

PENTWATER LAKE

PLANT CONTROL SUMMARY

PREPARED FOR:
PENTWATER LAKE IMPROVEMENT BOARD
OCEANA COUNTY, MI



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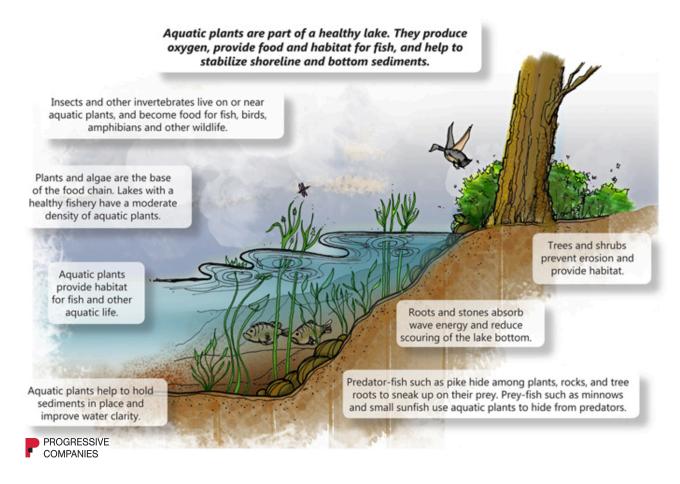
PLM Lake and Land Management Corp.





PROGRAM SUMMARY

A nuisance aquatic plant control program has been ongoing on Pentwater 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 plant control activities conducted on Pentwater Lake in 2025.



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 on the lake's ecosystem. It is important to maintain an active plant control program to reduce the establishment and spread of invasive species within Pentwater Lake. Plant control efforts in 2025 consisted of three aquatic plant surveys, two 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 contractor. GPS reference points are established along the shoreline and offshore areas 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 Pentwater 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 2025 are summarized in Table 1.

In Michigan, an Aquatic Nuisance Control (ANC) permit must be acquired from the Department of Environment, Great Lakes, and Energy (EGLE) before herbicides are applied to inland lakes. The permit lists the herbicides that are approved for use, maximum dose rates, use restrictions, and indicates specific areas of the lake where herbicides may be applied. Permit requirements are designed to protect public health and the environment. The contracted herbicide applicator on Pentwater Lake, PLM Lake and Land Management Corp., holds the ANC permit for the lake. As Pentwater Lake is designated as Section 10 waters by the Rivers and Harbors Act of 1899, a joint permit from EGLE and the US Army Corps of Engineers is required for mechanical harvesting.

PLANT CONTROL

TABLE 1. PENTWATER LAKE 2025 PLANT CONTROL ACTIVITIES

Date	Plant Control Activity: Target Species	Amount
June 23	Herbicide treatment: E. milfoil, curly-leaf pondweed	6.75 acres
August 5-13	Harvesting: starry stonewort	75 hours
September 8	Herbicide treatment: E. milfoil, cabomba	1.5 acres

In 2025, 8.25 acres of Pentwater Lake were treated with aquatic herbicides. Eurasian milfoil and curly-leaf pondweed treatment occurred on June 23 using contact herbicides, which provided control of the invasive plants. 75 hours of mechanical harvesting were dedicated to the removal of starry stonewort in early August. In September, *Cabomba* and Eurasian milfoil were treated with the contact herbicide, flumioxazin.

Herbicide applications were limited in 2025 as Eurasian milfoil growth was sparse throughout the summer. Plant control efforts are recommended to continue in 2026, using herbicide treatments to control Eurasian milfoil, curly-leaf pondweed, and *Cobomba* and harvesting to remove starry stonewort biomass. *Phragmites* along the northern shoreline should be treated in the late summer or early fall of 2026.

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 27 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, 16 submersed species, one free-floating species, two floating-leaved species, and four emergent species were found in the lake. In 2025, Pentwater Lake's plant community was dominated by native plants, primarily wild celery and coontail. Although in their native range, these plants can grow at nuisance levels when conditions allow. Pentwater Lake maintains a good diversity of beneficial, native plant species.

TABLE 2. PENTWATER LAKE 2023-2025 PLANT INVENTORY DATA

Common Name	Scientific Name	Group	Percent of sites where present 2023	Percent of sites where present 2024	Percent of sites where present 2025
Wild colons	Vallisneria americana	Cubmore	77	82	95
Wild celery		Submersed	77		95 84
Coontail	Ceratophyllum demersum	Submersed	59	52 37	~ .
Richardson's pondweed	Potamogeton richardsonii	Submersed	45		59 57
Starry stonewort	Nitellopsis obtusa	Submersed	42	60	57
Chara	Chara sp.	Submersed	30	23	47
Water stargrass	Heteranthera dubia	Submersed	29	23	30
Eurasian milfoil	Myriophyllum spicatum	Submersed	32	8	21
Flat-stem pondweed	Potamogeton zosteriformis	Submersed	26	16	19
Sago pondweed	Stuckenia pectinata	Submersed	7	1	15
Slender naiad	Najas flexilis	Submersed	11	7	14
Whitestem pondweed	Potamogeton praelongus	Submersed	2	0	14
Thin-leaf pondweed	Potamogeton sp.	Submersed	6	3	10
Elodea	Elodea canadensis	Submersed	14	12	7
Curly-leaf pondweed	Potamogeton crispus	Submersed	1	0	3
Carolina fanwort	Cabomba caroliniana	Submersed	0	2	2
Bladderwort	Utricularia vulgaris	Submersed	10	8	1
Robbins pondweed	Potamogeton robbinsii	Submersed	2	2	0
Duckweed	Lemna minor	Free-floating	5	2	2
European frog-bit	Hydrocharis morsus-ranae	Free-floating	0	1	0
Watermeal	Wolffia punctata	Free-floating	1	0	0
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Yellow waterlily	Nuphar sp.	Floating-leaved	3	8	6
White waterlily	Nymphaea odorata	Floating-leaved	2	1	4
Cattail	Typha sp.	Emergent	7	13	12
Bulrush	Schoenoplectus sp.	Emergent	2	5	5
Phragmites	Phragmites australis	Emergent	1	3	4
Lake sedge	Carex lacustris	Emergent	1	0	3
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Exotic invasive species