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# Aquatic Invasive Species in Muskoka

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*Muskoka*  
WATERSHED COUNCIL

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## Introduction

The mission of MWC is "To Champion Watershed Health". MWC Goals are to Evaluate the Watersheds, Advocate for the Watersheds, Communicate and Educate about the Watersheds, and Promote and Demonstrate BMPs that support the health of the watersheds.

Invasive species are plants, animals, both aquatic and terrestrial, and micro-organisms that out-compete native species when introduced outside of their natural environment and threaten Canada's ecosystems, economy and society. They can come from across the country or across the globe.

In evaluating the watersheds of Muskoka in relation to aquatic invasive species, there are scientific studies analyzing the presence of 'non native' species of algae, other plants, invertebrates and fishes. There are studies of the methods of their dispersal, as well as data collected by reports to the Ontario Federation of Anglers and Hunters (OFAH) and the MNR that confirm the presence and impacts of 'invasive species' in our watersheds.

A review of the "[Field Guide to Aquatic Invasive Species](#)" indicates that invasive species are more prevalent in watersheds directly connected to waterways which have international shipping. In Muskoka that puts Georgian Bay and Severn River waterbodies at a higher risk than some inland lakes. Nevertheless, there are at least some invasive species in most waterbodies across our watersheds. Many of those species threatens the environment, economy or recreational use of our water resource.

In the recent past, there was significant public awareness and concern about the introduction of the Zebra mussel into Muskoka's watersheds. Fortunately, zebra mussels do not thrive in the cold, calcium poor waters of Canadian Shield lakes, although they are a considerable issue in lakes located off the shield in the Severn River watershed or in Georgian Bay. The initial public awareness warning people about inadvertently transporting these animals between lakes has faded, leaving our waters vulnerable to other species which will continue to arrive. The goal of this paper is to outline the invasive species present in or near Muskoka's watersheds, explain their impacts on the health of the watersheds, and reignite interest in proactive behaviours to prevent further invasions and/or lessen the impacts of invasive species already present.

## Aquatic Plants

A review of the Field Guide outlines 18 species of algae and other plants, many of which are not present in Ontario, or are isolated in internationally travelled waterways. The follow list identifies invasive species found in inland waters of the Crowe River system, Kawartha Lakes, and Georgian Bay, in or near Muskoka.

- Eurasian water-milfoil (*Myriophyllum spicatum*) is found in southern Georgian Bay and was likely introduced through shipping ballast water or aquarium waste. It lives in both alkaline and acidic waters and in high or low nutrient lakes. It forms dense stands which suppress native vegetation, impede water traffic and impact recreational use.
- European frog-bit (*Hydrocharis morsus-ranae*) was introduced at an experimental farm in Ottawa but can now be found in Canadian Shield lakes. It forms large dense floating mats on the surface.
- The Yellow Iris (*Iris pseudacorus*) was introduced as an ornamental plant in southern Ontario and is similar to a native iris, but it displaces native species and tends to 'dry out'

the wetlands in which it grows. This plant is also poisonous to animals and causes blistering on human skin.

- While not a major problem in Muskoka Purple loosestrife (*Lythrum salicaria*) has threatened large wetland areas and garnered significant attention, particularly to the north and east of us.
- European common reed (*Phragmites australis subsp. australis*), found from southern Ontario to Georgian Bay, is another ornamental plant which displaces native species.
- Curly-leaved pondweed (*Potamogeton crispus*) is found in Georgian Bay and Severn waters and was originally introduced to provide food and habitat for waterfowl. Its dense stands suppress native plants and can reduce oxygen supplies in the water.

Invasive plant and algae species have generally been introduced through shipping ballast water, in appropriate disposal of aquarium waste, and human error. It is highly improbable to eradicate an invasive plant and much more feasible to prevent its spread in the first place.

### Invertebrates

Of the 12 invertebrates noted, 10 may be found in Ontario and two are already clearly identified within Muskoka's watersheds.

- The Rusty crayfish (*Orconectes rusticus*) is found in Manitoulin, Kawartha and Magnetawan areas and was likely introduced as released bait or aquarium pets. They compete with native crayfish, eat fish eggs and cross breed with native species, diluting the species.
- Chinese mysterysnails (*Cipangopaludina chinensis*) and Banded mysterysnails (*Viviparus georgianus*) are found in the Trent-Severn system and in Kawartha Lakes. They were originally introduced as a food source and for aquariums. There has been little study on their impact except to assume that they compete with native snails for food.
- The impact and spread into Ontario waters of the zebra mussel (*Dreissena polymorpha*) have been well documented and reported. However, since it does not reproduce well in the cold calcium-poor lakes in Muskoka, the overall 'concern' about this species seems to be waning.
- Most recently, flags have been raised about the impacts of the Spiny water flea (*Bythotrephes longimanus*) in over 100 inland lakes including many in Muskoka. It likely arrived in ballast water and is easily transported in or on fishing boats or gear and bait pails. It can colonize with a single female so once present, it can dominate. The Spiny water flea changes the zooplankton communities, competes for food, can foul fish lines, and can kill predator fish as it is indigestible.

### Fish

Of the 17 invasive fish species, 3 have been identified in or near Muskoka's watersheds.

- Carp and Sticklebacks are the most numerous but have not been recorded in Muskoka.
- White perch (*Morone americana*) may be present in the Trent-Severn system.

- Round goby (*Neogobius melanostomus*) were first identified in the St. Clair River in 1990. It is now illegal to have them but they are present in all the Great Lakes and the Trent-Severn system. They can be transported in ballast water and are also easily mistaken for baitfish. They prey on fish eggs and larvae.
- Rainbow smelt (*Osmerus mordax*) have been identified in Muskoka and Parry Sound lakes. They feed so voraciously on zooplankton and newly-hatched fish that they can extirpate native species such as perch, walleye, Lake herring and Lake trout as well as affect the zooplankton communities. These fish were used in deliberate stocking in Michigan in the early 1900's and have been transported as baitfish and in ballast water.

### *New Threats*

An emerging aquatic threat is the Water soldier (*Stratiotes aloides*), which resembles a spider plant in water but with leaves that are sharp and could hurt a swimmer. They have been found in the Trent-Severn system. Unfortunately, they are sold in nurseries and end up thriving in Ontario waterways when improperly discarded.

This past October, two new species of invasive carp were identified in the Chicago area and threaten Georgian Bay: The Bighead and the Silver.

They are voracious filter feeders, which mean they remove phyto- and zooplankton from the bottom of the food chain, muscling out and starving native aquatic species and fish. In addition to destroying native species, the Silver Carp leap from the water when startled and may cause a serious safety concern for boaters.

### *Stewardship and Education*

Both the MNR and OFAH have reporting systems for invasive species. Clear instructions and manuals on reporting, including hotlines and online reports are available. Reporting, however, is not the solution to the invading species threat. As noted, most invasive species were introduced by human activities, sometimes deliberately, so education is important in preventing the further spread of non native species.

Current prevention programs implemented by OFAH and the MNR are directed towards recreational boaters and anglers, float planes pilots, SCUBA divers and waterfowl hunters.

Key message:

1. Clean and dry equipment before moving from one waterbody to another.
2. Dispose of aquarium plants and species properly. Dumping them into a municipal sewer system can spread unwanted species into our waterways.
3. Don't bring exotic species back into the country. Many invasive species have arrived because they 'looked interesting' in their native land/water.

There is a program to combat Purple Loosestrife with the Galerucella beetles. The problem is so prevalent in areas like eastern Ontario that there is a 'Project Purple Week' to educate and work to eradicate the plant.

The Natural Heritage Committee of the Muskoka Heritage Foundation initiated an education and awareness program in 2010 for terrestrial invasive species in Muskoka, specifically Garlic mustard, Giant hogweed, Japanese knotweed, and Norway maple, among others. Components of the program include:

- Erecting a display and distributing handouts at the NHC Annual Native Plant sale in May.
- Publishing articles in local newspapers on terrestrial invasive species in Muskoka.
- Giving presentations and distributing handouts at lake association AGMs.
- Posting resources on terrestrial invasive species on the Muskoka Heritage Foundation website.

### *Recommendation*

It is recommended that Muskoka Watershed Council seek partners to develop a comprehensive education and stewardship program for aquatic invasive species that impact our watersheds. In particular, next steps should include:

1. Identify specific invasive species that currently exist in our watersheds
2. Identify potential new invasive species
3. Develop a Key Messages sheet or work with and promote existing programs
4. Identify partners for a stewardship program
  - a. Marinas –signage
  - b. Bait shops
  - c. OFAH (existing program and plenty of free stuff to download)
  - d. Lake associations