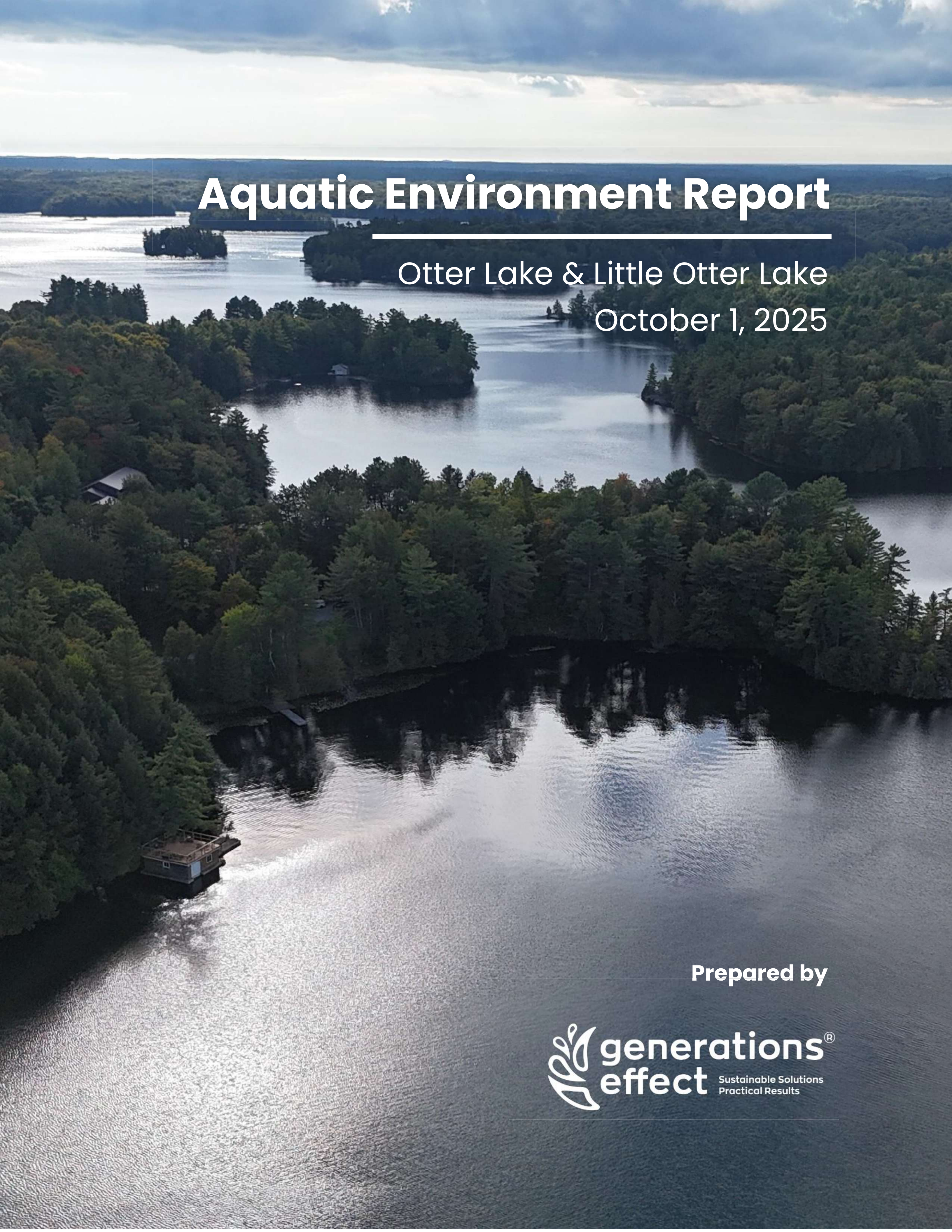

Aquatic Environment Report

Otter Lake & Little Otter Lake

October 1, 2025

Prepared by

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Sustainable Solutions
Practical Results

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Executive Summary

Generations Effect, a social enterprise of the Georgian Bay Mnidoo Gamii Biosphere, has prepared this Aquatic Environment Report for the Otter Lake Ratepayers' Association (OLRA) in order to provide Otter Lake and Little Otter Lake residents with summarized water quality and fish community monitoring data for these lakes. In addition, the report provides a brief summary of an eDNA project started on Otter Lake in 2022, water contaminant testing results, recommendations for further aquatic monitoring, and possible stewardship activities. The report is divided into four sections to reflect these objectives – water quality, fish communities, eDNA project, and recommendations.

Water Quality

OLRA participates in the Lake Partner Program (LPP) and conducts benthic monitoring (Figure 1). As part of the LPP, sites on Otter Lake and Little Otter Lake are sampled for total phosphorus (TP) concentrations, water clarity, calcium, and chloride concentrations. A high-level summary of LPP results is presented in Table 1 (includes recently active sampling sites).

Benthic monitoring, following the Ontario Benthos Biomonitoring Network (OBBN) protocol, was initiated in 2019 in three locations (one on Little Otter Lake, two on Otter Lake). The benthic communities of Little Otter Lake and Otter Lake (both impacted and minimally impacted sites) are considered typical of what would be expected for lakes in this region based on the percentage of pollution-sensitive taxa found.

Both Otter Lake sites had a higher average percentage of pollution-sensitive taxa (larval mayflies (*Ephemeroptera*), dragonflies and damselflies (*Odonata*), and caddisflies (*Trichoptera*)), collectively referred to as %EOT) than the Little Otter Lake site, but all sites are considered typical for the region.

The benthic communities of Otter Lake and Little Otter Lake should continue to be monitored into the future to note any changes over time that may prompt further investigation.

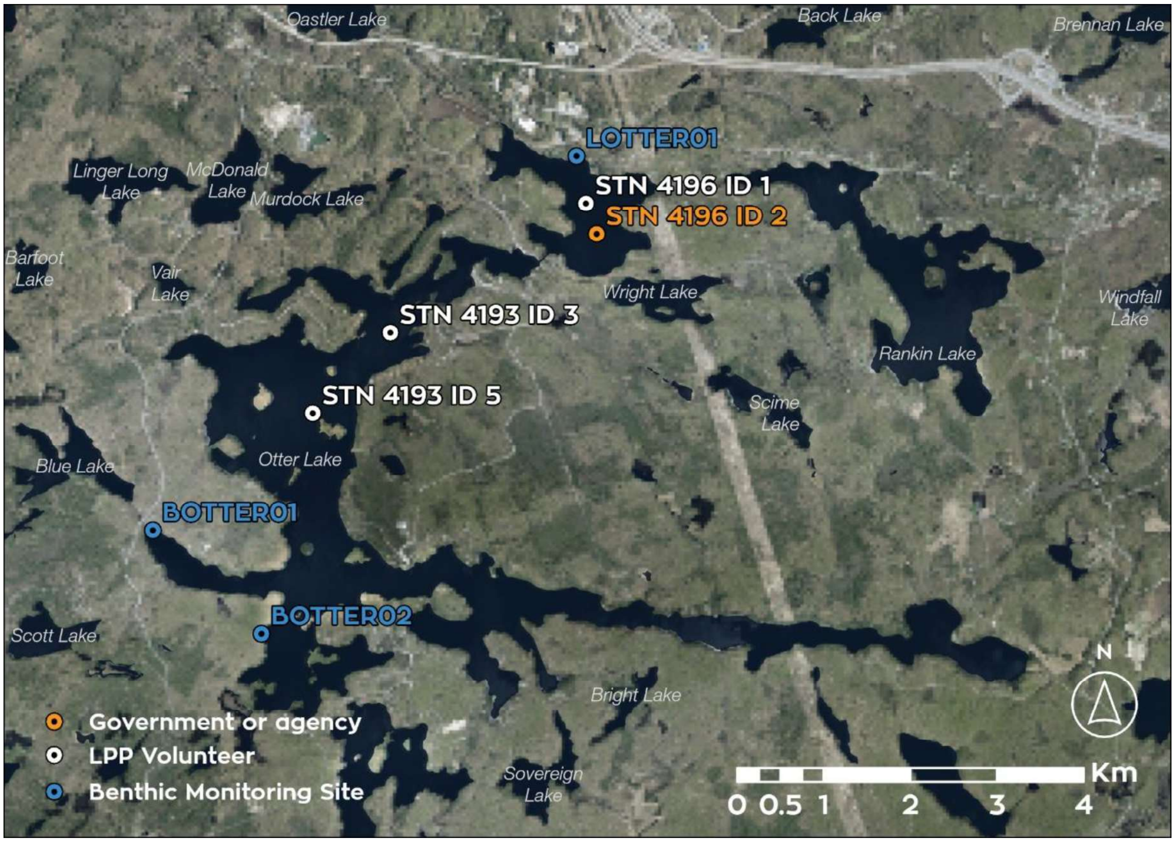

Figure 1. Active and recently active monitoring sites on Otter Lake and Little Otter Lake. Station 4193 Site ID 5 location is approximate and Site ID 7 is not shown due to incorrect coordinates.

Table 1. Overview of Otter Lake and Little Otter Lake LPP sampling results

	Station 4193, Site ID 3	Station 4193, Site ID 5	Station 4196, Site ID 1	Station 4196, Site ID 2
TP average	5.8 µg/L	5.4 µg/L	n/a	7.5 µg/L
TP trend	n/a	n/a	Decreasing	n/a
Trophic status	Oligotrophic	Oligotrophic	Oligotrophic	Oligotrophic
Clarity (average)	5.4 m	4.3 m	4.6 m	3.3 m
Calcium (average)	2.3 mg/L	2.3 mg/L	3.5 mg/L	4.1 mg/L
Chloride (average)	2.1 mg/L	1.9 mg/L	10.2 mg/L	9.8 mg/L

Note: Clarity, calcium, and chloride are reported as averages. TP is reported as an average for sites with three to five years of data or no apparent trend. Trends are reported for sites with more than five years of data. Trophic status is described in terms of three broad categories – oligotrophic, mesotrophic, and eutrophic. TP concentrations below 10 µg/L indicate an oligotrophic or unproductive environment.

In 2025, OLRA volunteers submitted lake water samples from four sites to Near North Laboratories Inc. for contaminants testing. One sample of raw lake water was taken from the boat launch on Little Otter Lake as a control. The other three samples came from filtered tap water from volunteer Otter Lake properties across the lake. For the 50 parameters tested, the water samples did not show any concerning results aside from the presence of bacteria, which is treatable with a well-maintained drinking water filtration system (see full results here). OLRA recommends that property owners regularly test their filtered water for bacteria through the North Bay Parry Sound District Health Unit's free Private Drinking Water Testing program.

Finally, microplastics sampling conducted by an OLRA volunteer is scheduled to take place in fall 2025 with results expected in early 2026.

Fish Communities

Otter Lake

The major fish species in Otter Lake include lake trout, northern pike, smallmouth bass (introduced), largemouth bass, and black crappie (introduced). Other species in the lake include, but are not limited to, cisco, rainbow smelt (introduced), pumpkinseed, brown bullhead, yellow perch, rock bass, and white sucker.

Otter Lake is designated as a lake trout lake and managed for natural reproduction. Lake trout were previously stocked in the lake but stocking ceased after 1998. The conclusion from a 2013 Spring Profundal Index Netting survey is that the lake trout population is at a moderately low density. However, since stocking was discontinued, the proportion of naturally reproduced fish in the population has increased from a small proportion to about half. The lake appears to have a natural tendency for relatively low lake trout abundance but large average size, regardless of whether stocking is occurring. It is recommended that the lake continue to be managed for a natural population with no supplemental stocking and with the current angling regulations.

In 2023, Otter Lake was surveyed by the Ministry of Natural Resources (MNR) as part of a multi-lakes science exercise to evaluate the relationship between catch of fish in a net and the actual density of fish in the lake. Fish populations were surveyed using trapnets and large mesh nets.

A total of 1,035 fish were captured in trapnets, of which 679 were tagged and 131 were recaptured. Large mesh nets captured 11 different species as summarized in Table 2.

Table 2. Fish captured in large mesh gill nets in Otter Lake in 2023.

Species	Total catch %	Maximum length (cm)	Minimum length (cm)	Average length (cm)
Smallmouth bass	53	51.5	13.8	33.5
Rock bass	10	23.9	10.5	15.6
Northern pike	10	99.7	46.2	71.4
Cisco	8	31.3	17.6	23.4
Largemouth bass	4	46.7	14.2	27.4
Yellow perch	4	19.1	15.0	16.5
Pumpkinseed	4	21.4	10.3	15.9
White sucker	3	60.3	24.8	46.6
Lake trout	3	79.2	50.3	64.8
Black crappie	<1	20.9	11.6	16.9
Brown bullhead	<1	31.2	22.1	26.7

Little Otter Lake

The major fish species in Little Otter Lake include northern pike, largemouth bass, and smallmouth bass. Other species in the lake include, but are not limited to, rock bass, pumpkinseed, cisco, yellow perch, white sucker, and rainbow smelt (introduced).

No stocking has occurred in the lake and no species have been tested for contaminants.

eDNA Project

In 2022, OLRA membership supported initiating a small eDNA project to measure and monitor the biodiversity of aquatic and terrestrial organisms that reside in and around Otter Lake and Little Otter Lake. Of particular interest was the potential detection of species at risk and early detection of invasive species. Since 2022, a total of 17 eDNA samples have been collected. Most recently, five samples were collected in July 2024.

In 2024, the greatest species diversity was found in the samples from Little Otter Lake, an embayment off the long arm, and the short arm. A total of 14 fish species, 23 families of invertebrates, and several vertebrates including mammals and amphibians were detected.

At this time, no further eDNA sampling is scheduled.

Recommendations

Based on results from water quality sampling, benthic monitoring, and the most recent fish community survey, several recommendations are made in this report.

Water Quality

1. Continue LPP sampling on Otter Lake at Station 4193, Site ID 3 and Little Otter Lake at Station 4196, Site ID 1.
2. Benthic communities should continue to be monitored into the future to note any sudden or gradual changes in the community that could signify changes in water quality and prompt further investigation.

Fish Communities

1. Maintain current angling regulations for lake trout in Otter Lake (40-55 cm protected slot size, winter closure).
2. If there is interest, volunteers could monitor the enhanced lake trout spawning habitat in Otter Lake to determine whether it is being used.
3. Anglers should familiarize themselves with regulations for the sale and possession of live bait in Ontario. Highlights include:
    - A valid fishing license is required to catch your own live baitfish, leeches, crayfish, and northern leopard frogs.
    - There are specific fish species that can and cannot be used as bait in Ontario (see permitted list of baitfish here).
    - Bait can only be caught in your home Bait Management Zone (BMZ) and cannot leave your BMZ.
    - Baitfish and leeches you catch cannot be sold unless you are a licensed dealer.
    - If you fish outside your home BMZ, you must buy your baitfish and leeches locally, keep a receipt, and use or dispose of your bait within two weeks of the purchase date.
4. The app MyCatch by Angler's Atlas can be used by people fishing on the lake to log fishing trips and share fishing data confidentially with biologists.

Stewardship Activities

1. Encourage Otter Lake and Little Otter Lake property owners to maintain and/or restore natural shorelines. For information about choosing native plants for your shoreline, see the Planting for Pollinators guide.
2. Property owners interested in minimizing their ecological footprint can utilize the Georgian Bay Biosphere's Life on the Bay stewardship guide.
3. Get involved in one of the many citizen science programs available for cottagers and residents (e.g., invasive species reporting, IceWatch, FrogWatch, Canadian Lakes Loon Survey) and consider hosting a community Bioblitz. See GBB's Bioblitz guide for more information.

1. Introduction

Generations Effect, a social enterprise of the Georgian Bay Mnidoo Gamii Biosphere, has prepared this aquatic environment report for the Otter Lake Ratepayers' Association (OLRA) to provide Otter Lake and Little Otter Lake residents with a summary of water quality and fish community monitoring data for these lakes.

Otter Lake is located in Seguin Township (Figure 2) and is part of the Boyne River watershed. Otter Lake is situated within the Williams Treaty of 1923 and the Robinson-Huron Treaty of 1850 (Ministry of Indigenous Affairs, 2022). It is a medium-size lake in the Parry Sound area, measuring 506 hectares in size. The lake has a maximum depth of 44.8 m (147 ft) and a mean depth of 10.8 m (35 ft) (McIntyre, 1999). Lake water level is regulated by a dam at the outlet of Little Otter Lake.

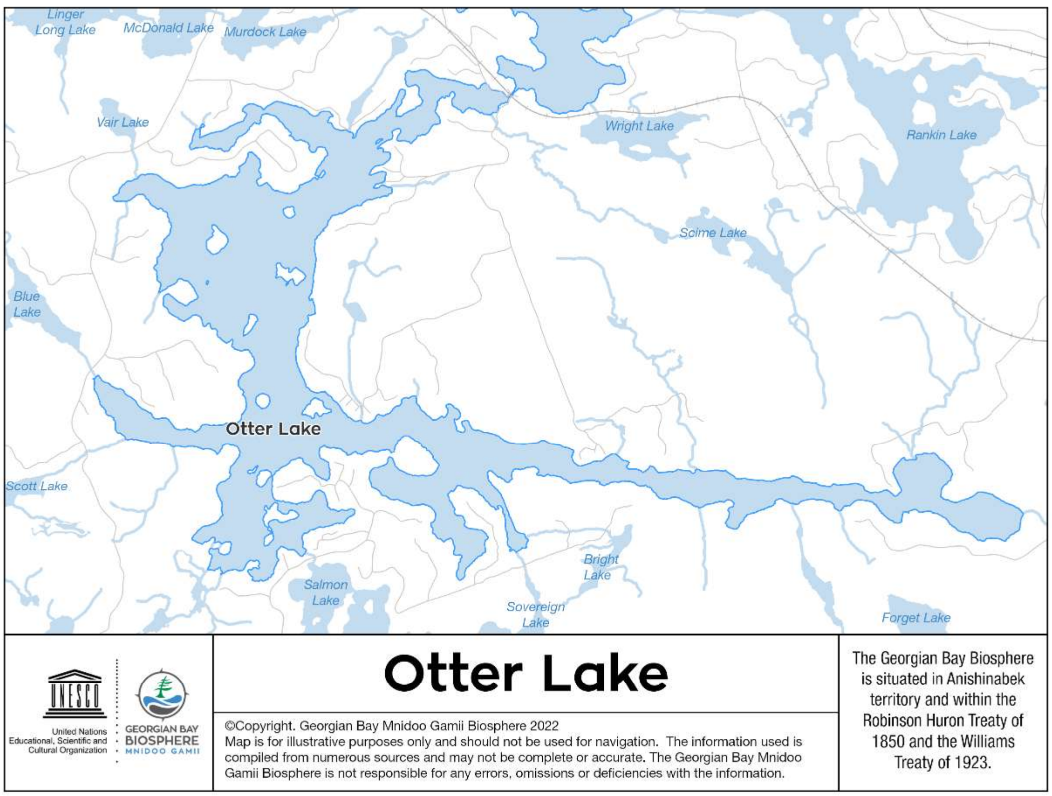

Figure 2. Otter Lake located in Seguin Township.

Otter Lake is readily accessible by road with numerous public access points. Shoreline development on the lake is considered relatively heavy (McIntyre, 1999). Approximately 5% of the shoreline is Treaty/Crown land (MNRF, 2016b). The lake has a varied fish community including a native lake trout population (McIntyre, 1999).

Little Otter Lake (Figure 3) is connected to Otter Lake by a navigable channel but is physically quite different from it. Little Otter Lake is considerably smaller than Otter Lake, measuring 68 hectares in size, and much shallower with a maximum depth of 5.2 m (17 ft) and a mean depth of 2.7 m (9 ft). Compared to Otter Lake, Little Otter Lake has received far less fisheries management attention. The lake supports self-sustaining populations of bass and northern pike.

Little Otter Lake is accessible by road and public boat launch. Shoreline development on the lake is considered moderate. None of the shoreline is Treaty/Crown land (MNRF, 2016a).

The remainder of this report describes water quality and fisheries monitoring taking place on these lakes, an eDNA project on Otter Lake, and recommendations for future monitoring and stewardship.

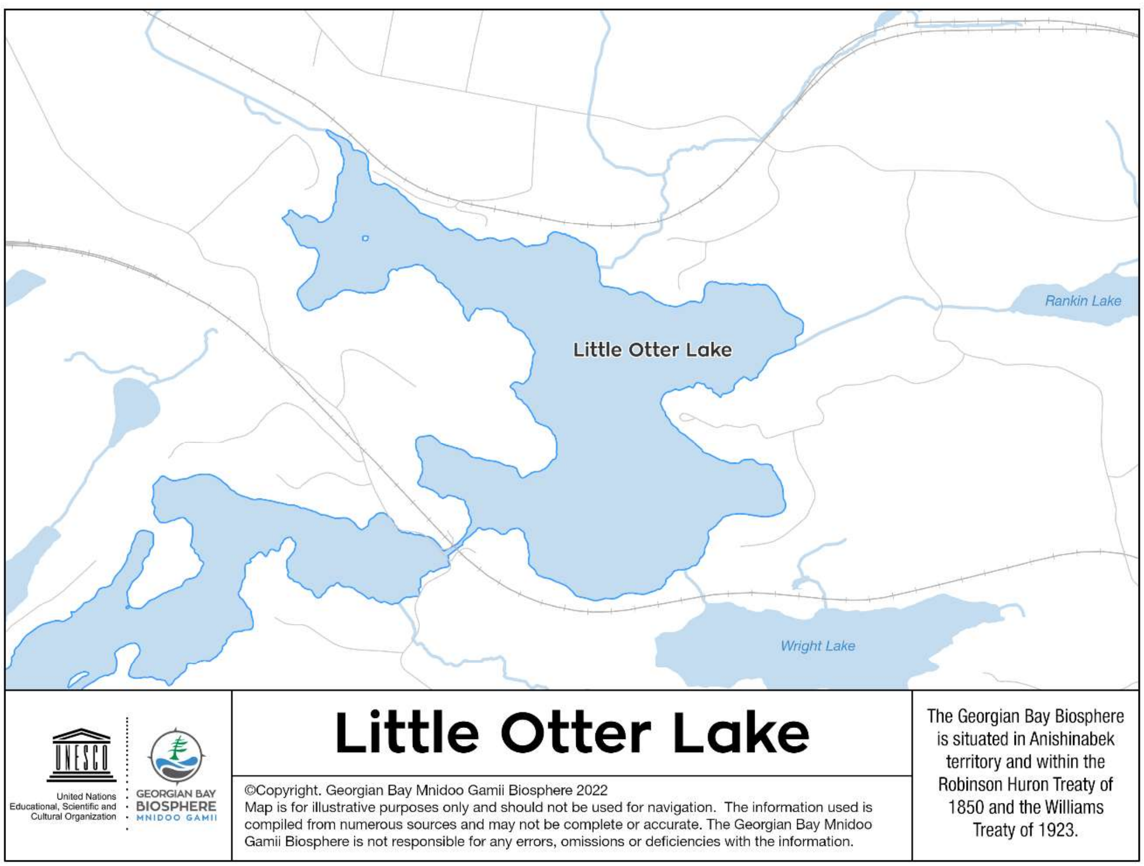

Figure 3. Little Otter Lake located in Seguin Township.

2. Water Quality

2.1 Lake Partner Program

The Lake Partner Program (LPP) is an Ontario-wide, publicly funded, free program that collects data about phosphorus, water clarity, calcium, and chloride. The simple tests provide a strong basis for assessing the health of the ecosystem.

Monitoring TP is very important as phosphorus is the nutrient that controls plant growth (including algae) in lakes. Measuring TP year after year is necessary to detect long-term changes in water quality that may be due to impacts of shoreline development, climate change, and/or other stressors. Inland lakes require TP data to help assess background concentrations relative to present day concentrations. Data collected by volunteers are analyzed by the Dorset Environmental Science Centre (DESC) which makes all data available online.

2.1.1 What is Involved in Monitoring?

As a general rule, only one representative sampling location is required for each lake even in large convoluted lakes with multiple arms. In the event that there are compelling reasons to believe that water quality in different areas of the lake would be influenced differently by rivers or development, for example, or there are local observed differences or perceived problems, more sites might be recommended. Generally speaking, if the watershed influences are similar across a lake, the water quality will be similar as well.

Spring total phosphorus sampling (following LPP protocols) is sufficient for most locations in the region, as there are few areas that experience fall algal blooms. Additionally, Secchi disc water clarity measurements are taken each month at the same location as the TP samples. The black-and-white Secchi disc is lowered into the water until it is at the absolute limit of being visible. This depth is the Secchi depth of visibility, which is directly related to water clarity and can be used as a simple and effective monitoring tool for determining the effects of human activities on water clarity and, indirectly, on the nutrient content in the water.

The materials and instructions needed to take the water samples and conduct water clarity measurements are sent to volunteers by the province. Samples are returned (postage paid) to DESC for analysis and Secchi observation sheets are mailed to DESC in November.

2.1.2 Interpreting Results

Only data collected after the Ministry of Environment, Conservation and Parks (MECP) took over coordination of the LPP (2002 to present) are shown in graphs and labelled on figures. Since 2002, LPP phosphorus samples have been analysed on a low-level phosphorus analyser that has increased the precision of results from +/- 6 µg of phosphorus per litre to +/- 0.7 µg/L. Complete data for all historical and active sampling locations, including data collected prior to 2002, are available through the Lake Partner Program open data website.

Water Clarity

In general, water clarity, as measured by Secchi depth, tends to be higher in open areas with good water circulation. Water clarity tends to diminish (smaller Secchi depth values) in enclosed bays, near wetlands or sources of organic material, and in lakes or areas that have higher nutrient levels either from natural or anthropogenic sources.

Secchi depth values should be compared over several years to assess whether there are water clarity trends for a particular area. Where more than one year of water clarity data exists for a sampling location, Secchi depth in metres is graphed and an average depth is given.

Calcium

Calcium is a nutrient that is required by all living organisms. Some organisms, including those that make up the lower food web, use calcium in the water to form their calcium-rich body coverings. The lower food web forms the foundation of a healthy food web. Prey fish and juvenile predatory fish (piscivores) rely on the lower food web as a main source of food for growth, and predators depend on plentiful prey for their growth. If the lower food web is in poor condition, in time higher levels of the food web will respond and reflect that condition. These organisms of the lower food web, like Daphnia, mollusks, clams, amphipods, and crayfish, are very sensitive to declining calcium levels.

Calcium concentrations have been shown to be decreasing in Canadian Shield lakes in response to depleted watershed stores of calcium caused by logging and decades of acid loading associated with acid rain. Combined with lower food availability and warmer temperatures predicted as part of a changing climate, this decrease represents an important stressor for many aquatic species.

Calcium concentrations should be considered over the long term to identify trends. Where more than one year of data exists for a sampling location, calcium concentration in mg/L is graphed.

Chloride

Chloride is a naturally occurring ion found dissolved in water. It can come from natural sources (e.g., weathering of rocks and soils) as well as human sources (e.g., road salt, water softener discharge, agricultural activities). Chloride is often measured as an indication of salinity, although other ions also affect salinity including calcium, magnesium, sodium, and others.

Lakes and rivers naturally contain low concentrations of chloride (generally <100 mg/L). Too much chloride can be toxic to freshwater plants and animals. The Canadian Council of Ministers of the Environment set the Canadian Water Quality Guidelines (CWQG) for the protection of aquatic life against effects of chronic exposure to chloride at a concentration of 120 mg/L.

A study by Sorichetti et al. (2022) found clear evidence of anthropogenic impact on chloride concentrations in Ontario inland lakes and that the primary source is runoff from de-icers and road salts. The authors state, "relatively higher and increasing historical chloride concentrations are measured in lakes that have winter-maintained roads or urban land use within their watersheds" (Sorichetti et al., 2022, p. 521). Most lakes examined in the study (79%) had chloride concentrations below 5 mg/L, 19.5% were between 5 and 40 mg/L, and 0.5% were above 40 mg/L (Sorichetti et al., 2022). These concentrations are well below the CWQG for the protection of aquatic life from exposure to chloride (120 mg/L). However, recent studies have shown that the CWQGs may not be protective of all taxa, "namely cladoceran zooplankton, particularly in low nutrient and soft-water lakes such as those on the Canadian Shield" (Sorichetti et al., 2022, p. 524).

Similar to calcium, chloride concentrations should be considered over the long term to identify trends. Where more than one year of data exists for a sampling location, chloride concentration in mg/L is graphed.

Total Phosphorus

As phosphorus is the nutrient that controls the growth of plants (e.g., algae) in the aquatic environment, TP concentrations are used to interpret nutrient status. The nutrient status of an aquatic environment is described in terms of three broad categories—oligotrophic, mesotrophic, and eutrophic (Figure 4).

- Oligotrophic or nutrient-poor = TP concentrations below 10 µg/L
- Mesotrophic or moderately enriched = TP concentrations between 10 and 20 µg/L
- Eutrophic or nutrient-rich = TP concentrations over 20 µg/L

Figure 4. Visual representation of how nutrient levels affect aquatic ecosystems (International Joint Commission).

Where more than one year of TP data exists for a sampling location, TP in µg/L is graphed. Average TP is calculated for sampling locations with between three and five years of data, as well as locations with five or more years of data for which there is no apparent trend. For sampling locations with five or more years of TP data and for which there is an apparent trend, a trend line is shown on the TP graph and average is not calculated. Visible outliers are removed for the purpose of determining whether a trend exists.

The LPP database (available here) contains TP data from over 1,000 sampling locations across Ontario. Readers may find the database useful in understanding how their lake's TP concentrations compare to other waterbodies across the province.

2.1.3 Otter Lake Results

Figure 5 shows the location of recently active LPP sampling sites on Otter Lake. Site ID 7 is not shown in Figure 5 due to incorrect coordinates.

Complete data for all historical and active sampling locations are available through the Lake Partner Program open data website. However, there are issues with site numbering for Otter Lake sites in the database (e.g., data being assigned to the wrong site IDs) and it can be difficult to accurately piece together the longer-term datasets.

Based on conversations with LPP staff at MECP, Table 3 provides some clarity on the data that align with each site. To request a separate appendix with correctly labelled historical data, please contact Katrina Krievins at kkrievins@generationseffect.com.

Figure 5. Active and recently active Otter Lake LPP sampling locations. Site ID 5 location is approximate.

Table 3. List of past and present LPP sampling sites on Otter Lake.

Site ID	Description	Data Collector	Notes
1	OT01	MOECC Northern Region	2016 data only
2	OT02	MOECC Northern Region	2016 data only
3	N end, deep spot	LPP volunteer	Consistent TP sampling starting in 2002
4	Long Arm	LPP volunteer	2004 data only
5	Delta Island	LPP volunteer	Fairly consistent TP sampling starting in 2012
6	N end, NW bay	LPP volunteer	2016 data only
7	Mid lake, deep spot	Seguin Township	2016 and 2023 data only

Results for Site ID 3 are shown in Figure 6 and Figure 7. From 2002-2016, LPP sampling was conducted once per year, typically in May. Starting in 2017, more than one sample was taken each year, in some cases samples were taken monthly from May to October. Figure 6 presents annual results using data from the first sample of each year, the sample taken closest to ice out (as per LPP instructions). This allows for newer data to be compared with the once per year annual sampling from 2002-2016. Figure 7 presents only TP data since 2017, the start of more frequent sampling. This figure illustrates changes in TP through different seasons.

Otter Lake	
• Station: 4193	• TP trend: n/a
• Site ID: 3	• Average TP: 5.8 µg/L
• Description: N end, deep spot	• Average Secchi depth: 5.4 m
• Data collector: LPP volunteer	• Average calcium: 2.3 mg/L
• Trophic status: oligotrophic	• Average chloride: 2.1 mg/L

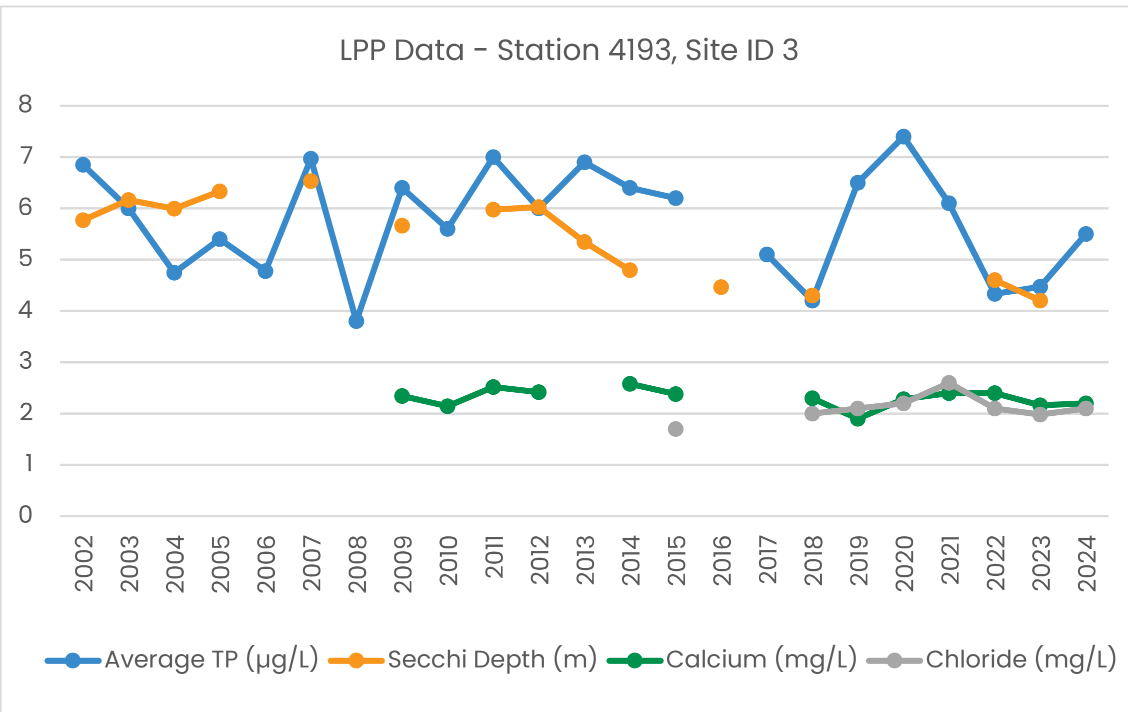

Figure 6. Annual Lake Partner Program data for Station 4193, Site 3 on Otter Lake.

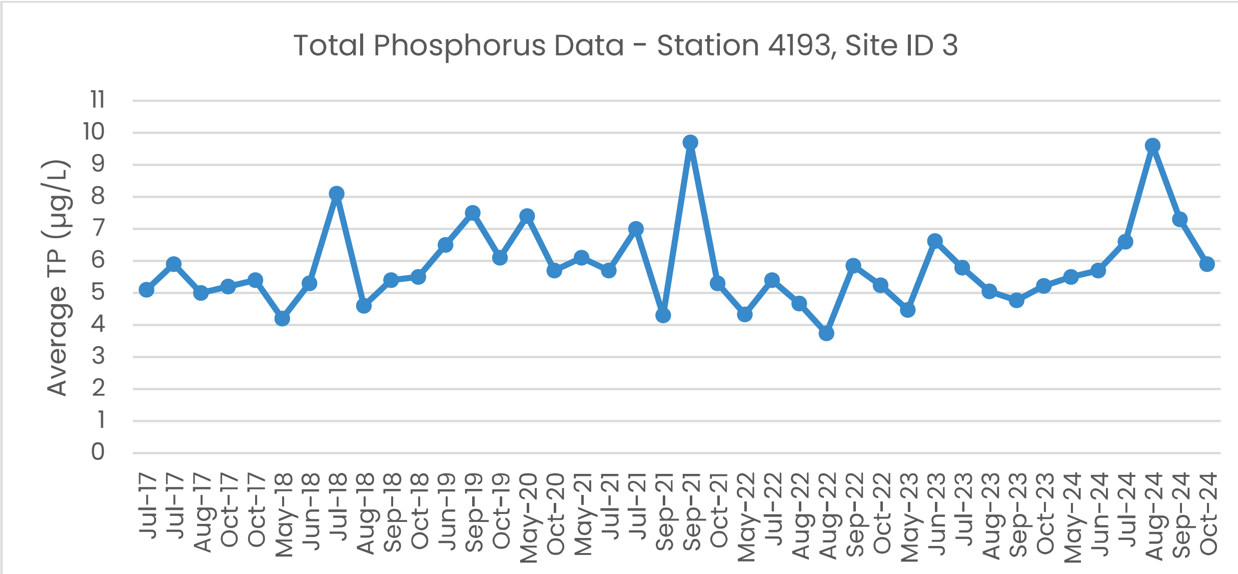

Figure 7. Total phosphorus data for Station 4193, Site 3 on Otter Lake from 2017-2024. *Two data points are given in the LPP database for July and October 2017, July and September 2021, and August 2022.

Otter Lake	
• Station: 4193	• TP trend: n/a
• Site ID: 5	• Average TP: 5.4 µg/L
• Description: Delta Island	• Average Secchi depth: 4.3 m
• Data collector: LPP volunteer	• Calcium: 2.3 mg/L (in 2018)
• Trophic status: oligotrophic	• Chloride: 1.9 mg/L (in 2018)

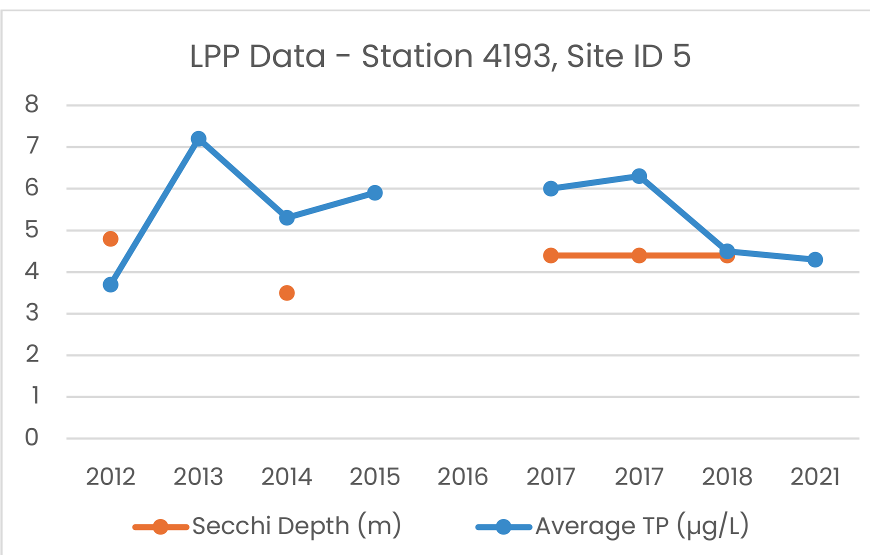

Figure 8. Lake Partner Program data for Station 4193, Site 5 on Otter Lake. *Two data points given in the LPP database for May 2017.

Site ID 7 is sampled by Seguin Township. The following data are available for this site:

- 2016 – Average TP 4.0 µg/L
- 2023 – Average TP 3.8 µg/L, Secchi depth 5.5 m

Recommendations

Continue annual volunteer-led LPP sampling. In addition, continue sampling as part of Seguin Township's Lake Water Quality Monitoring Program which monitors approximately 120 lakes across the township on a rotating basis.

2.1.4 Little Otter Lake Results

Figure 9 shows the locations of one active LPP sampling site on Little Otter Lake (Station 4196, site ID 1) and one recently active sampling site (Station 4196, site ID 2). Results for site ID 1 follow.

Complete data for all historical and active sampling locations are available through the Lake Partner Program open data website.

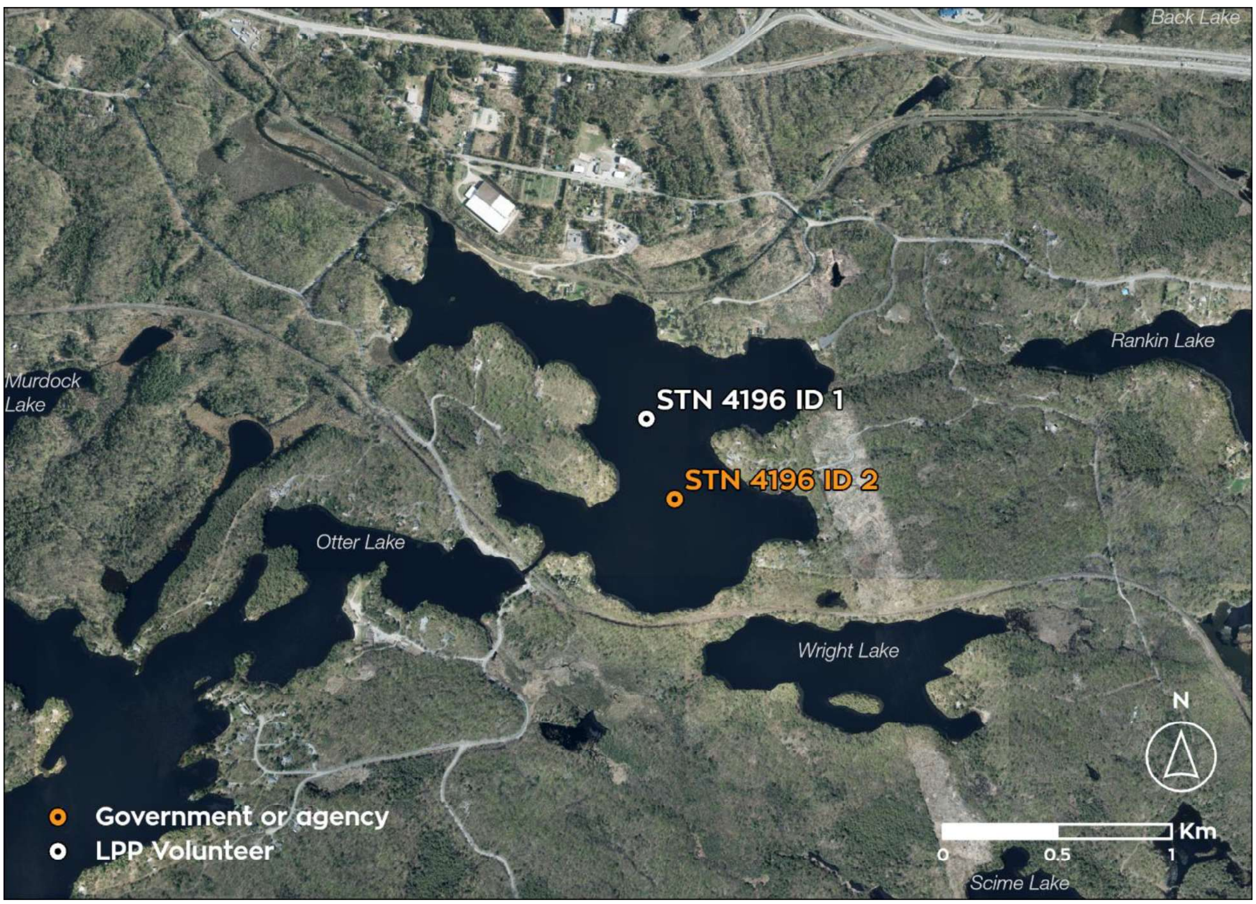

Figure 9. Active and recently active Little Otter Lake LPP sampling locations.

Results for Site ID 1 are shown in Figure 10 and Figure 11. Figure 10 presents annual results using data from the first sample of each year, the sample taken closest to ice out (as per LPP instructions). Figure 11 presents only TP data and illustrates changes through different seasons.

Little Otter Lake	
• Station: 4196	• TP trend: decreasing
• Site ID: 1	• Average TP: n/a
• Description: Mid lake, deep spot	• Average Secchi depth: 4.6 m
• Data collector: LPP volunteer	• Average calcium: 3.5 mg/L
• Trophic status: oligotrophic	• Average chloride: 10.2 mg/L

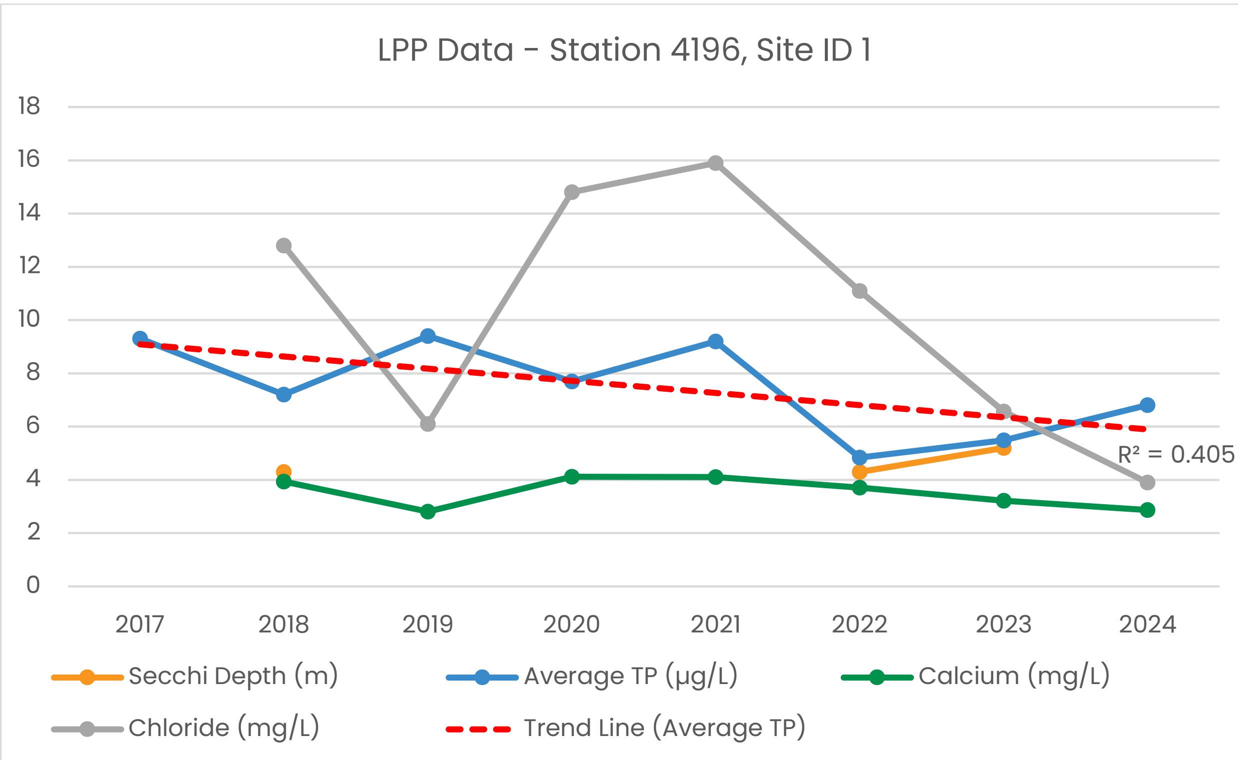

Figure 10. Annual Lake Partner Program data for Station 4196, Site 1 on Little Otter Lake.

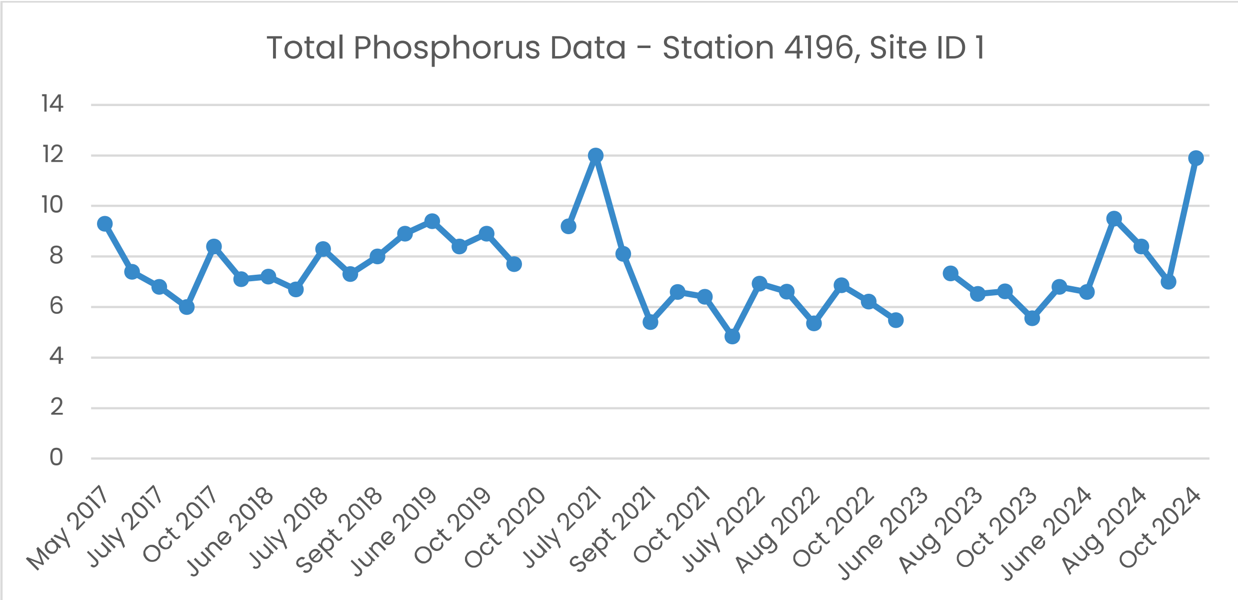

Figure 11. Total phosphorus data for Station 4196, Site 3 on Little Otter Lake from 2017-2024. *Two data points are given in the LPP database for July and October 2017, June 2018, July and September 2021, and August 2022.

Recommendations

Continue annual volunteer-led LPP sampling. In addition, continue sampling as part of Seguin Township's Lake Water Quality Monitoring Program which monitors approximately 120 lakes across the township on a rotating basis.

2.2 Benthic Monitoring

Different types of water quality monitoring provide environmental managers with complementary information. Most people are familiar with the idea of looking at water quality from a "stressor-based approach". This includes monitoring water chemistry parameters like pH, dissolved oxygen, total phosphorus, and others. Stressor-based monitoring approaches provide important information about an ecosystem's exposure to stress, but they leave unanswered questions about the significance (or effect) of that stress.

Biological monitoring (e.g., benthic monitoring) uses an "effect-based approach" to provide information about how ecosystems have responded to a stress, for example by looking at fish communities or benthic macroinvertebrates. However, effect-based approaches leave unanswered questions about what stresses are being responded to. Therefore, these approaches (chemical and biological monitoring) are complementary and together provide a more complete picture of aquatic ecosystem health (i.e., the lake's exposure to stress and associated ecological response).

For example, volunteers on Otter Lake and Little Otter Lake monitor phosphorus levels which provide a measure of exposure to stress (e.g., impacts from humans, climate change, invasive species). These measures could be phosphorus levels going up, going down, or staying the same. But what is the impact from these trends on the ecosystem? By adding benthic monitoring, we can start to see if and how the ecosystem is reacting to a stressor.

Over the last three decades, the use of biological monitoring in Ontario has increased dramatically. Researchers, water managers, and the larger scientific community are recognizing the ability of biological monitoring to reflect the impacts of stressors on aquatic ecosystems including the effects of non-point-source and episodic pollution, habitat changes, and the cumulative effects of multiple stressors.

Accordingly, the use of biotic changes to evaluate ecosystem condition and water management performance has grown in relevance and legitimacy – to the point that legal and regulatory frameworks in many countries now require information on biological condition. Ontario's Water Resources Act (R.S.O 1990, C. 040) and Environmental Protection Act (R.S.O. 1990, C. E19), for example, define impairment and adverse impact in clearly biological terms.

Benthic macroinvertebrates (or benthos) are small aquatic organisms (including insects, crustaceans, worms, and mollusks). The term benthic macroinvertebrate can be broken down to better understand the nature of these organisms. Benthic macroinvertebrates spend all or part of their life cycle living at the bottom of the lake (benthic), they are quite small but can generally still be seen with the naked eye (macro), and they lack a backbone (invertebrate).

These animals are well suited as indicators of water and sediment quality as they spend most or all of their lives (1-3 years) in constant contact with the benthic environment in a specific area. Furthermore, they are relatively easy and inexpensive to sample, and have varying tolerances to disturbances and pollution. Figure 12 shows examples of benthic macroinvertebrates found in lakes in this area with their accompanying pollution tolerances.

Figure 12. Benthic macroinvertebrates found in Otter Lake and Little Otter Lake and their pollution sensitivities.

A healthy lake will support high richness (the number of species) and abundance (the number of individuals). If a lake has low species richness and mainly pollution-tolerant species, the lake could be impaired.

Changes in the benthic community of a lake (e.g., changes in the types of organisms, abundance) can indicate changes in the lake ecosystem (e.g., improvements in water quality, habitat alteration, introduction of invasive species).

Benthic macroinvertebrates are also an important part of the food web of a lake. Many benthic macroinvertebrates are critical food sources for a variety of fish species, while others play a key role in decomposing organic matter.

The objectives of OLRA's benthic monitoring program are to:

- Determine the ecological condition of Otter Lake and Little Otter Lake and monitor over time;
- Compare the lakes to similar lakes in the Parry Sound-Muskoka District; and
- Compare impacted and minimally impacted sites on the lakes.

2.2.1 What is Involved in Monitoring?

Certified Generations Effect staff oversee benthic macroinvertebrate sampling using the standardized Ontario Benthos Biomonitoring Network (OBBN) protocol for lakes. Three shallow, nearshore areas representative of the lake are selected as test sites (referred to as "lake segments" in the protocol) and sampled each year using the travelling-kick-and-sweep method. The individual doing the sampling disturbs the bottom of the lake in transects from 1 m depth to the water's edge for approximately 10 minutes. Using a net, the dislodged material is collected and placed in a bucket. These samples are then processed to count and identify the different types of benthos in the sample (video available here). There are 27 different groups of benthos that are searched for, ranging in sensitivity to water pollutants and water quality.

2.2.2 Interpreting Results

One of the objectives of the benthic monitoring is to characterize the benthic community of each lake and compare them to lakes in the Parry Sound-Muskoka District to determine whether their benthic communities are considered typical of what would be expected for lakes in this region.

The District Municipality of Muskoka has been working with lake associations to conduct benthic monitoring throughout the district since 2004. This rich Muskoka dataset, combined with additional benthic data for lakes in south-central Ontario from the DESC and from Jones et al. (2007), provides the basis needed for regional comparisons among lakes.

As detailed in the 2018 Muskoka Watershed Report Card Background Report, the Muskoka Watershed Council (MWC) reports on lake benthic communities in terms of the percentage of pollution-sensitive taxa found. Specifically, the pollution-sensitive taxa include larval mayflies (*Ephemeroptera*), dragonflies and damselflies (*Odonata*), and caddisflies (*Trichoptera*), collectively referred to as EOT. These taxa are very sensitive to pollution and habitat alterations, meaning that their numbers will be highest in healthy lakes and lowest in unhealthy or disturbed lakes. The average %EOT for a lake is compared to the normal range for %EOT in lakes in the region. In other words, this monitoring seeks to answer the question, does the %EOT for the lake of interest fall within the normal range of what would be expected for a lake in the region?

The normal range for %EOT in lakes in the region was determined by MWC for the Muskoka Watershed Report Card by "randomly selecting one data point from each lake sampled between 2012 and 2017 and characterizing the distribution of values observed among these lakes" (MWC, 2018, p. 46). The resulting range of %EOT values is shown in Figure 13 and is used for analysis in this report.

Following the methodology used by MWC (2018), the average %EOT was calculated for each of the three sampling locations using data collected between 2019 and 2023. The average %EOT for each site was then compared to the normal range (Figure 13) to determine whether the lake is considered typical, atypical, or extremely atypical. These categories are defined by MWC (2018) as follows:

- **Typical**: %EOT is between the 10th and 90th percentile. These lakes resemble the majority of lakes in the region, and therefore are comprised of typical percentages of EOT species.
- **Atypical**: %EOT is between either the 5th and 10th percentile or the 90th and 95th percentile. These lakes are outside of the normal range of the majority of lakes in the region. The percentages of EOT species may be slightly higher or lower compared to the majority of lakes in the region.
- **Extremely Atypical**: %EOT is less than the 5th percentile or greater than the 95th percentile. These lakes do not represent the majority of lakes in the region in terms of the percentages of EOT species. These lakes may have very high or very low percentages of EOT species compared to the majority of lakes in the region.

If a lake is considered atypical or extremely atypical, additional monitoring may be necessary to try to understand potential causes and/or contributing factors.

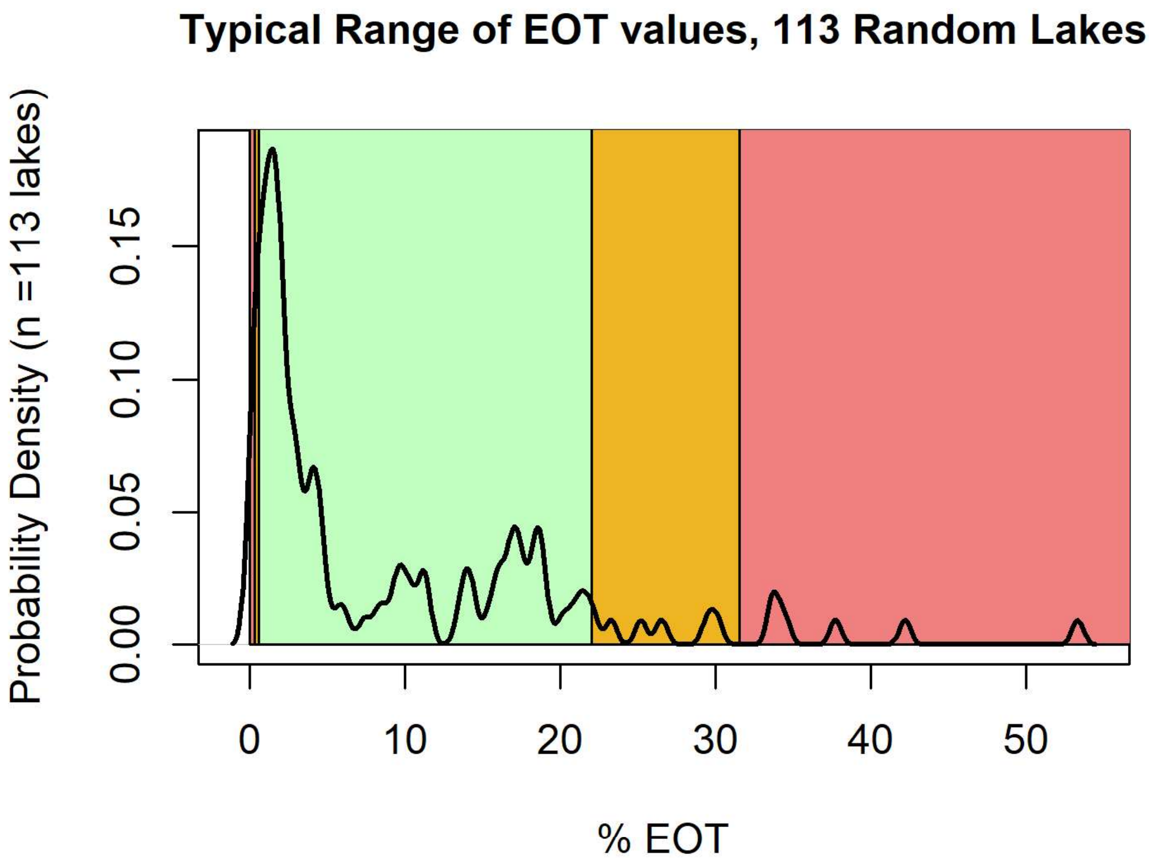

Figure 13. Range of %EOT values of sampled lakes in the region from 2012 to 2017. Typical is shown in green which is between the 10th and 90th percentile (%EOT between 0.55 and 20.99). Atypical is shown in orange which is between the 5th and 10th percentile (%EOT between 0.3 and 0.54) and 90th and 95th percentile (%EOT between 22.1 and 28.01). Extremely atypical is shown in red which is less than the 5th percentile (%EOT less than 0.29) or greater than the 95th percentile (%EOT greater than 31.5).

2.2.3 Otter Lake Results

Two sites (three lake segments each) were sampled on Otter Lake from 2019-2025; one "impacted" site (BOTTER01) and one "minimally impacted" site (BOTTER02) (Figure 14). Raw data is available upon request, please contact Katrina Krievins at kkrievins@generationseffect.com.

As shown in Figure 15 (BOTTER01) and Figure 17 (BOTTER02), the %EOT for both Otter Lake sites falls within the normal range of what would be expected for a lake in the region.

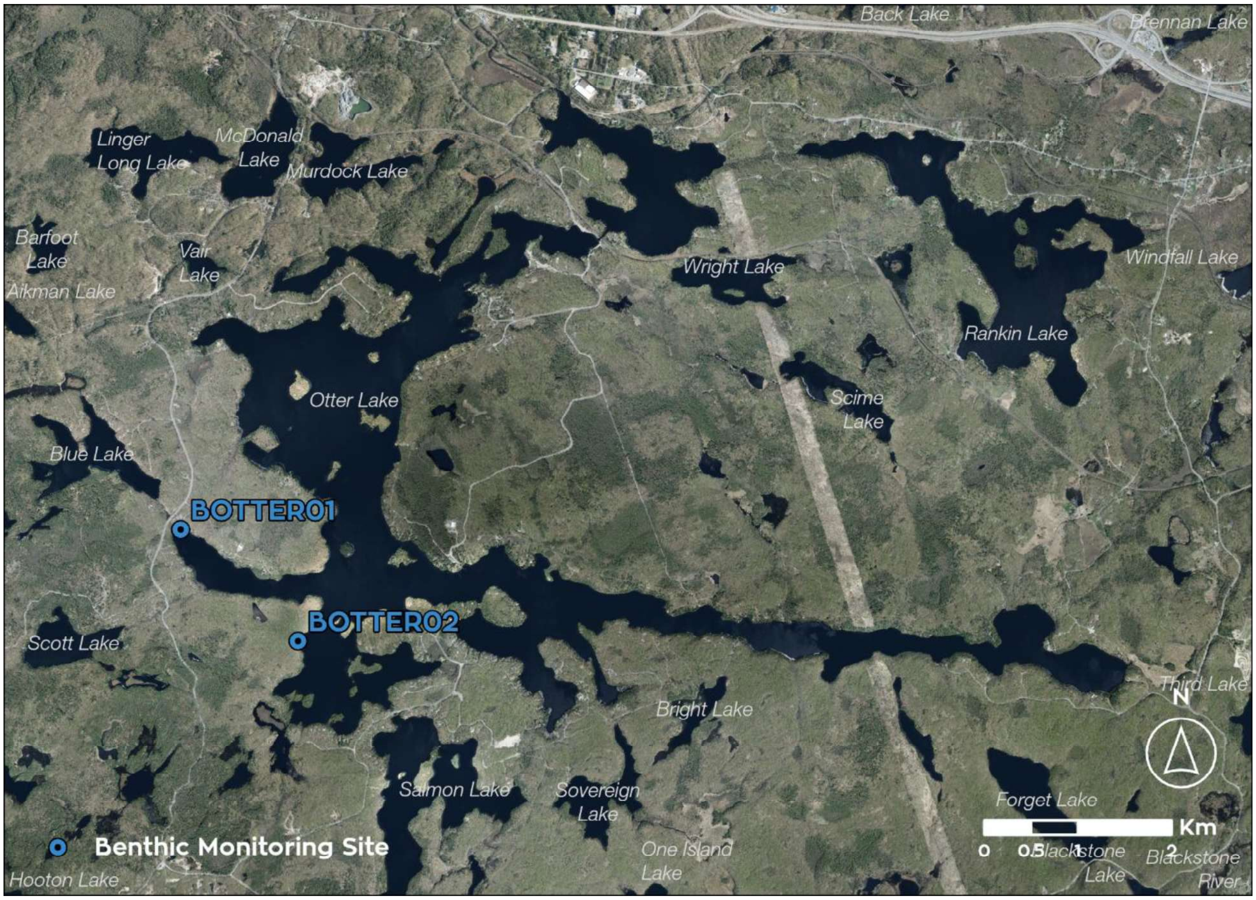

Figure 14. Benthic sampling locations on Otter Lake.

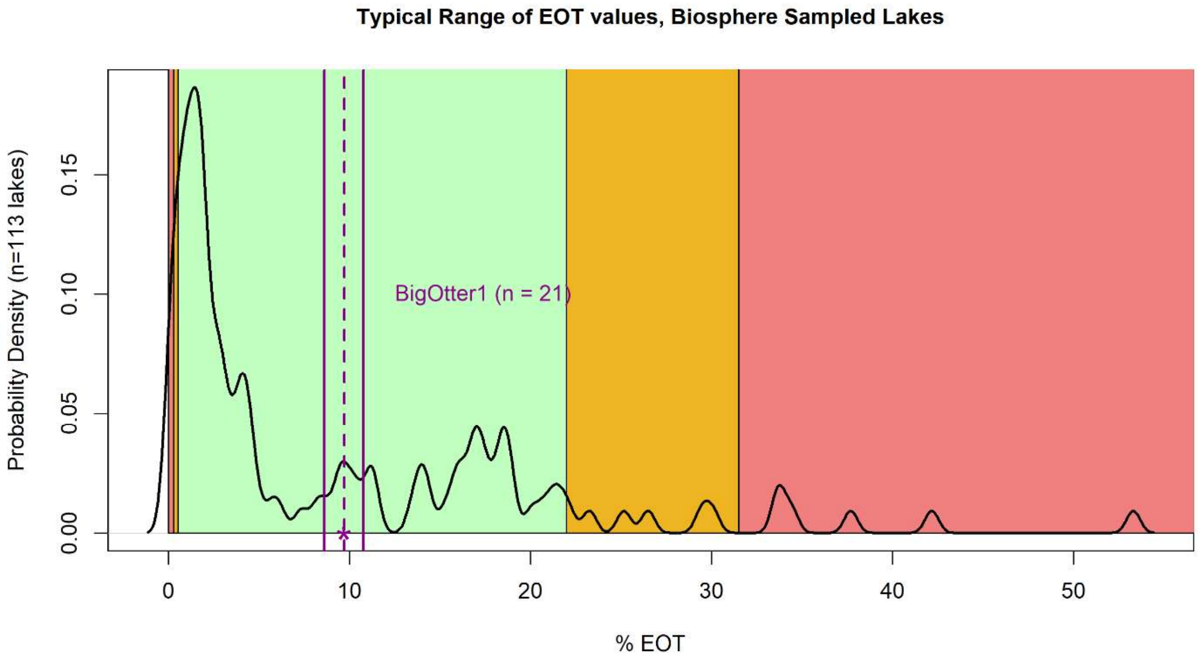

Figure 15. Otter Lake (BOTTER01) average %EOT (dashed purple line) and standard deviation (solid purple line) sampled from 3 lake segments over 7 years (n = 21) fall within the "typical" category (green area) on the typical %EOT range plot (based on 113 sampled lakes). This indicates that the Otter Lake benthic community at site BOTTER01 is typical of what would be expected for a lake in this region.

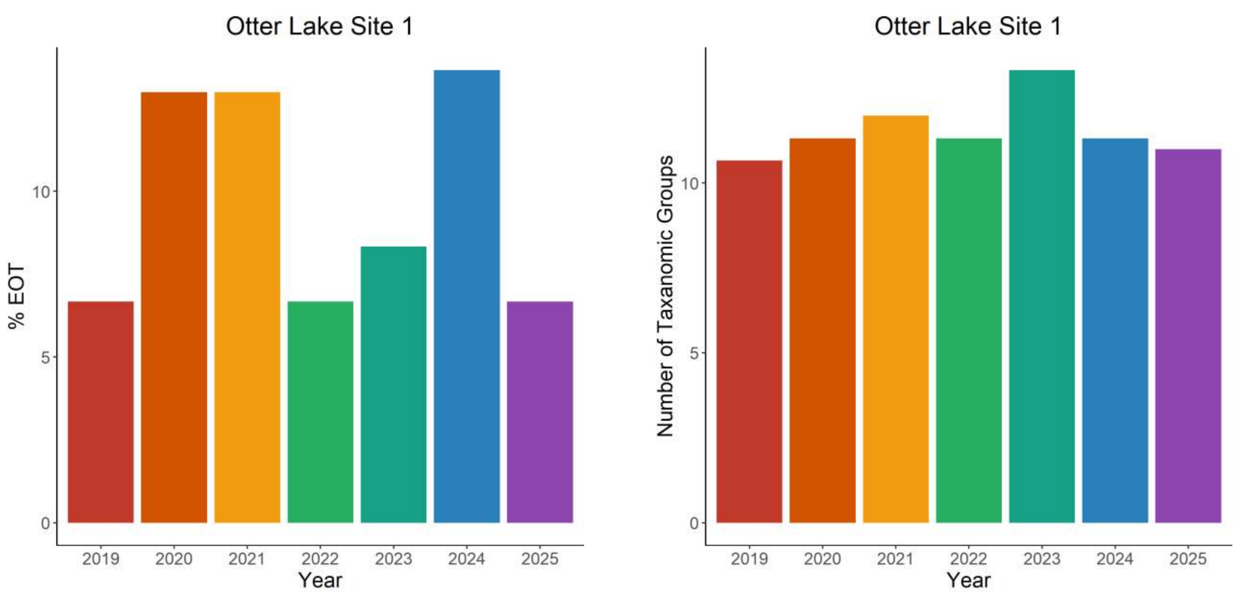

Figure 16. %EOT and the number of taxonomic groups in Otter Lake Site 1 from 2019 to 2025.

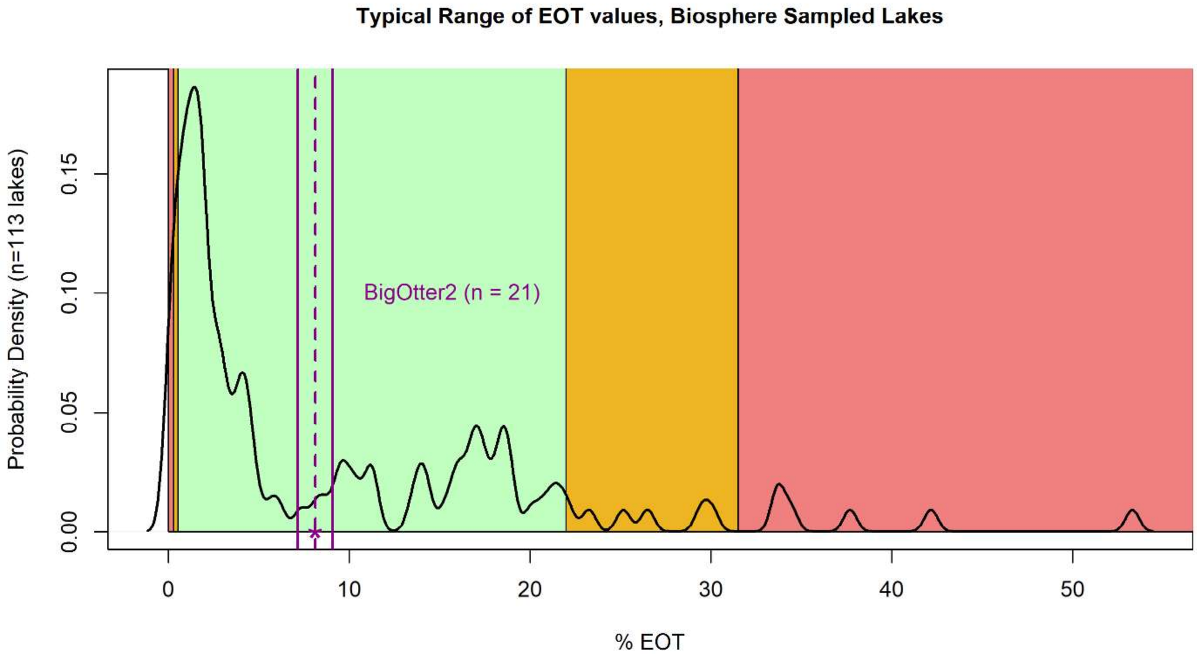

Figure 17. Otter Lake (BOTTER02) average %EOT (dashed purple line) and standard deviation (solid purple line) sampled from 3 lake segments over 7 years (n = 21) fall within the “typical” category (green area) on the typical %EOT range plot (based on 113 sampled lakes). This indicates that the Otter Lake benthic community at site BOTTER02 is typical of what would be expected for a lake in this region.

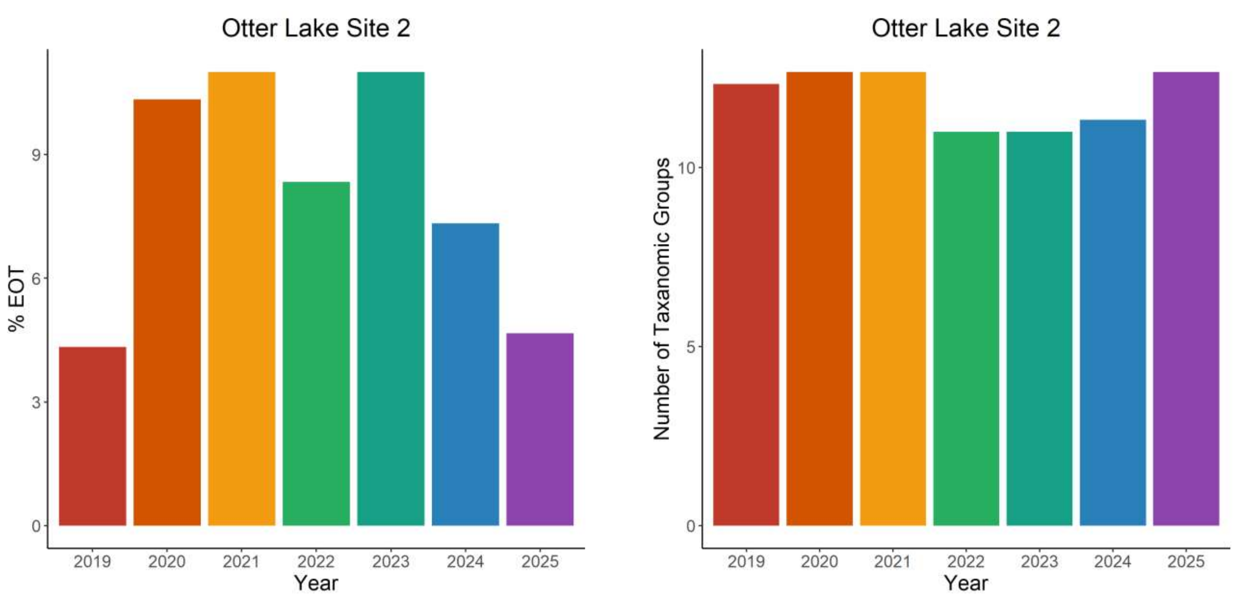

Figure 18. %EOT and the number of taxonomic groups in Otter Lake Site 2 from 2019 to 2025.

Recommendations
With lakes in the region facing many threats (e.g., climate change, biodiversity loss, development, pollution), benthic communities act as a barometer of ecological change and impacts. Continuing to monitor the benthic community in Otter Lake will allow OLRA to track trends over time and observe any notable shifts (statistically significant changes) that would be cause for further investigation and potentially require remedial actions.

2.2.4 Little Otter Lake Results

One site (three lake segments) was sampled on Little Otter Lake from 2019-2025 (LOTTER01, Figure 19). Raw data is available upon request, please contact Katrina Krievins at kkrievins@generationseffect.com.

As shown in Figure 20, the %EOT for Little Otter Lake falls within the normal range of what would be expected for a lake in the region.

Figure 19. Benthic sampling location on Little Otter Lake.

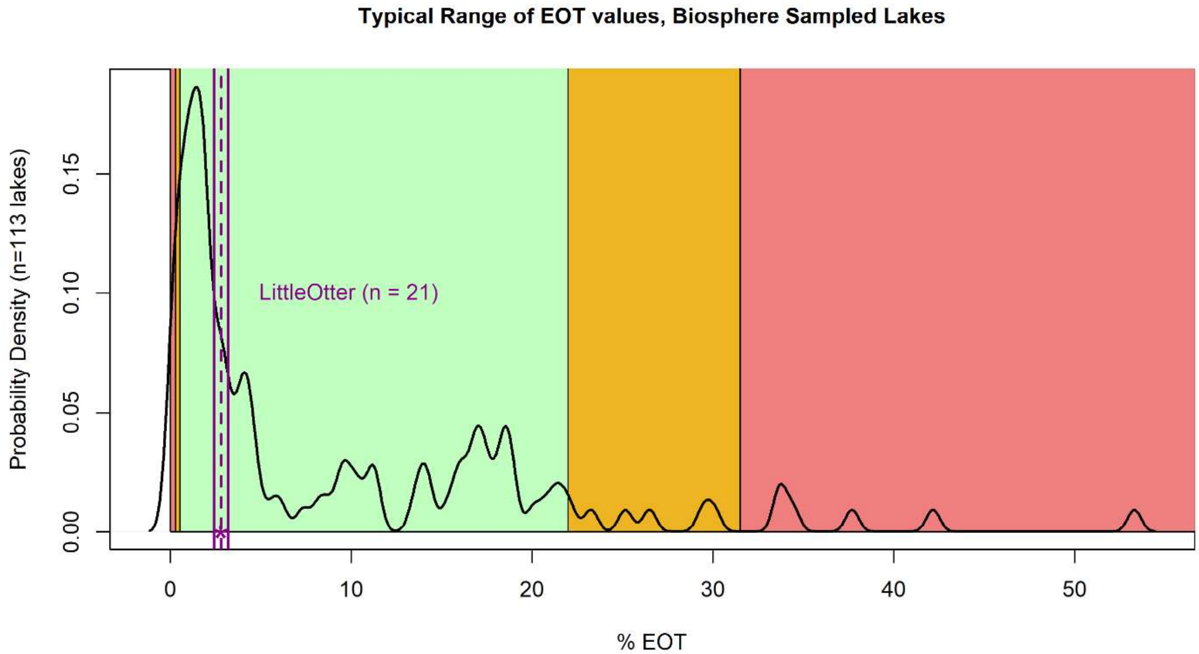

Figure 20. Little Otter Lake average %EOT (dashed purple line) and standard deviation (solid purple line) sampled from 3 lake segments over 7 years (n = 21) fall within the "typical" category (green area) on the typical %EOT range plot (based on 113 sampled lakes). This indicates that the Little Otter Lake benthic community is typical of what would be expected for a lake in this region.

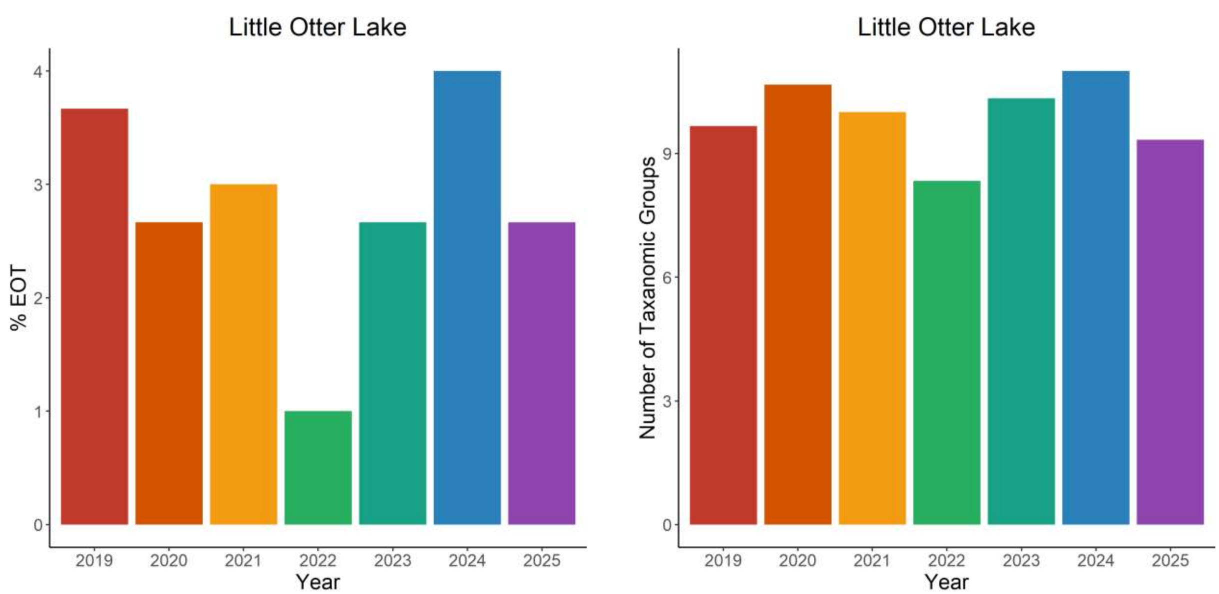

Figure 21. %EOT and the number of taxonomic groups in Little Otter Lake from 2019 to 2025.

Recommendations
With lakes in the region facing many threats (e.g., climate change, biodiversity loss, development, pollution), benthic communities act as a barometer of ecological change and impacts. Continuing to monitor the benthic community in Little Otter Lake will allow OLRA to track trends over time and observe any notable shifts (statistically significant changes) that would be cause for further investigation and potentially require remedial actions.

2.2.5 Summary of Results
The benthic communities of Otter Lake (both impacted and minimally impacted sites) and Little Otter Lake are considered typical of what would be expected for lakes in this region. Both Otter Lake sites had a higher average %EOT than the Little Otter Lake site.

These benthic communities should continue to be monitored into the future to note any changes over time that may prompt further investigation.

2.3 Clark Study of Water Quality on Otter Lake
An embayment water quality monitoring report was prepared in 2017 by Bev Clark, an environmental consultant. The report details the results of monitoring conducted during the open water season in 2017, as well as available historical data collected by the MECP. The conclusions and recommendations from the report are provided in full below (complete report available here).

The following conclusions can be drawn from the water quality results derived from this project:

- Conductivity surveys indicate that water throughout Otter Lake has similar watershed origins. The water in Little Otter Lake is slightly different and this may reflect differences in watershed or inflow characteristics.
- Phosphorus concentrations indicate that Otter and Little Otter Lakes are dilute, oligotrophic lakes with excellent water quality and no apparent trends since low-level testing began in 2002. Testing in Little Otter Lake is sparse.
- Phosphorus concentrations in the enclosed embayments that were studied in 2017 are similar in range to those measured over time in the main body of the lake by the Lake Partner Program.
- Bay#2 had elevated P concentrations compared to the other sample sites and higher concentrations approaching 20 µg/L in the late summer which are likely due to internal P loads that are introduced through anoxia in the bottom few

meters of water. These conditions are likely natural and related to basin morphometry and watershed characteristics.

- Phosphorus measurements show some variation through time and from location to location but with no trends. There are trends in the long-term, Lake Partner Program water clarity results but the reasons for this are unclear.

2.3.1 Recommendations

1. Best management practices should be encouraged to minimize the movement of anthropogenic phosphorus into Otter Lake.
2. Volunteers should continue to collect phosphorus and water clarity data at the main basin locations on Otter and Little Otter Lakes. Volunteer dedication is required to collect all samples.
3. If algal blooms occur there should be photographs and water samples taken at the time to assess the extent and species responsible for the bloom.
4. It is not absolutely necessary to establish additional Lake Partner Program sample locations in the enclosed bays because the LPP does not accommodate 1 m off bottom samples.
5. Further test sites could be established if there is evidence of increased development or if typical blue green algal blooms develop in any of the enclosed bays. Water quality measurements do not indicate that this is likely.
6. It would be of some use to conduct annual fall surveys of the enclosed bays to observe temperature oxygen profiles and collect 1 m off bottom samples. This could be accomplished through the Georgian Bay Biosphere enhanced sampling program.

2.4 Lake Water Testing for Contaminants

In 2025, OLRA volunteers submitted lake water samples from four sites to Near North Laboratories Inc. for contaminants testing. One sample of raw lake water was taken from the boat launch on Little Otter Lake as a control. The other three samples came from filtered tap water from volunteer Otter Lake properties across the lake. All samples were tested for 50 different contaminants.

According to the Near North Laboratories Analysis Interpretation Guide, the results showed only a few areas of concern. A summary of results is provided by OLRA and included below (view detailed results here).

Alkalinity and pH are low. For Alkalinity, less than 30 mg/L as $CaCO_3$ will corrode plumbing and may cause Iron to dissolve. For pH below 6.5 there is also the potential for corrosion of pipes.

Chloride is low in the filtered water samples. Ideal levels are between 5–20 mg/L.

The main concern detected by this study was **bacterial contamination** in two of the three filtered drinking water locations.

Treated drinking water should have zero coliforms and E. coli to be safe. Two of the three treated drinking water test sites were deemed to need increased filtration and/or sterilization to reduce their bacterial counts to zero.

Since all three filtered water test sites were using a combination of filters followed by a UV light for bacterial sterilization, it is clear that such a system is not infallible. Bacteria can slip through filters and when they do, the UV light has to reach them all to have safe, potable water.

Particles that slip through clogged filters can provide a shield for bacteria from the UV light. Also, if the sheath of the UV light becomes dirty or the light's life expires, not all bacteria will be UV irradiated which can lead to illness.

In summary, for the 50 parameters tested, the water samples showed no concerning results aside from bacteria which is treatable with a well-maintained drinking water filtration system.

OLRA recommends that property owners regularly test their filtered water for bacteria through the North Bay Parry Sound District Health Unit's free Private Drinking Water Testing program.

2.5 Microplastics Sampling

Microplastics sampling conducted by an OLRA volunteer is scheduled to take place in fall 2025 with results expected in early 2026.

3. Fish Communities

The Ministry of Natural Resources (MNR) is responsible for gathering data on fish communities in inland lakes. Not all lakes are sampled on a regular basis, nor is the same data collected from every lake. Fish community information presented here represents the most current information publicly available from the MNR for Otter Lake and Little Otter Lake.

Consumption advisories or restrictions on fish are commonplace across jurisdictions in North America. Fish are exposed to, and absorb, contaminants in the water in a variety of ways (e.g., consuming contaminated food, absorption from the water as it passes over their gills). Contaminants found in fish can come from local sources, as well as sources from thousands of kilometers away (e.g., airborne contaminants that end up in the water via rain or snowfall). Examples of contaminants that are known to be transported long distances include mercury, polychlorinated biphenyls (PCBs), and toxaphene.

Based on species, size, and location, certain fish are more or less suitable to eat than others. Smaller fish tend to be less contaminated than larger fish of the same species. In the Great Lakes, leaner fish (e.g., bass, pike, walleye, perch, panfish) tend to have much lower contaminants than fatty species like trout and salmon. In inland lakes, top-predatory fish such as pike and walleye generally have greater contaminants than panfish or whitefish.

Advisories provide consumption advice for the general population and sensitive populations. The sensitive population includes women of child-bearing age (women who intend to become pregnant or are pregnant) and children younger than 15 years of age. These groups are considered sensitive because pregnant women and nursing mothers can affect the health of their baby through a diet elevated in contaminants, and young children are affected by contaminants at lower levels than the general population.

3.1 Otter Lake

Table 4 provides a high-level overview of the fish communities in Otter Lake and their management.

Table 4. Summary of fish communities and their management in Otter Lake (see link)

Major fish species	Lake trout, northern pike, smallmouth bass (introduced; status uncertain), largemouth bass, black crappie (introduced 1999)
Other fish species	Cisco, rainbow smelt (introduced), pumpkinseed, brown bullhead, yellow perch, rock bass, white sucker
Lake trout management	Designated; natural reproduction. Season open from third Saturday in May to September 30, no lake trout between 40-55 cm may be kept
Current stocking	None
Historic stocking	Walleye (1939), smallmouth bass (1941-1950), lake trout (1956-1998), rainbow trout (1989-2001)
Contaminants (species tested)	Lake trout (2013)

3.2.1 Broad-scale Monitoring (2023)

In 2023, Otter Lake was surveyed by the MNR as part of a multi-lakes science exercise to evaluate the relationship between catch of fish in a net and the actual density of fish in the lake. Fish populations were surveyed using trapnets and large mesh nets. A total of 1,035 fish were captured in trapnets, of which 679 were tagged and 131 were recaptured. Large mesh nets captured 11 different species as summarized in Table 5.

Table 5. Fish captured in large mesh gill nets in Otter Lake in 2023

Species	Total catch %	Maximum length (cm)	Minimum length (cm)	Average length (cm)
Smallmouth bass	53	51.5	13.8	33.5
Rock bass	10	23.9	10.5	15.6
Northern pike	10	99.7	46.2	71.4
Cisco	8	31.3	17.6	23.4
Largemouth bass	4	46.7	14.2	27.4
Yellow perch	4	19.1	15.0	16.5
Pumpkinseed	4	21.4	10.3	15.9
White sucker	3	60.3	24.8	46.6
Lake trout	3	79.2	50.3	64.8
Black crappie	<1	20.9	11.6	16.9
Brown bullhead	<1	31.2	22.1	26.7

3.2.2 Population Survey (2013)

A Summer Profundal Index Netting (SPIN) survey was conducted in 2013. SPIN is an adaptable methodology that can be used to assess both small bodied and large bodied lake trout populations in a wide range of lake sizes (Sandstrom & Nester, 2009). A total of 29 net sets were completed over three days of netting (Figure 22).

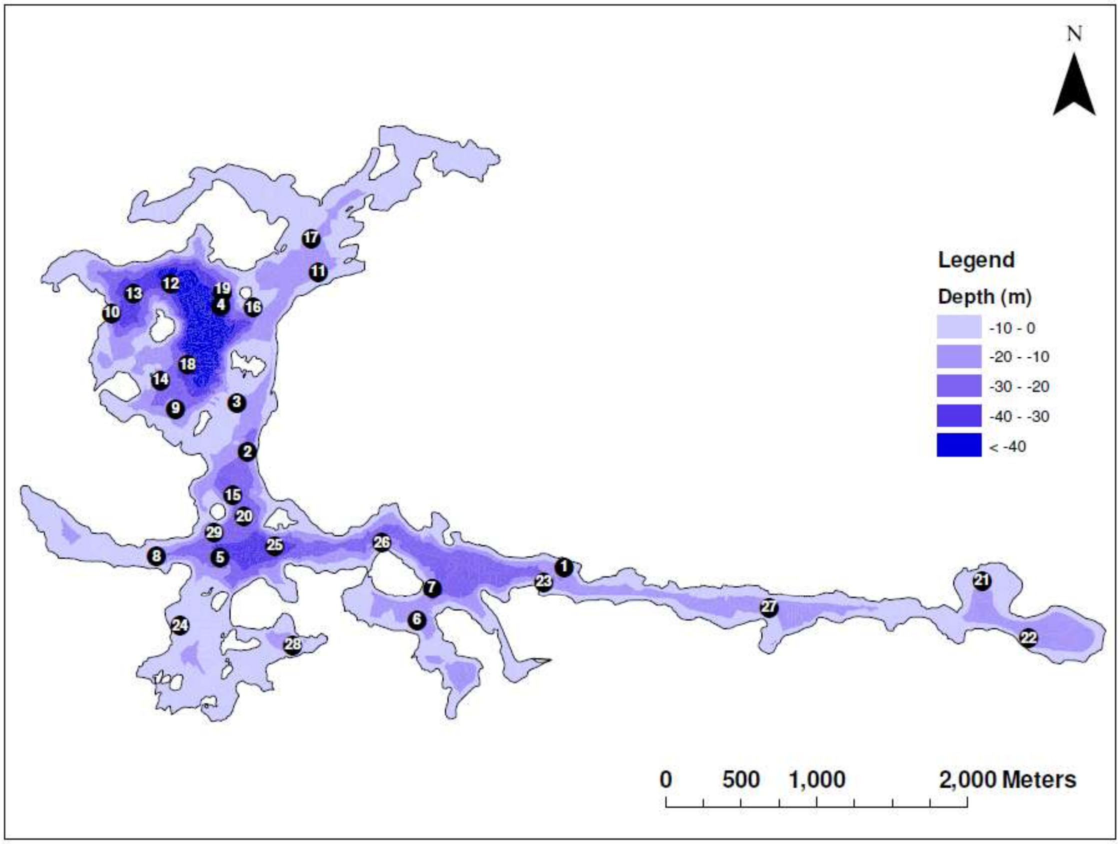

Figure 22. Map of Otter Lake showing bathymetry and net set locations (Scholten, 2014).

During the 2013 survey, nine lake trout, five cisco, two white sucker, and seven smallmouth bass were caught (Table 6). Four of the nine lake trout were large, old (16-20 years) stocked fish. Five were younger (6-9 years) naturally reproduced fish. Based on the survey, the population of catchable (>300 mm) fish is estimated to be in the range of several hundred; a moderately low density.

The proportion of naturally reproduced fish in the population has increased from a small proportion to about half, since supplemental stocking was discontinued after 1998. The observation that most natural lake trout were produced after stocking ceased is an encouraging sign of increased reproduction.

Table 6. 2013 Otter Lake SPIN catch summary (Scholten, 2014)

Effort	Depth Stratum	Lake Trout	Cisco	White Sucker	Smallmouth Bass
1	10	1			1
2	20	1			
3	3				1
5	20	1	3		
6	10	1			
7	20		1		
9	10				1
11	10	1			
13	30	1			
14	20	1			
15	20		1		
16	10	1			
20	20	1			
22	10				1
24	3			2	3

Lake Trout Habitat

Spawning habitat enhancement was completed on Otter Lake in 2005. Many of the lake trout lakes in the same part of the district have very small areas of good spawning habitat. However, as stated in the 2014 MNR report, the amount of spawning habitat is probably not the factor that limits population size in Otter Lake (the amount of deep water juvenile habitat is probably more limiting, for instance). Nevertheless, spawning habitat is the one aspect of habitat that can be enhanced, and on lakes like Otter Lake where this habitat type is not obviously abundant, shoal enhancement may be a worthwhile endeavour. At a minimum, it could add resilience to this component of the habitat. Monitoring of shoal use is a relatively low cost, low skill activity that is well suited to volunteers and could be conducted if there is interest from local residents.

Lake Trout Management Recommendations

Otter Lake is currently classified for management of a natural lake trout population. Based on the 2013 assessment, the MNR believes that this designation should remain. Natural reproduction is occurring and there is some indication that the population is growing as stocked fish decline in abundance. The current management approach should be continued until stocked fish are essentially gone from the population and the natural population has reached its full potential.

The standard regulation for a lake greater than 100 ha with a large bodied population is the 40-55 cm protected slot size (OMNR, 1995). Otter Lake has this protected slot size but also is closed to lake trout fishing in the winter, a regulation normally applied only to lakes less than ~100 ha. Most of the lake trout caught in the 2013 survey were larger than the protected slot size and would have been legal to harvest, suggesting the slot size is not effective at limiting harvest in this population, especially considering that the population abundance is already low. It is recommended that the winter closure be retained in addition to the slot size limit.

In summary, the lake trout population in Otter Lake is currently at a moderately low density. The proportion of naturally reproduced fish in the population has increased from a small proportion to about half, since supplemental stocking was discontinued. The observation that most natural lake trout were produced after stocking ceased is an encouraging sign of increased reproduction. The lake appears to have a natural tendency for relatively low abundance but a large average size, regardless of whether stocking is occurring, due to the natural characteristics of the lake basin and the composition of the fish community. It is recommended that the lake continue to be managed for a natural population with no supplemental stocking and with the current angling regulations (Scholten, 2014).

3.3.3 Consumption Advisories

In terms of advisories for eating fish from Otter Lake, mercury, polychlorinated biphenyls (PCBs), and PolyFluoroAlkyl substances (PFAS) are the contaminants of concern (Table 7). To learn more about fish consumption advisories and how to reduce the risk from contaminants in fish, please visit the MECP website on eating Ontario fish.

Table 7. Fish consumption advisories for Otter Lake (see link)

Species	General Population	Sensitive Population*
Black crappie[1,6]	• max 16 meals/month of fish 25-30cm	• max 8 meals/month of fish 25-30cm
Lake trout[1,6]	• max 4 meals/month of fish 50-55cm, 55-60cm, 60-65cm, and 65-70cm	• no meals of fish 50cm or greater
Largemouth bass[1]	• max 8 meals/month of fish 30-35cm and 35-40cm • max 4 meals/month of fish 40-45cm and 45-50cm	• max 4 meals/month of fish 30-35cm • no meals of fish >35cm

Species	General Population	Sensitive Population*
Northern pike[1]	• max 12 meals/month of fish 45-50cm, 50-55cm, and 55-60cm • max 8 meals/month of fish 60-65cm and 65-70cm • max 4 meals/month of fish 70-75cm • no meals of fish >75cm	• max 8 meals/month of fish 45-50cm and 50-55cm • max 4 meals/month of fish 55-60cm and 60-65cm • no meals of fish >65cm
Pumpkin-seed[1,6]	• max 16 meals/month of fish 15-20cm	• max 12 meals/month of fish 15-20cm
Smallmouth bass[1]	• max 16 meals/month of fish 25-30cm • max 12 meals/month of fish 30-35cm • max 8 meals/month of fish 35-40cm • max 4 meals/month of fish 40-45cm and 45-50cm • max 2 meals/month of fish 50-55cm	• max 8 meals/month of fish 25-30cm • max 4 meals/month of fish 30-35cm • no meals of fish >35cm

*Women of child-bearing age and children under 15; [1] Mercury; [2] Polychlorinated biphenyls (PCBs); [6]PerFluoroAlkyl and PolyFluoroAlkyl Substances (PFAS)

3.2 Little Otter Lake

Table 8 provides a high-level overview of the fish communities in Little Otter Lake. Compared to Otter Lake, Little Otter Lake has received very little fisheries management attention. The fishery is dominated by self-sustaining populations of bass and northern pike.

Table 8. Summary of fish communities and their management in Litter Otter Lake (see link)

Major fish species	Northern pike, largemouth bass, smallmouth bass
Other fish species	Rock bass, pumpkinseed, longear sunfish (status uncertain), cisco, yellow perch, white sucker, rainbow smelt (introduced)
Lake trout management	Not designated
Current stocking	None
Historic stocking	None

Contaminants (species tested)	No testing done

3.2.1 Consumption Advisories

No fish from Little Otter Lake have been tested for contaminants. Accordingly, there are no consumption advisories specific to Little Otter Lake. Readers are advised to consult advisories for Otter Lake.

4. eDNA Project

As organisms (e.g., fish, reptiles, invertebrates) move through their environment, they leave behind genetic material such as skin, scales, fur, and feces. Environmental DNA, or eDNA, refers to genetic material collected from an environmental sample (e.g., water, soil, snow, air) rather than directly from an individual organism. eDNA can be used to understand what organisms were recently in an area without actually having to see or capture those organisms. The use of eDNA has been growing in popularity in recent years, particularly for detecting rare or hard to find species, as well as invasive species. In some cases, eDNA has the potential to replace more traditional means of sampling (learn more here).

The OLRA board was approached with a proposal to collect and analyse water samples from Otter Lake. In 2022, OLRA membership supported initiating a small eDNA project to measure and monitor the biodiversity of aquatic and terrestrial organisms that reside in and around Otter Lake. Of particular interest was the potential detection of species at risk and early detection of invasive species. This information can be used to better target future stewardship efforts and complements existing water testing and benthic monitoring supported by OLRA.

Since 2022, a total of 17 eDNA samples have been collected. Most recently, samples were collected in July 2024:

- one in Little Otter Lake;
- two in a sheltered embayment around the main basin of Otter Lake;
- one in the short arm of Otter Lake; and
- two in the long arm of Otter Lake.

The results show a diversity of invertebrates, fish, and amphibians, as well as several mammal species. Examples of species and families detected are found in Table 9.

At this time, no further eDNA sampling is scheduled.

Table 9. Examples of species and families detected in 2024 eDNA samples

Fish Species	Amphibians	Mammals	Invertebrates
• Bluntnose minnow • Brown bullhead • Central mudminnow • Common shiner • Iowa darter • Largemouth bass • Logperch • Northern pike • Pumpkinseed • Rainbow smelt • Rock bass • Smallmouth bass • White sucker • Yellow perch	• Northern leopard frog • Mudpuppy	• Beaver • Muskrat	• Midges • Beetles • Mosquitoes • Mayflies • Crayfish • Water fleas • Cyclopods • Copepods

5. Summary of Recommendations

5.1 Water Quality

Continue annual LPP sampling on Otter Lake (Station 4193, Site ID 3) and Little Otter Lake (Station 4196, Site ID 1). Spring TP sampling is sufficient for most lakes in the region, unless a lake has experienced regular fall algal blooms.

Continue to conduct benthic monitoring annually to track changes over time. While all three sites sampled are currently considered to have 'typical' benthic communities, lakes in the region are experiencing increasing pressures, such as climate change, development, and invasive species. It is important to continue monitoring water quality even in lakes considered to be healthy so that if/when changes start to occur, those changes are noted and appropriate actions can be taken swiftly (e.g., stewardship actions, enhances monitoring or studies). Without long-term, continuous monitoring, changes in the benthic community and water quality more broadly may go unnoticed until there is a significant problem.

5.2 Fish Communities

Maintain current angling regulations for lake trout (40-55 cm protected slot size, winter closure). If there is interest, volunteers could monitor the enhanced spawning habitat to determine whether it is being used.

The province of Ontario released new regulations for the sale and possession of live bait in July 2020, anglers should familiarize themselves with these changes to remain in compliance with the new regulations at all times. Highlights include:

- A valid fishing license is required to catch your own live baitfish, leeches, crayfish, and northern leopard frogs.
- There are specific fish species that can and cannot be used as bait in Ontario (see permitted list of baitfish here).
- Bait can only be caught in your home Bait Management Zone (BMZ) and cannot leave your BMZ.
- Baitfish and leeches you catch cannot be sold unless you are a licensed dealer.
- If you fish outside your home BMZ, you must buy your baitfish and leeches locally, keep a receipt, and use or dispose of your bait within two weeks of the purchase date.

The app MyCatch by Angler's Atlas can be used by people fishing on the lake to log fishing trips and share fishing data confidentially with biologists. Use of the app can help supplement fisheries data between MNR population surveys.

5.3 Stewardship Activities

OLRA should encourage Otter Lake and Little Otter Lake property owners to maintain and/or restore natural shorelines. A naturally vegetated shoreline supports a wide variety of plants and animal life. Ninety percent of all aquatic life depends on the area where land and water meet for at least part of their lives. In addition, natural shoreline buffers have robust underground root networks that protect both the stability of the shoreline and water quality by filtering and purifying water before it enters a watercourse.

GBB's Planting for Pollinators guide offers property owners assistance in choosing plants for their property that are native to eastern Georgian Bay and that help to enhance the property and conserve important natural habitats.

Property owners interested in decreasing their ecological footprint can also utilize GBB's Life on the Bay stewardship guide (designed to be used by waterfront property owners on inland lakes as well as Georgian Bay). The guide covers a range of topics including how to live with wildlife, how to use landscaping to improve water quality, best practices during construction, how to store chemicals and garbage, and more.

There are many citizen science programs for interested cottagers and residents to get involved in. Examples include invasive species reporting, IceWatch, FrogWatch, Canadian Lakes Loon Survey, and many others. GBB also has a Bioblitz guide available for download to help community groups plan and host their own Bioblitz. This would be a great opportunity to engage and educate the OLRA community.

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