



LAKE FACT SHEET (2017)

NORTH OTTER LAKE



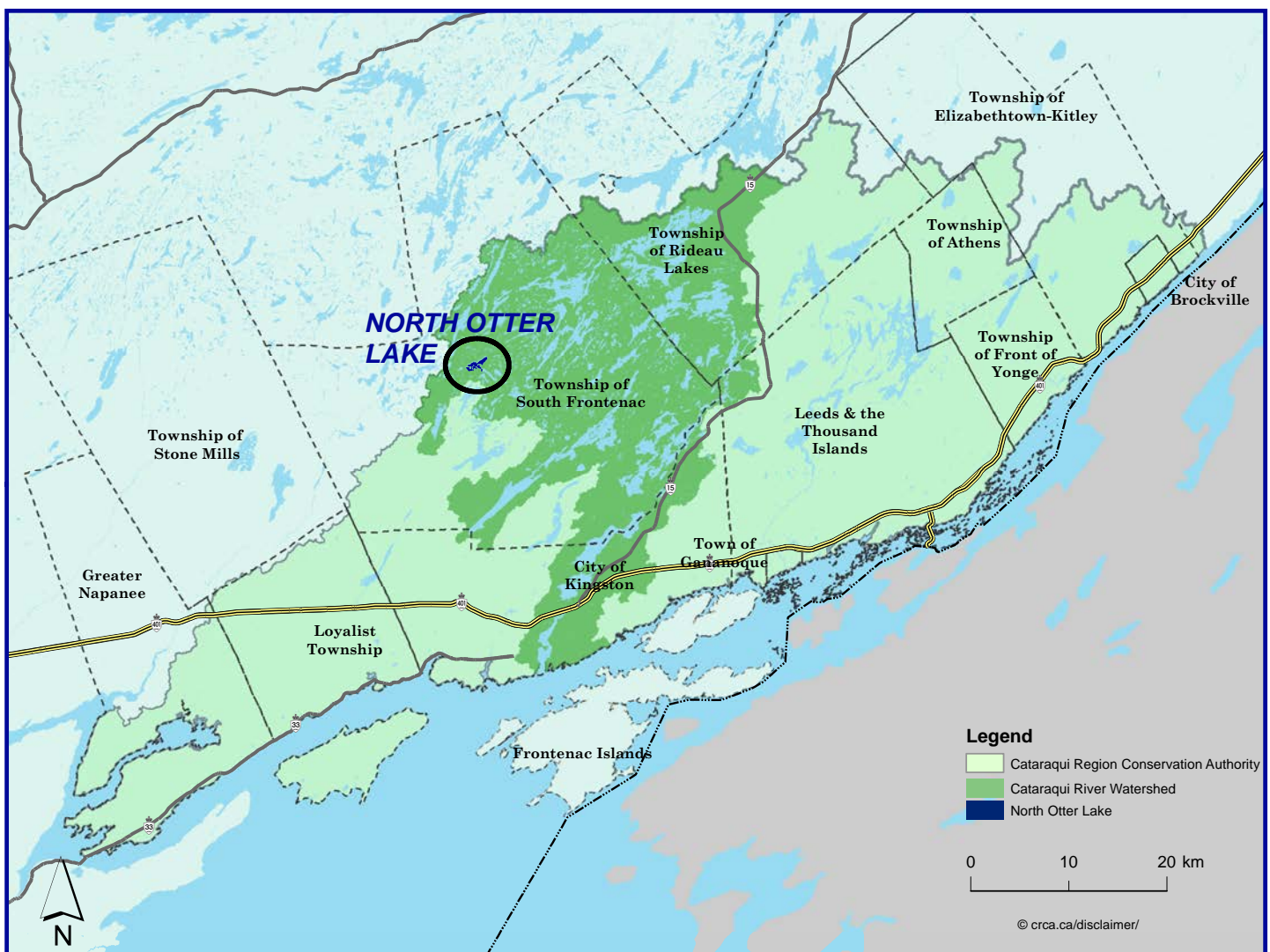
**CATARAQUI REGION
CONSERVATION AUTHORITY**



LAKE FACT SHEETS

The Cataraqui Region Conservation Authority (CRCA) has provided environmental leadership and service to local communities since 1964. It is one of 36 watershed-based agencies within Ontario dedicated to the conservation and protection of the natural environment through a variety of management tools including land ownership, education, monitoring, reporting and regulation.

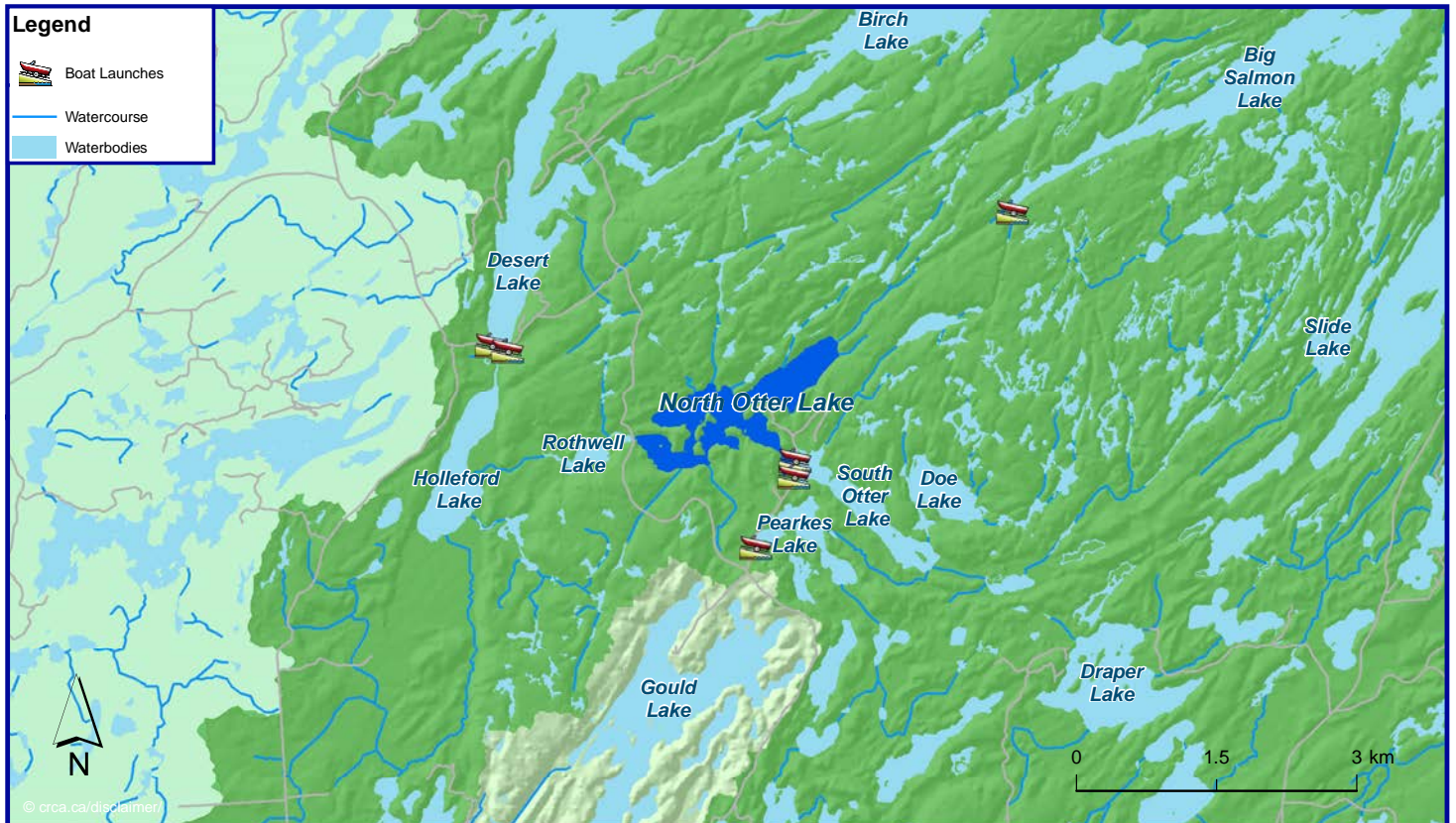
To learn more about the lakes in our region, the CRCA and partners collect samples, take measurements and compare this information against established standards to identify any significant changes or areas of concern. This Lake Fact Sheet focuses on key parameters to assess the health and resilience of North Otter Lake with respect to nutrient loading, invasive species colonization and acidification.





NORTH OTTER LAKE

North Otter Lake is located within the Cataraqui River watershed. Nearby lakes include Holleford Lake, Desert Lake, Birch Lake, Big Salmon Lake, Slide Lake, Pearkes Lake, South Otter Lake, Doe Lake, Gould Lake and Draper Lake.



County: County of Frontenac

Municipality: Township of South Frontenac

Watershed: Cataraqui River

Coordinates: 44.506 Lat., -76.566 Long.

Average Depth (m): 19.9

Volume (m³ x10⁶): 5.84

SURFACE AREA (HA)

102

MAX. DEPTH (M)

16.2

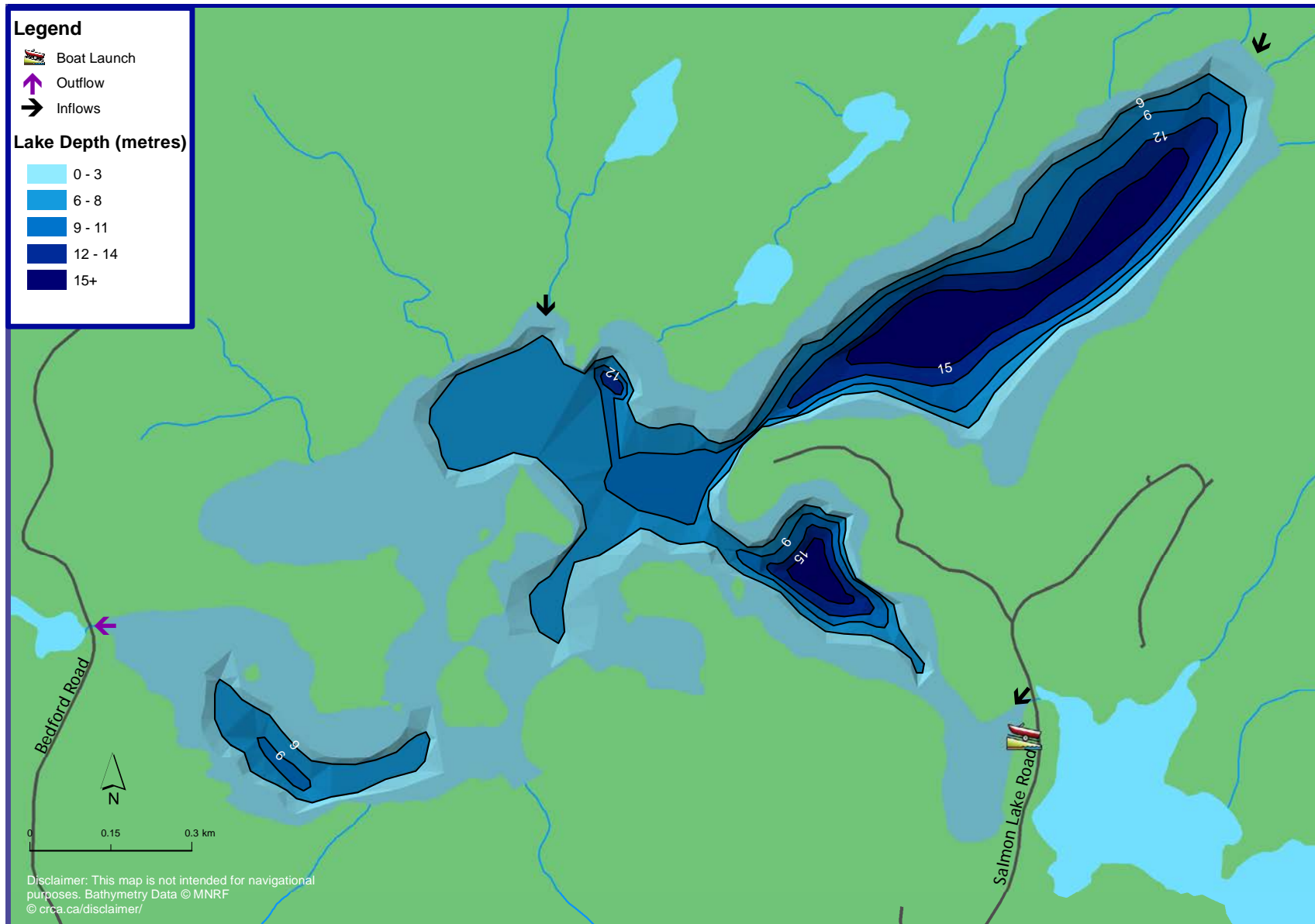
SHORE LENGTH (KM)

12.1



LOCATION & BATHYMETRY

The map below shows water depths and the topography of the lake bottom (bathymetry), as well as the direction of water flow. Water enters North Otter Lake from South Otter Lake and flows out to Rothwell Lake.





LAKE CHARACTERISTICS

North Otter Lake is a natural, mid-depth lake located in the Canadian Shield. Like the majority of lakes within the Cataraqui Region, North Otter Lake mixes in the spring and fall due to lake water warming and cooling. During mixing, nutrients are cycled throughout the lake twice per year and may appear cloudy with a brown or green colour from algae that use the cycled nutrients. Later in the spring, summer, and winter, water temperatures vary by depth (thermal stratification) so multiple fish species are found at different depth and temperature ranges. Refer to the [Cataraqui Region Lake Assessment Report](#) for more detail.

Water levels are controlled naturally through changes in climate, precipitation, evaporation, and surrounding land use.

LAKE FEATURES



IMPORTANT NATURAL FEATURES:

Adjacent to southwest corner of Frontenac Provincial Park



SURROUNDING LAND USE:

Woodlands, Wetlands



PRIMARY WATER LEVEL CONTROL:

Natural



WATER ACCESS:




Southeast off of Salmon Lake Road





VULNERABILITY

Information about North Otter Lake has been used to identify whether it is vulnerable to a few common stressors to lake water quality and biodiversity. Stressors include excess nutrient build up (eutrophication), the introduction of invasive species, and pH levels that are too low (acidification). Refer to the scoring card below that grades these risks for North Otter Lake.

EUTROPHICATION: The process of increasing nutrient levels in a waterbody. It results in excess algal growth, lower oxygen levels, and reduced biodiversity. For more information refer to the [Cataraqui Region Lake Assessment Report](#).

-  **Low:** Low nutrient levels (oligotrophic), minimal algae present
-  **Medium:** Moderate nutrient levels (mesotrophic), algae present
-  **High:** High nutrient levels (eutrophic), algae bloom presence likely

INVASIVE SPECIES: Species that are not native to an environment, but are introduced, establish, and reproduce in a new system. For more information about invaders in the region, refer to [Appendix 5](#) of the Cataraqui Region Lake Assessment Report.

-  **Absent:** No aquatic invaders reported
-  **Present:** Aquatic invaders established



VULNERABILITY

ACIDIFICATION: The process of lake water becoming more acidic, resulting in reduced biodiversity and increased water clarity.

Low: pH 6.5 to >7.5, not impacted, neutral or alkaline conditions

Medium: pH 6 to 6.5, sensitive but acceptable range

High: pH <6 hyper-sensitive, threatened or critically impaired

NORTH OTTER LAKE VULNERABILITY SCORES

Eutrophication	Invasive Species	Acidification
LOW	ABSENT	NO DATA

- Based on average total phosphorus concentrations of 0.0096 mg/L, nutrient levels are low with no risk of nuisance algae bloom growth
- There have been no reported sightings of successful establishment of aquatic invasive species.



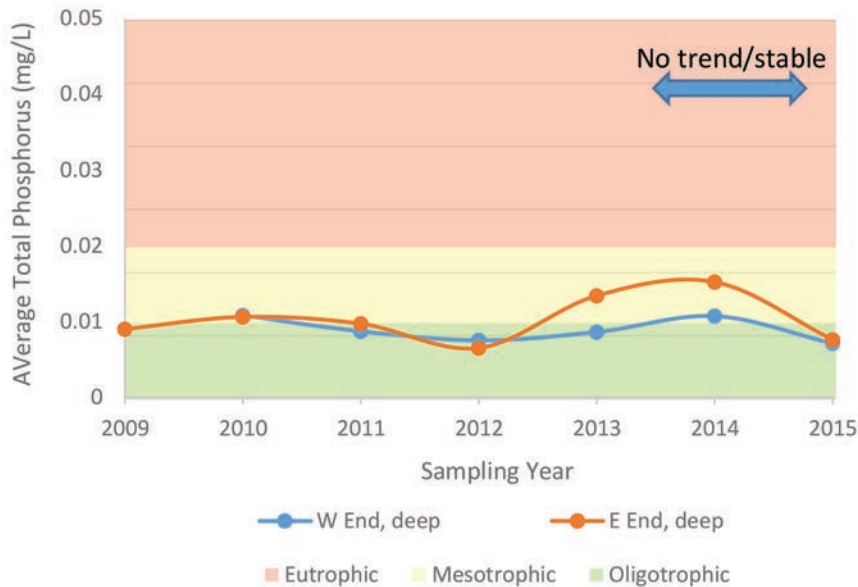


WATER QUALITY

The water quality of a lake is affected by many factors including temperature, pH, oxygen, nutrients (trophic status), and transparency (Secchi disk depth). Classifying lakes by these factors can provide a better understanding of lake health. For more information, refer to the [Cataraqui Region Lake Assessment Report](#).

Water Quality Summary

Thermal Regime:	Coolwater	Total Phosphorus (mg/l):	0.0096 ¹
Dissolved Oxygen (mg/l):	No data	pH:	No data
Trophic Status:	Oligotrophic ¹	Average Calcium(mg/l):	4.48 ²
Average Secchi Depth (m):	3.9 ²		



The lack of coldwater species such as trout and the presence of species such as the banded killifish and yellow perch suggests North Otter Lake is a coolwater lake with sufficient dissolved oxygen concentrations to support aquatic diversity.






The average Secchi disk depth and average total phosphorus concentration show North Otter Lake to be on the border of mesotrophic and oligotrophic status. This is indicated in the total phosphorous, as levels have been both above and below the oligotrophic line.

The average calcium concentration is very low in this lake indicating that invasive mussels will not be capable of establishing. Low calcium may reduce the lake's buffering capacity against changes to pH and other water quality parameters over time. Calcium in lakes originates from weathering of rocks and soils. Reasons for low calcium concentrations may stem from the lake's location on Canadian Shield bedrock, as this rock type is resistant to weathering, limiting calcium input into the lake³.



AQUATIC DIVERSITY

North Otter Lake hosts a good diversity of fish species. Fish species previously caught on North Otter Lake are listed below. There are also a variety of minnows supplementing the food chain along the shallow shoreline areas that have not been recorded.

	COMMON FISH FAMILIES	SPECIES PRESENT
	North American Catfish	Brown Bullhead
	Sunfishes & Basses	Largemouth Bass Pumpkinseed Bluegill Black Crappie
	Topminnows	Banded Killifish
	Carps & Minnows	Variety
	Perches & Darters	Yellow Perch



AQUATIC DIVERSITY

FISHERIES MANAGEMENT ZONE

18

ACTIVE FISH STOCKING⁴

NO DATA

There are some species at risk in the region that will benefit from good lake care practices. At the time of reporting, the following species at risk have been observed within the last ten years⁵:

- Blanding's Turtle
- Eastern Musk Turtle
- Snapping Turtle

Additional species may also be present, but have yet to be reported. It is important to conserve shoreline vegetation and woody debris, and reduce pollution to maintain healthy aquatic communities.



For more information, follow the links below:

[Fish ON-Line
Reptile and Amphibian Atlas
Zone 18 Fishing Regulations](#)

[Guide to Eating Ontario Fish
Species at Risk by Region](#)



NATURAL

ALTERED

HOW TO PROTECT YOUR LAKE

Maintain a natural shoreline:

Create a buffer zone by planting native species to control erosion, increase habitat for wildlife, maintain cooler water temperatures (shade), protect from flooding and improve water quality.

Contact [Watersheds Canada](#) to learn more about their [Natural Edge](#) shoreline naturalization program.

Build low impact-docks:

Increase habitat and reduce sediment disruption. Examples of low impact docks include [cantilever](#), [floating](#) or [post styles](#).

Reduce runoff from pollutants:

Use phosphate-free, biodegradable soaps and detergents at a distance from the lake and limit or eliminate fertilizers to decrease nutrient input. Limit the amount of hard surfaces to control runoff of pollutants entering the lake.

Handle and dispose of chemicals properly:

Fuel motor craft responsibly to avoid spills and bring extra chemicals and storage containers to a hazardous waste depots.

Manage animal waste and grazing areas:

Avoid overgrazing as it can expose soil and increase erosion. Remove animal waste to avoid excess nutrients.

Maintain your septic system:

Septic systems can last 15-25 years if properly maintained; pump out your septic tank every 3-5 years. Keep septic systems far from the shore to reduce risk of water pollution and limit damage.

Prevent the spread of invasive species:

Clean, drain, dry and disinfect any watercraft prior to entering the lake. Do not release live fishing bait or aquarium fish.



Become a citizen scientist:

Citizen science is a great way to learn and engage with nature. Volunteers provide valuable research that allow scientists to track environmental changes to a greater extent than if they were to do it alone. Learn how to get involved by visiting the sites below.

Invading Species Watch Program
Lake Partner Program
Loon Watch
Nature Watch (frog, plant, ice, worm)
Ontario Reptile & Amphibian Atlas
Water Rangers

www.invadingspecies.com
www.desc.ca
www.birdscanada.org
www.naturewatch.ca
www.ontarionature.org
www.waterrangers.ca

To report large blooms of algae:

KFL&A Public Health 1-800-267-7875
Blue-Green Algae Bloom Sighting (MOECC) 1-800-268-6060

To report invasive species:

EDD Mapping System App www.eddmaps.org/ontario
Invasive Species Hotline (OFAH) 1-800-563-7711 or info@invadingspecies.com

For more information:

Cataraqui Region Conservation Authority 1-877-956-2722 or 613-546-4228
North and South Otter Lake Association <http://nsola.org>

¹ Average total phosphorus data provided by the Lake Partner Program and PWQO

² Average Secchi Disk depth provided by the Lake Partner Program (2009-2015)

³ [Dorset Environmental Centre Calcium in Ontario's Inland Lakes \(2016\)](#)

⁴ Ministry of Natural Resources and Forestry Fisheries Data (Fish ON-line and personal communication, 2016)

⁵ [Ontario Nature Reptile and Amphibian Atlas](#)



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1641 Perth Rd. Glenburnie ON K0H 1S0
613-546-4228 | info@crca.ca | crca.ca

