

## The Spread of Eurasian Milfoil Will Cost Cottagers Billions

Studies have indicated that waterfront property values on a lake with Eurasian Milfoil will drop by up to 19%<sup>1</sup>. On a typical lake, this can represent >\$3.8M loss per 100 cottages<sup>2</sup>. Milfoil will damage the shallow waters of a cottage waterfront reducing the enjoyment and swimming in the area and will harm the lake's delicate ecosystem. Milfoil will also eliminate critical fish habitats leading to a significant reduction of game fish populations in the given lake.

Eurasian water-milfoil is an extremely invasive water plant from Europe and Asia that has no natural predators in North America to keep it in check. Milfoil can easily spread in all types of lakes, whether they are nutrient rich (eutrophic) or mineral rich (oligotrophic). Although milfoil can grow as deep as 25 feet (7.6M), it is most dense between 1 to 12 feet deep (the littoral zone of a lake), a common fish spawning area. It has currently spread to well over 10,000 locations across in Canada (Ontario, Quebec and British Columbia) and the United States<sup>3</sup> (Figure 2).



Figure 1: Typical Eurasian Milfoil infestation

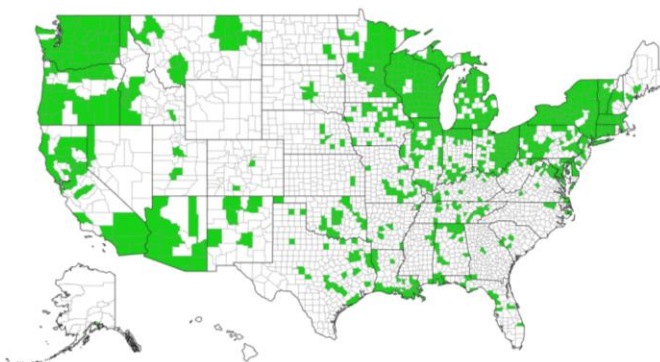


Figure 2: Milfoil Map created by the Early Detection and Distribution Mapping System (EDDmapS)<sup>3</sup>. As expected, the infested areas are mostly in the states with the highest concentrations of lakes.

The rate at which Milfoil spreads depends on many variables including: lake nutrient levels, temperatures, boat traffic, days of sun, etc. However, the reason this plant is so pervasive is that it primarily spreads through stem fragmentation. If a single plant is cut into 10 pieces, it will grow 10 more plants from those pieces. It is also a very fragile plant and is easily chopped up by a canoe paddle or boat propeller. A powered boat passing through an infested area has the potential to chop up thousands of Milfoil plants with its propeller in only minutes, resulting in thousands of new plants. As such, a significant increase in the Milfoil growth rate will occur when it spreads into high boat traffic areas. These areas include boat launch zones, shallow waterways with high traffic and near cottage docks. The result is that the Milfoil can sometimes double or triple in size in two or three years.

Trying to remove Milfoil by cutting will also increase the rate at which it spreads, since it is next to impossible to collect all the cuttings. Harvesting (industrial cutting) is sometimes used to gain an immediate trimmed result in large areas. However, mechanical cutting of Milfoil can produce a disastrous effect the following year from the large number of fragments left behind.

ABV des 7 is a non-profit environmental group responsible for the 7 watersheds North of Gatineau, Québec.

<sup>1</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4198248/>

<sup>2</sup> Based on an average property cost of \$200K X 19% X 100 cottages. Specific averages vary significantly across the continent, which will vary this loss accordingly

<sup>3</sup> <https://www.eddmaps.org/distribution/uscounty.cfm?sub=3055&map=distribution>

Its 2015 survey of 13 lakes indicated that Milfoil can cover from 30% to 45%<sup>4</sup> of a lake's littoral zone. In extreme cases, Milfoil can cover 80%<sup>5</sup>.

When Milfoil infests the littoral zone of a lake it can form thick underwater strands of tangled stems and vast mats of vegetation at the water's surface with up to 250 plants/yard<sup>2</sup> or 300/m<sup>2</sup> (Figure 1). This dense growth of the Milfoil displaces the indigenous plant and aquatic wild life and prevents fish from laying eggs in the infested areas, effectively damaging their habitat. Milfoil will reduce local oxygen content and pump phosphates in to the water, which can support the growth of blue-green algae (*a toxic bacterium*). The dense infestations create stagnant water, which supports increased mosquito populations. The thick growth will also make recreational use in those areas difficult or impossible. In some cases, beaches have been closed down due to unsafe conditions for swimmers<sup>6</sup>.

University studies have shown that if Milfoil is not controlled on a given lake, the water front property values can drop by as much as 13% in one study and up to 19% in another study<sup>1, 7, 8</sup>. The studies also indicate that the loss in property value is tied to the extent of the Milfoil infestation on the given lake.

The US Fish and Wildlife Service have stated that "*America's fisheries are facing a conservation crisis. Nearly 700 species in total are imperiled. More than two-thirds of these are listed as threatened or endangered under the Endangered Species Act. **Habitat alteration is the principle factor in this conservation crisis***".<sup>9</sup> Other groups, including the World Wildlife Fund<sup>10</sup> and the Canadian Department of Fisheries and Oceans<sup>11</sup>, support this conclusion; that damage to fish habitats will negatively affect fish populations and that habitats must be protected. A significant percentage of popular game fish spawn in the littoral zone of lakes and rivers including, trout, bass, crappie, catfish and salmon. This is the same habitat that the Milfoil infestations are displacing.

Milfoil must be controlled to stop it from spreading! It is not realistic to completely eradicate it. The spread of Milfoil has been ABV des 7's number one environmental concern over the last decade. After analysing all the various methods to control the spread and not finding an adequate solution, it decided to look at other options. In 2008 an environmental group, Inland Fisheries Ireland, tested the use of burlap on Lagarosiphon major, an invasive water plant in that region<sup>12</sup>. Many other studies since then have also shown that the burlap can kill off certain invasive aquatic plants in 4 months. In 2012, ABV des 7 then ran their own 3-year study<sup>13</sup> to test the burlap process on Eurasian Milfoil, which proved highly successful.

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<sup>4</sup> ABV des 7's 2015 Milfoil survey of 13 lakes, <http://abv7.org/administration/content/UserFiles/File/English%20version.pdf>

<sup>5</sup> Lac-a-la-Tortue (Turtle Lake), near Shawinigan Quebec is 80% covered with milfoil.

<sup>6</sup> <https://www.espanola.ca/mediareleases/item/881-clear-lake-beach-closed>

<sup>7</sup> [https://www.google.ca/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&ved=0ahUKEwi4romX9r7ZAuUG\\_IMKHfIJBOYQFghLMAM&url=https%3A%2F%2Fageconsearch.umn.edu%2Fbitstream%2F6199%2F2%2F463956.pdf&usg=AOvVaw2nQRMj0aXkJaemkPIPSHz9](https://www.google.ca/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&ved=0ahUKEwi4romX9r7ZAuUG_IMKHfIJBOYQFghLMAM&url=https%3A%2F%2Fageconsearch.umn.edu%2Fbitstream%2F6199%2F2%2F463956.pdf&usg=AOvVaw2nQRMj0aXkJaemkPIPSHz9)

<sup>8</sup> [https://www.google.ca/url?sa=t&rct=j&q=&esrc=s&source=web&cd=8&ved=0ahUKEwi4romX9r7ZAuUG\\_IMKHfIJBOYQFghpMAc&url=http%3A%2F%2Fwww.eaglelakelake1.org%2Fenvironmental%2Finvasive%2Fspecies%2Faquatic%2Fmilfoil%2Fzhang%2520and%2520Boyle%2520EE%25202010.pdf&usg=AOvVaw2G\\_cLRkCTMKQ\\_B2tu0hm3xE](https://www.google.ca/url?sa=t&rct=j&q=&esrc=s&source=web&cd=8&ved=0ahUKEwi4romX9r7ZAuUG_IMKHfIJBOYQFghpMAc&url=http%3A%2F%2Fwww.eaglelakelake1.org%2Fenvironmental%2Finvasive%2Fspecies%2Faquatic%2Fmilfoil%2Fzhang%2520and%2520Boyle%2520EE%25202010.pdf&usg=AOvVaw2G_cLRkCTMKQ_B2tu0hm3xE)

<sup>9</sup> <https://www.fws.gov/fisheries/whatwedo/NFHAP/nfhap.html>

<sup>10</sup> [http://wwf.panda.org/about\\_our\\_earth/species/problems/habitat\\_loss\\_degradation/](http://wwf.panda.org/about_our_earth/species/problems/habitat_loss_degradation/)

<sup>11</sup> <http://www.dfo-mpo.gc.ca/pnw-ppe/changes-changements/index-eng.html>

<sup>12</sup> J.M. Caffrey et al. A novel approach to aquatic weed control and habitat restoration using biodegradable jute matting

[https://www.google.ca/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwiG8dfpucTZAhWD4IMKHdP8DaAQFggwMAA&url=http%3A%2F%2Fwww.gt-ibma.eu%2Fwp-content%2Fuploads%2F2015%2F04%2FAI\\_2010\\_5\\_2\\_Caffrey\\_et\\_al.pdf&usg=AOvVaw1LmCPRLuyQin8wwhpM68Lx](https://www.google.ca/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwiG8dfpucTZAhWD4IMKHdP8DaAQFggwMAA&url=http%3A%2F%2Fwww.gt-ibma.eu%2Fwp-content%2Fuploads%2F2015%2F04%2FAI_2010_5_2_Caffrey_et_al.pdf&usg=AOvVaw1LmCPRLuyQin8wwhpM68Lx)

<sup>13</sup> ABV des 7 Burlap Project, <http://abv7.org/current-projects.php?projectId=95>



*Figure 3: This is a photo taken from a cottage dock in Quebec, Canada. Hundreds of thousands of dollars were spent to purchase this cottage, mostly for the waterfront and view. The water is crystal clear, but now Eurasian Milfoil has started to infest this area. It is now getting difficult to swim off the dock, but at some point, it will be dangerous to swim when the milfoil grows to full density as in Figure 1*

The process involves laying biodegradable burlap on top of the Milfoil and holding it to the lake bottom with local sand. The burlap kills off the Milfoil in the first season and biodegrades in 1 to 3 years after installation, providing an ideal environmental solution (Figure 4).

However, to stop Milfoil from coming back or spreading, the milfoil must be killed off in high traffic areas to stop the fragmentation. A holistic approach must be taken to control the milfoil in a specific lake or river. This includes targeting public passageways and private docks. Measures also need to be taken to clean boats, trailers and aquatic equipment when removed from a lake or river, to remove all Milfoil fragments. This will prevent the Milfoil from spreading between bodies of water.

Cottage and lake Associations need to contact Local, regional and federal authorities to take action. They should support sustainable solutions which have been tried and tested, such as the laying of biodegradable burlap (Figure 4).



*Figure 4* The edge of a treated section showing an untreated v.s treated area. The area on right was treated with burlap in 2012 in the ABV des 7 study

For infested lakes the control of milfoil in a timely manner is paramount, since delayed control initiatives will allow the milfoil to spread into a larger problem. However, for uninfested lakes and rivers prevention is the most effective solution. Lake associations, fishing federations and governments need to adopt a boat and equipment cleaning program, to stop the spread of invasive species into new areas. Milfoil may be in over 10,000 locations, but hundreds of thousands of lakes and rivers are at risk.

Governments and cottage federations should be doing further research to better understand the extent of Milfoil damage. This includes quantifying the spread of Milfoil in lakes to understand how severe the problem is. A problem cannot be properly controlled unless it is fully understood and measured.

Inaction will cost the North American economy billions!