Invasive Species

LWRA

LIMERICK WATERWAYS RATEPAYERS ASSOCIATION

https://**limerickwra.wordpress**.com

LIMERICK WATERWAYS RATEPAYERS ASSOCIATION

Introduction

"Hundreds of invasive species have infiltrated our lakes, rivers and forests. This puts our native fish, plants, animals and their habitats at risk.

After an invasive species arrives it is almost impossible to remove it. This can cause irreparable damage to important habitats and ecosystems, according to the Province of Ontario.

The purpose of this document is to review the current state of invasive species in and around the Limerick Waterways, its susceptibility to invasive species and an action plan to monitor the waterway and educate its users. It is divided into three parts:

1. Review of Invasive Species in and around the Limerick Waterways
2. Susceptibility of the Limerick Waterways to Invasive Species
3. Monitoring of Limerick Waterways, and action steps to help minimize the introduction of invasive species

Part 1
Review of Invasive Species in and around Limerick Waterways

Below is a list of invasive aquatic plants, animals, and terrestrial plants that have been identified within a 35 km radius of Limerick Lake within the last ten years.

The source for the list is EDDMapS Ontario, which is a depository of reports and sightings of invasive species by government and private sources. All of the reports and sightings are verified by the Ontario Federation of Anglers and Hunters (OFAH). For more information about EDDMapS Ontario, *see Appendix 1*.

An additional resource for identification and information concerning aquatic invasive species can be found in the link contained in *Appendix 3*

A 35 km radius was selected to specifically exclude Lake Ontario, the Bay of Quinte and The Trent Severn Waterway. These three bodies have significantly more exposure to transient vessels, a significant source of invasive species contamination.

Aquatic Animals

Species of **Most Concern**, require education, constant monitoring and yearly testing

Zebra and Quagga Mussels are similar in appearance and the two names are often used together and or interchangeably. For purposes of this document the term Zebra Mussel is used to denote either or both species.

Zebra Mussels, data suggest that the current conditions in the Limerick Waterways limit its susceptibility to Zebra Mussels. Continued efforts have kept the Zebra Mussels out of our chain of lakes. However, they have recently been confirmed nearby.
See part 2 and appendix 4
- 2022, 2015 Wollaston Lake
- 2014 Bon Echo Park

Species of **Concern**, require education and regular monitoring

Banded Mystery Snail, note there are native snails in our lakes, it requires professional identification to determine species.
- 2022 Jeffery Lake, south of Bancroft
- 2019 Bon Echo Park
- 2018 Steenburg Lake
- 2016 Alibionn Lake, east of Bancroft

Chinese Mystery Snail, note there are native snails in our lakes, it requires professional identification to determine species.
- 2021 Chandos Lake
- 2021 Skootamatta Lake

Rainbow Smelt
- 2017 Skootamatta Lake

Round Goby
- Sold as a bait fish. While none have been reported in waterways similar to Limerick, the Provence has made it illegal to transport them in some areas

Spiny Waterflea, reporting of this species in our area has dropped over the last five years.
- 2023 Chandos Lake, sign noted at HWY 620 launch ramp
- 2014 Wollaston Lake

Part 1, *continued*
Review of Invasive Species in and around Limerick Waterways

Aquatic Plants and Plants growing in wet locations

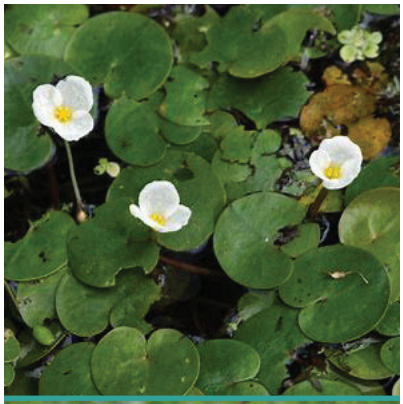
Species of **Most Concern**, require education, constant monitoring and yearly testing

Eurasian Water Milfoil, this can and has overtaken lakes in Ontario
- 2022, 2019 Bon Echo Park
- 2018 Chandos Lake

European Common Reed, Phragmites, common along most roadsides in the area
- 2022 Paudash Lake environs
- 2021 Multiple along HWY 620 between Apsley & Coe Hill
- 2019 Bon Echo Park
- 2019 Skootamatta Lake
- 2018 Steenburg Lake
- 2017 L'amable environs

Water Solder, while there are no confirmed positive reports in the 35 km radius on EDDMapS, many organizations including FOCA have raised extreme concern, grows so dense that fish can not swim with in it. Leaves are very sharp
See appendix 2

Aquatic Plants and Plants growing in wet locations continued



Species of **Concern**, require education and regular monitoring

European Frogbit
- 2022, 2021, 2017 Chandos Lake Environs
- 2022 Paudash Lake Environs

Purple Loosestrife, once a major concern, the species in most areas of Ontario has been controlled through the introduction of two species of European leaf eating beetles. Both of which only feed on species of Loosestrife. *See appendix 5*
- 2022 Bancroft environs
- 2022 Chandos Lake
- 2022 Coe Hill
- 2022 Paudash Lake environs
- 2022 Skootamatta Lake
- 2018, L'amable

Starry Stonewort
- 2019 Dickey Lake

Part 1, *continued*
Review of Invasive Species in and around Limerick Waterways

Invasive Forest Pest

Species of **Most Concern**, require education, constant monitoring and yearly testing

Emerald Ash Bore
The Emerald Ash Bore is pervasive in Ontario. Dead ash trees can be seen along many road sides in our area. See appendix 6, for addition information from Natural Resources Canada.

Spongy Moth (formerly Gypsy Moth). This moth is cyclic. Outbreaks typically last 1-3 years with approximately 10 years between outbreaks.
2022, 2021, 2020, 2019 Bancroft environs
2022 Coe Hill/Wollaston Lake
2022, 2021,2020 Silent Lake
2021, 2020, 2019 Baptiste Lake environs
2021, 2019 East of Chandos Lake
2021, 2020 Limerick Lake environs
2021 Steenburg Lake
2020, 2017 Bon Echo Park
2020 L'amable environs
2020 Skootamatta Lake
2019 Dickey Lake

Terrestrial Plants

Species of **Most Concern**, require education, constant monitoring and yearly testing

Wild Parsnip
2022, 2019, 2018, 2015, Multiple along HWY 620 between Apsley & Coe Hill
2021, 2018, 2015 Bancroft environs

Species of **Concern**, require education and regular monitoring

Beech Bark Disease
2019 North of Chandos Lake

Terrestrial Plants continued

Species of **Concern**, require education and regular monitoring

Bird Vetch
2021, 2019, 2018 Bancroft environs
2021, 2020 Chandos Lake environs
2021 Wollaston Lakes
2020 Silent Lake
2014 Baptiste Lake

2020, 2019 Bon Echo Park

Bittersweet Nightshade
2023 Coe Hill
2022, 2021 2020 Chandos Lake environs
2022, 2017 L'amable
2022 Wollaston Lake
2021, 2020, 2018 Bancroft environs
2020 Bon Echo Park
2020, 2019 Silent Lake
2019 Silent Lake
2014 Baptiste Lake environs

Coltsfoot
2023 Coe Hill
2022, 2021 2020 Chandos Lake environs
2020, 2019 Silent Lake
2022 Wollaston Lake
2021 Bancroft Environs

Common Chickweed
2018 Bon Echo Park

Common Periwinkle
2022 Bancroft Environs
2021, 2014 Chandos Lake environs
2020 L'amable Environs

Terrestrial Plants continued

Species of **Concern**, require education and regular monitoring

Crown Vetch
2021, 2020 Bancroft environs

Dames Rocket
2023 Coe Hill

Dog Strangling Vine
2017 L'amable Environs
2017 Limerick Lake environs
2016 Steenburg Lake
2014 Chandos Lake environs

European Bugleweed
2019 Bancroft environs
2019 Coe Hill

European Cranberry Bush
2019 Coe Hill

Exotic Swallowwort
2018 Steenburg Lake

Terrestrial Plants continued

Species of **Concern**, require education and regular monitoring

Garlic Mustard
2021, 2018, 2016, 2014, 2013 Bon Echo Park

Glossy Buckthorn
2019 L'amable environs
2019 Steenburg Lake

Goutweed
2020 L'amable

Greater Celandine
2021 Bancroft environs

Heleboring
2022, 2018 Bancroft environs
2022, 2020, 2019 Chandos Lake environs
2022 Coe Hill
2022, 2020 L'amable environs
2022 Skootamatta Lake
2022, 2018 Silent Lake
2019 Bon Echo Park
2018 Steenburg Lake

Terrestrial Plants continued

Species of **Concern**, require education and regular monitoring

Herb Bennett
2018, Silent Lake

Japanese Knotweed
2022, 2016 Chandos Lake environs
2021, 2019, 2018, Bancroft environs
2019 Bon Echo Park

Multiflora Rose
2018 Silent Lake

Redtop
2022, 2021, 2020, 2019 Bon Echo Park
2021 Chandos Lake environs
2020, 2018 Silent Lake
2020 Skootamatta Lake
2019 Bancroft environs
2018 Silent Lake
2017 L'amable environs

St Johnswort
2022, 2021, 2020, 2019 Bon Echo Park
2021 Chandos Lake environs
2020, 2018 Silent Lake
2020 Skootamatta Lake
2019 Bancroft environs
2017 L'amable environs

Terrestrial Plants continued

Species of **Concern**, require education and regular monitoring

Scots Pine
2016 Bon Echo Park

Smooth Brome
2020 L'amable

Spotted Spurge
2017 Bon Echo Park

Vinca
2022 Limerick Lake environs
2021 Chandos Lake environs
2021 Wollaston Lake

White Sweet Clover
2022 Bancroft environs
2022 Limerick Lake environs
2022 Silent Lake
2022 Steenburg Lake

Of the 39 species identified above, other than Purple Loosestrife, none have been positively identified by OFAH in or immediately adjacent to the shores of the Limerick Waterway. There are three plants that have been identified nearby. Along with LWRA, we encourage all other Limerick Waterways residents to monitor the area and report potential sightings of invasive species. See section 3 for monitoring, educational and reporting tools.

Part 2
Susceptibility of Limerick Waterways to Invasive Species

There are number of factors that contribute to overall susceptibility of the Limerick Waterways to invasive species, including water sources, general lake health, lake structure, water level management and exposure to transient visitors.

Water Source

The source of water for the Limerick Waterways consists primarily of underground springs, environmental run-off, streams and lakes.

- Because the water is naturally filtered from underground springs, they pose little chance of introducing any invasive species.
- Environmental run off from rain or snow is not a significant source for introduction of invasive species.
- The source for most small streams in the area is environmental run-off.

Dark and Dixon all drain into Limerick Lake and all are primarily fed through small streams. Steenburg Lake also contributes to the inflow of Limerick Lake. While, Steenburg is primarily fed through small streams, it is also exposed to other potential sources of invasive species contamination. (see Transient Visitors below) Devil Lake is fed by small streams, along with a small marsh that has inflow from Gunter and Cashel Lakes. While the marsh does act as a filter it is possible that aquatic invasive species could be introduced into Limerick via Devil Lake.

In flow of water from Steenburg and Devil Lakes is one of the two major points of susceptibility for the introduction of invasive species to the Limerick Waterways. The second is from transient visitors, see page 14.

Part 2, *continued*
Susceptibility of Limerick Waterways to Invasive Species

General Lake Health

Lake Health is comprised of a number of factors including native, non-native and invasive species, pH level, alkalinity level and phosphorus levels. These are not directly linked to the susceptibility of the Limerick Waterways to invasive species, but do contribute to overall health of the lake.

- OFAH has no reports of non-native aquatic animals in the Limerick Waterways and the native aquatic animals are believed to be at consistent historic levels. *See appendix 7,* for historical annual reports identifying Ontario lakes with invasive aquatic animals

- The pH level of Limerick Lake is in the normal range for a healthy lake. A low pH level would deter all aquatic species, native, non-native and invasive. *See appendix 8*

- Alkalinity (high pH), is the ability of a lake to rebound from the effects of acid rain, Limerick Waterways has enough lime as part of its geological make-up to counter the effects of acid rain.

- Abnormally high phosphorus levels are generally a result of farming/ extensive landscape fertilization and non-conforming/lack of septic systems. There are limited farmlands that drain directly or indirectly into the waterway.

  Currently there are no governmental systems in place to check or monitor the condition, maintenance or compliance of spetic systems along the Limerick Waterways.

  As cottages age so do their septic systems and without proper maintenance the probability of failure increases with every flush.

  Remodeling of existing cottages, along with tear-down-rebuilds is also a concern, these projects typically add plumbing fixtures and appliances, i.e. additional bathrooms, washing machines and dishwashers. Many of these

There are no signs of abnormal levels of native, non-native and invasive species, pH level, alkalinity level and phosphorus levels. Available existing data for the Limerick Waterways suggest the lake is healthy.

Part 2, *continued*
Susceptibility of Limerick Waterways to Invasive Species

Lake Structure

The Limerick Waterways are thought to be near the northern extent for survival of many aquatic invasive plants and animals. In addition to climate, lake structure can further deter the growth and survival of these species.

- Colder lakes are less susceptible to invasive aquatic animals. Limerick is considered to be a cold-water lake. However, it is not cold enough to kill certain aquatic species like Zebra mussels. *See appendix 4*

- Limerick is a thermally stratified lake, meaning the bottom layer stays colder than the top layer during the summer. Non-thermally stratified lakes have a more consistent temperature from top to bottom.

The top layer of Limerick freezes to about a depth of one meter each winter (after draw down) killing most invasive aquatic species. The bottom layer of Limerick is basically too cold for almost all invasive species to survive and of those that can, virtually none can reproduce. Together they create an inhospitable environment for most invasive species.

Water Level Management

The Ministry of Natural Resources and Forests manages the water level of the Limerick Waterway via the dam at St. Ola.

- The draw down in the fall of approximately half a meter prevents zebra mussels and other invasive aquatic animals from surviving the winter to the depth of the draw down.

The draw down coupled with ice in the winter; equaling approximately a meter and a half, significantly contribute to controlling invasive aquatic species.

Part 2, *continued*
Susceptibility of Limerick Waterways to Invasive Species

Exposure to Transient Visitors

Visitors launching boats, using public access lands & parks or private access such as campgrounds or rental cottages all create opportunities for invasive species contamination.

- Because the three launch ramps that provide access to the Limerick Waterways: Devil, St. Ola and Limerick Lodge ramps are fairly remote there are a limited number of transient boats on the Limerick Water way.

- Boats left out of the water for more than two days have a very low probability of spreading invasive species from the hull of the boat.

- Potentially the biggest threat that transient boaters create is the emptying of their live wells or other live bait containers into our lake. The water in their live well could have come from contaminated water ways.

- The only public camping and picnic area is at St. Ola. There are a few rental cottages on the Limerick Waterway and Limerick Lodge is the only private facility.

Part 3
Monitoring of Limerick Waterways and Action Steps

Monitoring continued

Historically LWRA has participated in two province wide environmental initiatives.

- The Invasive Species Watch Program by the Ontario Federation of Anglers and Hunters (OFAH) in partnership with the Ontario Ministry of Natural Resources and Forestry (OMNRF).
  Contact: *invadingspecies.com See appendix 7* for historical results

- The Lake Partner Program which monitors water clarity (Secchi Disk) and phosphorus levels by Federation of Ontario Cottagers' Associations (FOCA) in association with the Ministry of Environment and Climate Change/Dorset Environmental Science Center (MOECC/DESC) *see appendix 9 and 10* for historical Limerick Lake results.

Action Steps

The following is a list of items that can be undertaken by the LWRA to help control the introduction of invasive species in the waterway.

- **Continued involvement in the Invasive Species Watch Program**
  Scientific analysis of lake water samples that determine the presence of invasive species, focused on Zebra Mussels and Spinney Water Fleas

- **Continued involvement in the Lake Partner Program**
  Monitoring of lake clarity, and phosphorus levels, provides insight into fertilizer, algae and sewage related issues

- **Distribution of the Cottagers Guide**, *completed July 2016*
  A listing of best demonstrated practices to help cottagers avoid intro ducing invasive species our waterways, *see appendix 11*

- **Create an awareness campaign of the EARLY Detection and Distribution Mapping System**, *ongoing*
  The app has a section on species identification, a channel to report sightings, and reference maps of where species have been found, *see appendix 1*

- **Attend the FOCA AGM,** *ongoing*
  Ensure LWRA is represented in FOCA's direction and the LWRA has the most current information

Part 3, *continued*
Monitoring of Limerick Waterways and Action Steps

Action Steps continued

- **Consider developing a relationship with residents on Devil Lake**
  Because Devil Lake drains into Limerick their problems can quickly become ours
  There is a loose organization of cottagers headed by Joe O'Hagan, *johagan@sympatico.ca*

- **LWRA organizing/facilitating the monitoring of the Limerick, St Ola and Devil launch ramps.**
  LWRA built and implemented a signage program at all three launch ramps. The funding was a grant from FOCA. **The owners of Limerick Lake Marina continue to help monitor their ramp and provide information to visitors launching boats.**

Appendix I
EDDMapS Overview
www.eddmaps.org/ontario

EDDMaps - Early Detection and Distribution Mapping System
Invasive Species Mapping Made Easy!

- Real time tracking of invasive species occurrences
- Local and national distribution maps
- Electronic early detection reporting tools
- Library of identification and management information

Overview

EDDMapS is a web-based mapping system for documenting invasive species distribution. Launched in 2005 by the Center for Invasive Species and Ecosystem Health at the University of Georgia, it was originally designed as a tool for state Exotic Pest Plant Councils to develop more complete distribution data of invasive species.

EDDMapS Ontario was developed through the support and funding provided by the Canada/Ontario Invasive Species Centre, the Ontario Federation of Anglers and Hunters, and the Ontario Ministry of Natural Resources.

In Ontario, there are numerous agencies and monitoring programs in place that collect information and/or identify the distribution of invasive species.

Appendix 1, *continued*
EDDMapS Overview
continued

In Ontario, there are numerous agencies and monitoring programs in place that collect information and/or identify the distribution of invasive species. Monitoring programs generate large quantities of data, often covering a wide geographic area, multiple species, and lengthy time periods. Invasive species cross jurisdictional boundaries, so it is important to be able to share monitoring information with neighboring provinces and states, and with the federal government. Effective data management improves our ability to detect and respond to invasive species, while avoiding duplication of effort.
Maximizing the effectiveness and accessibility of the immense numbers of invasive species observations recorded each year is a goal for EDDMapS. As of May 2016, EDDMapS contains more than 2.9 million records and 30,095 of these records are from Ontario.

Appendix 1, *continued*
EDDMapS Mobile App

EDDMapS mobile app allows users to report potential sightings of invasive species, see reports of invasive species for a given location and contains an identification guide.

Download the EDDMapS (free) from the Apple Store or Google play, Download the regular version NOT the PRO version.

Once download the app will ask you to select a Provence or state. It will then download the identification guide specific to that Provence.

The top half of the main screen will provide reporting options, including the ability to capture and submit photos.

The bottom half of the main screen is the identification guide. You can select,; plants, insects, diseases & fungi and wildlife. Within a category the species are listed alphabetically, each with a picture.

Appendix 2
Water Soldier

https://www.invadingspecies.com/invaders/aquatic-plants/water-soldier-2/

Currently there are no reports of Water Soldier on Limerick Waterways, the species has the ability to kill other plants and animal species in the area it inhabits. The leaves are extremely sharp and can not be hand harvested. The roots are prone to breaking and developing into even more plants. The adjacent link provides additional information.

Appendix 3
Field Guide to Aquatic Invasive Species

http://viewer.zmags.com/publication/43e38be9#/43e38be9/

An online version of a print publication that does a very good job of describing and illustrating invasive species

Appendix 4
Zebra Mussels

http://nas.er.usgs.gov/queries/factsheet.aspx?speciesid=5

Good detailed information on Zebra Mussels, article is from the US so ignore geography that does not apply

Appendix 5
Purple Loosestrife and the Introduction of European Beetles

https://www.ontario.ca/document/purple-loosestrife-0

Since it was brought to North America, purple loosestrife has become a serious invader of wetlands, roadsides and disturbed areas. The plant forms dense stands with thick mats of roots that can extend over vast areas. The stands reduce nutrients and space for native plants and degrade habitat for wildlife. Each plant can grow as many as 30 stems that can produce up to 2.7 million seeds each year. The tiny seeds are easily spread by water, wind, wildlife and humans.

In 1992, the Canadian and American governments approved the release of two European leaf-eating beetles, Galerucella calmariensis and G. pusilla. The beetles are natural enemies of purple loosestrife and feed primarily on the plant, although they occasionally eat other species of loosestrife. This biological control of purple loosestrife can reduce populations by up to 90 per cent and allow native plants to re-establish. The beetles were widely released in Ontario, and purple loosestrife populations at many of these sites have been significantly reduced.

Appendix 6
Emerald Ash Bore

http://www.nrcan.gc.ca/forests/fire-insects-disturbances/top-insects/13377

The presence of emerald ash borer in Quebec's Montérégie area was confirmed by the Canadian Food Inspection Agency (CFIA) in 2008. Infestation in Montreal and the Gatineau area were detected in 2011; Longueuil in 2012; and Terrebonne in 2013.
In 2014, CFIA consolidated the regulated areas within Ontario and Quebec into one larger regulated area.

Appendix 7
Annual Reports,
Invasive Species Watch Program

A link to the annual reports for the Invasive Watch Program

http://www.invadingspecies.com/get-involved/invading-species-watch-program/

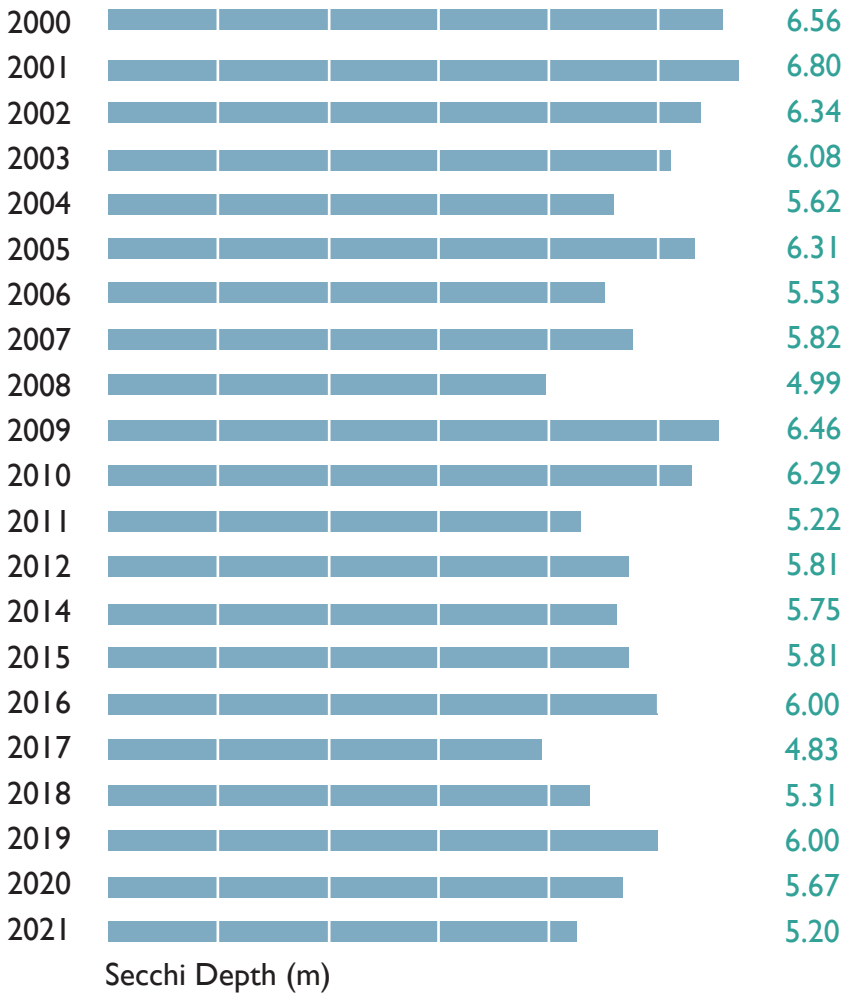
Appendix 8
pH Levels and Alkalinity

Document is dated but provides a good explanation of pH levels, alkalinity and the effects of acid rain.

http://booksnow1.scholarsportal.info/ebooks/oca5/5/ome/pdf/acidsensitivityo00ontauoft.pdf

Appendix 9
Historical Secchi Disk Results for Limerick Lake

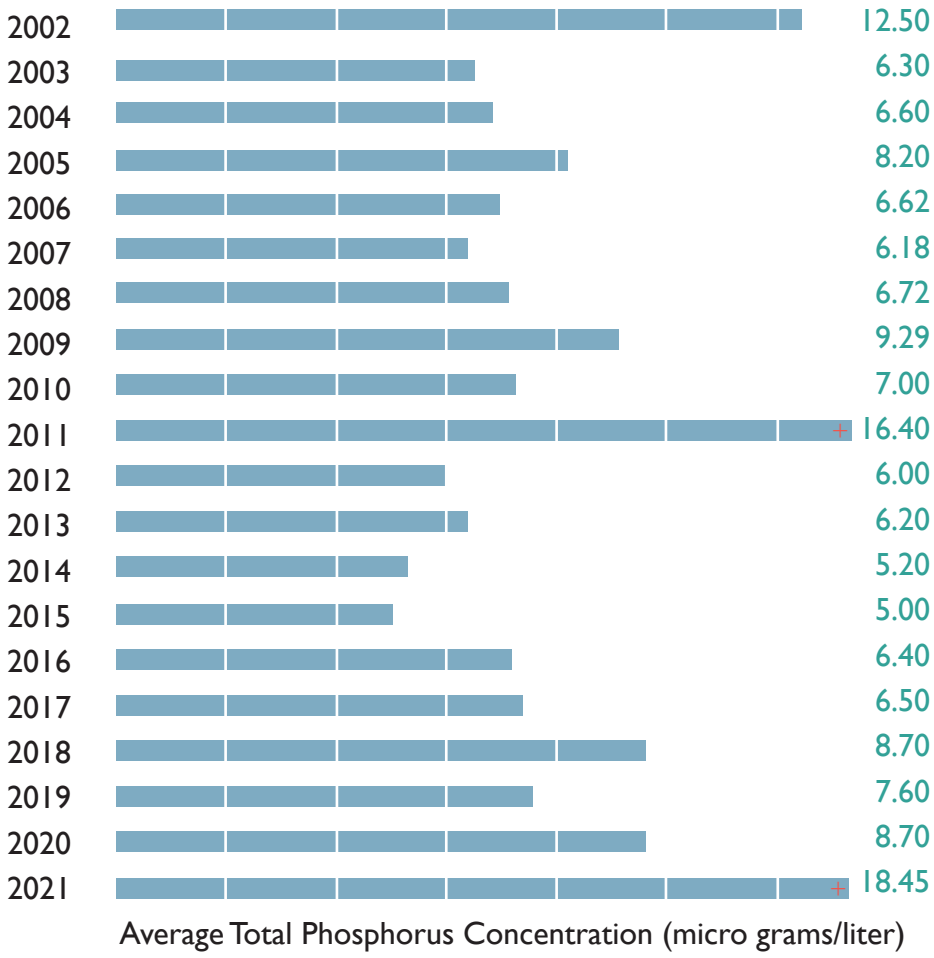
https://www.ontario.ca/page/secchi-depth-report?id=64710003



Appendix 10

Historical Phosphorus Levels
for Limerick Lake

https://www.ontario.ca/page/total-phosphorus-report?id=64710003



Appendix 11
Cottagers Action Plan

https://www.ontario.ca/page/invasive-species-action-plans#cottagers

Keep invaders away from your cottage — they will ruin the fun for everyone. To stop the invasion, make sure you and your guests know the plan.

1. Use Local Firewood
   Never bring in firewood from another location, because it may be home to an invasive species that could cause irreparable harm. Buy your firewood locally and leave behind any you do not use. It's never a good idea to transport firewood.

2. Keep Goldie in the fish bowl
   Teach your children not to release aquarium plants and pets at the cottage or anywhere else. Gold fish are an invasive species!

3. Clean your gear
   Before heading home from the cottage, be sure to clean all of your gear. Make sure your watercraft, trailers, bicycles, all-terrain vehicles, and boot bottoms are free of plant material and seed-spreading mud.

4. Groom your pet
   Give your pet's coat a good brushing to remove any seeds it might have picked up.

5. Keep your eyes peeled
   Inspect your property and shoreline for any sign of invasion. To find our what species are threatening your area, visit *eddmaps.org/ontario/*

6. Report all invaders
   Call the Ontario Federation of Anglers and Hunters' Invading Species Hotline at 1-800-563-7711 to report an invasive species sighting. Or download the EDDMapS Ontario app to report an invader on the spot.

7. Remove invaders responsibly
   Visit ontario.ca and search "invasive species fact sheets" find out how to remove problematic woodland and aquatic pests from your property.

8. Stop the invasion
   Visit ontario.ca/invasionON to download Action Plans for Anglers, Boaters, Hikers and Gardeners.

Additional resources:
Invading Species, invadingspecies.com
Invasive Plants Council, ontarioinvasiveplants.ca
Federation of Ontario Cottagers' Associations foca.on.ca
Visitontario.ca/invasionON

https://**limerickwra.wordpress**.com/