

State of the Lake Report

2024

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Introduction

The Otty Lake Association (OLA) is pleased to release the 2024 State of the Lake Report.

The report summarizes the condition of Otty Lake and the environmental activities that have been completed on the lake this year. The report includes sections on physical and chemical monitoring, invasive species, the fishery, loons, shoreline planting and iNaturalist.

The report is made possible by the many volunteers who contribute their valuable time, expertise and passion for lake preservation.

Water Quality

Contributed by Kevin Terrion

Water Quality Monitoring

The first program we participate in is the **Lake Partner Program** with the **Ministry of the Environment's Dorset Science Center**. Sampling was conducted monthly from May to October. The program analyzes nutrients and calcium concentrations. Results for this past summer will be available in early 2025.

The second is the **RVCA sampling and profiling program**. This program includes monthly nutrient sampling of temperature/dissolved oxygen vertical profiles and Secchi disk measurements (to assess water clarity) at the deepest point in the lake (halfway between Baxter Bay and Camp Shomria, approximately 300 metres south of Code Island). This work also began in May 2024.

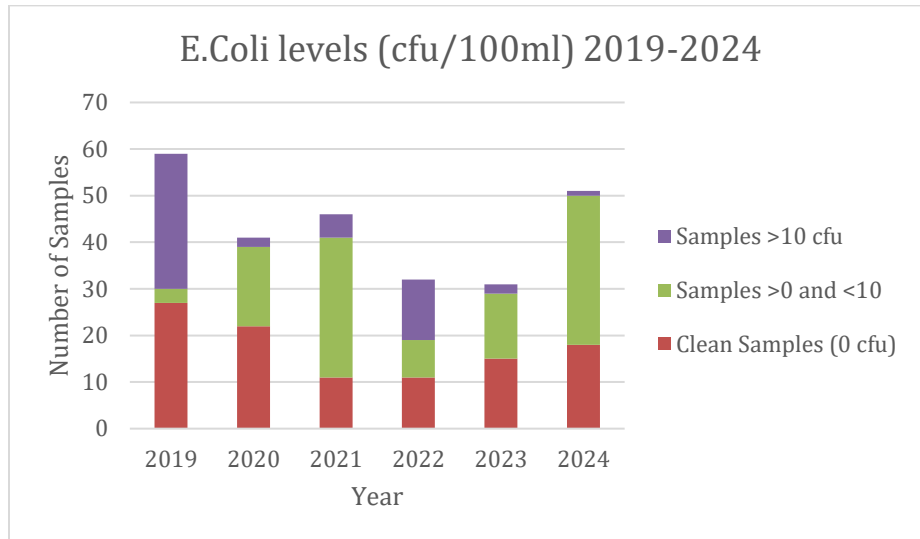
The third program is an OLA funded bacteria/nutrient sampling program. Bacteria samples are taken during the summer months and the sampling is focused on places where people swim.

Results of Water Quality Monitoring

The presence of Escherichia coliform (*E.coli*) bacteria indicates contamination from fecal material produced by warm blooded animals such as humans, beavers 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 33 *E.Coli* samples were taken on the lake in the summer of 2024. 18 of the samples came back from the lab as clean or 0 cfu/100 ml. Fourteen samples produced less than 10 cfu/100 ml. The sample taken on the lake with the highest reading was 25cfu/100m. In general, the bays typically have higher readings of *E.coli* while most of the clean samples are measured in the main basin or open part of the lake. The standard for safe swimming in Ontario is 200 cfus. (Measured as the geometric mean of 5 sample concentrations). The lake water at Camp Shomria (mid-point of the lake close to Codes island) was tested twice this summer in July and measured 0 cfu/100ml both times.

Overall, these *E.coli* values for 2024 were good. Although we are unable to sample the entire lake for *E.coli* at the frequency of a monitored public swimming beach, these recorded values of *E.coli* would indicate that Otty can be generally regarded as a safe lake for swimming. It is noteworthy that warm water temperature and low flow conditions are more favourable for bacterial growth, along with an excess of fecal matter. In any case, drinking untreated lake water is not advised.



Total Kjeldahl Nitrogen (TKN) and Total Phosphorous (TP) samples were taken at the deep point in July and August. TKN is the total concentration of organic nitrogen and ammonia in a filtered sample. Increases in phosphorus will decrease water clarity by stimulating algal growth. In extreme cases, algal blooms will affect the aesthetics of the lake and/or cause taste and odour problems in the water.

Both samples met the Provincial Water Quality Objectives of T.P 0.02 milligrams per liter (mg/l) and TKN 0.5 mg/l for a mesotrophic lake (or a lake that contains moderate amounts of nutrients, and contains healthy, diverse populations of aquatic plants, algae, and fish, such as Otty Lake).

Water clarity is measured by determining the maximum depth that a Secchi disk is visible. Secchi readings are an indicator of lake water clarity. This year the monthly readings varied less than a metre from 5.0 m depth with the exception of July when a 7 m reading was taken. The water clarity variation was less this year than the past few years.



Murray Hunt taking a secchi disc reading

Water Quality Index

The RVCA determines a Water Quality Index (WQI) as a rough indicator of water quality. It summarizes large amounts of water quality data in a single “score” from 1-100. Higher scores reflect cleaner water. The data are compared to provincial and federal water quality objectives. The WQI does not account for the natural condition of the lake and as a result may unfairly represent some lakes (i.e., headwater and wetland dominated lakes may present as poor when they could be considered “pristine” in many ways).

A 2023 Watersheds Conditions Report released by the RVCA in January 2024 gave Otty Lake a score of 88.4, for a “good” rating, for the period 2019-2021.

Physical Limnology

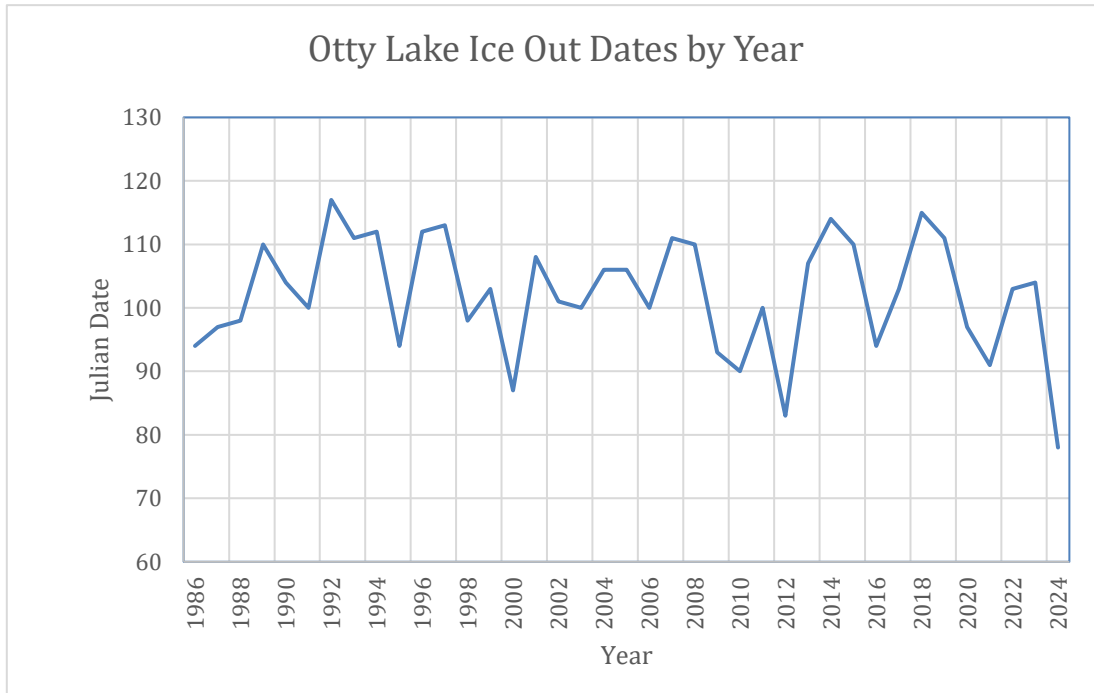
Ice Timing and Thickness

After a mild December, and not much snow, the temperature dropped to -10c in early January and thus we had a good lake freeze-over on January 5. Unfortunately for cross country skiers, skaters and snowmobilers, the lake ice did not get to a consistent safe thickness. In recent years, the ice thickness is has been measured in early March. Due to unsafe ice conditions the measurement was not taken this year.



Photo: Nancy Lynn

The ice started coming off the lake on March 15 and took two or three days. There were reports that the lake froze over again briefly on March 22. This is the earliest ice out in the past 38 years. The ice went out on March 23 in 2012.



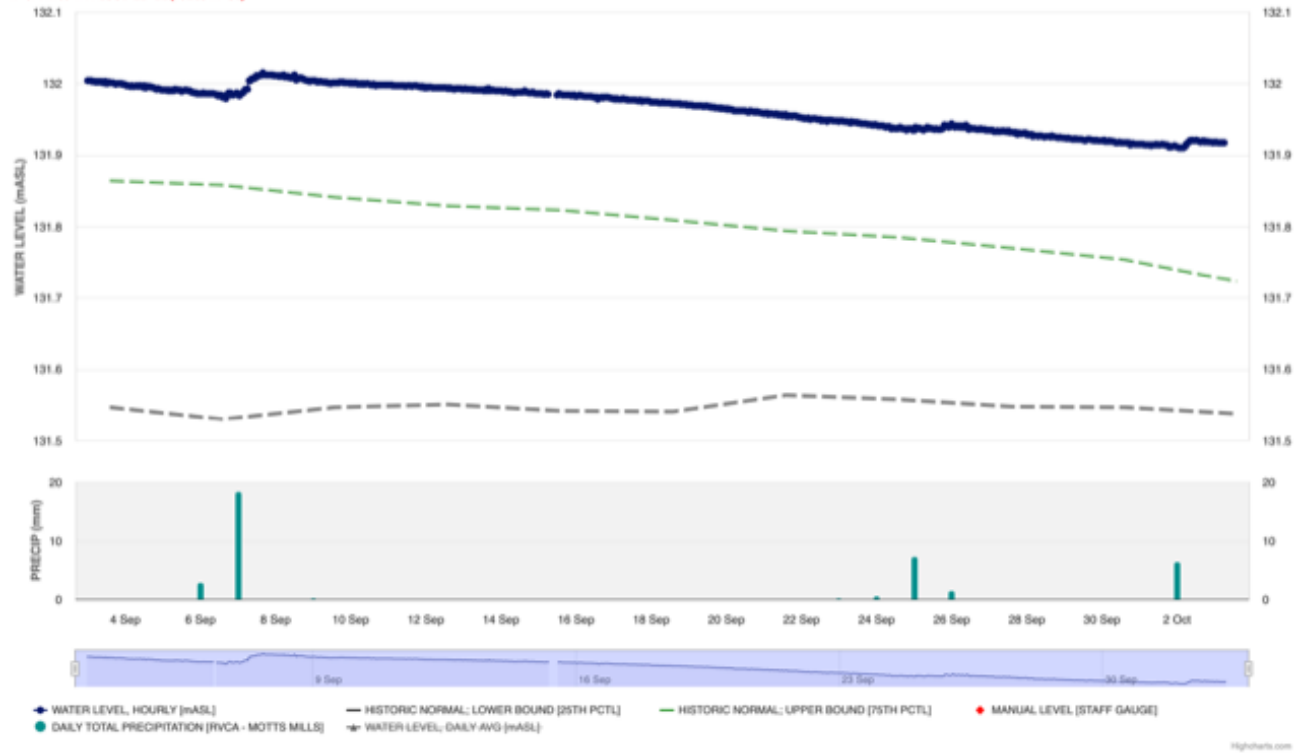
Lake levels and Jebbs Creek Water Flow

Otty Lake drains through Jebbs Creek and down into the Tay River watershed. Lake levels have been historically affected by beaver dams reported by residents along Jebbs Creek and observed by members of the OLA.

The summer of 2024 was one of the wettest seasons in years with many heavy rainfall events. The lake water level did not drop as it normally would in early June. In fact, right into August we were faced with freshet lake levels (or high-water levels that result from snowmelt), which was concerning to many residents. Our high lake water issue was compounded with an abundance of beaver activity on Jebbs Creek. In early July, a beaver dam was discovered at the Rideau Ferry bridge (a common spot to dam the lake). After some trapping was done by Lanark County, the dam was removed. More beaver dams were discovered further down Jebbs Creek between the Rideau Ferry bridge and the Tay River. Additional trapping occurred and the lake levels have been slowly dropping as a result of the breached beaver dams.

OTTY LAKE - WATER LEVEL [MEASURED, GEODETIC]

REAL-TIME WATER LEVEL AND REGIONAL PRECIPITATION FOR OTTY LAKE. TIME STAMP ADJUSTED TO LOCAL STANDARD TIME (GMT-5:00). GAUGE OWNED & OPERATED BY THE RVCA.
RVCA 1:100 YR FLOOD LEVEL (132.69 mASL)



Beavers have always inhabited Jebbs creek and because of a lack of predators (wolves, coyotes and bears) and the collapse of the fur trade, the beaver population is healthier than ever. It has also become controversial to trap beavers and some Otty lake residents do not support the trapping of beaver on Jebbs Creek.

It is well documented that annual, good drainage of the lake through Jebbs Creek is paramount to maintaining our good quality of lake water.



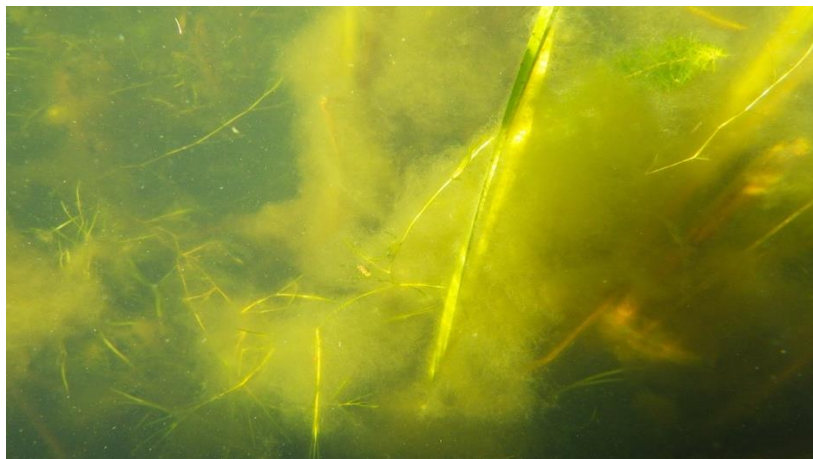
Beaver dam at Jebbs Creek, 2021

Algal Blooms

'Algae' is a generalized term for photosynthetic organisms that occur as either single cells or simple colonies. Planktonic algae are mostly single celled organisms suspended in the water column, and are a vital component of the lake's food web. The larger colonial forms of algae (most frequently filamentous) can be a nuisance, forming a floating mass or attaching to objects.

While the term 'algae' is a simple concept, it comprises a heterogenous mix of distantly related groups. Green algae (Chlorophyta) is normally beneficial, innocuous, or a minor annoyance, whereas some types of Cyanobacteria ('blue-green algae') produce toxins that can be harmful to humans, pets, and wildlife.

It is not uncommon to see mats of floating algae below and on the surface of Otty Lake. These are caused by a short-lived growth of *Green Filamentous algae* which occurs in mid-June as submerged amorphous masses are trapped on milfoil stems. As is typical, by late July these mats had essentially disappeared. While *Green Filamentous algae* are not harmful, they can be the result of too many nutrients in the lake.



Example of Green Filamentous Algae

(Source: <https://www.severnsound.ca/resources/fact-sheets/all-about-algae/>).

Blue Green Cyanobacteria, or blue-green algae, are naturally occurring microscopic organisms found in freshwater. Under favourable conditions which generally include warm water temperatures, an excess of nutrients (e.g. after a storm), high light levels and calm wind conditions, cyanobacteria can multiply quickly and form algal blooms.

There were no reports of blue-green algae in 2024. You can read more about blue-green algae in this [presentation given to the Lake Networking Group in 2014](#).

Invasive Species

Living organisms – plants, animals, insects – that are not native to an area (or those that were introduced to an area by humans) can be detrimental to the health of an ecosystem. Some non-native species are aggressive colonizers and can become so well established in the new environment that they disrupt the native species, at which point they are classified as invasive species. Invasive species can out-compete native species for resources, such as food and habitat, and introduce new diseases and parasites. Invasive species will often take over, or invade an area upon introduction, often because they have no known enemies in their new environments.

Some invasive species in and around Otty Lake are well known and well-established such as Purple Loosestrife, St. Johns' Wort and Common Buckthorn (*Rhamnus cathartica*), and are no longer being tracked.

For more about invasive species, see <https://www.nwf.org/Educational-Resources/Wildlife-Guide/Threats-to-Wildlife/Invasive-Species>

Two species are recent arrivals to this area: Flowering Rush (*Butomus umbellatus*) and Dog-strangling Vine (*Vincetoxicum rossicum*).

- *Flowering Rush (Butomus umbellatus)* is an invasive aquatic plant species. It produces aesthetically pleasing, pink flowers which grow in a cluster that resembles an umbrella. This species spreads very easily and can cause several negative impacts. It displaces native vegetation and alters water quality, leading to reduced biodiversity and alterations to fish and wildlife habitat. It can impact water supply when it establishes in irrigation canals, reservoirs, and stormwater management ponds. Flowering Rush also impacts water related recreational activities such as swimming, boating, and fishing by forming dense stands that restrict access to the water body. (Source: Invasive Species Centre)



Flowering Rush

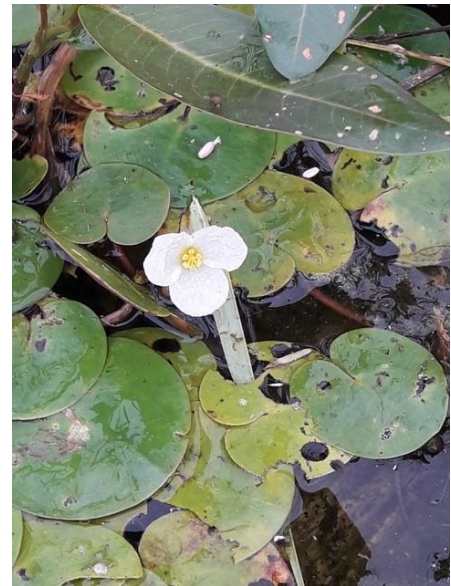
- *Dog-Strangling Vine (Vincetoxicum rossicum)* grows aggressively by wrapping itself around trees and other plants or trailing along the ground. It can grow up to 2 m high. The vines prefer sun but grow in light shade. They form dense stands that overwhelm and crowd out native plants and young trees, preventing forest regeneration. The plant produces bean-shaped seed pods 4-7 cm long and pink to dark purple star-shaped flowers. It was introduced to the Northeastern United States in the mid 1800s for gardening and has spread rapidly through wind blown seeds and root fragments.



Dog-Strangling Vine

Here are some of the other invasive species observed in and around Otty Lake:

- *Eurasian watermilfoil* is an invasive aquatic plant native to Europe, Asia, and northern Africa. Introduced to North America in the 19th century, it is now one of the most widely distributed invasive aquatic plants on the continent. Eurasian watermilfoil prefers shallow water 1-3 m deep, but can root in up to 10 m of water. Being a fast-growing perennial, it forms dense underwater mats that shade out other aquatic plants. When large stands begin to die off in the fall, the decaying plants can reduce oxygen levels in the immediate vicinity, causing fish to relocate. The exact year this aquatic plant appeared at Otty Lake is not known, although it was regarded as a major problem in the 2003-2007 timeframe. (<https://www.invadingspecies.com/invaders/aquatic-plants/eurasian-water-milfoil-2/>).



European Frog-Bit (Hydrocharis morsus-ranae). Photo: Kit Muma

- The *zebra mussel* population is cyclical, with this summer showing large mussel concentrations on submerged rocks, boats and docks. Zebra mussels can have a negative impact on the lake ecosystem because they remove sediment and suspended particles from the water, which increases water clarity. Increased water clarity will mean that sunlight will penetrate deeper into the water, increasing vegetation growth in the lake. But most importantly, zebra mussels filter out the phytoplankton, so the nutrients normally used by the phytoplankton become available to the filamentous algae. Zebra mussels first appeared in Otty Lake in 2002.

- The European common reed or invasive *Phragmites* is an aggressive grass that spreads quickly and chokes out native species and damages ecosystems. This plant species grows well in areas of standing water and releases toxins from its roots to hinder the growth of and kill surrounding plants (Ontario Invading Species Awareness Program, 2016). Recognized as Canada's worst invasive plant in 2005 by Agriculture and Agri-food Canada, it grows in tall, dense stands and can reach up to 15 feet in height. They have been in Lanark County at least since 2017.



Phragmites australis. Source: Ontario's Invading Species Awareness Program

- Wild parsnip has been observed and noted along the Rideau Ferry Road near Jebbs Creek. Lanark County staff have been active in controlling it. Wild parsnip, which is also known as poison parsnip, is a member of the carrot/parsley family. It typically grows a low, spindly rosette of leaves in the first year while the root develops. In the second year it flowers on a tall stalk and then dies. The plant can form dense stands and spreads quickly in disturbed areas such as abandoned yards, waste dumps, meadows, open fields, roadsides and railway embankments. Its seeds are easily dispersed by wind and water, and on mowing or other equipment. Like giant hogweed and other members of the carrot family, it produces sap containing chemicals that can cause human skin to react to sunlight, resulting in intense burns, rashes or blisters (<https://www.ontario.ca/page/wild-parsnip>). Note that wild parsnip can also cause burns to dogs and cats.
- European frogbit is an invasive aquatic plant brought from Europe to Ottawa in 1932 as an ornamental plant. It has been at Otty Lake since at least 2009. The plant likes slow-moving water, where it forms dense, floating mats, crowding out native plants, and preventing sunlight from reaching submergent plants. It produces a small white flower with rounded petals and a yellow centre. It looks similar to several native plants, including white water lily. Reduce speed near infested areas, as boat wake can dislodge plants, and it can easily spread and reproduce from small fragments.

The Banded Mystery Snail is one of four types of snails that are considered invasive in Ontario. This particular snail is native to the United States. RVCA reports they have reached Otty Lake. They do well in lakes and slow-moving rivers. They are a problem because they reproduce and spread rapidly, may prey on fish eggs and reduce survival rates, and out-compete for food and habitat and affect the abundance of native snails.

- *Rusty Crayfish* are large, freshwater crayfish, native to the Ohio Valley, first seen in Ontario in the early 1960s. The RVCA reports they have been found in Otty Lake. They likely were introduced to Ontario by anglers from other areas discarding crayfish they were using as bait. Their aggressive eating habits lead them to consume large amounts of aquatic vegetation, causing the decline of native crayfish, and reducing the spawning and nursery habitat for native fish. Because the females can carry up to 200 fertilized eggs under their tails, they can spread rapidly.

There are a number of invasive species that have arrived in the area but have not been seen in and around Otty Lake. Be on the lookout for quagga mussels, the hemlock woolly adelgid, spiny water flea, and the spotted lantern fly.



Quagga Mussels



Hemlock Woolly Adelgid (aphid-like insect)



Spotted Lantern Fly



Spiny Water Flea

Photos from [invasivespeciescentre.ca](https://www.invasivespeciescentre.ca)

The full list of invasive species being tracked is very lengthy.

See: <https://www.eddmaps.org/species/> .

Area residents can help by posting any observation of these species on iNaturalist, an online network for biodiversity observations, as it helps scientists studying range expansions. See the iNaturalist section of this report or [our website](#) for more information.

Fishing

Two projects in the past decade have addressed fish and wildlife habitat in the Otty Lake Watershed.

Jebbs Creek Embayment

The Jebbs Creek Embayment project was completed in 2018 in an area of the Perth Wildlife Reserve Conservation Area with the assistance of some Otty Lake volunteers. It has been monitored monthly May to October or November since then. Staff visit the site to observe and to do fish sampling.

In 2018, five embayments of varying depths were excavated and native trees, shrubs and wetland vegetation planted. The idea was to provide additional habitat for the twenty varieties of fish that inhabit Jebbs Creek. Of particular concern was giving northern pike a better place to spawn. Pike prefer to spawn in shallow water with a lot of vegetation. Before the embayments, fish that spawned there in the spring would be stranded when water levels declined later in the season.

The embayments were excavated to varying depths as the pike can be very particular. During monitoring, RVCA staff use a seine net to sample each of the five embayments as well as three sections of the creek itself. This usually yields pike, pumpkin seed and other species, including one juvenile largemouth bass. Pike have been found in all but one sample taken since the embayments were created. The natural inclination of pike would be to move upstream towards the Tay, but some might head downstream to Otty Lake, provided there were no obstructions, for example, beaver dams.

The plants that were put in have done well, also. Sometimes natural vegetation (mostly reed canary grass) seems to take over again, but there is a good variety of vegetation there still.

This is the final monitoring year of this project. A full report with pictures will be available early in 2025. You can read more about the project on the [RVCA website](#).

Bass Spawning Enhancement

Otty Lake volunteers assisted the RVCA in creating bass spawning nests and installing Christmas tree brush bundles as shelter for other fish and assorted wildlife in the years 2013, 2014, and 2015. Early monitoring indicated the project was a success with about 50% of the bass nests being populated. However, they are not being actively monitored now. It is quite possible that the nests have dispersed and the brush bundles deteriorated. If resources allow the RVCA would like to go back to those sites (the GPS coordinates were recorded) to take another look using a GoPro camera, possibly in May 2025. The footage would help determine if any of the nests or bundles could be replenished.

Fisheries Management

The Ministry of Natural Resources (MNR) is responsible for fisheries management in Ontario and does broad-scale monitoring program of fish populations. Data from the program is posted on [Fish ON-Line \(gov.on.ca\)](https://fish.on.ca). There is no current data for Otty Lake posted, but you can search for Otty Lake and see what species have been noted in the past under the “Fish” tab. The public can also contribute information on species they have found in a given waterbody.

Loon Report

Contributed by Kyla Haley

This year the Otty Lake loons met with mixed success. One pair successfully hatched two babies, and another pair hatched one. At the time of writing, all three babies are thriving, nearly independent and getting ready for their big migration.

Nests in three other locations, known to be successful in years past, unfortunately failed this year, and the water levels played a role in at least two of them. The legs of loons are far back on their bodies, which gives them an advantage in the water, but puts them at significant disadvantage on land. As a result, they must build their nest close to the water’s edge where it is vulnerable to fluctuating water levels during their 26-29 day incubation period. One nest in particular was observed to be regularly splashed by waves and wake as the water level rose through the incubation period.



Photo: Linda Davies (Sept 8, 2024)

This nest failed this year. Minimizing wake during nesting times (May-early July), especially when water levels are high will help protect loons while they are nesting.

Did you know that a leading cause of premature death in loons is lead in fishing tackle? One of the most effective ways we can work together to protect loon health is to understand the risks of and alternatives to lead in fishing tackle. For more information, please visit fishleadfree.ca.

Shoreline Planting

With details from Rachel Roth

Each year, the OLA, in partnership with the RVCA's Shoreline Naturalization Program, has offered members of the community subsidized native trees and shrubs to be planted on the shores of Otty Lake.

Benefits to shoreline planting include:

- Reduces water run-off that causes algal blooms and excessive weed growth;
- Reduces shoreline erosion and making shorelines more resilient;
- Much cheaper and more eco-friendly than rock-based "rip rap" shorelines;
- Discourages geese;
- Is more inviting to wildlife.

This year the plants sold out within 10 hours. Fortunately, the RVCA was able to add some additional nannyberry and wild columbine. In total, 190 plants were distributed to 36 households on June 1. The flowers were purple coneflower, columbine and bergamot and the shrubs distributed were sweet gale, nannyberry and snowberry.

iNaturalist

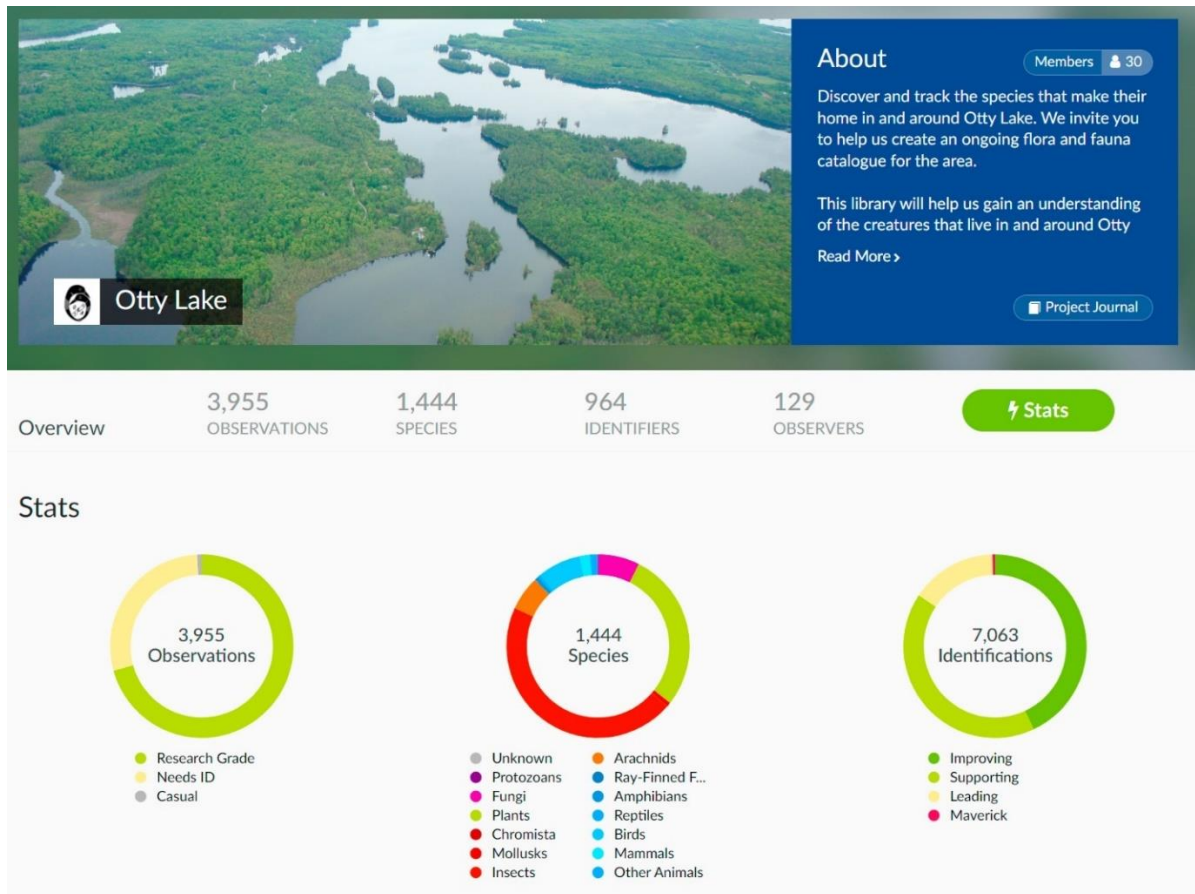
Contributed by Kit Muma & Bruce Smith

The Otty Lake iNaturalist project has had a great year with many new species added to our tally and new observers on the lake. At the end of September 2024, we are at 3,955 observations (up 812 from last year), 1,444 species (up 169) and 129 observers (up 23). If you have not already done so, please check out the free website at: <https://inaturalist.ca/projects/otty-lake>. Consider starting a project for your Otty Lake property which will automatically be included in the overall lake project. We have documented over 990 species on our 8.9 acres!

For the first time, Beech Blight Aphids (*Grylloprociphilus imbricator*) were reported along Baxter Lane. Each aphid has a plume of white, waxy secretion coming from its hind end, and the aphids occur in large, dense colonies. They are also called 'Boogie Woogie Bugs' because they wave their waxy plume whenever disturbed (see a video clip at <https://inaturalist.ca/observations/238473787>). They rarely cause much damage to a tree although a heavily infested twig or small branch may be lost.

Other new records in 2024 for Otty Lake include a Long-tailed Duck (April 23) and a Star-nosed Mole (Sept. 16). Dog-Strangling Vine has turned up for the first time this year, twice on Trillium Point Rd (June 2, Sep. 22). It is a serious invasive pest and should be pulled and disposed of in black plastic garbage bags whenever you encounter it.

Don't just record the rare species, observations of common ones are also very valuable! As an example, records of when snapping turtles are nesting and when hatchlings are found are very useful for tracking seasonality, especially if we are looking for evidence of the impact of climate change. It is also not too late to add observations if you can document the location, date, etc. Most digital cameras and cell phones tag your image with metadata including date and time, and these are typically uploaded automatically to iNaturalist with your image.



iNaturalist cumulative statistics to Sept. 27, 2024

Conclusion

Overall, our monitoring programs indicate that Otty Lake is quite healthy. Whether we live here year-round or seasonally, we all love our lake. Gathering data and producing this report is one way of monitoring and taking responsibility for the health of Otty Lake. Thanks to everyone who contributed material or coordinated this report.

The OLA is reevaluating the data that is collected on our lake to ensure we are collecting the right data, with the appropriate frequency and over sufficient sample locations. The Board is also watching for new initiatives that will help ensure the continued health of the lake. We invite your ideas and participation. If you have ideas to share or are interested in volunteering for these or any of our programs outlined in this report, please write to <mailto:ola@ottylakeassociation.ca>.