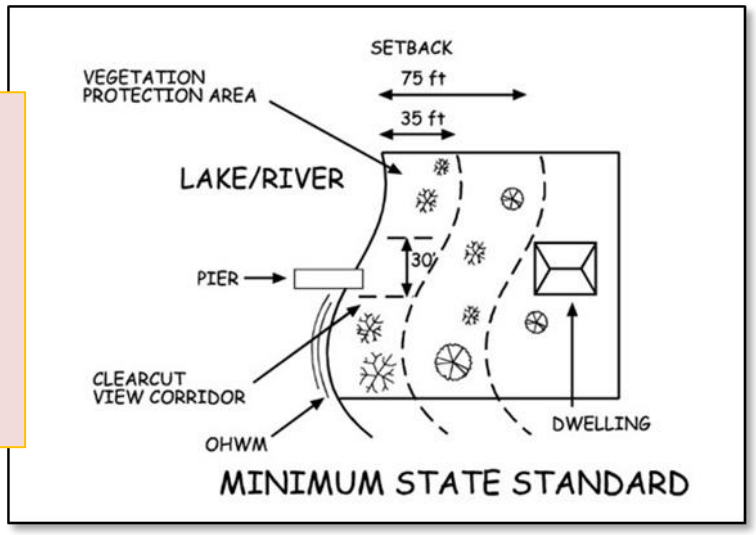
- Shorelands around Bass Lake were surveyed in June 2023. Some of Bass Lake's shoreland is healthy, but many sections are in need of restoration.

Total lakefront footage	No. Riparian lots	Measured shoreland disturbance (feet)	Measured shoreland disturbance (%)
2,870	35	1,878	65%

State Shoreland Zoning Ordinance
NR 115 Wisc. Adm. Code for Unincorporated Municipalities

No vegetation within 35 feet of the lake's edge shall be removed except for:

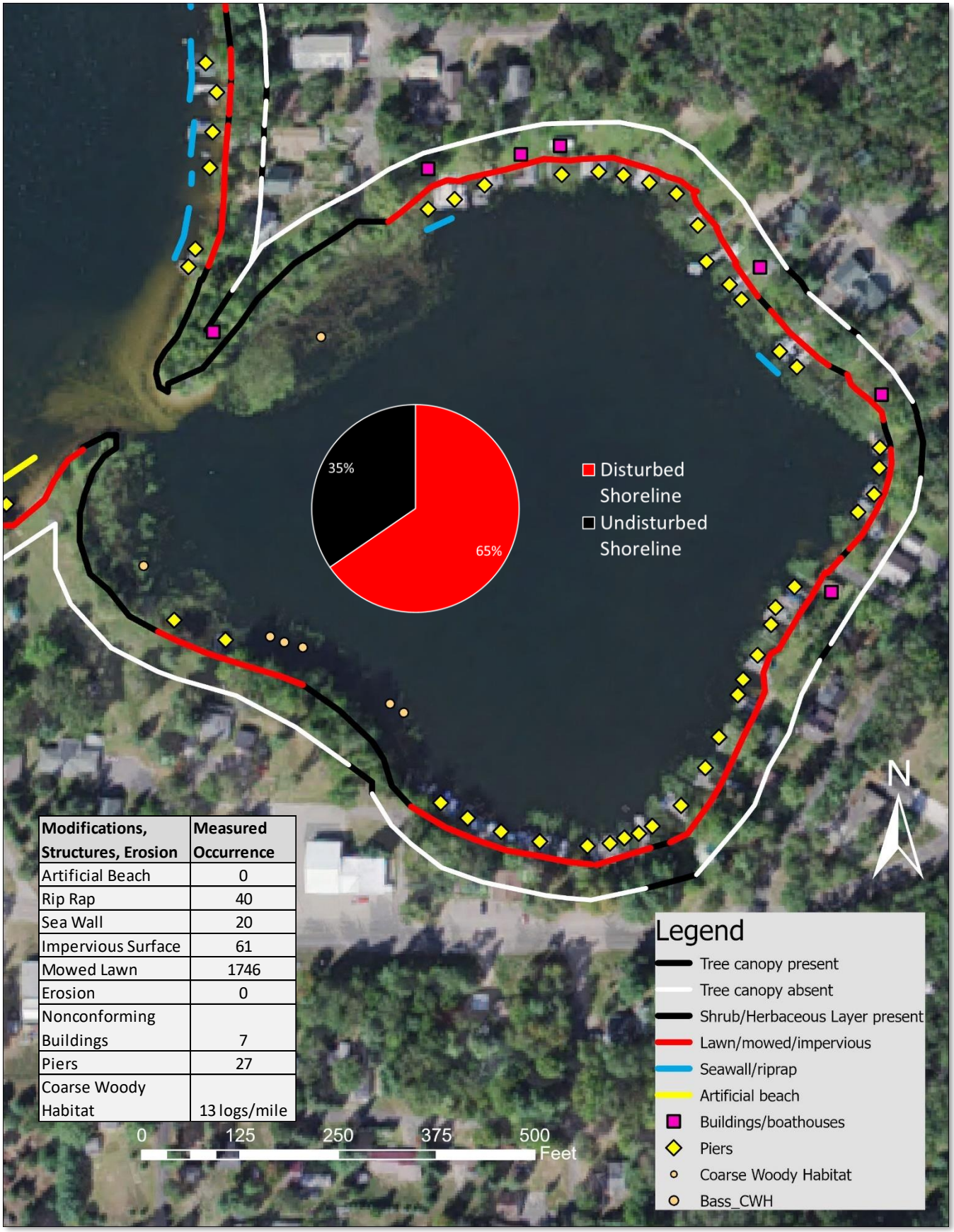
- Up to 30% of shoreline may be removed of shrubs and trees for a view corridor
- A mowed or constructed pedestrian path up to 5 feet wide to access lake



What Can You Do To Help Bass Lake?

- ✓ Leave natural shoreland vegetation in place or restore if it has been removed.
- ✓ Learn to identify and look for invasive plants and animals and know who to contact if found.
- ✓ Do not purchase prohibited and restricted species. Purchase native plants when possible.
- ✓ Never transplant water garden or aquarium plants into lakes, streams or wetlands. Properly dispose of them.
- ✓ Remove invasive exotic plants from your landscape and replace them with native plants or non-invasive exotics. Scout regularly for new invasive plants.
- ✓ Avoid using garden plants from other regions whose invasive potential is poorly understood.

Shorelands

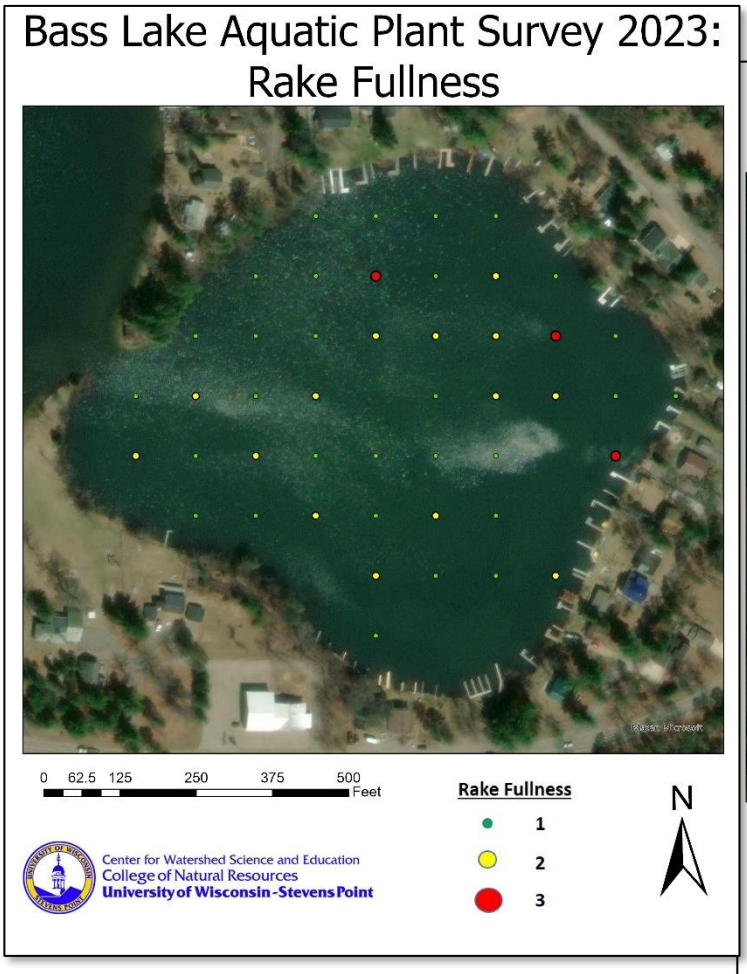


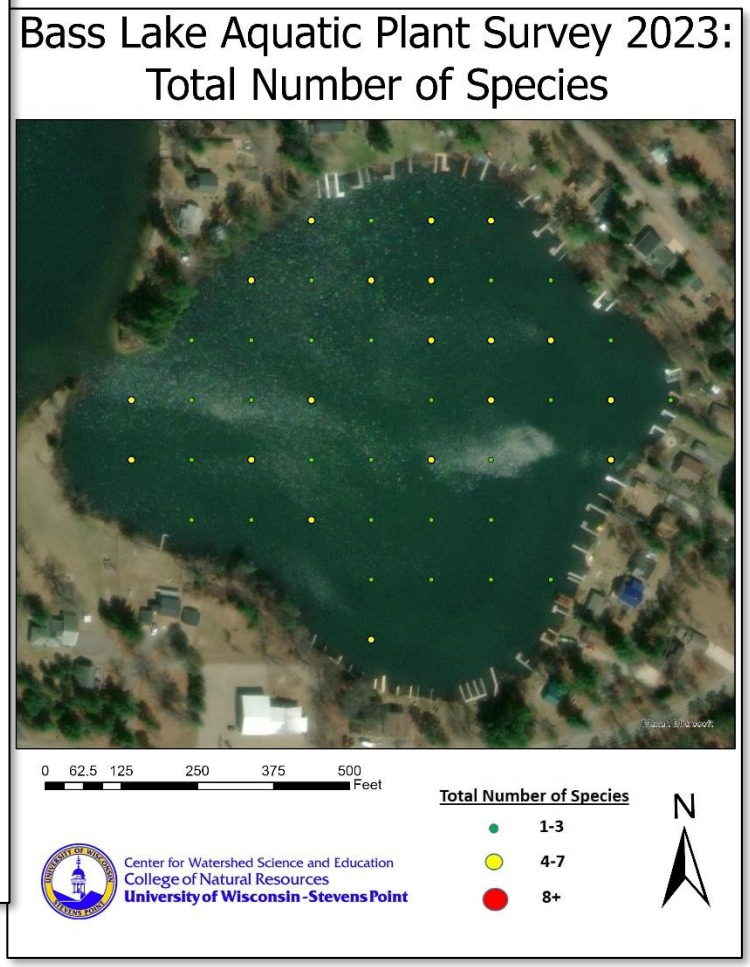
Modifications, Structures, Erosion	Measured Occurrence
Artificial Beach	0
Rip Rap	40
Sea Wall	20
Impervious Surface	61
Mowed Lawn	1746
Erosion	0
Nonconforming Buildings	7
Piers	27
Coarse Woody Habitat	13 logs/mile

Aquatic Plants

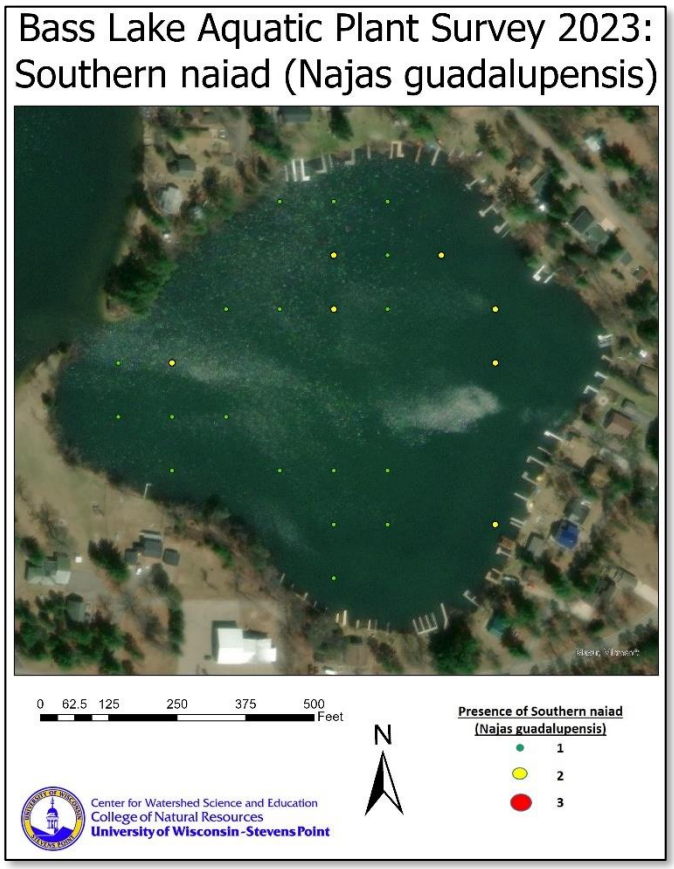
Aquatic plants are the forest landscape within a lake. They provide food and habitat for terrestrial and aquatic creatures such as fish, ducks, turtles, invertebrates and other animals. They increase oxygen levels in the water and utilize nutrients that would otherwise be used by algae. A healthy lake typically has a variety of aquatic plant species creating diversity that can help to prevent the establishment of aquatic invasive species.

- The aquatic plant community in Bass Lake is characterized by slightly below average diversity of plant species when compared to other lakes in the Oconto County Lakes Project, with a total of 19 species in the 2021 survey.
- During the 2021 aquatic plant survey of Bass Lake, 89% of visited sites had vegetative growth. The maximum depth of vegetation was 11 feet and the Floristic Quality Assessment (FQI) was 24.3.
- The most frequently encountered plant species were southern naiad (54%), waterweed (32%), and bladderwort (30%)
- Eurasian water-milfoil was observed in 7 locations and filamentous algae was observed in 17 locations.

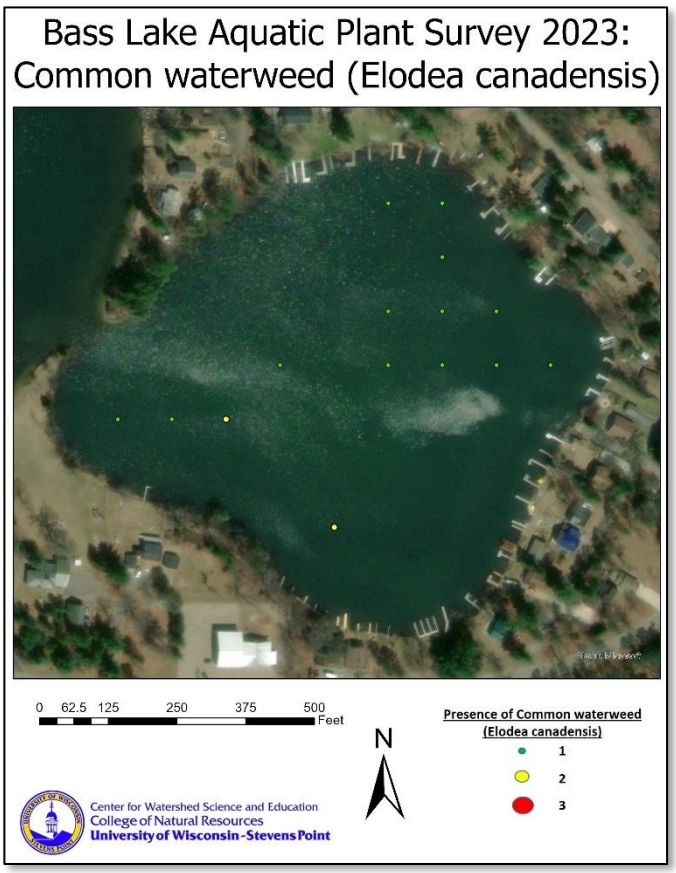




Aquatic Plants

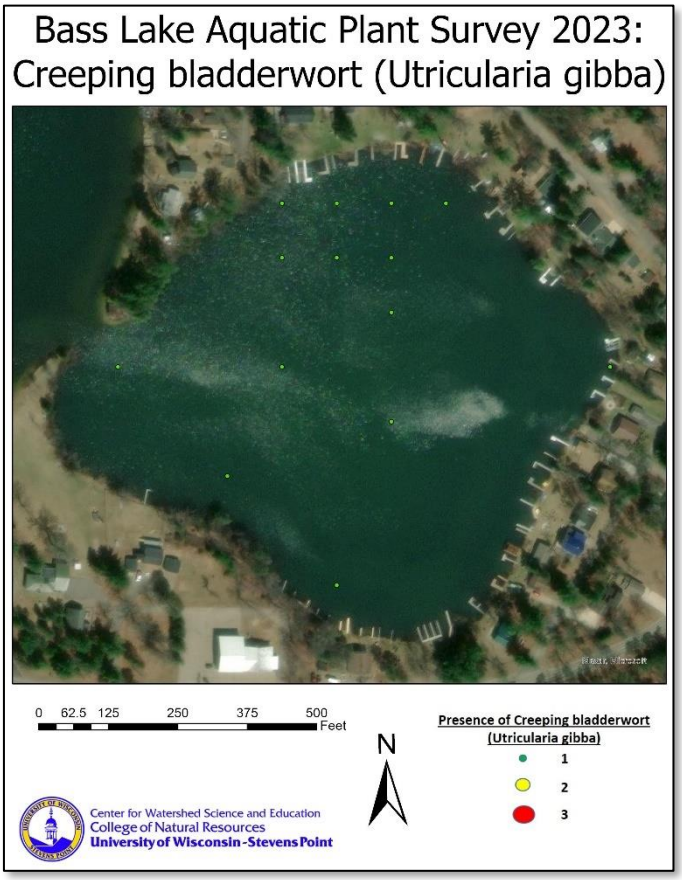


Southern naiad, also called bushy pondweed, is a primary food source for ducks and provides habitat for many invertebrates.

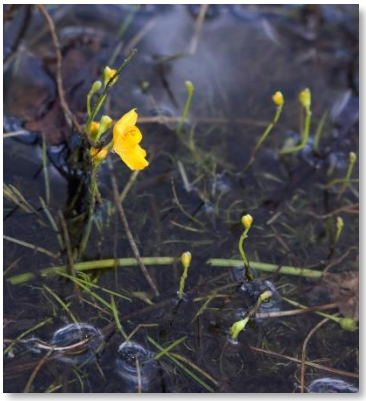


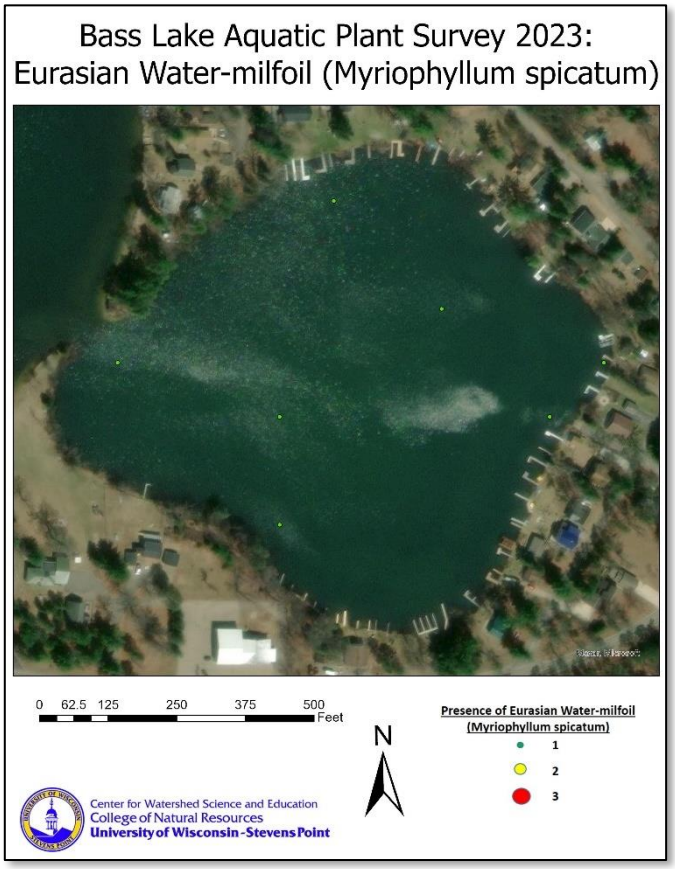
Common waterweed is a common and widespread plant in Wisconsin lakes. It is important forage and cover for aquatic animals and an important food source for waterfowl.

Aquatic Plants



Creeping bladderwort is a carnivorous plant with underwater 'sacs' that trap insects and other small animals. Without roots, it has slender stems which may be floating, submerged or creeping along the substrate.



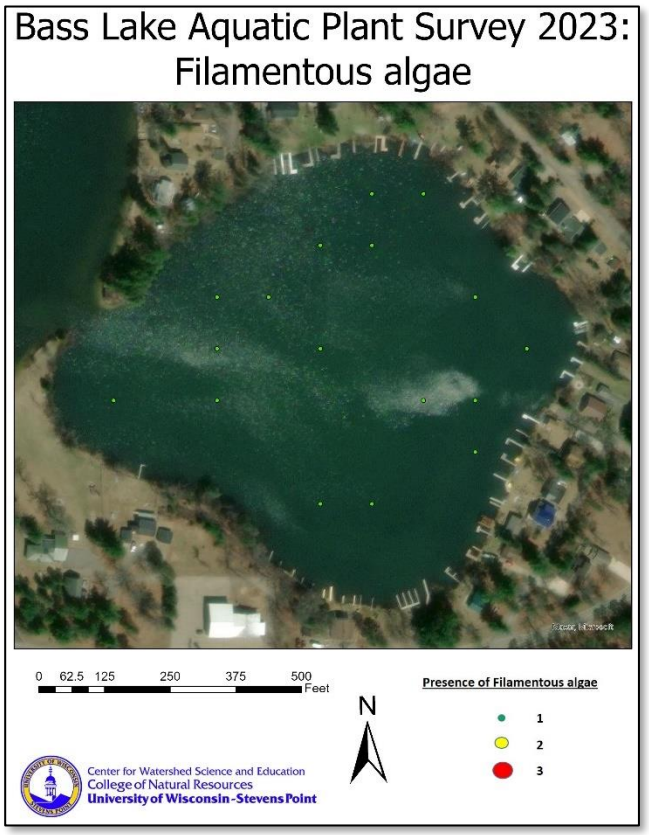


Eurasian watermilfoil is one of the most common invasive aquatic plants in Wisconsin. It can from dense mats that choke out native plants and inhibit navigation. New plants can grow from stem fragments that root on contact with the substrate.

Aquatic Plants

Aquatic **invasive species** are non-native aquatic plants and animals that are most often unintentionally introduced into lakes by lake users. In some lakes, aquatic invasive plant species can exist as a part of the plant community, while in other lakes populations explode, creating dense beds that can damage boat motors, make areas non-navigable, inhibit activities like swimming and fishing, and disrupt the lakes' ecosystems.

- Eurasian water-milfoil, first documented in 2002, was observed in seven locations during the 2021 survey.
- Curly-Leaf pondweed (2016) has previously been documented in Bass Lake.



Filamentous algae, often mistaken for blue-green algae, is common in lakes with available nutrients. These harmless, stringy algae can form dense mats, especially in shallow, sun-drenched areas. It can create a nuisance by forming mats on the surface, tangling with other plants, and shade out other high quality aquatic plants.

Curly-leaf pondweed invades freshwater lakes and can become dominant due to its tolerance of a variety of habitats. CLP grows primarily during the winter and dies off by June, just was water is warming up which can drastically increase nutrient concentrations.

Acknowledgments

This report was prepared as an appendix to the **Oconto County State of the Lakes Report**, which is on file with the Oconto County Land Conservation Department.
Written and prepared by the Center for Watershed Science and Education at the University of Wisconsin-Stevens Point.

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Acknowledgments

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