

Nuisance Aquatic Plant Control in Lake Mitchell

(Draft)

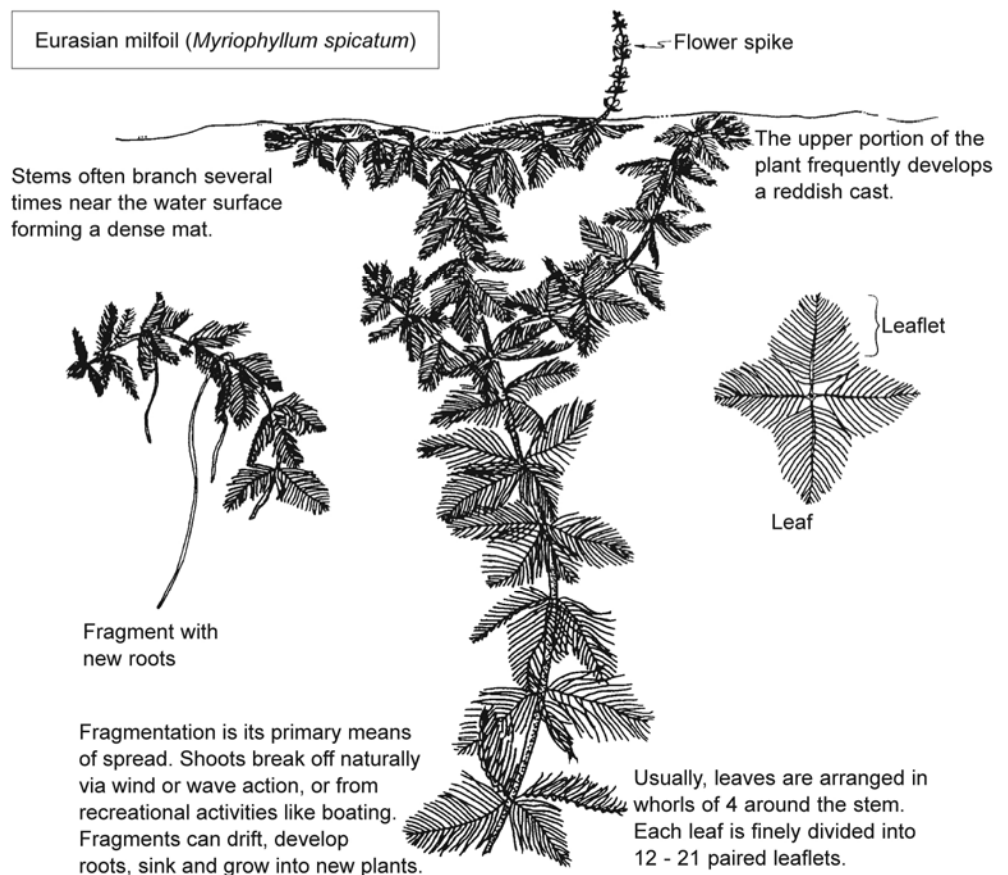
Background

The control of nuisance aquatic plant growth in Lake Mitchell is the primary focus of the Lake Mitchell Improvement Program. Since the late 1980's, plant control activities in Lake Mitchell have been coordinated under the direction of the Lake Mitchell Improvement Board. The Lake Mitchell Improvement Board was established in accordance with Michigan's Natural Resources and Environmental Protection Act.

Although an overabundance of undesirable plants can limit recreational use and enjoyment of a lake, it is important to realize that aquatic plants are a vital component of aquatic ecosystems. They produce oxygen during photosynthesis, provide food and habitat for fish and other organisms, and help stabilize shoreline and bottom sediments. The objective of a sound aquatic plant control program is to remove plants only from problem areas where nuisance growth is occurring. Under no circumstance should an attempt be made to remove all plants from the lake. The goal of the Lake Mitchell Aquatic Plant Control Program is only to remove aquatic plants from problem areas where nuisance plant growth is occurring.

The distribution and abundance of aquatic plants are dependent on several variables, including light penetration, bottom type, temperature, water levels, and the availability of plant nutrients. Lake Mitchell is a large, shallow lake. The lake has a surface area of 2,580 acres and a mean or average depth of only 8 to 9 feet. Lake Mitchell naturally sustains abundant aquatic plant growth. Nearly 30 species of plants have been observed in the lake, and about 70% of the shallow water portions of the lake (areas less than about 12 feet) contain plant growth. Wind and wave action limit extensive plant growth in many of the near-shore areas in Lake Mitchell. However, in the cove areas protected from prevailing winds and waves, plant growth can be heavy. In some years, plant growth occurs in shallow areas of the lake far from shore.

The primary objective of the aquatic plant control program in Lake Mitchell is to control non-native, invasive plant species. The primary non-native species in Lake Mitchell targeted for control is Eurasian milfoil (*Myriophyllum spicatum*). In



addition to Eurasian milfoil control, growth of other plants growing at nuisance levels is targeted for control. The Lake Mitchell Improvement Board uses a combination of herbicide treatments, mechanical harvesting, and shoreline clean-ups to control nuisance plant growth in Lake Mitchell.

Mechanical Harvesting and Herbicide Treatments

Mechanical harvesting (i.e., plant cutting and removal) and chemical herbicide treatments are methods commonly employed to control aquatic plant growth. For large-scale aquatic plant control, harvesting may be advantageous over herbicide treatments since plants removed from the lake will not sink to the lake bottom and add to the buildup of organic sediments. In addition, some nutrients contained within the plant tissues are removed with the harvested plants. With the use of herbicides, treated plants die back and decompose on the lake bottom while bacteria consume dissolved oxygen reserves in the decomposition process. Since the plants are not removed from the lake, sediment buildup on the lake bottom continues, often creating a bottom substrate ideal for future aquatic plant growth.

It should be noted, however, that attempts to control certain plant types by harvesting alone may not prove entirely effective. This is especially true with Eurasian milfoil due to the fact that this plant may proliferate and spread via vegetative propagation (small pieces break off, take root, and grow) if the plant is cut. Eurasian milfoil is especially problematic in that it often becomes established early in the growing season and can grow at greater depths than most plants. Eurasian milfoil often forms a thick canopy at the lake surface that can degrade fish habitat and seriously hinder recreational activity. Once introduced into a lake system, Eurasian milfoil often out-competes and displaces more desirable plants and becomes the dominant species. When Eurasian milfoil is present, it is typically controlled with a species-selective systemic herbicide. Systemic herbicides are designed to kill the entire plant, roots and all.

In Michigan, a permit must be acquired from the Department of Environmental Quality (DEQ) before any herbicides are applied to inland lakes. The permit will include a list herbicides that are approved for use in the lake, respective dose rates, use restrictions, and will show specific areas in the lake where treatments are allowed. With the exception of Eurasian milfoil, DEQ will typically limit herbicide treatments to within 300 feet of shore or the five-foot depth contour, whatever comes first. Eurasian milfoil is generally allowed to be treated anywhere it is found in the lake, although herbicide dose rates in certain areas may be reduced to limit impacts to non-target plants.

In light of the DEQ restrictions on herbicides and possible adverse impacts associated with large-scale, broad-spectrum herbicide treatments, herbicides in Lake Mitchell are used primarily to control Eurasian milfoil, while other plants growing at nuisance levels are controlled via mechanical harvesting.

Shoreline Clean-Up

Given the vast size of Lake Mitchell, it is not practical or cost-effective to mechanically harvest vegetation in the off-shore open waters of the lake. Also, given the restrictions on treating plant growth in the off-shore portions of the lake, control options are limited. In some years, depending on lake level, weather, and other factors, plants growing in the open waters of the lake can detach, drift to shore and accumulate in beach areas. To help address this problem, the Lake Mitchell Improvement Board sponsors a shoreline clean-up for individual property owners. If property owners rake plants up on shore, they may call a hot-line telephone number to arrange for the pick-up and disposal of the plants.

Project Coordination

Plant control activities are coordinated under the direction of the lake board's consultant. The consultant is responsible for preparing bid documents and/or contract extensions for the plant control program, conducting surveys of the lake to determine the scope of work to be performed by the plant control contractor(s), and performing follow-up inspections to ensure work is performed in a satisfactory manner. The consultant evaluates contractor performance and makes recommendations regarding payments to the contractor. The consultant collects and provides technical data to assist with the acquisition of permits and approvals for the project.

The plant control effort in Lake Mitchell is a delicate balancing act. It is not possible to predict from one year to the next what the conditions in the lake will be. The Lake Mitchell Improvement Board continually reviews new approaches and monitors activities on the lake each year to help ensure that the plant control effort proceeds in the most efficient, ecologically sound, and cost-effective manner.