



# LAKE FACT SHEET (2017)

# TROY LAKE



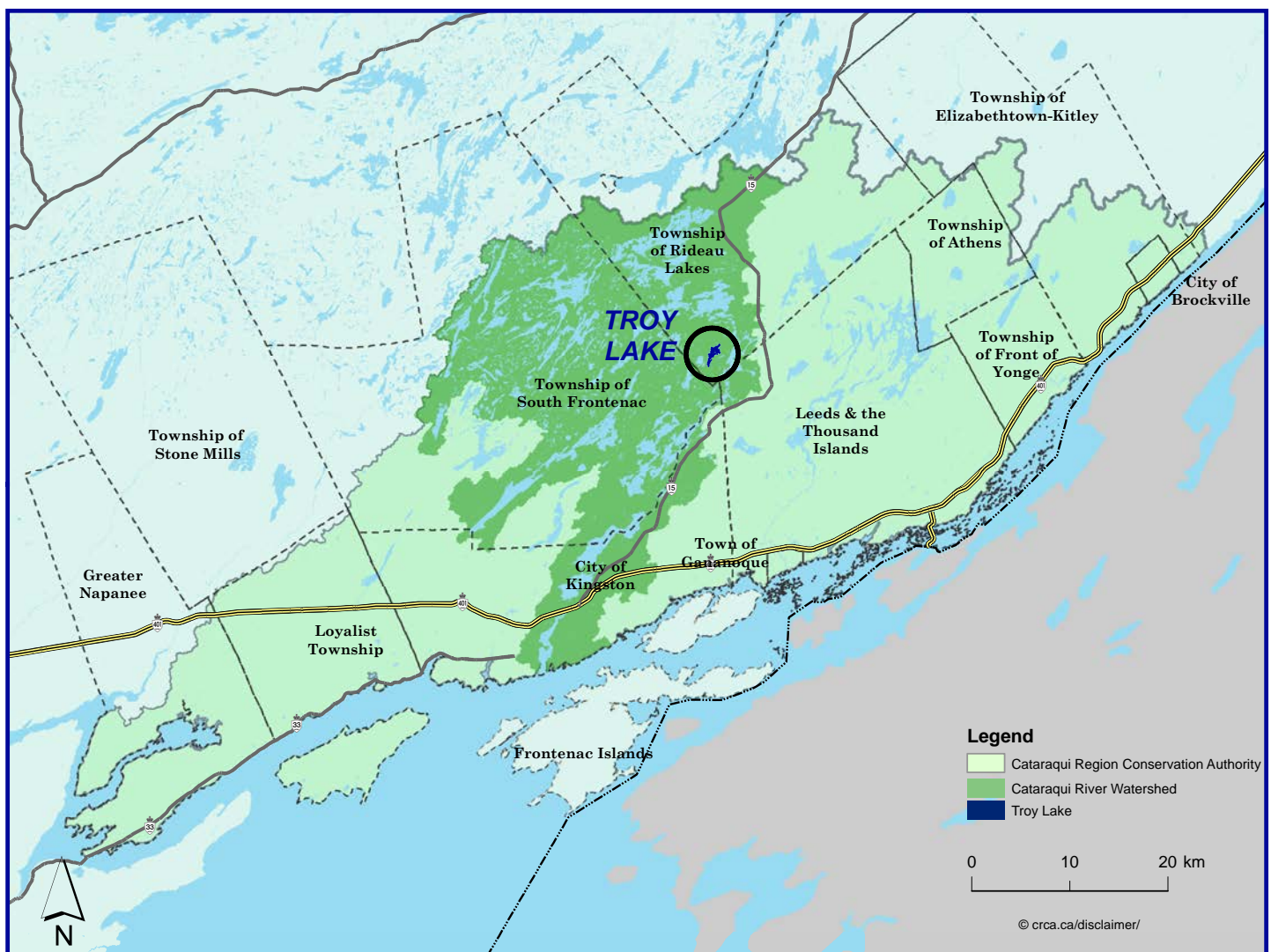
CATARAQUI REGION  
CONSERVATION AUTHORITY



# 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 Troy Lake with respect to nutrient loading, invasive species colonization and acidification.





# TROY LAKE

Troy Lake is located in the Cataraqui River watershed. Nearby lakes include Opinicon Lake, Heart Lake, Crow Lake, Traverse Lake, Mud Lake, Sand Lake and Whitefish Lake.



**County:** United Counties Leeds Grenville

**Municipality:** Township of Rideau Lakes

**Watershed:** Cataraqui River

**Coordinates:** 44.523 Lat., -76.562 Long.

**Average Depth (m):** 2.3

**Volume (m<sup>3</sup> x10<sup>6</sup>):** 3.54

**SURFACE AREA (HA)**

**119**

**MAX. DEPTH (M)**

**5.2**

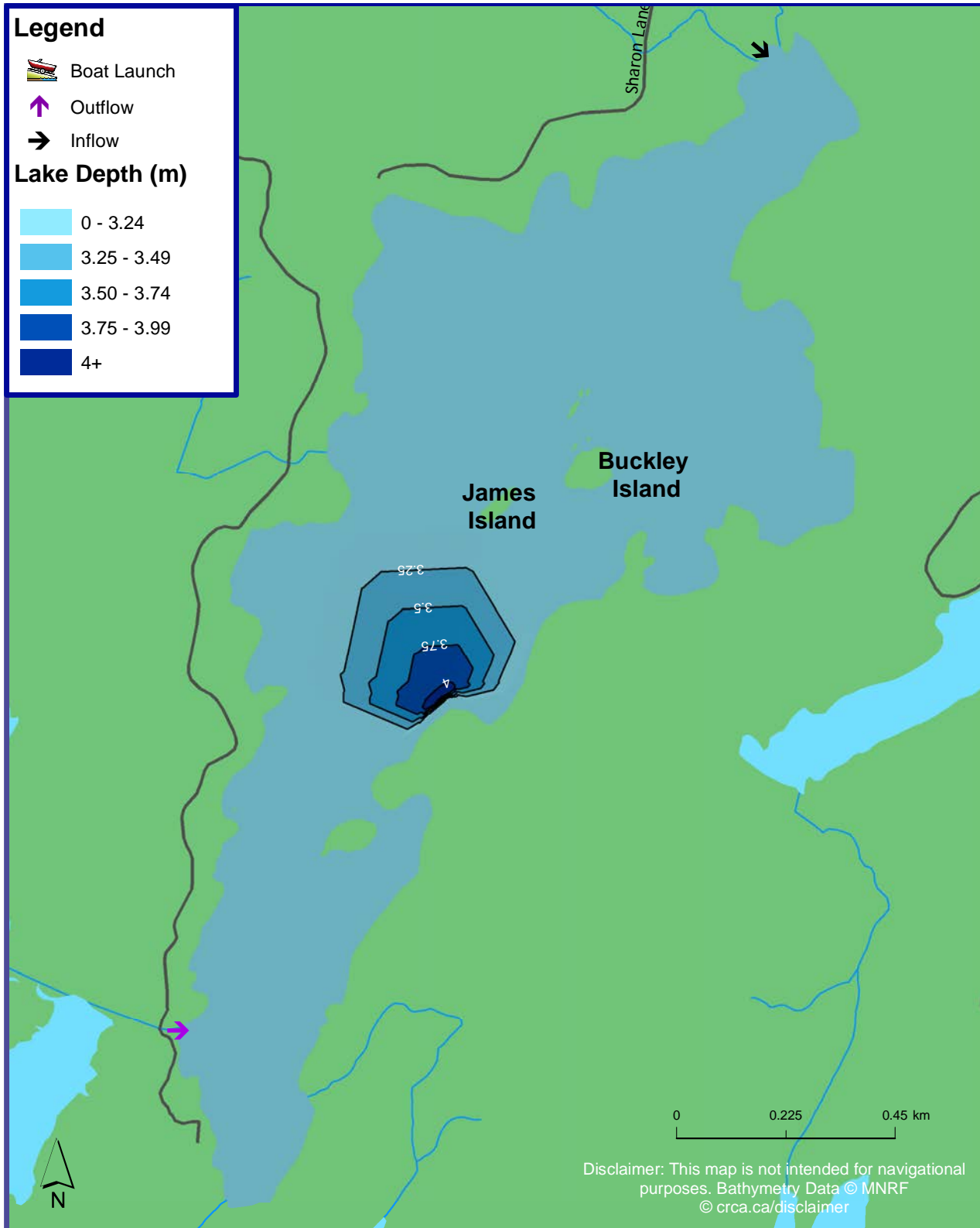
**SHORE LENGTH (KM)**

**9.64**



# LOCATION & BATHYMETRY

The map below shows water depths, the topography of the lake bottom (bathymetry), and direction of water flow. Troy Lake is a headwater lake receiving flow from surrounding wetlands. It flows out to Mud Lake.





# LAKE CHARACTERISTICS

Troy Lake is a natural, shallow lake located on the Canadian Shield. As the sun most likely reaches the bottom sediments, Troy Lake would not stratify during the summer months reducing nutrient mixing within the lake. 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:**

None



### **SURROUNDING LAND USE:**

Woodlots, Wetlands



### **PRIMARY WATER LEVEL CONTROL:**

Natural



### **WATER ACCESS:**




None





# VULNERABILITY

Information about Troy 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 Troy 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

## TROY LAKE VULNERABILITY SCORES

Eutrophication

HIGH

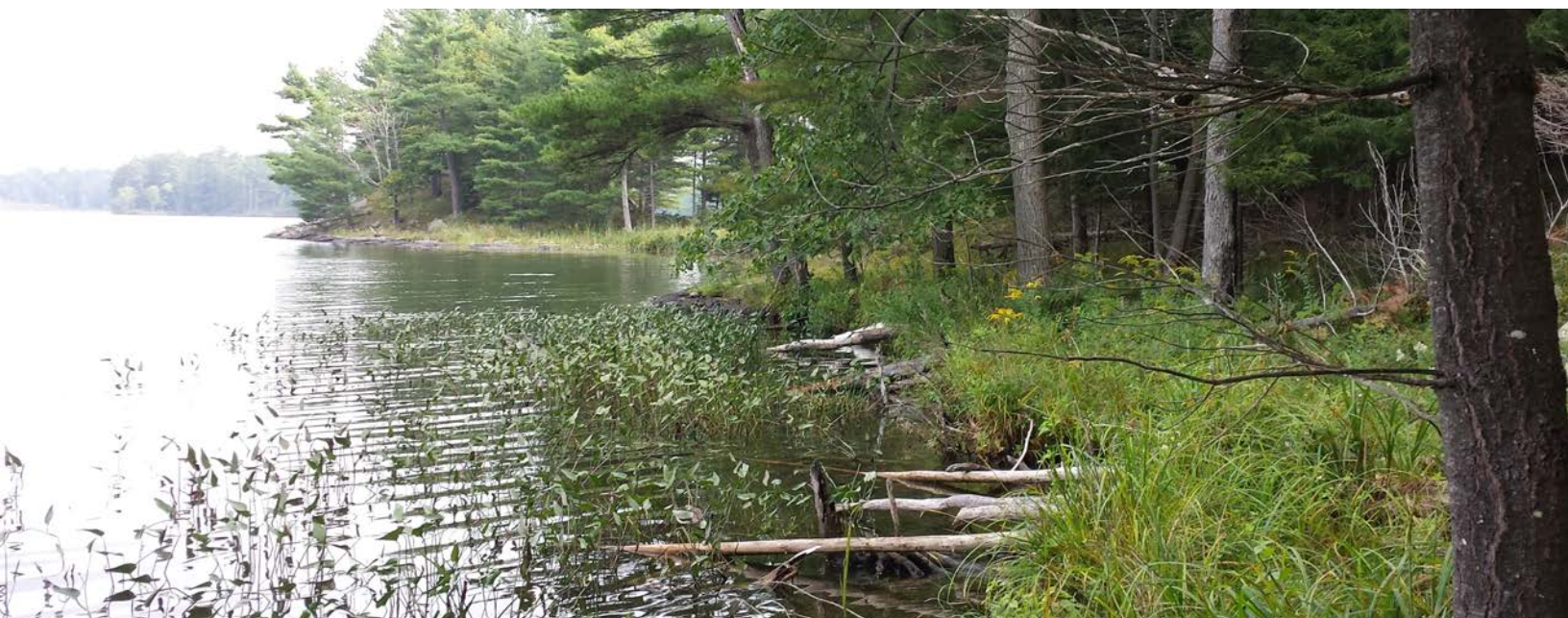
Invasive Species

NO DATA

Acidification

NO DATA

- Based on an average total phosphorus concentration of 0.034 mg/L, nutrient levels are in excess with eutrophic conditions suitable for nuisance algae bloom growth



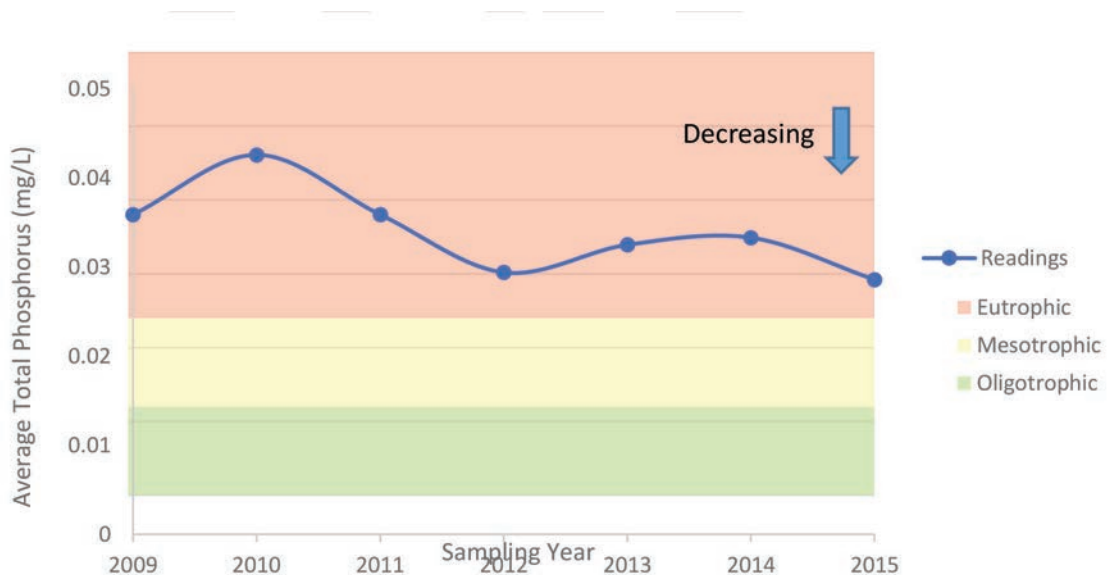


# WATER QUALITY

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

|                                  |                        |                                 |                    |
|----------------------------------|------------------------|---------------------------------|--------------------|
| <b>Thermal Regime:</b>           | Coolwater              | <b>Total Phosphorus (mg/l):</b> | 0.034 <sup>3</sup> |
| <b>Dissolved Oxygen (mg/l):</b>  | No data                | <b>pH:</b>                      | No data            |
| <b>Trophic Status:</b>           | Eutrophic <sup>1</sup> | <b>Average Calcium(mg/l):</b>   | 14.3 <sup>3</sup>  |
| <b>Average Secchi Depth (m):</b> | 1.5 <sup>2</sup>       |                                 |                    |



Total average phosphorus concentrations and an average Secchi disk measurement of less than two meters indicates eutrophic conditions. The total phosphorous graph shows a decreasing trend since 2009 indicating lowering nutrient levels. 2015 showed the highest Secchi disk reading of 1.7 meters over the past six years, suggesting improved water quality<sup>4</sup>.







Average calcium indicates slightly alkaline conditions with little risk to acidification. Historical pH data confirms there is little risk of changes in acidity with slightly alkaline conditions (8.22)<sup>5</sup>. Conditions are suitable for maintaining a healthy zebra mussel population.





# AQUATIC DIVERSITY

Troy Lake hosts a diversity of aquatic communities. Fish species previously caught on Troy Lake are listed below. There are also a variety of minnows supplementing the food chain along the shallow shoreline areas that have not been listed.

|   | <b>COMMON FISH FAMILIES</b> | <b>SPECIES PRESENT</b>  |
|---|-----------------------------|---|
|    | North American Catfish      | Brown Bullhead<br>Yellow Bullhead   |
|    | Pikes                       | Northern Pike   |
|  | Suckers                     | White Sucker  |
|  | Sunfishes & Bases           | Largemouth Bass<br>Smallmouth Bass<br>Pumpkinseed<br>Bluegill<br>Rock Bass<br>Black Crappie |
|  | Carps & Minnows             | Blacknose Shiner<br>Bluntnose Minnow<br>Golden Shiner                                       |
|  | Perches & Darters           | Yellow Perch  |



# AQUATIC DIVERSITY

FISHERIES MANAGEMENT ZONE

**18**

ACTIVE FISH STOCKING<sup>6</sup>

**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 years<sup>7</sup>:

- Blanding's Turtle
- Eastern Musk Turtle
- Northern Map Turtle
- Snapping Turtle
- Eastern Pondmussel
- Pugnose Shiner

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](http://www.invadingspecies.com)  
[www.desc.ca](http://www.desc.ca)  
[www.birdscanada.org](http://www.birdscanada.org)  
[www.naturewatch.ca](http://www.naturewatch.ca)  
[www.ontarionature.org](http://www.ontarionature.org)  
[www.waterrangers.ca](http://www.waterrangers.ca)

## To report large blooms of algae:

Leeds, Grenville & Lanark Health Unit 613-345-5685  
Blue-Green Algae Bloom Sighting (MOECC) 1-800-268-6060

## To report invasive species:

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

## For more information:

Catarauqui Region Conservation Authority 1-877-956-2722 or 613-546-4228  
Troy Lake Rate Payers Association [www.troylake.org/contact](http://www.troylake.org/contact)

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<sup>1</sup> Average total phosphorus data provided by the Lake Partner Program and PWQO

<sup>2</sup> Average Secchi Disk depth from 2009-2015 provided by the Lake Partner Program and Parks Canada ([Rideau Canal](#))

<sup>3</sup> Averages provided by the Lake Partner Program (2009-2015)

<sup>4</sup> Troy Lake Rate Payers Association 2015 Water Quality Report <http://www.troylake.org/resources>

<sup>5</sup> Reavie, E.D., and J.P. Smol. 2001. Diatom-environmental relationships in 64 alkaline southeastern Ontario (Canada) lakes: a diatom-based model for water quality reconstructions. *Journal of Paleolimnology* 25:25-42

<sup>6</sup> Ministry of Natural Resources and Forestry Fisheries Data (Fish ON-line and personal communication, 2016)

<sup>7</sup> [Ontario Nature Reptile and Amphibian Atlas](#) and [Fisheries and Oceans Canada \(2016\)](#)



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