2020 Pandemic Community Science Nearshore Study Findings

- The purpose of this study was to examine water quality in the nearshore zone of Kawartha Lakes during a global pandemic.
- The nearshore zone is an important component to the overall lake ecosystem as it provides fish spawning and nursery grounds, and habitat and food for many aquatic organisms that live in the aquatic plant beds.
- The nearshore zone is also where we enjoy the lake, when we are at a beach, or swimming. It's also where the impacts from our activities on land are directly felt.
- From June - September 2020 community scientists, collected 227 samples from 16 lakes.
- Samples were frozen until analysis in the fall. Lake water samples were analyzed for total phosphorus (TP) and total nitrogen (TN).

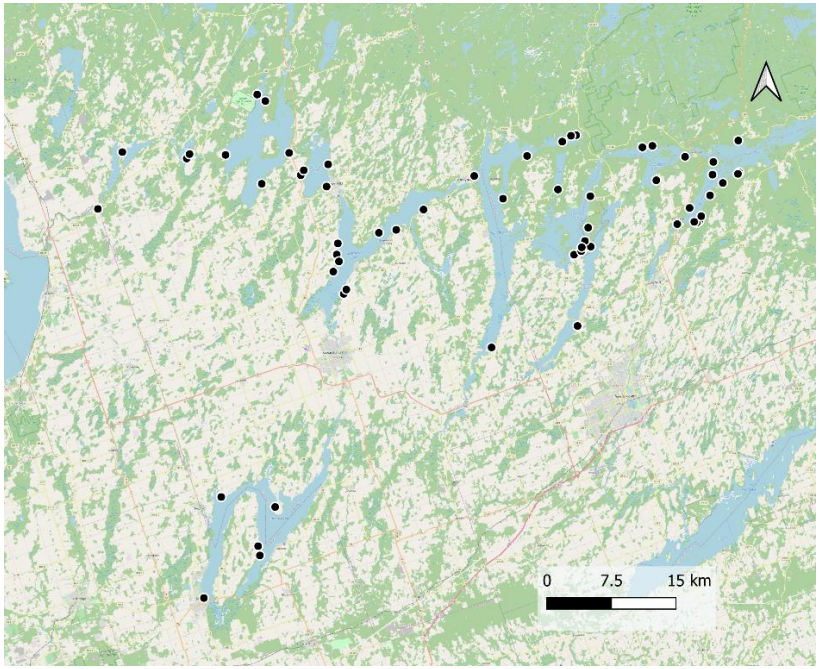
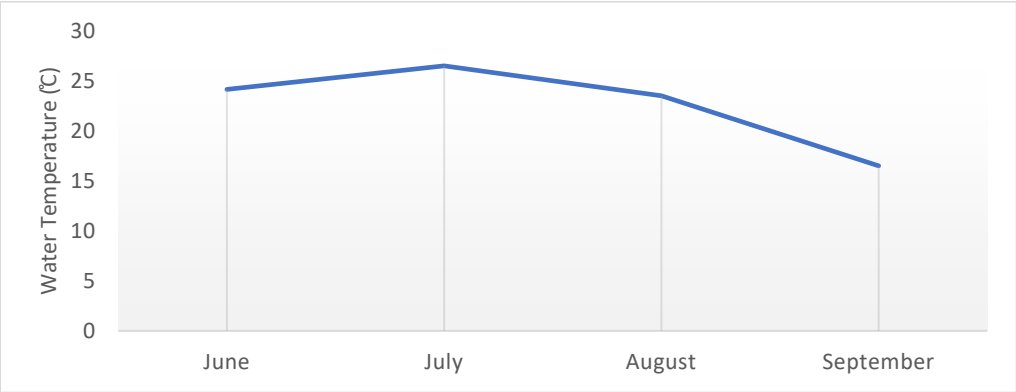
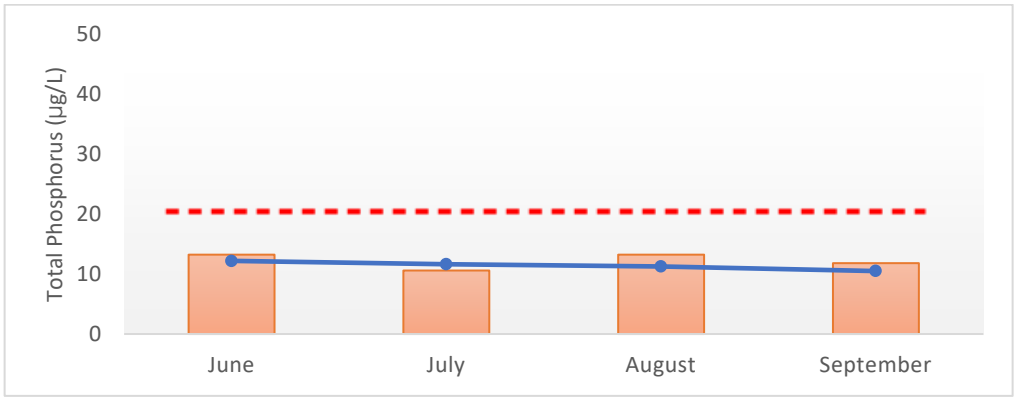


Figure 1. 2020 pandemic community science nearshore monitoring locations.

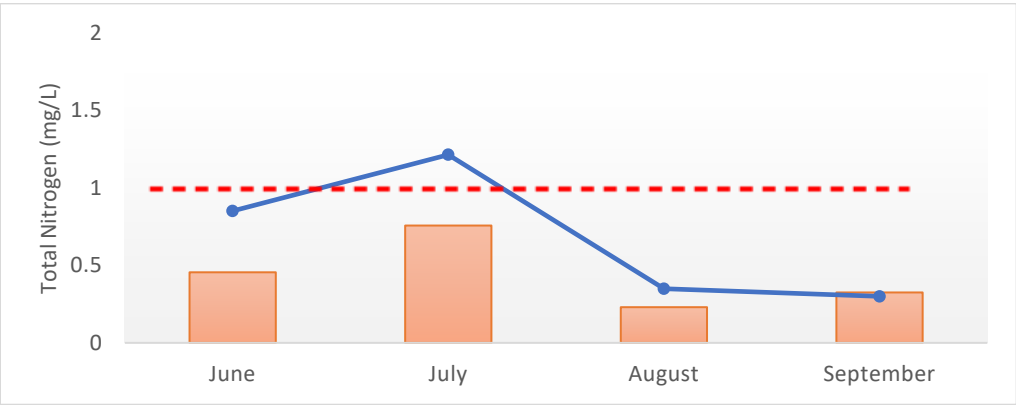
Water Quality Parameter	Provincial Water Quality Objective	Common Source(s)	Significance
Total Phosphorus (TP)	20 µg/L	Manure, fertilizer, septic systems, wastewater treatment facilities, water fowl	An important nutrient for plant and algae. High levels can result in excessive aquatic weed and algae growth.
Total Nitrogen (TN)	1.0 mg/L	Manure, fertilizer, septic systems, wastewater treatment facilities, water fowl	An important nutrient for plant and algae. High levels can result in excessive aquatic weed and algae growth. High levels of certain forms (nitrate, ammonia) can be toxic to aquatic life
Water Temperature	*based on background values	Thermal pollution- inline ponds, lack of canopy vegetation to shade creeks and shorelines	Increasing water temperature reduces the amount of oxygen available to aquatic life. It can limit some plant and animal species. Higher temperatures promote algal blooms



- Water temperature followed seasonal trends as expected, peaking in late July and falling later in the season.
- On your lake water temperature ranged from 16.0 – 27.0 ˚C.



- Total phosphorus for your site in each month of study indicated by the blue line, lake average indicated by the orange bar. The PWQO is indicated on the graph with the red dashed line.
- At your site, TP levels did not exceed the PWQO during the 2020 summer.



- Total nitrogen for your site in each month of study indicated by the blue line, lake average indicated by the orange bar. The PWQO is indicated on the graph with the red dashed line.
- At your site TN was below the PWQO of 1.0 mg/L in June, August, and September.
- Nitrates were also low, below detection limit for 2/4 samples, reaching a maximum of 0.013 mg/L.

Thank-you for your Participation

We want to thank you for your participation in the 2020 Pandemic Nearshore Monitoring program. Your efforts have contributed significantly to research on your lake and will contribute to our understanding of lake health throughout the region. The findings from this project provide us with a baseline reading of nearshore conditions across a range of Kawartha Lakes during a global pandemic. We would like to thank the Kawartha Lake Stewards Association (KLSA) and Curve Lake First Nations for their collaboration during this project, including helping with volunteer recruitment. Any publications from this project will be shared with all stakeholders.

Best Management Practices

Creating and enhancing natural plant groupings near your lake's shoreline will help to stabilize soil and absorb runoff, sediment, and nutrients. One of the most basic methods of shoreline naturalization is to simply stop mowing grass. When left to grow long, grass will act as natural filter. You can increase your filters effectiveness by introducing native plant species with robust root systems. These deep roots will help stabilize the bank, reducing potential ice damage and erosion.

You can help maintain the condition of your lake by reducing nutrient inputs from your property, some simple steps to do this include:

1. Reducing or eliminating fertilizer application. When fertilizers run off into your lake they spur excessive growth of algae and aquatic plants.
2. Maintain your septic system. Pumping out your septic system every 2-3 years will help ensure no excess nutrients are entering your lake.
3. Be mindful of soap usage. Avoid using antibacterial soaps, opt for phosphate-free soaps at your lake and ensure soapy water from dishwashing and bathing is disposed of at least 60 m from the shoreline.

There are programs available to help with shoreline naturalization, Kawartha Conservation and Watersheds Canada have several services for landowners that can help you with your shoreline naturalization and other types of shoreline stewardship projects:

- You can access low cost potted perennials, grasses, and shrubs to help with these types of projects through Kawartha Conservations **native plant sale**.
- You can book site visit with Kawartha Conservation or Watersheds Canada to help you establish a stewardship plan for your shoreline property.
- You can also **apply for a grant** to help pay for shoreline naturalization and other types of shoreline stewardship projects, such as the following:
    - decommissioning hardened shorelines to restore them to a more natural state
    - repairing and maintaining septic systems
    - managing stormwater through projects such as harvesting rainwater or building up shore rain gardens to reduce runoff

For information about these and other useful resources, check out the resources below:

https://foca.on.ca/wp-content/uploads/Shoreline_Owners_Guide_2015/files/index.html

https://watersheds.ca/our-work/

https://www.kawarthaconservation.com/en/landowner-services/erosion-and-shoreline-protection.aspx