

Introduction

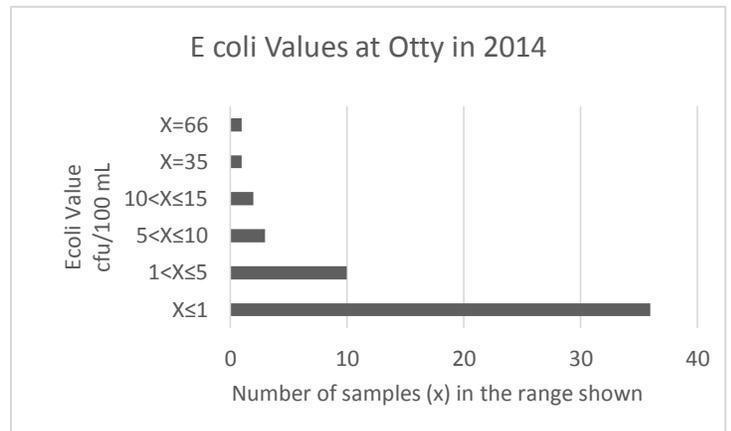
The intent of this report is to give an overview of water quality at Otty Lake.

Water Levels

In 2014 colder temperatures persisted into the spring, resulting in a very late ice-out and record high water levels in late April. The flow in Jebbs Creek was larger than average throughout the year and by December the lake level had dropped 60 cm. to normal levels for the time of year.

Bacteria Sampling

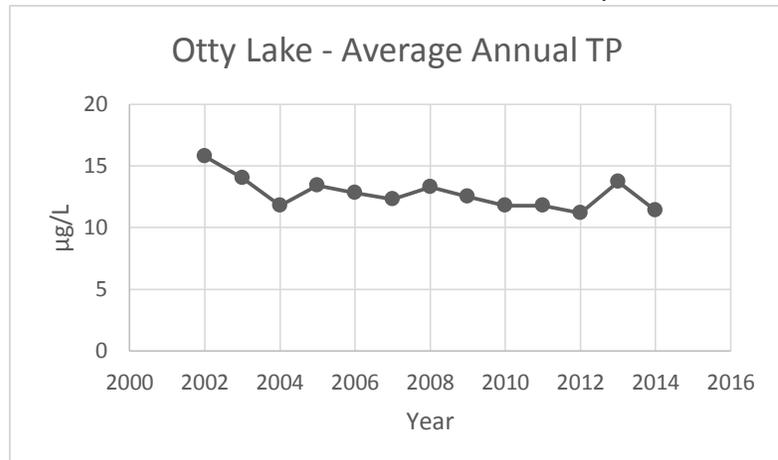
A total of 53 E.coli samples were taken at Otty by the OLA in 2014. There were no exceedences of the provincial standard for swimming of 100 cfu/100 mL. The majority of E.coli samples had very low values. Samples taken at two sites in August had somewhat higher values of 35 and 66 cfu/100 mL, but when these sites were resampled at a later date, they had very low values. This variation in values of E.coli is not uncommon given the fauna living in a lake environment.



Nutrient Levels

A certain amount of nutrients are necessary for a living lake. However excessive levels of nutrients can lead to algal blooms and profuse aquatic vegetation. Total Phosphorus (TP) and Total Kjeldahl Nitrogen are sampled by the OLA as well as under the MOECC Lake Partner and Rideau Valley Conservation Authority (RVCA) programs. OLA is conducting supplementary nutrient sampling with an emphasis on shoreline sites to understand better the dynamics of nutrient loading. Sampling at the outlet of streams entering Otty from wetlands show elevated nitrogen levels.

The following chart of values of TP taken at mid-lake under the Lake Partners program shows a slight decline in phosphorus levels over the past 13 years.



Dissolved Oxygen

An important aspect of lake health is the amount of dissolved oxygen found at various depths. Dissolved oxygen is essential to support a range of species from fish and insects to zooplankton. Oxygen is dissolved in water due to exposure to air and the photosynthetic production of plants in shallow waters. Exposure to air occurs during the ice-out period. There is a complete mixing of the water from top to bottom immediately after the ice melts. However stratification of the lake water occurs shortly after ice-out resulting in a warmer layer of water forming above a colder layer. The division between the two layers is called the thermocline and at Otty is at a depth of about 6 metres. Due to this phenomenon the dissolved oxygen in the lower colder layer of water is gradually consumed until colder air temperatures in October/November cause the fall turnover with a complete mixing of the lake again.

The RVCA takes four dissolved oxygen/temperature (DO/T) profiles annually. Please see the OLA website <http://www.ottylakeassociation.ca/> click Environment page; click water quality to see the DO/T profiles for May, June, August and September, 2014. They show a large reduction in dissolved oxygen below the thermocline by August.

Algal Blooms and Aquatic Vegetation

Two periods of minor algal growth occurred in 2014. In early June, some concentrations of green filamentous algae were noted. These were of the species *Mougeotia* Sp., and the blooms were short lived and limited in size. In August, concentrations of another species of green filamentous algae, *Spirogyra* sp. were noted. In general, the extent of algal blooms in 2014 was significantly less than the previous year.

The invasive aquatic plant, Eurasian Watermilfoil (EWM), was introduced to Otty some years ago. The abundance of this plant varies from year to year depending on weather conditions, nutrient levels and possibly a trade off with the abundance of algae. In 2014, EWM was found in most of the shallow bays of Otty.

Future Monitoring

The OLA will continue its water quality monitoring program in 2015 with an ongoing emphasis on E.coli sampling and nutrient sampling, particularly at shoreline sites. The OLA will continue its participation in the MOECC Lake Partners Program and with the RVCA Watershed Watch Program. The OLA will also continue to facilitate and assist university research projects centred on Otty. Results will be posted on the OLA website and discussed in the Newsletter.

We invite your input.