



State of the Lake Report 2020

INTRODUCTION

For the seventh consecutive year, the Otty Lake Association is pleased to release this State of the Lake Report.

As it has since its inception, the report summarizes the condition of our lake and the environmental activities that have been completed on Otty Lake this summer. The 2020 State of the Lake report includes sections on physical and chemical monitoring, as well as shoreline planting and loon sightings. COVID-19, and measures to fight its spread, have significantly reduced the partner programs for water testing available on Otty Lake this year. But, with the help of volunteers from around the lake, we have been able to maintain continuity of key data that will continue to provide important information about the state of Otty Lake for residents.

WATER QUALITY MONITORING

Otty Lake's water testing through the Lake Partner Program of the Ministry of the Environment, Conservation and Parks was cancelled this year due to COVID-19. However, Otty Lake's lake steward led the following testing throughout the summer:

- Weekly measurements of the flow out of Jebbs Creek, Otty Lake surface water levels, surface water temperatures and related meteorological conditions.
- Monthly bacteria sampling, with a focus on locations where people swim as well as locations where bacterial contamination was identified during previous sampling years. Due to the coronavirus problem, the May sampling was cancelled. However, monthly sampling resumed from June to late September.

- Monthly chemical samples and Secchi disk measurements at the deep point (half way between Baxter Bay and Camp Shomria) for nutrient analysis.
- On-going observations of the aquatic vegetation and algal growth

Physical Limnology

Ice timing and water levels

Otty was ice free on April 6 this year. The water elevation was 131.97 metres above sea level at that time. This level was 26 centimeters below the 2019 maximum elevation, indicating relatively low water levels this year. The water level decreased by a further 31 centimeters by the middle of August and has fluctuated by several centimeters since that time, depending on rainfall events.

Flow at Jebbs Creek

Otty Lake drains through Jebbs Creek. Discharge volumes are measured weekly at the Rideau Ferry Road bridge, where a staff gauge is located. Flow volumes are calculated by measuring flow velocities and water depths under the bridge and using a formula developed by Murray Hunt.

The discharge in early April reached 1.8 m³/s (cubic metres per second). By the end of June there was no measurable flow in the creek. This was due to low water levels and heavy vegetation growth in the channel. There has also been a buildup of sticks under the bridge, perhaps indicating beaver activity. It may be necessary to physically clean the debris out before meaningful measurements can be made again.

By comparison, the flow out of Jebbs Creek reached a peak of 2.57 m³/s on April 21, 2019, significantly larger than 2020.

Water temperature

The surface water temperature at a 1 metre depth (measured at the lake's deep point (which is approximately 300 metres south of Code Island) was 7 degrees C on April 6th. It warmed to 28 C on July 12th and was 16 C in mid- October. By comparison the highest water temperature measured during the summer of 2019 was 27.5 C on July 21. The lake temperature was 13 C on October 28, 2019.

Water Testing

Bacteria Sampling - E.Coli

The presence of Escherichia coliform (E.Coli) bacteria indicates contamination from fecal material produced by warm blooded animals such as humans, beaver and geese. E.Coli bacteria concentrations are measured in cfu/100 mL, (where cfu means the number of "colony forming units" that can be incubated in a laboratory in a petri dish).

A total of 41 E.Coli samples were taken this summer. E.coli bacteria were not present in 22 of the samples and 39 samples had less than 10 cfu/100mL. The standard for safe

swimming in Ontario is 200cfu/100mL. Otty Lake is safe for swimming at all locations. The highest reading obtained was 25 cfu/100mL in Carson's Bay in September, a location which has a history of low level E.Coli contamination.

Nutrient sampling

Total Kjeldahl Nitrogen (TKN) and Total Phosphorous (TP) samples were taken at the lake deep point on a monthly basis. TKN is the total concentration of organic nitrogen and ammonia in a filtered sample. All samples each month met the Provincial Water Quality Objectives of T.P 0.02 milligrams per litre (mg/L) and TKN 0.5 mg/L.

Algal Blooms

Green Algae

During past summers Otty Lake has been plagued by mats of floating algae. A short-lived growth of algae occurred this year between June 16 and 28th. The algal species was identified as "Mougeotia spp.", a filamentous green algae which cleverly rotates its chloroplasts throughout the day to act as solar panels. By July 5 there was a very significant decrease in algal concentrations and by mid-July this algal species had essentially disappeared. Mougeotia spp. is not dangerous to humans or animals.

Water clarity measurements

Secchi disks are physical disks that are lowered into the water to determine the depth at which they can still be seen. Readings are an indicator of lake water clarity. Readings varied from a 5.0 metre depth in June to 4.2 m depth in August and a 6.0 m reading in September. The variation is an indicator of the cycle of phytoplankton growth during the warm summer months. These results are almost identical to the 2019 results.

Invasive species

Otty Lake's lake steward made the following informal and unquantified observations regarding a number of invasive species this summer:

- The shallow bays around the lake produced dense growths of Eurasian water milfoil. However, aquatic green algal blooms were largely absent this summer, a very positive indicator of low nutrient levels and good water quality.
- The zebra mussel population is cyclical, with this summer showing large mussel concentrations on submerged rocks, boats and docks.
- The forests in the Otty lake watershed had a heavy infestation of gypsy moth caterpillars. The presence of abundant egg masses this fall suggests that deforestation of hardwood species (oak, maple, birch etc.) will be a problem again next summer. Information on how to eliminate egg masses has been circulated to lake residents and is available on the [OLA website](#).
- Wetland environments around the lake produced less purple loosestrife and phragmites than during 2019.

OTTY LAKE FISHERY

In May and June, Rideau Valley Conservation Authority (RVCA) staff and OLA volunteers would typically monitor the various bass habitat areas on Otty Lake. From the fall of 2014 to 2017, our volunteers installed 253 smallmouth and largemouth bass nests in Otty Lake.

A key part of the management of the Otty Lake bass fishery is monitoring the annual spawn. Due to the COVID pandemic, this work was not able to be done in 2020. As a result, no data or observations are available on either the success of this year's spawn or the condition of the more than 200 smallmouth bass nesting sites constructed during the Smallmouth Bass Spawning Habitat Enhancement Project. It is hoped that monitoring will occur in 2021.

It appears that Otty Lake's smallmouth population remains in reasonably good health. There is no question that the aforementioned habitat enhancement work has had some positive results. There is a solid population of 12-14 inch fish, many of which were undoubtedly bred on nesting sites constructed during the joint RVCA – OLA. Given the estimated growth rate of smallmouth bass in Eastern Ontario, these fish would be products of the 2014 and 2015 spawns.

Although no formal study has been conducted on largemouth bass in Otty Lake, anecdotally, this population does not appear to be as abundant as the smallmouth counterpart.

LOON SURVEY

The regular loon survey was cancelled by Bird Studies Canada at the start of the season due to COVID, however there were still plenty of avid loon observers who chose to communicate information about pairs as they arrived and began to nest. With an estimated five pairs of loons on Otty this summer, three pairs were known to have nested. Of the three nesting pairs, two pairs successfully hatched chicks; one pair hatched two chicks toward the northern end of the lake on June 25th, and another pair also hatched two chicks, near the islands off the shore near Colin Farmer Road, on July 3rd. All four chicks survived the season.

In June, Bird Studies Canada announced that the Loon Survey for 2020 was back on, and so our happy results will be sent in as usual.

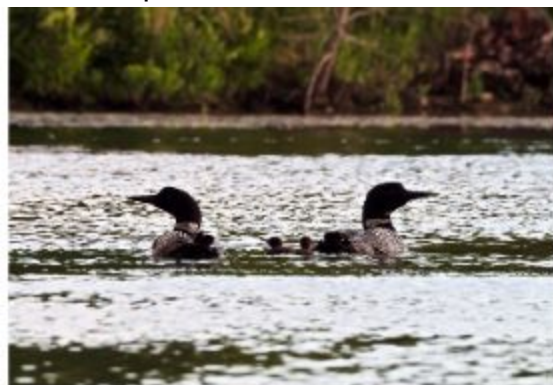


Photo: Gail Read

Four surviving loons chicks is the best outcome we've seen on Otty in the last several years. Watching these babies grow (from afar!) brought pleasure to so many around the lake this summer.

SHORELINE PLANTING PROJECT

On June 13th, 2020 the Rideau Valley Conservation Authority and the OLA came together once again to offer OLA members the Shoreline Plant Sale. This year was a bit different than in years past, due to the necessary COVID-19 safety protocols, but sold out as it does most years. The following 155 plants are now spread out across 23 shorelines on Otty Lake.

	Species	Size	Number
Shrubs	Nannyberry	1-gallon pot	25
	Elderberry	5" fibre pot	30
	Highbush Cranberry	1-gallon pot	30
Trees	Sugar Maple	1-gallon pot	30
	Tamarack	Bareroot tree potted into a 1-gallon pot by RVCA	20
	White Birch	Bareroot tree potted into a 1-gallon pot by RVCA	20
TOTAL			155

This Shoreline Planting Project promotes community involvement in increasing the ribbon of life along Otty Lake’s shoreline. Rideau Valley Conservation Authority’s website provides additional information on the [benefits of naturalizing a shoreline](#), including:

- Reduces water run-off that causes algal blooms and excessive weed growth;
- Significantly reduces shoreline erosion and makes your shoreline more resilient;
- Much cheaper and more eco-friendly than rock-based “rip rap” shorelines;
- Discourages geese;
- Invites more wildlife to your backyard paradise;
- Leaves less lawn to mow and more time to relax and enjoy the view.



Photo: Kit Muma

OTTY LAKE iNATURALIST PROJECT

iNaturalist is a citizen science project and online social network of naturalists, citizen scientists, and biologists built on the concept of mapping and sharing observations of biodiversity across the globe. iNaturalist may be accessed via its website <https://www.inaturalist.org> or from its mobile applications and participants can post their

observations (photos) of plants, animals, insects, fish, etc. as members of a particular “Community”. The members of the Community can help identify or discuss each other’s observations.

We have set up an iNaturalist Project to let the Otty Lake community pool our observations with other people on iNaturalist and, in that way, track the wildlife in and around Otty Lake. Please join us in this fun and informative project. Once you have signed up for a free iNaturalist.ca account, you can start adding observations to our Otty Lake project. Start here: <https://inaturalist.ca/signup> to sign up.

CONCLUSION

Overall, our monitoring programs indicate that Otty Lake is quite healthy. We hope this is in part due to our combined efforts to protect and enhance the lake environment. With the help of dedicated volunteers, we will continue these programs next summer.

The OLA Board is actively searching for, and reviewing, new initiatives that can be added to our environmental program. We invite your ideas and participation. Lake monitoring activities will re-commence in March of 2021.

Join us! If you’re interested in volunteering for any of the OLA programs outlined in this report, please write to ola@ottylakeassociation.ca.

Thanks to the following volunteers who contributed sections to this document:

Physical and chemical limnology, invasive species: Derek Smith

Loons: Kyla Haley

Shoreline Planting: Rachel Roth

iNaturalist: Jenepher Lennox-Terrion

Otty Lake Fishery: Wally Robins

Editors: Reid Kilburn, Kirsten Brouse, Murray Hunt