



LAKE FACT SHEET (2017)

BUCK LAKE



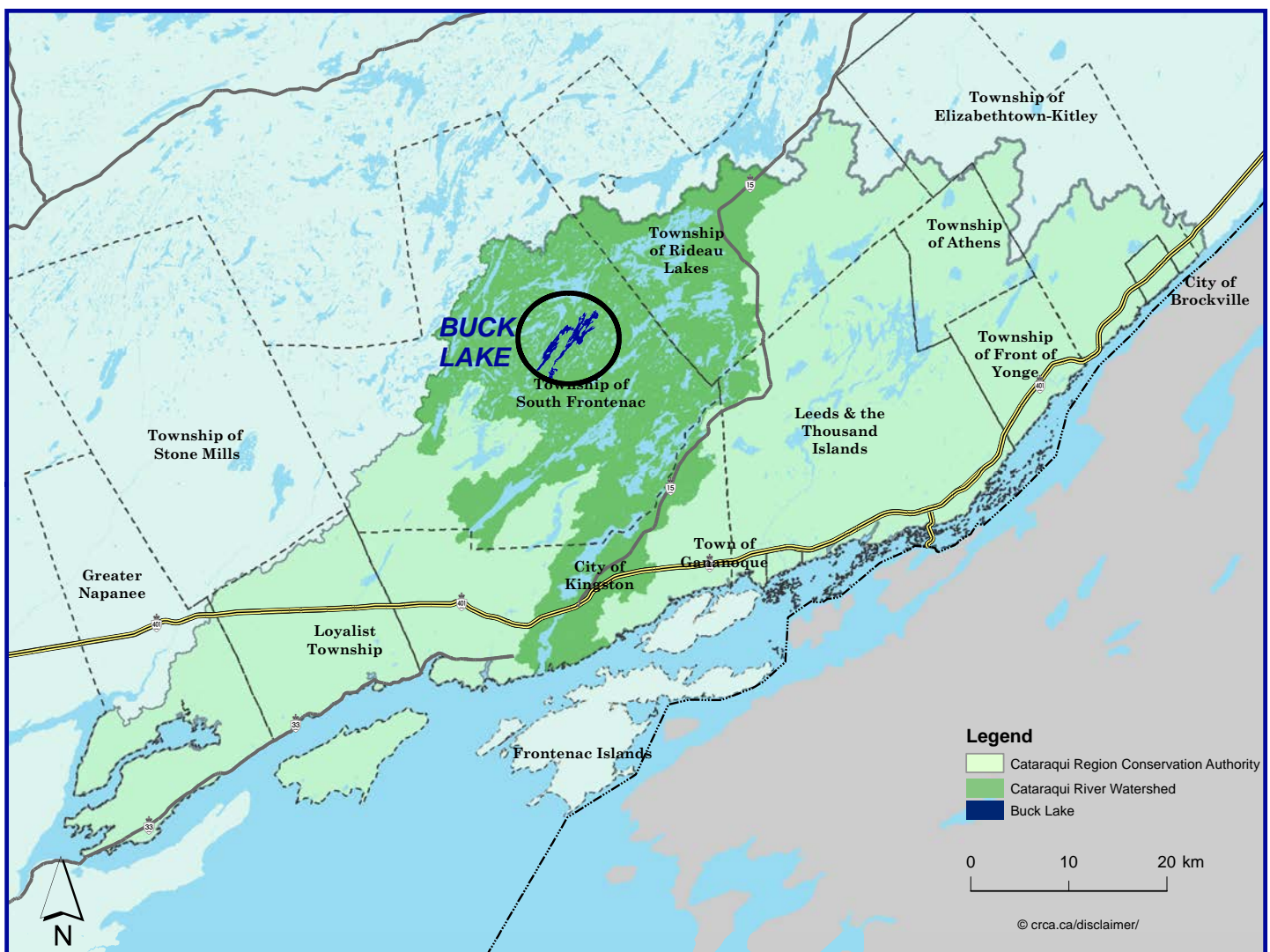
CATARAQUI REGION
CONSERVATION AUTHORITY



LAKE FACT SHEETS

The Cataraqi 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.

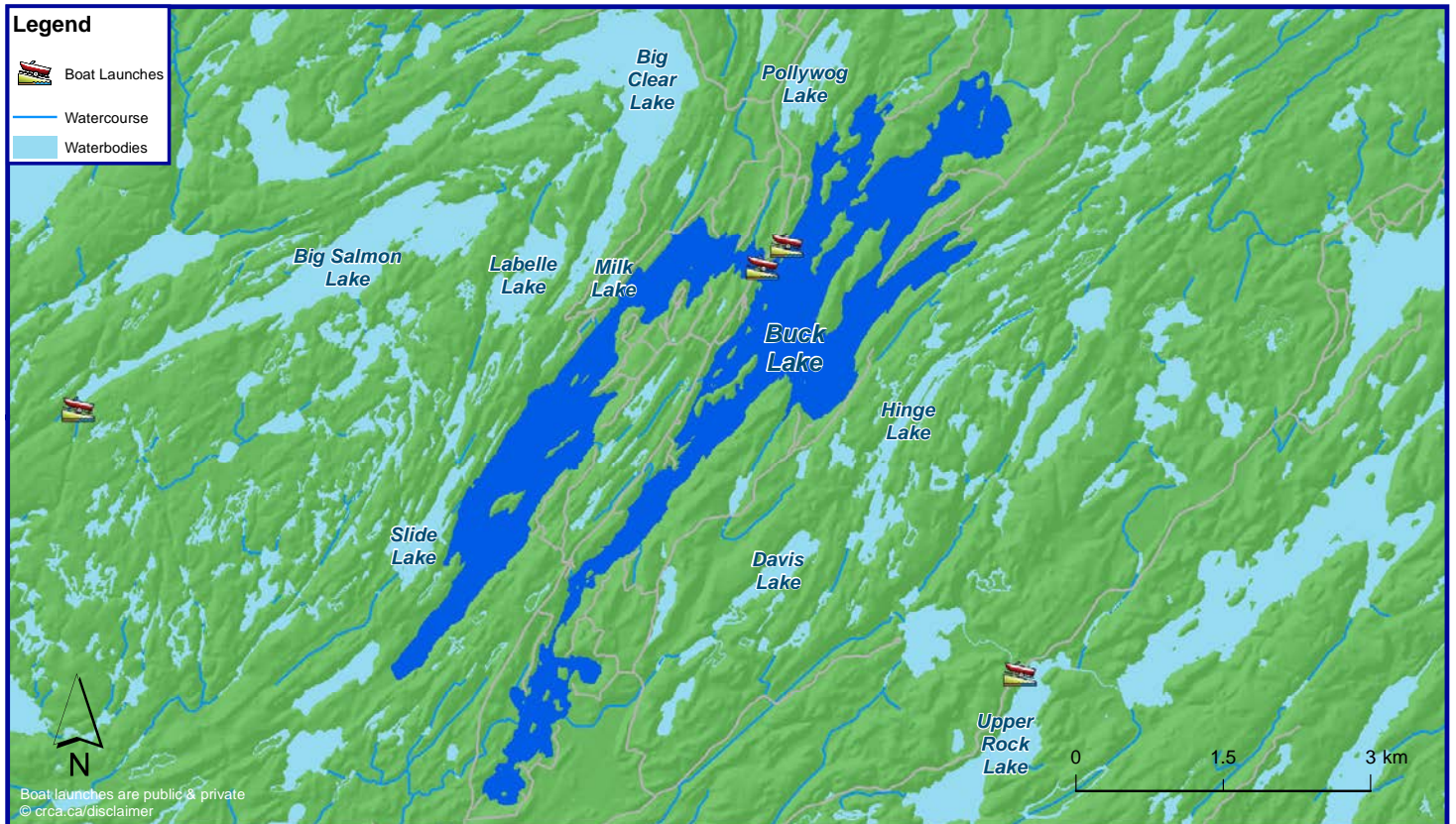
To learn more about the lakes in our region, the CRCA and partners collect samples, take measurements and compare this information against established standards to identify any significant changes or areas of concern. This Lake Fact Sheet focuses on key parameters to assess the health and resilience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





BUCK LAKE

Buck Lake is located within the Cataraqui River watershed and borders the east side of Frontenac Provincial Park. Nearby lakes include Big Clear Lake, Pollywog Lake, Big Salmon Lake, Labelle Lake, Milk Lake, Slide Lake, Davis Lake, Hinge Lake and Upper Rock Lake.



County: Frontenac County

Municipality: Township of South Frontenac

Watershed: Cataraqui River

Coordinates: 44.537 Lat., -76.437 Long.

Average Depth (m): 11.9

Volume (m³ x10⁶): 25.9

SURFACE AREA (HA)

755

MAX. DEPTH (M)

40.9

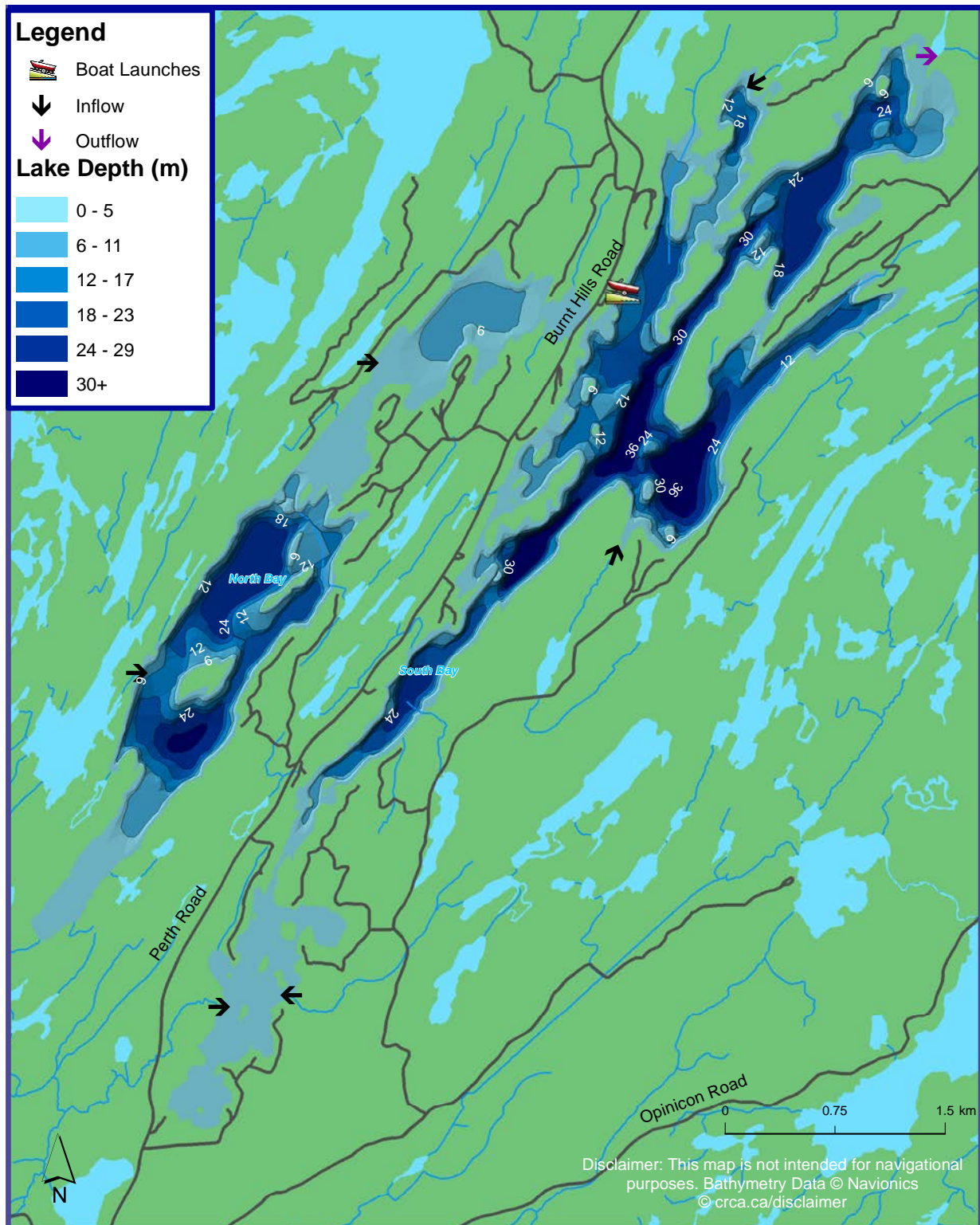
SHORE LENGTH (KM)

48.2



LOCATION & BATHYMETRY

The map below shows water depths, the topography of the lake bottom (bathymetry) and the direction of water flow. It also presents the two distinct basins (north and south) separated by a small stream that flows under Perth Road. Water flows into Buck Lake from Milk Lake, Slide Lake, Bear Lake, Mud Lake, Davis Lake, Goldfish Lake, and Little Franklin Lake, and out into Mississauga Creek.





LAKE CHARACTERISTICS

Buck Lake is a natural, deep, coldwater lake on the Canadian Shield enhanced by the construction of a dam. As with most lakes within the Cataraqui Region, Buck Lake ‘mixes’ in the spring and fall due to the lake water warming and cooling. During this mixing process, nutrients are cycled throughout the lake, giving the water a cloudy appearance as well as a brown or green hue from algae that feed off the cycling 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.

Buck Lake water level are regulated by Energy Ottawa through the Buck Lake Dam located at the northeast corner where the lake flows into Mississauga Creek. Water levels are maintained within a 0.5-meter fluctuation throughout the year based on rainfall, snow-melt, drought conditions, and rate of evaporation.

LAKE FEATURES



IMPORTANT NATURAL FEATURES:

Area of Natural & Scientific Interest (Hamilton and Slide Lakes), Provincially Significant Wetland (Mississauga Creek), Frontenac Provincial Park (east border)



SURROUNDING LAND USE:

Woodlands, Wetlands, Residential (year-round and seasonal)



PRIMARY WATER LEVEL CONTROL:

Buck Lake Dam (Energy Ottawa)



WATER ACCESS:




Off Perth Road or Burnt Hills Road





VULNERABILITY

Information about Buck 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 Buck 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

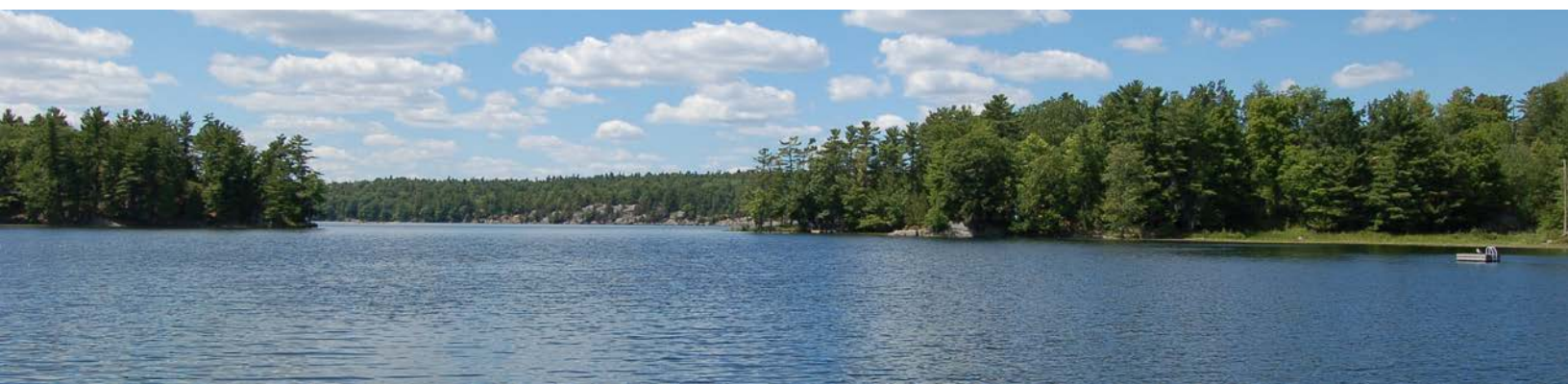
High: pH <6 hyper-sensitive, threatened or critically impaired

BUCK LAKE VULNERABILITY SCORES

Eutrophication	Invasive Species	Acidification
MEDIUM	PRESENT	LOW

- Based on average total phosphorus levels of 0.011 mg/L, nutrients levels are moderate providing for a productive lake with some risk of nuisance algae bloom growth
- The **Buck Lake Association** has reported zebra mussels in the south branch of the lake only
- Buck Lake maintains a neutral pH with little risk to acidification

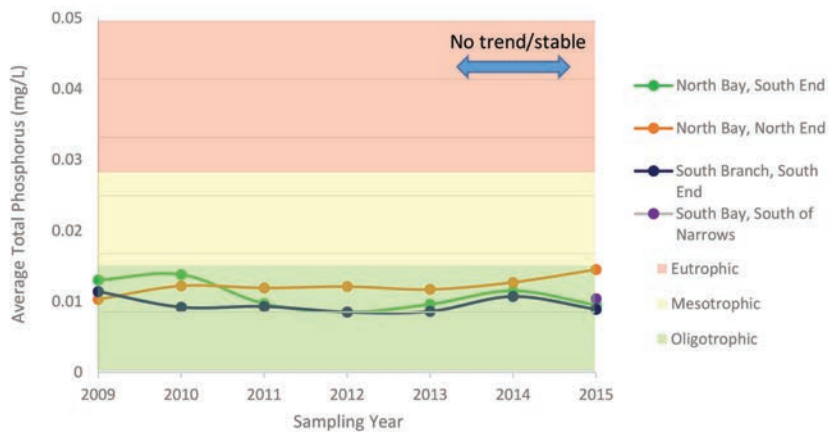
The water quality of a lake is affected by many factors including temperature, pH, oxygen, nutrients (trophic status), and transparency (Secchi disk depth). Classifying lakes by these factors can provide a better understanding of lake health. For more information, refer to the **Cataqui Region Lake Assessment Report**. Buck Lake's two basins are separated by a small stream. Each basin is a different shape with differing geology, therefore water quality is often variable between them.





WATER QUALITY

Thermal Regime: Coldwater
Trophic Status: Mesotrophic¹
Dissolved Oxygen (mg/l): No data
pH: 8.4²



	Sampling Location			
	North Bay, South Branch	North Bay, North Branch	South Bay, South of Narrows	South Branch, South End
Average Secchi Disk Depth (m)³	3.0	3.1	3.8	4.5
Average Total Phosphorus (mg/L)³	0.011	0.012	0.010 ⁴	0.010
Average Calcium (mg/L)³	5.74	6.07	No data	12.43

Buck Lake hosts populations of lake trout suggesting coldwater habitats in deeper pools and dissolved oxygen concentrations of at least 7 mg/L to support young fish growth. Temperature and dissolved oxygen data were reported for the north and south basin of Buck Lake by the Ministry of Natural Resources and Forestry in 2005, 2007, and 2008. Results showed optimal average temperatures of approximately 8°C in primary fish habitat (between 11-15 meters in depth) for both basins and dissolved oxygen concentrations averaging 8.3 mg/L and 8.1 mg/L respectively⁵.

The average Secchi disk depth and average total phosphorus readings indicate a mesotrophic trophic status for the entire lake. This indicates sufficient nutrient cycling and less cause for concern of the growth of algae blooms. Based on data from the Lake Partner Program, average Secchi depth readings have been increasing since 1997 (up to 7 metres), indicating increased water clarity throughout the lake.

Average total calcium concentrations are high enough to support zebra mussels in the south basin and have been reported in this area by the Buck Lake Association. Calcium levels in the north basin are too low to support any mussels and may cause concern for local species requiring calcium for shell and skeletal growth. The pH is slightly alkaline suggesting a good buffer capacity to future changes in acidity.



AQUATIC DIVERSITY

Buck Lake is a highly sensitive lake hosting a high diversity of fish species. As this lake is deep, there are many cold sections providing critical habitat for trout species. When cold-water species are present it is an indication of good water quality since these species are highly sensitive to specific habitat conditions. Ministry of Natural Resources and Forestry data from 2008 data shows usable lake trout habitat is primarily from 9-36 meter depths within the south basin of Buck Lake⁶. Fish species previously caught on Buck 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
Yellow Bullhead



Pikes

Northern Pike



Trout &
Salmon

Lake Trout
Cisco



Sunfishes &
Basses

Largemouth Bass
Smallmouth Bass
Pumpkinseed
Bluegill
Rock Bass
Black Crappie



Carps &
Minnows

Bluntnose Minnow
Golden Shiner



Perches &
Darters

Yellow Perch
Logperch



AQUATIC DIVERSITY

FISHERIES MANAGEMENT ZONE

18

ACTIVE FISH STOCKING⁶

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 years⁶:

- Blanding's Turtle
- Eastern Musk Turtle
- Northern Map 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
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
Invasive Species Hotline (OFAH) www.eddmaps.org/ontario
1-800-563-7711 or info@invadingspecies.com

For more information:

Cataraqui Region Conservation Authority 1-877-956-2722 or 613-546-4228
Buck Lake Association www.bucklake.ca
Water Level Questions (Energy Ottawa) 613-225-0418 or info@energyottawa.ca

¹ Average total phosphorus data provided by the Lake Partner Program

² Data provided by Queen's University (2013)

³ Data provided by the Lake Partner Program (2009-2015)

⁴ Data provided by the Lake Partner Program (2015)

⁵ Ministry of Natural Resources and Forestry [Buck Lake Fish Summary Report](#)

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

⁷ [Ontario Nature Reptile and Amphibian Atlas](#)



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