

Full Authority
21 April 2022
Agenda Item: 10

Eurasian Watermilfoil

Overview:

An invasive species, the aquatic plant Eurasian Watermilfoil, is beginning to establish itself in lakes and create problems for residents and cottagers in the Crowe Valley watershed. As per the Ontario Invasive Plant Council: "Eurasian water-milfoil, or spiked water-milfoil is a submerged aquatic perennial of the Holoragaceae (Watermilfoil) family. Native to Europe, Asia and northern Africa, it was introduced to the USA in the 1940s and has since become one of the most widespread and problematic aquatic invasive species in North America due to its competitive growth habits and ability to spread vegetatively by plant fragments.

Once established, Eurasian water-milfoil is able to form dense underwater mats of vegetation that can negatively impact the ecosystem of a waterbody, including displacing native plant species, altering food-web structures, reducing macroinvertebrate abundance and diversity, and degrading the quality of fish habitat. These thick mats also reduce the aesthetic appeal of a water body, decrease property values and impact recreational activities such as swimming and boating, and can clog industrial and power generation water intakes."

Twin Sister-Lakes Proposal:

The Twin Sister Lakes Ratepayers Association has sought the Crowe Valley Conservation Authority support for their efforts to control the Eurasian Watermilfoil that is threatening their lake using the application of herbicides.

President Paul Gill stated "As an initial step, we have applied to the Ontario Ministry of Environment, Conservation, and Parks" (MECP) for approval to spray the affected parts of the lake with an herbicide that will knock down the weeds giving us a chance to get ahead of the problem. This work would be conducted by industry professionals next summer (2022) after the fish spawning season. We require your support now as the ministry approval process is lengthy. It would be a great help if the Authority could write a letter of support for our request to MECP, citing the lakes' benefit to the area and concerns about the negative impact of Eurasian Water Milfoil on the quality of the environment and the economy."

Chandos Lake Eurasian Watermilfoil Management Project:

Chandos Lake, approximately 30 km northwest of Twin Sister Lakes, has also become subject to the establishment of the invasive Eurasian Watermilfoil. In response, the Chandos Lake Property Owners Association (CLPOA) initiated the Eurasian Watermilfoil Management Project.

“The CLPOA initiated an Aquatic Invasive Species (AIS) management project in 2018 in association with Trent University. The research project focuses on managing the invasive aquatic plant Eurasian Watermilfoil (*Myriophyllum spicatum*) invading Chandos Lake. The management project is completed in an integrated approach, with two principle pillars:

1. Placement of benthic mats seeded with vegetation. The mats are made of biodegradable materials, such as coconut husk. They are laid on the lake bottom after Eurasian Watermilfoil is removed. They act much like a shade cloth does in a garden, and prevent milfoil from growing after treatment. To further accelerate restoration of the site, native aquatic plants are seeded in the mat.
2. Release of milfoil weevils (*Euhrychiopsis lecontei*) a small aquatic insect. This native insect is used as a form of biocontrol and feeds on the Eurasian Watermilfoil over the summer.”

The final phase of the project was completed in the summer of 2021 and the results of the project will be evaluated throughout 2022. We recommend that the Twin Sister Lakes Ratepayers Association get in touch with the CPLOA to discuss the results of the project, specifically which control measures worked and how difficult they were to implement.

Control Measures:

The following are some possible control measures as recommended by the Ontario Invasive Plant Council:

1) Manual:

Hand Removal:

Advantages: Simple, effective and selective with minimal impact on native aquatic plants. Can reduce biomass and percent cover. Potential for increased community awareness and involvement.

Disadvantages: Not always effective as it is very difficult to remove all plant material; does not eradicate. Time consuming and labour-intensive, only practical for isolated patches.

Raking:

In certain situations (i.e. deeper water) raking may be combine with hand pulling to try and remove all floating plant fragments. In deeper water, guide the rake along the plant and spin the rake so the stems get wrapped around the rake before pulling it up from the water.

Benthic Barriers:

Benthic barriers, bottom screens, or benthic mats are covers laid on the bottom sediment of a water body to block sunlight, preventing plants from photosynthesizing and suppressing their growth. These barriers target the rhizome, the main method of spread, and can restrict growth in small, localized areas.

2) *Mechanical:*

Mechanical Harvesting:

Advantages: Direct relief and immediate results. Effective when repeated, moderately inexpensive; removes plant biomass in the short-term (weeks to months) and can reduce plant growth the following year.

Disadvantages: Labour intensive. Non-selective control measure, will indirectly harvest other plant, fish, and macroinvertebrate species. Harvesters can also fragment rhizome pieces, contributing to further spread. Any fragments left behind are at risk of re-rooting and growing. This problem can be mitigated by containing and removing fragments during mechanical harvesting. Milfoil can also return at a faster rate than untouched areas due to nutrient release during dredging and aeration of the bottom.

Dredging or Suction Harvesting:

Advantages: Longer-term solution.

Disadvantages: Disruptive; Very limited areas, usually small areas within larger waterbodies. Slow, expensive. Increases water depth. Milfoil can return at a faster rate than untouched areas due to nutrient release during dredging and aeration of the bottom. Algal blooms can also result from nutrient release. Non-selective; water quality impacts.

3) *Biological:*

Biological Control:

Biological control is the use of an herbivore, predator, disease or other natural enemy to reduce established populations of invasive species. Most invasive species have no natural enemies in their new habitats. Biological control aims to re-establish an ecological balance between the invasive species and its natural

enemies by selecting highly host-specific natural enemies from the country of origin and moving them to the country where the invasive species is a problem.

4) *Chemical:*

Aquatic Herbicide (Diquat):

Advantages: Effective and fast acting, requires only a short exposure time, less expensive than mechanical removal.

Disadvantages: As a broad-spectrum herbicide, diquat can harm many non-target species. In a study that tested the sensitivity of native and non-native aquatic plants such as Eurasian water-milfoil to a range of diquat concentrations (4.7 – 1,153 µg/L), diquat was found to be highly lethal to all plant species. A low concentration of 74 µg/L (below the label recommendation) resulted in 100% mortality of all aquatic plant species. Indirect effects also include lethal effects on invertebrate species using aquatic plants for cover (Sesin et al., 2018). In addition, plant dieback can lead to problems with dissolved oxygen and eutrophication. It is not effective in turbid waters. Areas that have been treated cannot be used for recreation or human consumption for at least five days, which could create a negative public perception. It may also be less effective on hybrid water-milfoil.

Disposal:

Eurasian water-milfoil should be disposed of on dry land, above the high-water mark, to prevent material from re-entering the water. Depending on the amount of plant material removed, disposal methods can vary. Small amounts of biomass can be put on

land to dry and then be mulched, buried, composted or left to decompose. Disposal sites should be at least 30 m from the nearest waterbody, preferably in a flat, vegetated area, preventing fragments from inadvertently entering the water through runoff or other means. Gardens or farm fields are excellent disposal sites. Alternatively, plant material can be sealed in a black plastic bag and left in direct sunlight for about one week. These can then be discarded in household garbage. For large amounts you should contact your local municipality to determine if plant material may be disposed of in the landfill.

Restoration:

In some invaded systems, planting a reclaimed area with native vegetation can help prevent the reestablishment of the invasive species. Once an invasive aquatic plant is removed, Eurasian water-milfoil can return or something else can become established. This can be curtailed by planting the treated area with native plants. In one study on Cedar Lake, transplanted species were chosen that would match present species in the lake and cover a large surface area.

Recommendation:

- 1) That the Twin Sister Lakes Ratepayers Association attempt to implement non-chemical solutions similar to those implemented in the Chandos Lake Eurasian Watermilfoil Management Plan prior to moving forward with the application of potentially dangerous pesticides, since the control measures of removal, placing of benthic mats seeded with native plants, and the use of biocontrol all have a much lower impact on the health and wellbeing of other animal and plant species in the ecosystem and do not impact water quality.***
- 2) That these control measures be undertaken and the results assessed prior to moving forward with the application of herbicides.***
- 3) Staff recommend that the CVCA do not write a letter of support for the spraying of herbicide in Twin Sister Lakes at this time.***

Board Decision

LBM/TP

Sources:

https://www.ontarioinvasiveplants.ca/wp-content/uploads/2021/01/Eurasian-Water-Milfoil_Edn1.0_March2020.pdf

<https://clpoa.ca/our-lake/love-chandos-lake/eurasian-watermilfoil-management-project/>

<https://www.ontario.ca/page/eurasian-water-milfoil>