

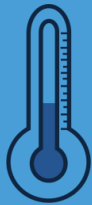


MACLEAN LAKE CONDITIONS UPDATE

Sample Date: May 9, 2023

Temperature at Surface

13.3°C



Temperatures are still cold following ice out on April 12th.

Water Clarity

1.3 m



Lake Depth

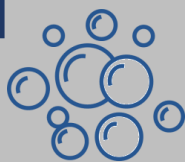
9.8 m

Water clarity over 5 m is considered excellent. Water clarity is low and may be related to watershed inputs & high levels of dissolved organic matter (tea colour).



Water colour and clarity conditions

Bottom Water Dissolved Oxygen



11.4 mg/L

This is plenty for cold and warm water fish species.

Gloucester Pool Water Level

180.448 masl*



Readings are taken at the Trent Severn Waterway gauge. Levels since ice-off have fluctuated within a 30 cm range.

* Data from Trent Severn Waterway



Black River at Upper Big Chute Rd



General Observations

- Dark tea coloured water
- No algae or foam
- 3 loons observed
- No plant debris floating on lake

Invasive Species

Invasive Species to keep an eye out for around MacLean Lake:

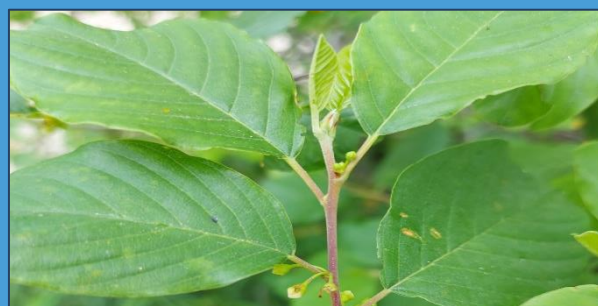
- **Glossy Buckthorn** is a shrub which can crowd out native species in large numbers. Their fruits do not provide adequate nutrition for wildlife compared to native shrub species which decreases available food sources for wildlife.
- **Japanese Beetles** are an invasive insect which feed on a large variety of plants. They have few natural controls outside of their native range giving them a competitive advantage which allows them to decimate large crops and gardens.



Collecting water samples



Natural shoreline including tree cover



Glossy Buckthorn



Japanese Beetle

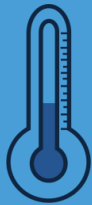


MACLEAN LAKE CONDITIONS UPDATE

Sample Date: May 24, 2023

Temperature at Surface

16.1°C



Temperatures are increasing in response to warmer air temperatures.

Water Clarity

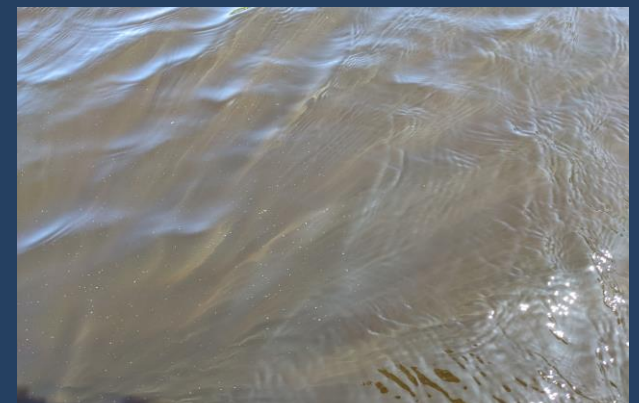
1.5 m



Lake Depth

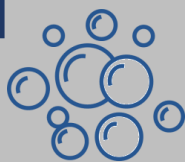
9.7 m

Water clarity over 5 m is considered excellent. Water clarity improved slightly compared to May 9th.



Water colour and clarity conditions

Bottom Water Dissolved Oxygen



9.0 mg/L

This is plenty for cold and warm water fish species.

Gloucester Pool Water Level

180.510 masl*



Readings taken at the Trent Severn Waterway gauge indicate that levels have increased since the last update on May 9th.

* Data from Trent Severn Waterway



Black River at Upper Big Chute Rd



General Observations

- Dark tea coloured water
- Foam on water surface
- A few specks of algae throughout water column
- Plant debris floating on lake at far west end

Invasive Species

Invasive Species likely present in and around MacLean Lake:

- **Purple Loosestrife** (*Lythrum salicaria*) is a wetland invasive flowering plant which can form dense monocultures and outgrow native vegetation.
- **Eurasian Water-milfoil** (*Myriophyllum spicatum*) is an aquatic invasive plant that forms thick mats of underwater vegetation which prevents native plant growth and can significantly hinder the recreational use of the water way by entangling boat propellers and hindering activities such as swimming and fishing.



Collecting water samples & field data



Midland Painted Turtle



Purple Loosestrife



Eurasian Water-milfoil



MACLEAN LAKE CONDITIONS UPDATE

Sample Date: Jun 7, 2023

Temperature at Surface

21.2°C



Temperatures are increasing with rising air temperatures.

Water Clarity

1.75 m



Lake Depth

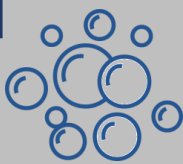
10 m

Water clarity over 5 m is considered excellent. Water clarity has remained low since the beginning of the season but improved since May 24th.



Water colour and clarity conditions

Bottom Water Dissolved Oxygen



8.0 mg/L

This is plenty for cold and warm water fish species.

Gloucester Pool Water Level

180.504 masl*



Readings taken at the Trent Severn Waterway gauge indicate that levels have stabilized since the last update on May 24th.



Black River at Upper Big Chute Rd

* Data from Trent Severn Waterway



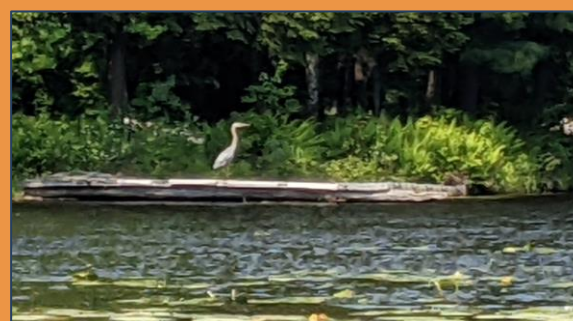
General Observations

- Dark tea coloured water
- Some foam and plant debris on surface
- Lots of specks of algae throughout water column
- Lots of pollen along shoreline

Invasive Species

Invasive Species found in MacLean Lake:

- **Zebra/Quagga Mussels**
(*Dreissena polymorpha*, *D. bugensis*) are invasive mussels that are widespread in Severn Sound, Bass Lake and Lake Couchiching. Small populations have also been observed in Orr and Little Lake
- Mussels are efficient filter feeders, and can have negative impacts on the ecology of a lake



Great Blue Heron



Pollen along shoreline



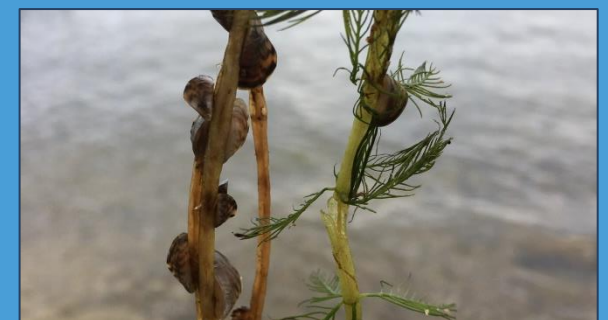
**CLEAN
DRAIN
DRY**

Prevent the Spread of Aquatic Invasive Species

Recreational users are reminded to Clean, Drain and Dry ALL equipment before & after entering the lake!



Zebra mussel attached to *Chara*



Mussels on Eurasian Milfoil

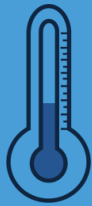


MACLEAN LAKE CONDITIONS UPDATE

Sample Date: Jun 20, 2023

Temperature at Surface

22.3°C



Temperatures are slightly higher than Jun 7th.

Water Clarity

1.4 m



Lake Depth

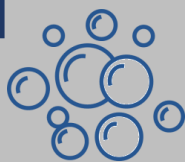
10 m

Water clarity over 5 m is considered excellent. Water clarity has remained low since the beginning of the season and has declined since Jun 7th.



Water colour and clarity conditions

Bottom Water Dissolved Oxygen



4.0 mg/L

This is insufficient for cold water fish species.

Gloucester Pool Water Level

180.551 masl*



Readings taken at the Trent Severn Waterway gauge indicate that levels have increased since the last update on Jun 7th.

* Data from Trent Severn Waterway



Black River at Upper Big Chute Rd



General Observations

- Dark tea coloured water
- Some foam on surface, plant debris in southern channel
- Lots of specks of algae throughout water column
- Lots of pollen near shore

Invasive Species

Invasive Species to keep an eye out for around MacLean Lake:

- **Amur Maple** (*Acer ginnala*) is a small tree which is often used for landscaping because of its ornamental features. When Amur Maple escapes to natural areas, it can shade out desirable native species.
- **Manitoba (Boxelder) Maple** (*Acer negundo*) is native to the Canadian prairies, however, in Ontario it is considered an invasive species. Manitoba maple grows fast, is relatively short-lived and forms a dense canopy at maturity, shading out native plant species.



Measuring clarity with a Secchi disk



Large snail at MacLean Lake outlet



Amur Maple



Manitoba (Boxelder) Maple

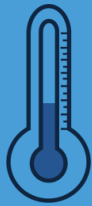


MACLEAN LAKE CONDITIONS UPDATE

Sample Date: Jul 4, 2023

Temperature at Surface

25.5°C



Temperatures are continuing to rise with increasing air temperature.

Water Clarity

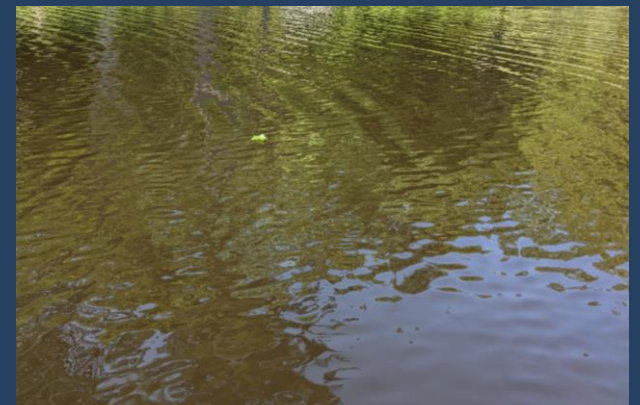
1.3 m



Lake Depth

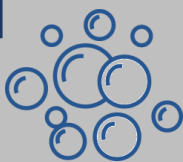
9.2 m

Water clarity over 5 m is considered excellent. Water clarity has remained low since the beginning of the season but has been stable since Jun 20th.



Water colour and clarity conditions

Bottom Water Dissolved Oxygen



4.0 mg/L*

This is insufficient for cold water fish species.

Gloucester Pool Water Level

180.509 masl*



Readings taken at the Trent Severn Waterway gauge indicate that levels have decreased since the last update on Jun 20th.



Black River at Upper Big Chute Rd

* Likely oxygen sensor malfunction; data from Jun 20

* Data from Trent Severn Waterway



General Observations

- Dark tea coloured water
- Large amount of plant debris floating on surface
- Lots of specks of algae throughout water column
- Lots of small insect cases on water surface

Invasive Species

Invasive Species that you should be on the look out for:

- **Yellow Iris** is a troublesome invasive species that outgrows native aquatic plants and harms biodiversity within aquatic ecosystems. It was originally introduced as an ornamental plant and has been documented on the lake shore.
- **Chinese Mystery Snails** can be identified by the "trapdoor" on their shells which no native species have. They can resist predation and alter food webs by significantly reducing native snail populations. They have not been confirmed on MacLean Lake.



Measuring temperature and oxygen



Lily pads in shallow waters



Yellow Iris



Chinese Mystery Snail

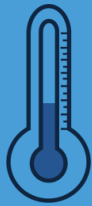


MACLEAN LAKE CONDITIONS UPDATE

Sample Date: Jul 18, 2023

Temperature at Surface

23.0°C



Temperatures have dropped since the last update, likely due to recent storms.

Water Clarity

2.2 m



Lake Depth

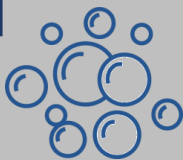
9.5 m

Water clarity over 5 m is considered excellent. Water clarity has remained low since the beginning of the season but has improved since July 4th.



Water colour and clarity conditions

Bottom Water Dissolved Oxygen



7.6 mg/L*

This is plenty for cold and warm water fish species.

Gloucester Pool Water Level

180.485 masl*



Readings taken at the Trent Severn Waterway gauge indicate that levels have decreased slightly since the last update on July 4th.



Black River at Upper Big Chute Rd

* Data from Trent Severn Waterway



General Observations

- Dark tea colour, murky water from recent rainfall
- Some foam on surface
- White specks of algae throughout water column
- Blue green algae present in entrance to Geri Bay

Invasive Species

Invasive Species found in or around MacLean Lake:

- **Phragmites/Common Reed** (*Phragmites australis* ssp. *australis*) is a tall perennial grass that is native to Eurasia. Phragmites is an aggressive semi-aquatic plant that threatens native plants and wildlife, human safety, agriculture and recreational activities. It invades a variety of habitats including lakes, shorelines, wetlands, beaches, ditches, and roadsides and succeeds in disturbed habitats. The seed head and stems will persist through the fall, winter and into early spring.



Collecting bottom water sample



Colonies of the blue-green algae *Nostoc* can look like floating peas



Phragmites - aquatic



Phragmites - terrestrial

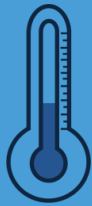


MACLEAN LAKE CONDITIONS UPDATE

Sample Date: Aug 2, 2023

Temperature at Surface

23.0°C



Temperatures are similar to those from the last update.

Water Clarity

0.7 m



Lake Depth

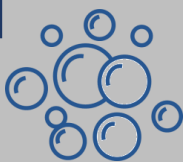
10.3 m

Water clarity over 5 m is considered excellent. Water clarity has remained low since the beginning of the season and has decreased since Jul 18th.



Water colour and clarity conditions

Bottom Water Dissolved Oxygen



2.3 mg/L

This is insufficient for both cold & warm water fish species.

Gloucester Pool Water Level

180.533 masl*



Readings taken at the Trent Severn Waterway gauge indicate that levels have increased since the last update on Jul 18th.



Black River at Upper Big Chute Rd

* Data from Trent Severn Waterway



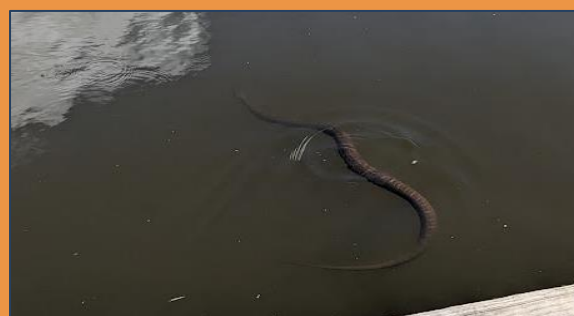
General Observations

- Dark tea colour water
- Lots of suspended sediment in the water column
- No plant debris floating on surface
- Potential Blue Green Algae bloom observed

Invasive Species

Invasive Species that have not been detected in MacLean Lake but that you should be on the look out for:

- **Spiny Waterfleas** (*Bythotrephes longimanus*) are predatory zooplankton that congregate to form masses on fishing lines. They reproduce quickly, outcompeting native zooplankton species, and harming fish that eat them due to their sharp spines.



Northern Watersnake (*Nerodia sipedon*)



Blue green algae appearing as peas



Recreational users are reminded to Clean, Drain and Dry ALL equipment before & after entering the lake!

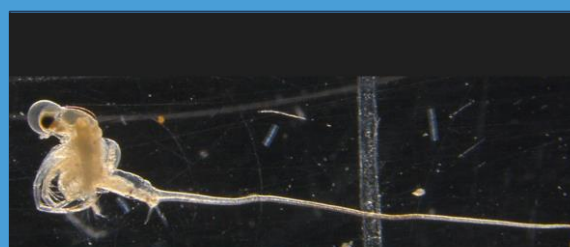


Photo: Lynne Witty, Identazoop

Spiny Waterflea



Photo: Andrea L. Jaeger Miehl, Michigan State University

Spiny Waterflea on fishing line

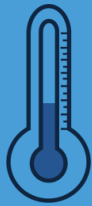


MACLEAN LAKE CONDITIONS UPDATE

Sample Date: Aug 15, 2023

Temperature at Surface

22.6°C



Temperatures are slightly lower than last update.

Water Clarity

0.5 m



Lake Depth

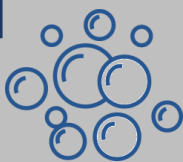
9 m

Water clarity over 5 m is considered excellent. Water clarity has remained low since the beginning of the season and exceptionally low since Aug 2nd.



Water colour and clarity conditions

Bottom Water Dissolved Oxygen



4.3 mg/L

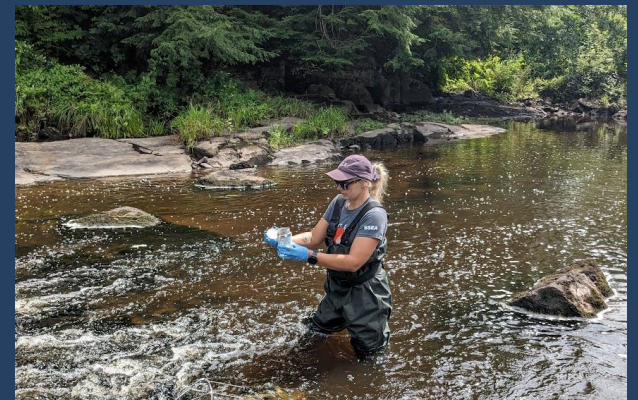
This is insufficient for cold water fish species.

Gloucester Pool Water Level

180.482 masl*



Readings taken at the Trent Severn Waterway gauge indicate that levels have decreased since the last update on Aug 2nd.



Black River at Upper Big Chute Rd

* Data from Trent Severn Waterway



General Observations

- Dark tea colour water
- Lots of suspended material in the water
- Water very cloudy, almost appears thick

- **BLUE GREEN ALGAE CONFIRMED BY SMDHU – WATER QUALITY ADVISORY ISSUED FOR SOUTHWEST SHORELINE**

Invasive Species

Invasive Species found in or around MacLean Lake:

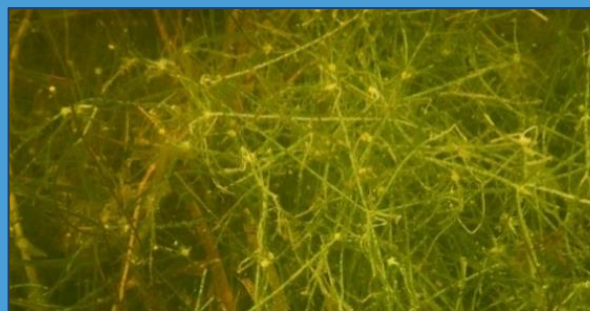
- **Starry Stonewort (SSW)** (*Nitellopsis obtusa*) is a green freshwater algae that forms dense mats under the water's surface. SSW spreads rapidly through fragments and can overtake shorelines, interfering with watercraft, swimming, and fishing.
- **Round Goby** (*Neogobium melanostomus*) is a small bottom-dwelling fish that is prevalent in the Great Lakes. They reproduce rapidly and outcompete native species of fish. **Note: Round Goby is present in Midland Harbour but not yet reported in Little Lake.**



Councillor Taylor pours water sample



Councillor Taylor collects profile data



Underwater photo of SSW



Round Goby

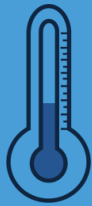


MACLEAN LAKE CONDITIONS UPDATE

Sample Date: Aug 29, 2023

Temperature at Surface

22.0°C



Temperatures are slightly lower than last update.

Water Clarity

0.6 m



Lake Depth

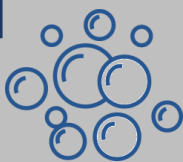
9.1 m

Water clarity over 5 m is considered excellent. Water clarity has remained low since the beginning of the season and exceptionally low since Aug 2nd.



Water colour and clarity conditions

Bottom Water Dissolved Oxygen



3.2 mg/L

This is insufficient for both warm and cold water fish species.

Gloucester Pool Water Level

180.460 masl*



Readings taken at the Trent Severn Waterway gauge indicate that levels have decreased since the last update on August 15.



Black River at Upper Big Chute Rd

* Data from Trent Severn Waterway



General Observations

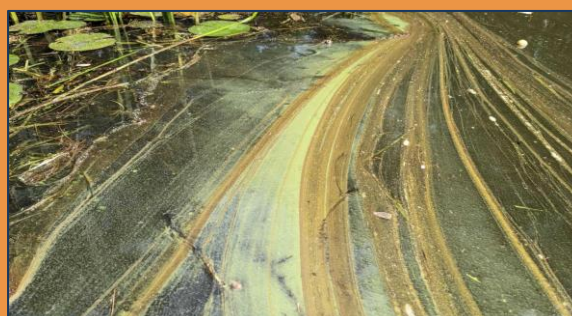
- Strong tea colour water
- Water is very cloudy
- Some plant debris floating on surface

- **BLUE GREEN ALGAE CONFIRMED BY SMDHU – WATER QUALITY ADVISORY ISSUED FOR SOUTHWEST SHORELINE**

Invasive Species

Invasive Species that have not been detected around MacLean Lake but that you should be on the look out for:

- **Giant Hogweed** (*Heracleum mantegazzianum*) is a large noxious plant that is a member of the *Carrot* family. This species is often confused with Queen Anne's Lace.
- Can reach up to 5 meters in height with leaves that are up to 1.5 meters wide.
- Do not touch this plant because its sap contains toxins that cause severe burns to skin and eyes when exposed to light.



Algae bloom near shore



Collecting samples from hypolimnion



Hogweed stem & immature flower



Hogweed leaves

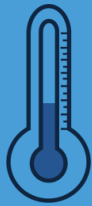


MACLEAN LAKE CONDITIONS UPDATE

Sample Date: Sept 12, 2023

Temperature at Surface

22.1°C



Temperatures are roughly the same as the last update.

Water Clarity

0.5 m



Lake Depth

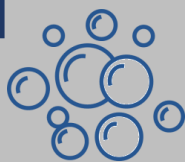
9 m

Water clarity over 5 m is considered excellent. Water clarity has remained low since the beginning of the season and has been stable since Aug 15th.



Water colour and clarity conditions

Bottom Water Dissolved Oxygen



2.4 mg/L

This is insufficient for cold water fish species.

Gloucester Pool Water Level

180.466 masl*



Readings taken at the Trent Severn Waterway gauge indicate that levels are the same as the last update on Aug 29th.



Black River at Upper Big Chute Rd

* Data from Trent Severn Waterway



General Observations

- Strong tea coloured water
- Lots of suspended sediment in water column
- Dead bugs on water surface

- **BLUE GREEN ALGAE CONFIRMED BY SMDHU – WATER QUALITY ADVISORY ISSUED FOR SOUTHWEST SHORELINE**

Invasive Species

Invasive Species that have not been detected around MacLean Lake but that you should be on the look out for:

- **Banded Mystery Snail** (*Viviparus georgianus*) is an invasive invertebrate that has been introduced to the Great Lakes. Mystery snails reproduce rapidly, overtake shorelines, and can carry disease.
- **European Frog-Bit** (*Hydrocharis morsus-ranae*) is an aquatic plant that creates large mats on the water surfaces. These mats can decrease biodiversity and hinder recreational water activities.



Heading out to sampling site



Great Blue Heron



Banded Mystery Snail



European Frog-Bit

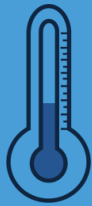


MACLEAN LAKE CONDITIONS UPDATE

Sample Date: Sept 26, 2023

Temperature at Surface

18.8°C



Temperatures have dropped due to a decrease in air temperature.

Water Clarity

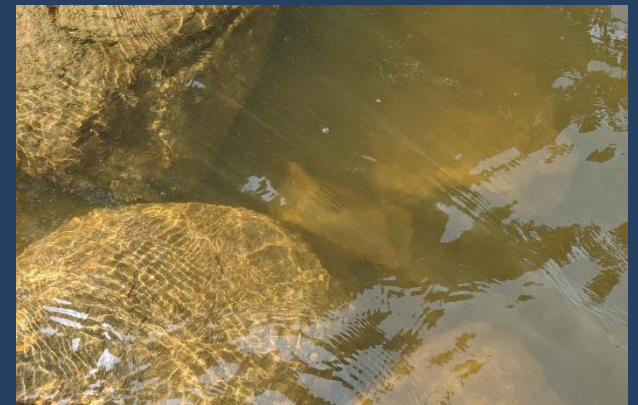
1.0 m



Lake Depth

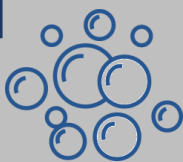
9.4 m

Water clarity over 5 m is considered excellent. Water clarity has remained low since the beginning of the season but has improved since Sept 12th.



Water colour and clarity conditions

Bottom Water Dissolved Oxygen



4.6 mg/L

This is insufficient for cold water fish species.

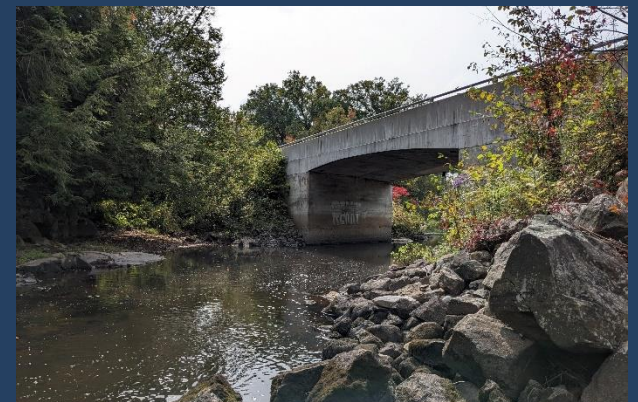
Gloucester Pool Water Level

180.499 masl*



Readings taken at the Trent Severn Waterway gauge indicate that levels have slight increased since the last update on Sept 12th.

* Data from Trent Severn Waterway



Black River at Upper Big Chute Rd



General Observations

- Strong tea colour water
- Lots of brown specks of algae
- Foam on water surface

- **BLUE GREEN ALGAE RISK – WATER QUALITY ADVISORY STILL IN EFFECT FOR SOUTHWEST SHORELINE**

Invasive Species

Invasive Species that have not been detected in MacLean Lake but that you should be on the look out for:

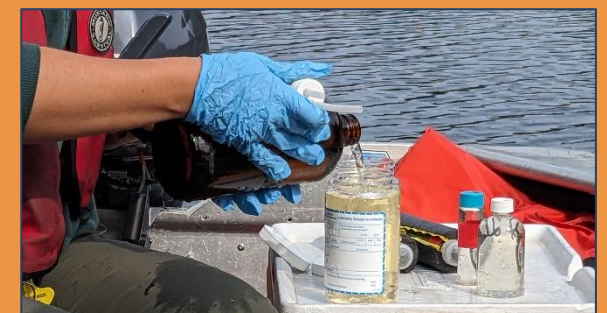
- **Rusty Crayfish** (*Orconectes rusticus*) is a large invertebrate species that has a distinct rusty coloured patch on the side of its shell and black bands on its claws.
- They compete with other crayfish species and feed on aquatic vegetation that reduces habitat and food for other species.



Recreational users are reminded to Clean, Drain and Dry ALL equipment before & after entering the lake!



"Green pea" blue green algae



Pouring a water sample



Rusty patch on shell



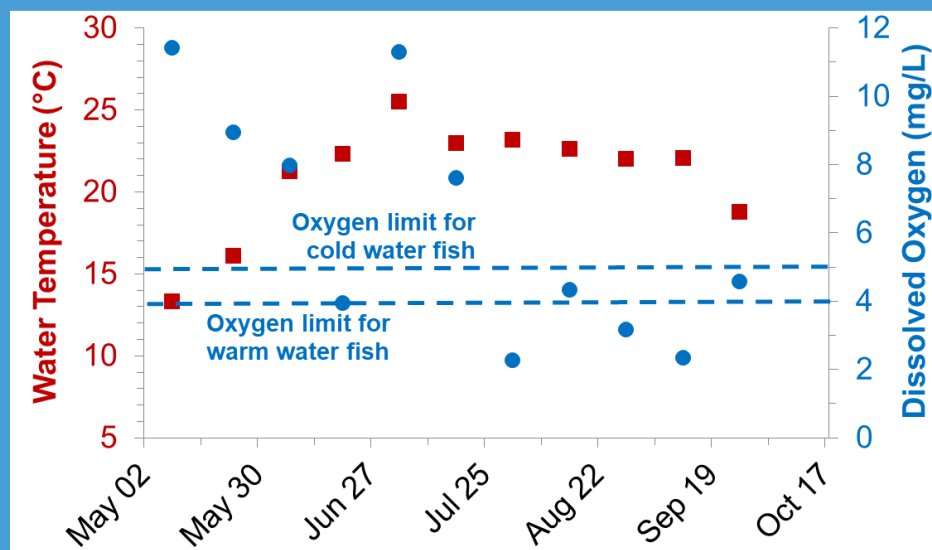
Black banding on claw



MACLEAN LAKE SEASONAL WATER QUALITY TRENDS

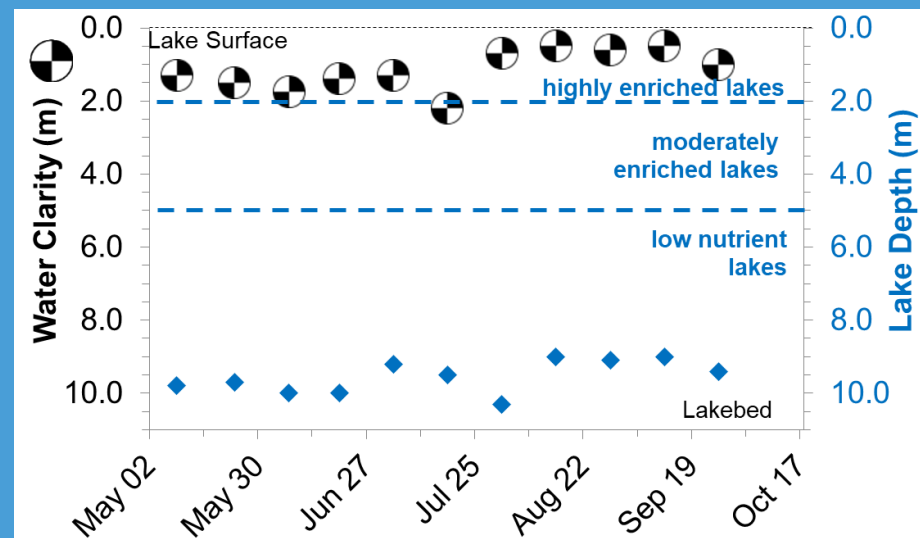
May 9 – Sept 26, 2023

Surface Temperature & Bottom Water Dissolved Oxygen



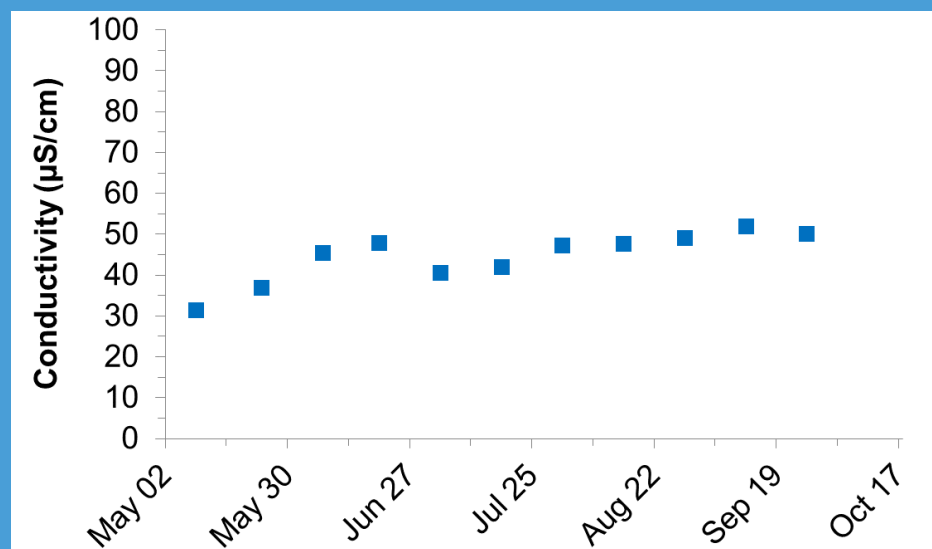
Oxygen levels are below the Provincial Water Quality Objectives for cold water fish, likely due to decomposition of organic material in deep waters.

Water Clarity & Lake Depth



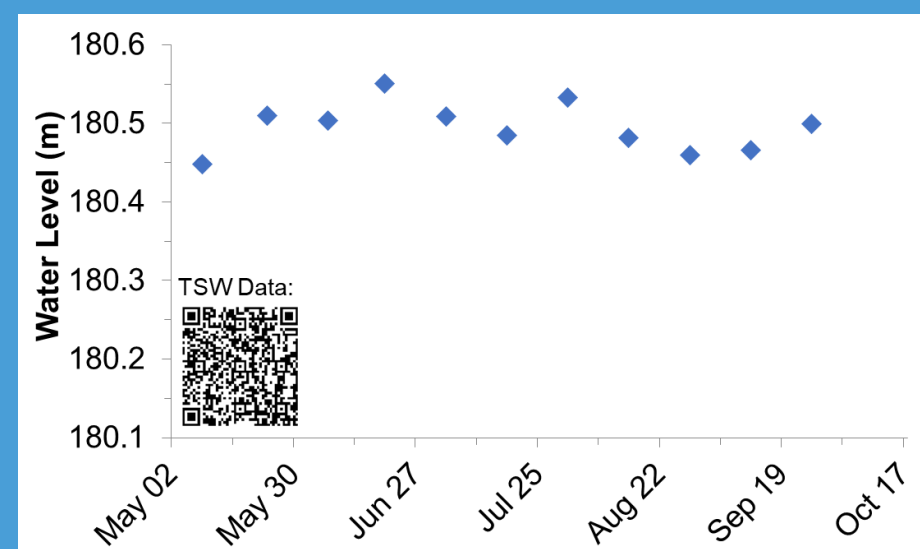
Water clarity above 5 m is considered excellent; MacLean L is below this level. Low clarity can be due to algae growth, sediments and “tea colour”.

Surface Water Conductivity



Conductivity is related to the concentration of dissolved material in the water. Values have been steady since early August.

Lake Water Levels at Gloucester Pool



Data from: www.pc.gc.ca/apps/waterlevels/donnees-data?Id=103&lang=en&siteId=100419

MacLean Lake water levels are closely linked to regulation of the Trent Severn Waterway (Parks Canada) and recent rainfall, and rose by 3.3 cm.