November 2024

PENTWATER LAKE

PLANT CONTROL SUMMARY

PREPARED FOR:
PENTWATER LAKE IMPROVEMENT BOARD
OCEANA COUNTY, MI

PROGRESSIVE COMPANIES

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AQUATIC HERBICIDE APPLICATOR

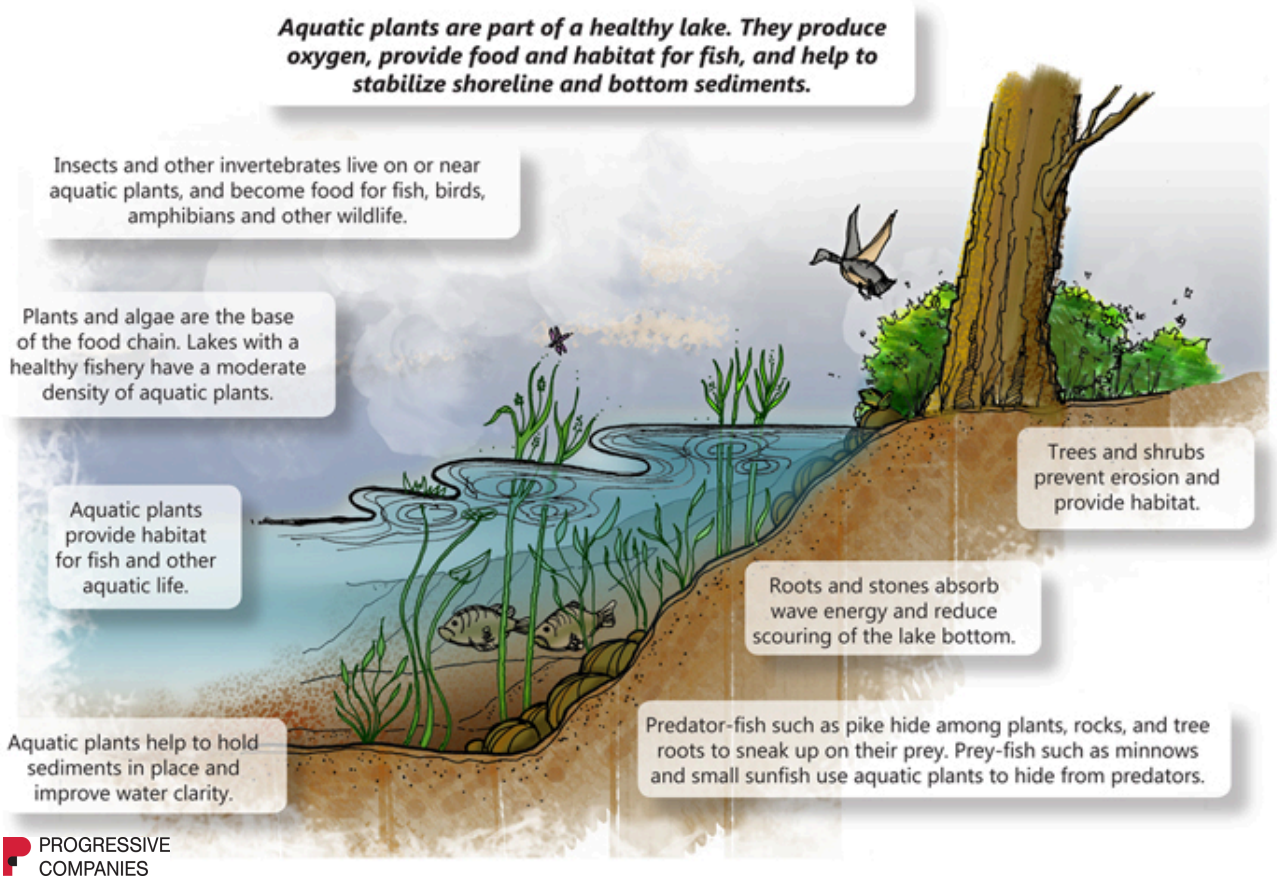
PLM Lake and Land Management Corp.

MECHANICAL HARVESTER

PLM Lake and Land Management Corp.

PROGRAM SUMMARY

A nuisance aquatic plant control program has been ongoing on Pentwater Lake for many 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 plant control activities conducted on Pentwater 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 Pentwater Lake. Plant control efforts in 2024 consisted of three herbicide treatments and one mechanical harvesting event.

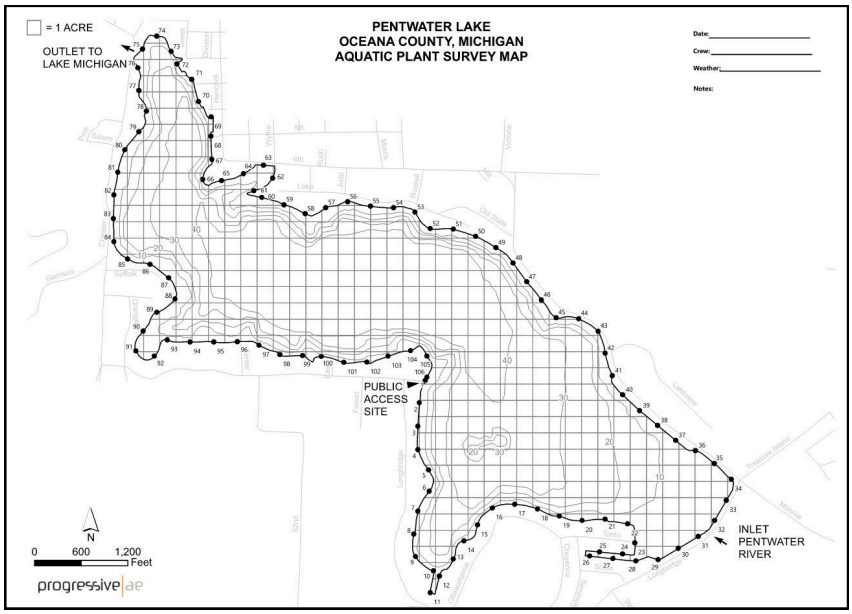
PLANT CONTROL

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 at 300 foot intervals. These waypoints are used to accurately identify the location of invasive and nuisance plant growth areas.

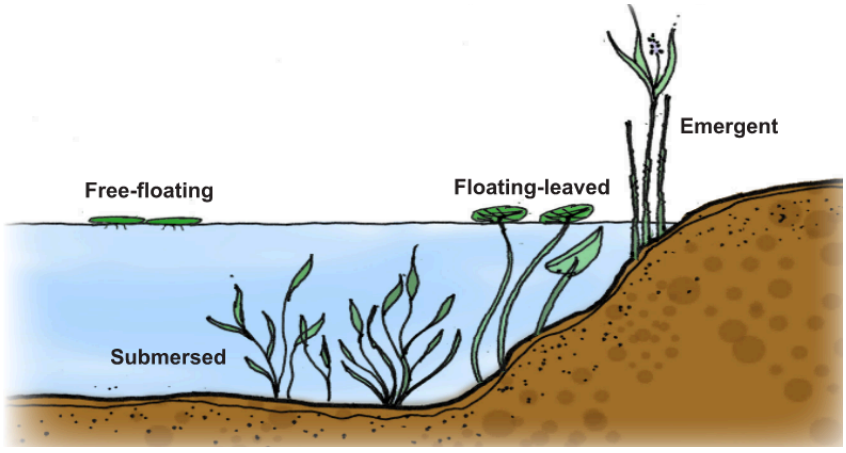
Eurasian milfoil
Myriophyllum spicatum

Carolina fanwort
Cabomba caroliniana

Starry stonewort
Nitellopsis obtusa



Primary plants targeted for control in Pentwater Lake in 2024 included Eurasian milfoil, Carolina fanwort, 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. PENTWATER LAKE 2024 PLANT CONTROL ACTIVITIES

Date	Plants Targeted	Acreage
June 12	E. milfoil, nuisance natives	9.25
July 24	E. milfoil, nuisance natives	3.75
July 29 - August 2	Harvesting: Starry stonewort	42.00
August 21	Carolina fanwort	2.00
Total		**57.00**

In 2024, a total of 15 acres of Pentwater Lake were treated with aquatic herbicides. On June 12, Eurasian milfoil was treated with the systemic herbicide, ProcellaCOR, which typically provides season-long control. On that same date, native plants impeding navigation were targeted with contact herbicides in select areas. A touch-up treatment for Eurasian milfoil and nuisance native plants was conducted on July 24 using contact herbicides. Starry stonewort was harvested from July 29 through August 2. Approximately 42 acres were harvested during 70 operating hours. Carolina fanwort was identified near Charlie's Marina during the August 12 survey and treated with flumioxazin, a contact herbicide, on August 21. High traffic areas like public access sites and marinas are the highest risk for exotic species introductions.

In 2024, the harvesting efforts increased to address expanding starry stonewort growth. As starry stonewort continues to spread throughout Pentwater Lake, control efforts are likely to increase accordingly.

PLANT INVENTORY SURVEY

In addition to the surveys of the lake to identify invasive plant locations, a detailed vegetation survey of Pentwater Lake was conducted on August 12 to evaluate the type and abundance of all plants in the lake. The table below lists each plant species observed during the survey and the relative abundance of each. At the time of the survey, 15 submersed species, two floating-leaved species, three free-floating species, and three emergent species were found in the lake. Pentwater Lake maintains a good diversity of beneficial, native plant species.

TABLE 2. PENTWATER LAKE 2024 PLANT INVENTORY DATA

Common Name	Scientific Name	Group	Percent of sites where present 2022	Percent of sites where present 2023	Percent of sites where present 2024
Wild celery	*Vallisneria americana*	Submersed	66	77	82
Starry stonewort	*Nitellopsis obtusa*	Submersed	50	42	60
Coontail	*Ceratophyllum demersum*	Submersed	66	59	52
Richardson's pondweed	*Potamogeton richardsonii*	Submersed	30	45	37
Chara	*Chara* sp.	Submersed	16	30	23
Water stargrass	*Heteranthera dubia*	Submersed	16	29	23
Flat-stem pondweed	*Potamogeton zosteriformis*	Submersed	30	26	16
Elodea	*Elodea canadensis*	Submersed	4	14	12
Eurasian milfoil	*Myriophyllum spicatum*	Submersed	11	32	8
Bladderwort	*Utricularia vulgaris*	Submersed	5	10	8
Slender naiad	*Najas flexilis*	Submersed	22	11	7
Thin-leaf pondweed	*Potamogeton* sp.	Submersed	9	6	3
Carolina fanwort	*Cabomba caroliniana*	Submersed	0*	0*	2
Robbins pondweed	*Potamogeton robbinsii*	Submersed	0*	2	2
Sago pondweed	*Stuckenia pectinata*	Submersed	5	7	1
Whitestem pondweed	*Potamogeton praelongus*	Submersed	10	2	0*
Curly-leaf pondweed	*Potamogeton crispus*	Submersed	3	1	0*
Yellow waterlily	*Nuphar* sp.	Floating-leaved	5	3	8
White waterlily	*Nymphaea odorata*	Floating-leaved	1	2	1
Duckweed	*Lemna minor*	Free-floating	21	5	2
European frog-bit	*Hydrocharis morsus-ranae*	Free-floating	4	0*	1
Watermeal	*Wolffia punctata*	Free-floating	0*	1	0*
Cattail	*Typha* sp.	Emergent	5	7	13
Bulrush	*Schoenoplectus* sp.	Emergent	5	2	5
Phragmites	*Phragmites australis*	Emergent	2	1	3
Purple loosestrife	*Lythrum salicaria*	Emergent	1	0*	0*
Lake sedge	*Carex lacustris*	Emergent	0*	1	0*

Exotic species

Species not observed during survey*