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 Cranberry Lake with respect to nutrient loading, invasive species colonization and acidification.
Cranberry Lake is located within the Cataraqui River watershed about 30 km northeast of the City of Kingston as part of the Rideau Canal System. Nearby lakes include Cranesnest Lake, Dog Lake, Little Cranberry Lake, Leo Lake, and Brewer Lake.

**County:** County of Frontenac  
**Municipality:** Township of South Frontenac & City of Kingston

**Watershed:** Cataraqui River  
**Average Depth (m):** 2.60  
**Coordinates:** 44.438 Lat., -76.307 Long.  
**Volume \((m^3 \times 10^6)\):** 96.4

<table>
<thead>
<tr>
<th>Surface Area (ha)</th>
<th>Max. Depth (m)</th>
<th>Shore Length (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>650</td>
<td>5.50</td>
<td>14.3</td>
</tr>
</tbody>
</table>
The map below shows water depths and the topography of the lake bottom (bathymetry) and direction of water flow. Water flows into Cranberry Lake from Dog Lake, Leo Lake and Little Cranberry Lake, and out into the Cataraqui River.
Lake Characteristics

Cranberry Lake is a shallow, warmwater lake located on the Canadian Shield created by the construction of the Morton Spillway and Upper / Lower Brewers Locks. As a shallow lake, the sunlight penetrates to the bottom sediments allowing the entire lake to remain an even temperature throughout the year; Cranberry Lake therefore does not stratify.

Cranberry Lake’s water level is controlled by Parks Canada at the Upper Brewers Locks as part of the Rideau Canal System along with Dog Lake, Little Cranberry Lake, Cranesnest Lake, and Whitefish Lake. Water level is regulated to within a 0.5-meter fluctuation dependent on evaporation, precipitation, and climate patterns throughout the year.

Lake Features

Important Natural Features:
None

Surrounding Land Use:
Woodlands, Agriculture, Residential (year-round and seasonal)

Primary Water Level Control:
Parks Canada (Rideau Canal System)

Water Access:
Off Burnt Hill Road past Carrying Place to the Marina (fee)
Off Burnt Hill Road past Brass Point Bridge to Campground
Off Mill Street and Bay Street intersection
Information about Cranberry 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 Cranberry 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
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

CRANBERRY LAKE VULNERABILITY SCORES

<table>
<thead>
<tr>
<th>Eutrophication</th>
<th>Invasive Species</th>
<th>Acidification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HIGH</strong></td>
<td><strong>PRESENT</strong></td>
<td><strong>LOW</strong></td>
</tr>
</tbody>
</table>

- Based on an average total phosphorus concentration of 0.033 mg/L, nutrient levels are in excess with eutrophic conditions suitable for nuisance algae bloom growth
- Zebra mussels have been observed throughout all the Rideau Canal lakes
- Cranberry Lake maintains a neutral pH with little risk to acidification
Cranberry Lake has varying water quality conditions throughout the different bays. As the lake was created from flooding a wetland area, there may be significant nutrient contributions from the sediments decomposition or flooded organic matter within the water. Seeley’s Bay shows extreme eutrophic conditions as compared to other bays. Additional monitoring will more confidently determine an average concentration for this location.

Cranberry Lake is considered eutrophic based on average total phosphorus concentrations. However, the Secchi disk depth is moderate, therefore turbidity is not extremely high.

The lake shows slightly alkaline conditions with a moderate average calcium concentration. These conditions will enhance the resilience of the lake to buffer changes in pH and support growth for species that require a continual source of calcium.

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:** Warmwater
- **Dissolved Oxygen (mg/l):** No data
- **Trophic Status:** Eutrophic
- **Average Secchi Depth (m):** 3.13
- **Total Phosphorus (mg/l):** 0.033
- **pH:** 8.0
- **Average Calcium(mg/l):** 11.45

Cranberry Lake is considered eutrophic based on average total phosphorus concentrations. However, the Secchi disk depth is moderate, therefore turbidity is not extremely high.

The lake shows slightly alkaline conditions with a moderate average calcium concentration. These conditions will enhance the resilience of the lake to buffer changes in pH and support growth for species that require a continual source of calcium.
Cranberry Lake is a warmwater environment with excess nutrients hosting a diversity of fish tolerant to changes in water quality. Fish species previously caught on Cranberry 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.

<table>
<thead>
<tr>
<th>COMMON FISH FAMILIES</th>
<th>SPECIES PRESENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>North American Catfish</td>
<td>Brown Bullhead</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Pikes</td>
<td>Northern Pike</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Sunfishes &amp; Basses</td>
<td>Largemouth Bass</td>
</tr>
<tr>
<td></td>
<td>Smallmouth Bass</td>
</tr>
<tr>
<td></td>
<td>Pumpkinseed</td>
</tr>
<tr>
<td></td>
<td>Bluegill</td>
</tr>
<tr>
<td></td>
<td>Rock Bass</td>
</tr>
<tr>
<td></td>
<td>Black Crappie</td>
</tr>
<tr>
<td></td>
<td>Variety</td>
</tr>
<tr>
<td>Carps &amp; Minnows</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Variety</td>
</tr>
<tr>
<td>Perches &amp; Darters</td>
<td>Yellow Perch</td>
</tr>
</tbody>
</table>
Aquatic Diversity

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:

- Blanding’s Turtle
- Eastern Musk Turtle
- Northern Map Turtle
- Snapping Turtle
- Bridle Shiner
- Grass Pickerel

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
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 www.invadingspecies.com
- Lake Partner Program www.desc.ca
- Loon Watch www.birdscanada.org
- Nature Watch (frog, plant, ice, worm) www.naturewatch.ca
- Ontario Reptile & Amphibian Atlas www.ontarionature.org
- Water Rangers 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
- Water Level Questions (Parks Canada) 1-888-773-8888 or information@pc.gc.ca

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1 Parks Canada – **Rideau Canal System**
2 Ministry of Natural Resources and Forestry (2001)
3 Average total phosphorus data provided by the Lake Partner Program
4 Average Secchi disk depth provided by the Lake Partner Program (2014-2015)
5 Data provided by Queen’s University (2012)
6 Ministry of Natural Resources and Forestry Fisheries Data (Fish ON-line and personal communication, 2016)
7 **Ontario Nature Reptile and Amphibian Atlas** and **Fisheries and Oceans Canada (2016)**