October 2024

GULL LAKE

PLANT CONTROL PROGRAM SUMMARY

PREPARED FOR:
GULL LAKE QUALITY ORGANIZATION
KALAMAZOO & BARRY COUNTIES, MI

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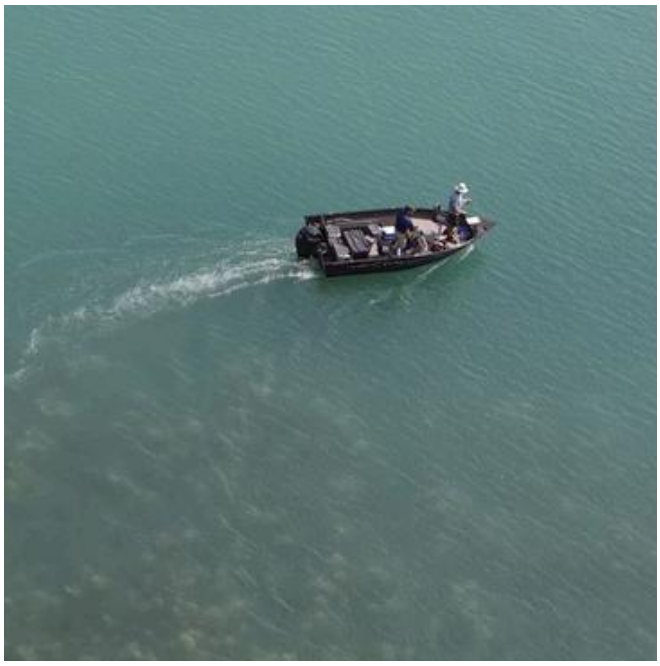


ENVIRONMENTAL CONSULTANT

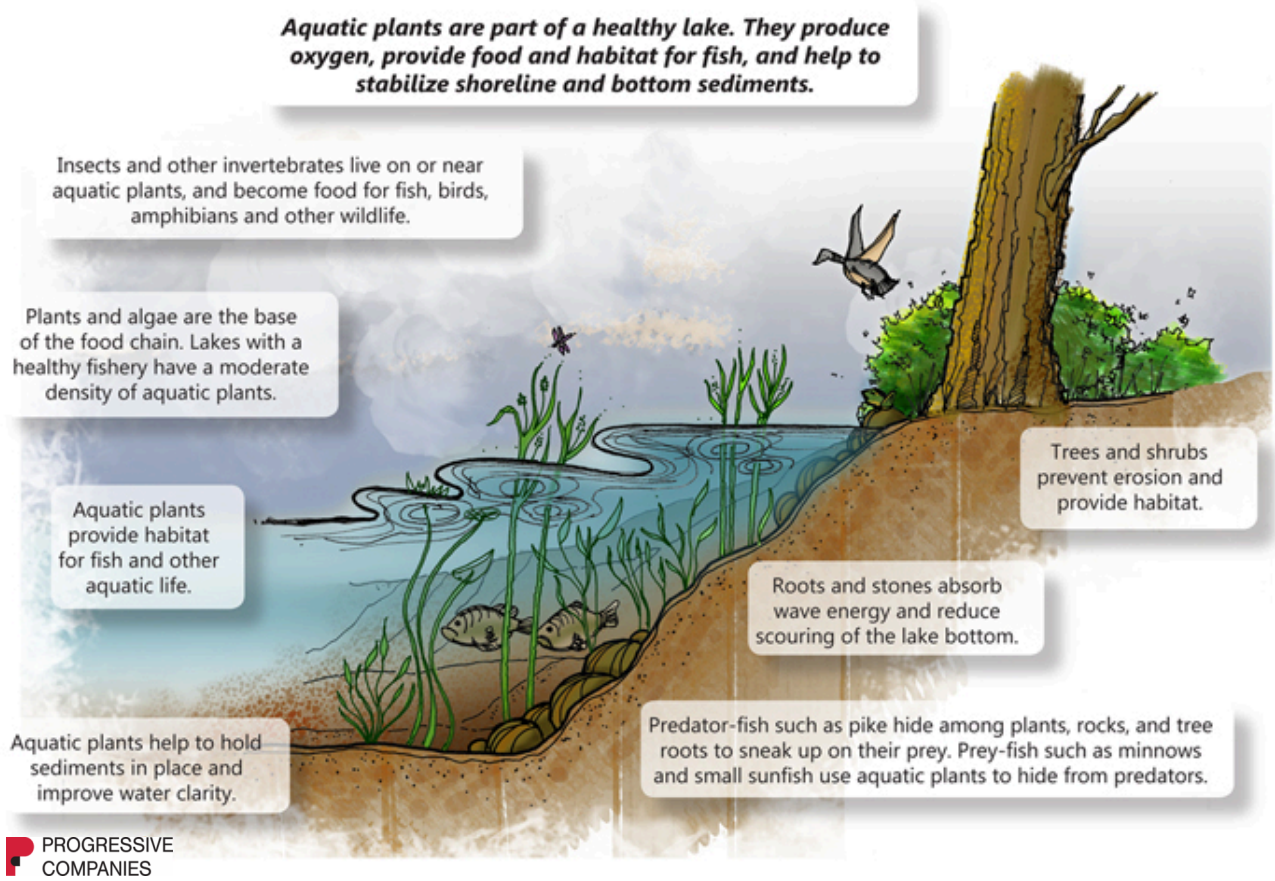
Progressive Companies

AQUATIC HERBICIDE APPLICATOR

PLM Lake & Land Management

PROGRAM SUMMARY

A nuisance aquatic plant control program has been ongoing on Gull Lake for several years. The primary objective of the program is to prevent the spread of invasive aquatic plants while preserving beneficial native plant species. This report contains an overview of aquatic plant monitoring and control activities conducted on Gull Lake in 2024.



Aquatic plants are an important component of lakes. They produce oxygen during photosynthesis, provide food, habitat and cover for fish, and help stabilize shoreline and bottom sediments. There are four main aquatic plant groups: submersed, floating-leaved, free-floating, and emergent. Each plant group provides important ecological functions. Maintaining a diversity of native aquatic plants is important to sustaining a healthy fishery and a healthy lake. Invasive aquatic plant species have negative impacts to the lake's ecosystem. It is important to maintain an active plant control program to reduce the introduction and spread of invasive species within Gull Lake. Plant control efforts in 2024 consisted of two small herbicide treatments in select areas of the lake that exhibited non-native plant growth.

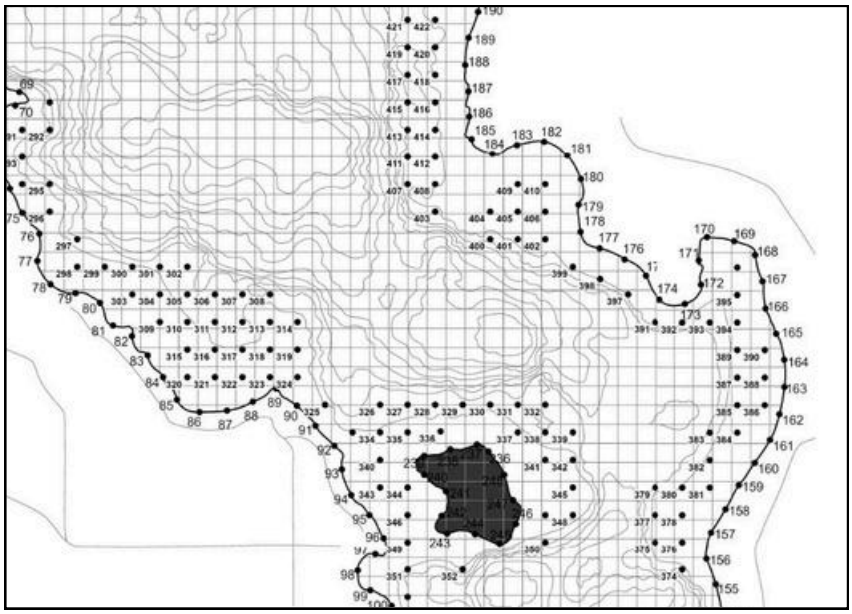
PLANT CONTROL

Plant control activities are coordinated under the direction of an environmental consultant, Progressive Companies. Scientists from Progressive conduct GPS-guided surveys of the lake to identify problem areas, and georeferenced plant control maps are provided to the plant control contractors. GPS reference points are established along the shoreline and across shallow portions of the lake. These waypoints are used to accurately identify the location of invasive and nuisance plant growth areas.

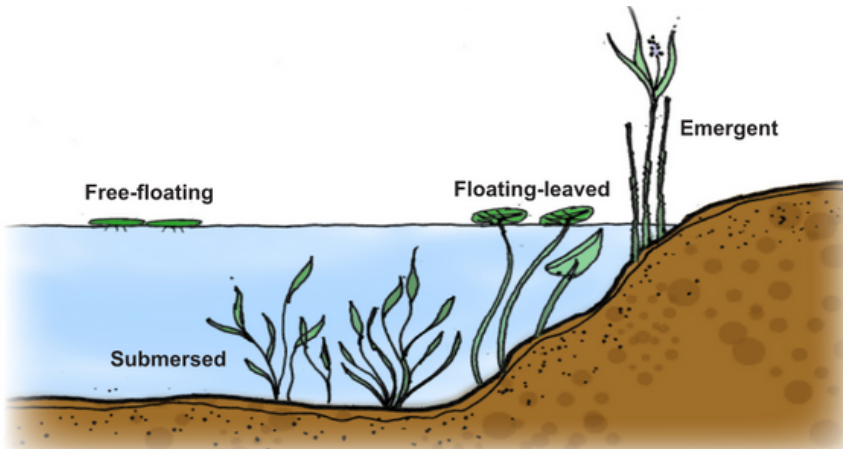
Eurasian milfoil
Myriophyllum spicatum

Curly-leaf pondweed
Potamogeton crispus

Starry stonewort
Nitellopsis obtusa



Primary plants targeted for control in Gull Lake include Eurasian milfoil, curly-leaf pondweed, and starry stonewort. These plants are non-native (exotic) species that tend to be highly invasive and have the potential to spread quickly if left unchecked. Plant control activities conducted on the lake in 2024 are summarized in Table 1.



PLANT CONTROL

TABLE 1. GULL LAKE 2024 PLANT MONITORING & CONTROL ACTIVITIES

Date	Activity	Acreage
May 29	Plant survey	
June 11	Herbicide treatment: E. milfoil, curly-leaf	2.50
June 24	Plant survey	
July 12	Herbicide treatment: E. milfoil, starry stonewort	2.75
August 7	Whole-lake plant inventory survey	
Total		**5.25**

In 2024, 5.25 acres of Gull Lake were treated with aquatic herbicides. On June 11, Eurasian milfoil was treated with systemic herbicides, ProcellaCOR and Triclopyr, providing season-long control. Curly-leaf pondweed was also targeted with the contact herbicide diquat dibromide at that time. On July 12, starry stonewort was treated with flumioxazin, a fast-acting contact herbicide, to control this invasive macro-algae species without the use of copper-based algaecide products.

PLANT INVENTORY SURVEY

In addition to the surveys of the lake to identify exotic plant locations, a detailed vegetation survey of Gull Lake was conducted on August 7 (Table 2) to evaluate the type and abundance of all plants in the lake. This survey method was part of the 2021 program and aimed to establish focus areas for routine plant surveys based on the presence of invasive species. Notably, submerged exotic species that are regularly targeted for control in Gull Lake were only found in areas previously known to support these populations, indicating that the exotic plants have not spread throughout the lake.

The table on the following page lists each plant species observed during the survey and the relative abundance of each. Results from the 2021 survey are included in the last column, providing a side-by-side comparison of the lake's plant community, three years apart. At the time of the 2024 survey, 21 submersed species, three floating-leaved species, and eight emergent species were found in the lake. In 2021, the inventory revealed the presence of 23 submerged species, three floating-leaved species, and seven emergent species. While the two surveys exhibit many similarities, some species have increased in abundance while others have decreased over this three year period. Overall, Gull Lake continues to exhibit a good diversity of beneficial native plant species.

PLANT INVENTORY SURVEY

TABLE 2. GULL LAKE 2024 PLANT INVENTORY DATA

Common Name	Scientific Name	Group	Percentage of sites where present	Percentage of sites where present
Chara	*Chara* sp.	Submersed	58	51
Slender naiad	*Najas flexilis*	Submersed	20	29
Wild celery	*Vallisneria americana*	Submersed	19	6
Sago pondweed	*Stuckenia pectinata*	Submersed	19	22
Bladderwort	*Utricularia vulgaris*	Submersed	17	12
Spiny naiad	*Najas marina*	Submersed	8	0
Illinois pondweed	*Potamogeton illinoensis*	Submersed	6	39
Underwater arrowhead	*Sagittaria* sp.	Submersed	4	1
Thin-leaf pondweed	*Potamogeton* sp.	Submersed	3	24
Variable pondweed	*Potamogeton gramineus*	Submersed	3	13
Starry stonewort	*Nitellopsis obtusa*	Submersed	2	1
Variable-leaf milfoil	*Myriophyllum heterophyllum*	Submersed	2	43
Green milfoil	*Myriophyllum verticillatum*	Submersed	2	0
Coontail	*Ceratophyllum demersum*	Submersed	2	1
Richardson's pondweed	*Potamogeton richardsonii*	Submersed	1	1
Whitestem pondweed	*Potamogeton praelongus*	Submersed	1	0
Curly-leaf pondweed	*Potamogeton crispus*	Submersed	1	0
Flat-stem pondweed	*Potamogeton zosteriformis*	Submersed	1	2
Elodea	*Elodea canadensis*	Submersed	1	1
Robbins pondweed	*Potamogeton robbinsii*	Submersed	1	1
Nitella	*Nitella*	Submersed	1	2
Brittle-leaf naiad	*Najas minor*	Submersed	0	6
Eurasian milfoil	*Myriophyllum spicatum*	Submersed	0	2
Submersed bulrush	*Schoenoplectus subterminalis*	Submersed	0	1
Water stargrass	*Heteranthera dubia*	Submersed	0	1
Large-leaf pondweed	*Potamogeton amplifolius*	Submersed	0	1
Water smartweed	*Persicaria amphibia* var. *stipulacea*	Submersed	0	1
White waterlily	*Nymphaea odorata*	Floating-leaved	4	4
Yellow waterlily	*Nuphar* sp.	Floating-leaved	3	3
Floating-leaf pondweed	*Potamogeton natans*	Floating-leaved	1	1
Phragmites	*Phragmites australis*	Emergent	2	1
Bulrush	*Schoenoplectus* sp.	Emergent	1	3
Purple loosestrife	*Lythrum salicaria*	Emergent	1	1
Iris	*Iris* sp.	Emergent	1	10
Northern wild rice	*Zizania palustris*	Emergent	1	1
Lake sedge	*Carex lacustris*	Emergent	1	0
Arrowhead	*Sagittaria latifolia*	Emergent	1	0
Southern wild rice	*Zizania aquatica*	Emergent	1	0
Cattail	*Typha* sp.	Emergent	0	2
Swamp loosestrife	*Decodon verticillatus*	Emergent	0	1

Exotic invasive species