Appendix C: Species Summaries

Species and risk summaries **for species proposed to be added to** Ontario regulation 354/16 under the Invasive Species Act

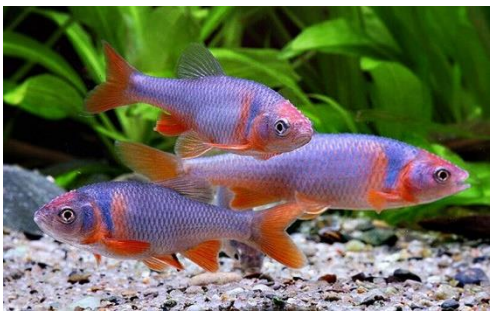
Ide (fish)

- Native to northern Europe and western Asia.
- Introduced widely across the U.S., but the current status of established populations is unclear. Ide has not been found in Canada or anywhere within the Great Lakes basin.
- Pathways for introduction: intentional or accidental aquarium release, aquarium trade, natural dispersal after introduction.
- Potential impacts: introduction of parasites, virus and disease transmission, competition with native fishes.

Eastern and Western Mosquito Fishes

- Western Mosquitofish is native to North and Central America, Mississippi River basin. Eastern Mosquitofish is native to Atlantic and Gulf Slope drainages.
- In the U.S. established widely in the west, mid-west and northeast, including several states bordering the Great Lakes. Established on all continents except Antarctica.
- Not known to occur in the wild in Ontario.
- Pathways for introduction: intentionally introduced (but found un-effective) as an ineffective agent of mosquito control; can also spread through connected waterbodies or flooding events. Aquarium and water garden use are also potential vectors of accidental or unlawful release into waterbodies.
- Potential impacts: outcompetes native fish species for food and habitat through aggressive feeding of zooplankton and the eggs and larvae of other aquatic vertebrates, leading to the loss of biodiversity and potential extirpation of native species.

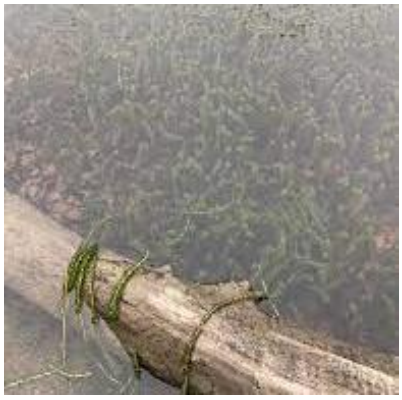
Red Shiner (fish)



- Native to the U.S. widely distributed throughout the Mississippi River basin and the Gulf of Mexico drainages westward to the Rio Grande.
- Established populations in tributaries in many U.S. states, no known introductions outside the U.S.
- Not known to occur in the wild in Ontario.
- Pathways for introduction: bait bucket releases and introduction as forage, also found in fish farms and aquarium trade under the name rainbow dace. Irrigation ditches, canals, and connected waters can also facilitate its dispersal.

- Potential impacts: reduction in native fish through predation on eggs and larvae, competition, genetic impacts through hybridization, and introduction of parasites.

Oxygen Weed (aquatic plant)

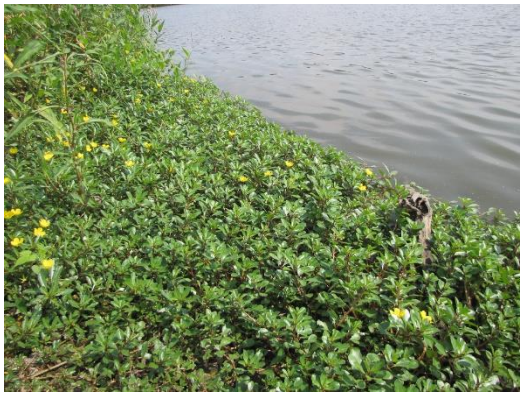


- Native to Botswana, Lesotho, South Africa, Zambia, and Zimbabwe.
- Established populations in Australia, New Zealand, France, Italy, Switzerland, Ireland and the UK.
- Not known to occur in the wild in Ontario.
- Pathways for introduction: horticultural and ornamental releases, flooding of ornamental ponds into surrounding waterways or emptying unwanted aquariums directly into waterways. Further spread through contaminated watercraft between waterbodies.
- Potential impacts: dense colonies outcompete native vegetation, create anoxic conditions during large-scale decay, impedes recreational activities such as boating and swimming.

Eurasian Water-milfoil (aquatic plant)

- Native to Europe, Asia, and northern Africa. In Ontario, occurs throughout southern and central Ontario as far north as Sault Ste. Marie and Sudbury.
- Established populations in every continent except Antarctica.
- Pathways for introduction: Easily spread via plant fragments transported between waterbodies typically attached to watercraft, and watercraft equipment, trailers, fishing gear, and naturally through connected waterbodies
- Potential impacts: dense colonies outcompete native vegetation, can create anoxic conditions during large-scale decay, impede recreational activities and create habitat for mosquitoes.

Floating Primrose-willow (aquatic plant)

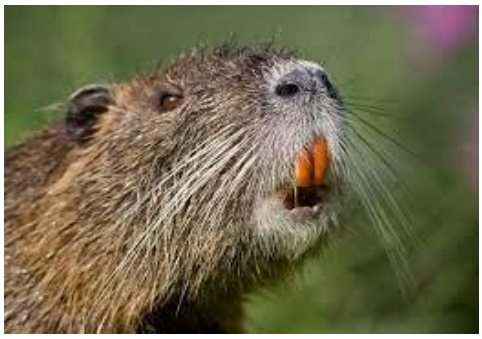


- Native to south America, southeastern U.S..
- Established populations in many U.S. states, May be present in Lake Erie/ Lake St. Clair basin.
- Pathways for introduction: Abundant reproduction with vegetative asexual spread. Pieces of stems readily dispersed by flowing water and wildlife. Can also spread through human activities including boating, alterations of waterways and discarding of aquarium material.
- Potential impacts: dense colonies outcompete native vegetation, can create anoxic conditions during large-scale decay, impedes recreational activities such as boating and swimming.

Flowering-rush (aquatic plant)

- Native to Africa, Asia, and Eurasia
- Established populations in each province of Canada. In Ontario, it occurs throughout Lakes Erie, St. Clair and Ontario, as well as in western St. Lawrence River. The plant has also spread to many inland waterbodies of southern Ontario.
- Pathways for introduction: used as garden plant for ornamental purposes which can spread to natural environments, especially when planted near or along shorelines, through improper disposal of plant material, animal spread, boating, and/or carried off by flooding events.
- Potential impacts: can displace native riparian vegetation, forms dense stands which impact industrial and recreational uses of shallow waters. Reduces habitat of native fish and increases habitat for invasive fish.

Nutria (mammal)



- Native to South America, the Nutria is a large, herbivorous semi-aquatic rodent with known populations in southern Brazil, Paraguay, Uruguay, Chile, and Argentina.
- Established populations in Asia, Africa, Europe, and parts of North America. The only Canadian province with reports of current sightings is British Columbia.
- Not known to occur in the wild in Ontario.
- Pathways for introduction: the majority of introductions in the U.S. and Canada were results of escapes or intentional releases from fur farms. Nutria is not currently farmed in Ontario.
- Potential impacts: burrowing and foraging behaviour impacts agriculture areas and increases flooding risks. They can also spread parasites and disease to humans, pets and livestock and can destroy coastal wetlands.

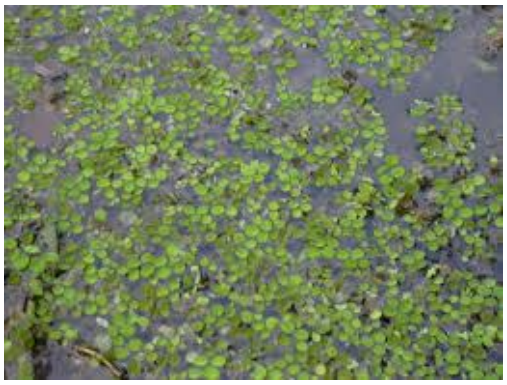
Tree-of-heaven (terrestrial plant)

- Native to Asia.
- Established populations in every continent apart from Antarctica. It is considered naturalized across much of its introduced range. Reported in parts of Canada (British Columbia, Quebec and Ontario). In Ontario, confirmed reports of this species in Southern Ontario, Ottawa and Toronto.
- Pathways for introduction: may have been introduced to Ontario via horticulture, although, this tree is rarely planted today due to its invasive tendencies. There is no evidence that tree-of-heaven was or is being sold in nurseries in Ontario. Human disturbances associated with forest management and infrastructure construction facilitates its spread.
- Potential impacts: changes chemical and microbial activity in soils, reduces soil nutrients and light availability causing habitat changes. Fast growth rate displaces native plant species. Also associated with several fungal pathogens and phytophagous insects, and the preferred host to the spotted lanternfly (*Lycorma delicatula*).

Azolla (Water Ferns – aquatic plant)

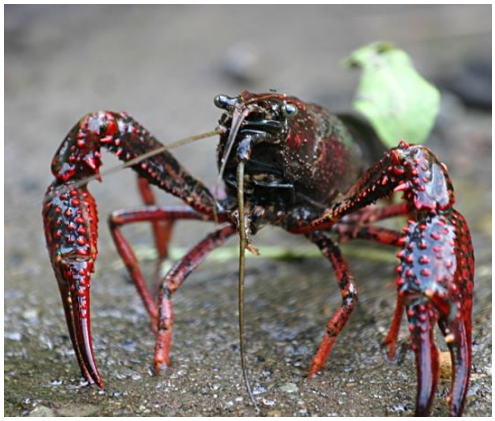
- This genus includes *Azolla cristata* (common names include Crested Mosquitofern, Carolina Mosquitofern and Eastern Mosquitofern), *A. caroliniana*, *A. filiculoides* (Waterfern), *A. mexicana*, *A. microphylla* and *A. pinnata* (Feathered Mosquitofern, Water Velvet).
- The Azolla genus, including various species and subspecies are mostly native to large parts of the southern hemisphere. *A. filiculoides* is native to both North and South America excluding Canada, and *A. cristata* is native to the U.S.
- The Azolla genus is widely distributed over the world. *A. cristata* is distributed in South Africa, India, Japan and the Netherlands and Argentina. *A. mexicana* is present in India and large parts of Europe. *A. pinnata* is present in the U.S. and New Zealand. *A. filiculoides* is present in large parts of Africa and Europe. No documented reports of non-native *Azolla* species in the wild in Ontario.
- Pathways for introduction: waterfowl or shorebirds during migration, contaminated watercraft or other equipment, intentional release of aquarium contents into sewers or waterways, flooding and natural spread from other infested waterbodies, use as a bio-fertilizer.
- Potential impacts: dense colonies outcompete native vegetation, can create anoxic conditions during large-scale decay, impedes recreational activities such as boating and swimming. Detrimental to wild rice populations.

Salvinia (Watermoss – aquatic plant)



- Most watermoss species are native to Central and South America. Some are native to Euro-Siberian and South Asian regions.
- Established populations in more than 20 countries. No documented reports of Salvinia spp. in the wild in Ontario, or anywhere in Canada, but they are present in the Great Lakes states in the U.S.
- Pathways for introduction: Natural as well as human-caused disturbance of mats greatly increases dispersal (e.g. wind, flooding, animal movement, boating). Largely introduced through the aquarium and water garden trade. Can spread attached to contaminated boats and as contaminants in shipments of aquatic plants and fish.
- Potential impacts: dense colonies outcompete native vegetation, can create anoxic conditions during large-scale decay, impedes recreational activities such as boating and swimming.

Procambarus and *Pacifastacus* (Crayfish)



- Pacifastacus spp are native to British Columbia (Vancouver Island, Okanagan, and Lower Mainland) and the northwest U.S. (Northern California, Idaho, Oregon, and Washington). Procambarus spp are native to the southern U.S..
- Pacifastacus spp have been introduced in Sweden and now established in many European countries, introduced and established in Japan. In the U.S, it has also been introduced to Nevada, Utah, and parts of California. Currently not known to exist in the Great Lakes Basin, or to occur in Ontario waters.
- Procambarus spp have been introduced in Africa, Asia, Europe, South America and North America, including U.S. states where it is not native.
- White river crayfish (*Procambarus acutus)* has been reported on Pelee Island in Lake Erie and near Port Severn. Marbled crayfish *(Procambarus virginalis)* is present in a stormwater pond in the Burlington area.
- Pathways for introduction: intentional stocking for harvest and commercial aquaculture, and illegal release through aquarium trade.
- Potential impacts: competition with native crayfishes and fish species for food and shelter, and predation on benthic invertebrates, crayfishes, fishes, and fish eggs with potential impacts on native species.
- Includes Marbled and Red-Swamp crayfish which are already prohibited under the Ontario *Invasive Species Act.*