

**WHITE LAKE**

**PROPERTY OWNERS ASSOCIATION  
ENVIRONMENT VOLUNTEERS**



# White Lake Checkups

**2023**

*Conrad Grégoire, PhD and David Overholt, BA*



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Every two weeks from mid-May to mid-October Environment Volunteers sample White Lake. Nine sites are monitored covering all parts of the lake. After each of these ‘sampling runs’ a White Lake Checkup is issued. Checkups are short and concise summaries of the condition of White Lake on the sampling date. Information is usually also provided for similar readings done a year earlier for comparison purposes. White Lake Checkups are generally published on the White Lake Property Owners Association [Facebook](#) page, as well as other local Facebook pages covering all four municipalities sharing parts of White Lake. Below is a compilation of the White Lake Checkups issued during 2023.



## **Mini White Lake Checkup: February 13, 2023**

The depth of the water at the Waba Creek dam was 122 cm, 15 cm higher than the target depth of 107 cm. Normally, a depth of 122 cm is expected only by April 1. Warm temperatures have probably resulted in quite a lot of water entering the lake.

## **White Lake Checkup: May 8, 2023**

It was cold! Our first sampling outing of 2023 was on May 8<sup>th</sup>. With air temperatures hovering around 10 °C and a wind of about 15 km/h we wasted no time getting our work done. We collected three samples at each of our monitoring sites. Two were duplicate samples for total phosphorus and the third sample was collected for the measurement of calcium and chloride levels. All of the samples are analyzed by the Ministry of the Environment’s laboratories in Dorset Ontario under the auspices of the Lake Partner Program. In addition to these samples, we also make temperature and water clarity measurements and collected plankton samples using a specialized net. These samples were analyzed later using an optical microscope.

**Water Temperature:** The water temperature in the deeper parts of the lake was 12.8°C. The temperature last year at about this time (May 16) was 17°C. The hot spot on the lake was Hayes Bay with a water temperature of 14.7°C.

**Water Clarity:** Water clarity as expressed as a Secchi depth was 4.0 metres; 1.3 metres less (clear) than last year. Lake water was teeming with zooplankton which contributed to lower water clarity.

**Water Depth:** The depth of the lake as measured at the gauge at the dam was 180 cm as compared to the target depth of 152 cm. The maximum depth we measured this year was 183 cm, a value identical to the measured depth of the lake in 2019, the last high-water year we experienced.

**Wildlife:** We did not observe any cormorants on our 50 km run on White Lake. We did spot a half-dozen loons and it appears that the bald eagles on Birch Island have returned to their nesting site.

## White Lake Checkup: June 1, 2023

Our second lake sampling outing took place on June 1. It was a slightly hazy but otherwise a very warm sunny day. There was no wind. We measured water temperatures, water clarity and water depth at the Waba Creek dam. We also collected plankton samples using a specialized net. These samples were analyzed later using an optical microscope.

**Water Temperature:** The water temperature in the deeper parts of the lake was 21.7°C. The temperature last year at about this time was 20.0°C, and in 2021; 17.8°C. The hot spot on the lake was again Hayes Bay with a water temperature of 24.0°C.

Please note that we measure water temperatures away from shorelines and at a depth corresponding to the Secchi depth. Water temperatures at the shoreline can be many degrees higher especially if there is no wind to help mix lake waters.

**Water Clarity:** Water clarity as expressed as a Secchi depth was 4.4 metres; 1.0 metres less (clear) than last year. Hotter temperatures and high water levels encourage the production of plankton which contributes to lower water clarity.

**Water Depth:** The depth of the lake as measured at the gauge at the dam was 149 cm as compared to the target depth of 153 cm. The maximum depth we measured this year was 183 cm, a value identical to the measured depth of the lake in 2019, the last high-water year we experienced. We have written a short bulletin entitled '[Spring Water Levels in White Lake 2017-2023](#)' which explains the unusually high water levels in White Lake this spring.

**Wildlife:** We counted 4 cormorants on the lake. This number is in keeping with observations during previous [years](#). Numbers are expected to increase during the summer months.

## White Lake Checkup: June 15, 2023

This third sampling day of 2023 was warm and sunny with winds of from 5 to 10 km/h. Measured were water temperatures, water clarity and water depth at the Waba Creek dam. Also collected were plankton samples using a specialized net. These samples were analyzed later using an optical microscope. Water samples for analysis for phosphorus, calcium and chloride were also collected.

**Water Temperature:** The water temperature in the deeper parts of the lake was 19.6°C which was less than the temperature recorded on June 1 of this year: 21.7°C. The temperature last year on this date was 20.7°C. In 2021 it was 17.8°C. The hot spot on the lake was again Hayes Bay with a water temperature of 20.5°C.

Please note that we measure water temperatures away from shorelines and at a depth corresponding to the Secchi depth. Water temperatures at the shoreline can be many degrees higher especially if there is no wind to help mix lake waters.

**Water Clarity:** Water clarity as expressed as a Secchi depth was 3.8 metres; only 0.1 metres less (clear) than last year.

**Water Depth:** The depth of the lake as measured at the gauge at the dam was 147.9 cm as compared to the target depth of 146 cm.

**Pollen:** Last week we all received an ample dose of pollen, an annual event. To learn more about pollen and how it effects White Lake, have a look at the Environment Bulletin entitled '[Pollen Storm](#)'.

**Wildlife:** Nine cormorants on the lake. This number is in keeping with observations during previous [years](#). Numbers are expected to increase during the summer months.

## White Lake Checkup: June 30, 2023

This fourth sampling day of 2023 was overcast with the lake covered by a thick blanket of wildfire smoke. Measured were water temperatures, water clarity and water depth at the Waba Creek dam. Also collected were plankton samples using a specialized net. These samples were analyzed later using an optical microscope.

**Water Temperature:** The water temperature in the deeper parts of the lake was 22.7°C which was about 1 degree warmer than last year but the same as that measured in 2021. There was no real 'hotspot' because temperatures did not vary more than about one-half of a degree throughout the lake.

**Water Clarity:** Water clarity as expressed as a Secchi depth was 3.5 metres; 1.2 metres less (clear) than last year. The presence of smoke particles may have contributed to this decrease in water clarity.

**Water Depth:** The depth of the lake as measured at the gauge at the dam was 142 cm as compared to the target depth of 143 cm.

**Smoke:** For the last several weeks our atmosphere has been dominated by dense forest fire smoke blanketing our area. For a better understanding of how this smoke can affect the ecology of White Lake, please download our latest [Environment Bulletin entitled 'SMOKE!'](#)

**How Much Does This Smoke Weigh?** Just in case you were interested to know how much all of that smoke above White Lake would weight if you could put it all in one place; we did a calculation. Taking into account the surface area of the lake (22.2 km<sup>2</sup>), the density of the smoke at 100 micrograms/m<sup>3</sup>, and a thickness of 500 m above the lake, we calculated that all of that smoke weighs 1000 kg, or **1 metric ton!**

**Cormorants:** Eight cormorants were spotted on the lake. This number is in keeping with observations during previous [years](#). Numbers are expected to increase during the summer months.

## White Lake Checkup: July 14, 2023

The morning of July 14<sup>th</sup> was a perfect day for lake sampling. The sun was shining, there was no wind and only a few other boats on the lake. We visited our nine sampling sites (using GPS) and measured water temperatures, water clarity and water depth at the Waba Creek dam. Water samples were also taken for analysis of phosphorus, calcium and chloride. These samples were mailed to the Ministry of the Environment Labs for processing. Also collected were plankton samples using a specialized net. These samples were analyzed later using an optical microscope.

**Water Temperature:** The average water temperature in the deeper parts of the lake was 23.4°C which was about the same temperature (within 0.3 degrees) measured last year on this date.

The coolest temperature measured was 22.2 °C in our sampling site we call Middle Narrows, which is located about half way up the lake. The warmest site was 24.3 °C at the rocky narrows at the northern part of the lake.

**Water Clarity:** Water clarity as expressed as a Secchi depth was 4.4 metres; exactly the same as that measured in 2022 on July 14.

**Water Depth:** The depth of the lake as measured at the gauge at the dam was 142 cm as compared to the target depth of 143 cm.

**Cormorants:** Nine cormorants were spotted on the lake. This number is in keeping with observations during previous [years](#). Numbers are expected to increase during the summer months.

## White Lake Checkup: July 31, 2023

On Sunday, July 30<sup>th</sup> we participated in the annual HerbFest at the Waba Cottage Museum and Gardens. We had the opportunity to talk about our work on White Lake and it was a pleasure to meet many of you in person. We hope to return next year.

We visited our nine sampling sites on White Lake (using GPS) on July 31st and measured water temperatures, water clarity and water depth at the Waba Creek dam.

**Water Temperature:** The average water temperature in the deeper parts of the lake was 23.2°C. Last year on this date, the water temperature was 23.9°C. In 2021, the water temperature was only 22.0°C. In the shallow parts of the lake, the water temperature was 21.9°C indicating a cooling trend in atmospheric temperatures.

**Water Clarity:** Water clarity as expressed as a Secchi depth was 3.0 metres. In 2022, the water clarity was over a metre higher (clearer water). In 2021 it was 3.5 metres. The relatively low water clarity this year is due in part to the large quantity of plankton living in the lake, which in turn suggests high concentrations of nutrients, such as phosphorus, entering the lake.

**Water Depth:** The depth of the lake as measured at the gauge at the dam was 141 cm as compared to the target depth of 137 cm. This time last year water depth was exactly 137 cm and 130 cm in 2021.

**Cormorants:** Seventeen cormorants were spotted on the lake. This number is the highest recorded during the [residential period in the five](#) years we have been monitoring populations on the lake. We saw several juveniles perched on trees along with the adults.

## White Lake Checkup: August 13, 2023

Bad water threatened for the early afternoon, but the morning of August 13 was mostly sunny during our 7<sup>th</sup> sampling run of the year. We collected plankton samples and water samples for analysis of phosphorus, chloride and calcium. We also took temperature and water clarity measurements.

We visited our usual nine sampling sites on White Lake (using GPS) and also measured the lake depth at the Waba Creek dam.

**Water Temperature:** The average water temperature in the deeper parts of the lake was 21.9°C. Last year on this date, the water temperature was 23.6°C. In 2021, the water temperature was 22.0°C, similar to this year's results. In the shallow parts of the lake, the water temperature was 21.2°C indicating a cooling trend in atmospheric temperatures.

Please have a look at the attached graph. The fat blue line is data so far for this year at the Hardwood Island sampling site. The graph contains data for the last ten years at this site. The red line shows that 2023 is an unusual year for the lake. Early in the season, water

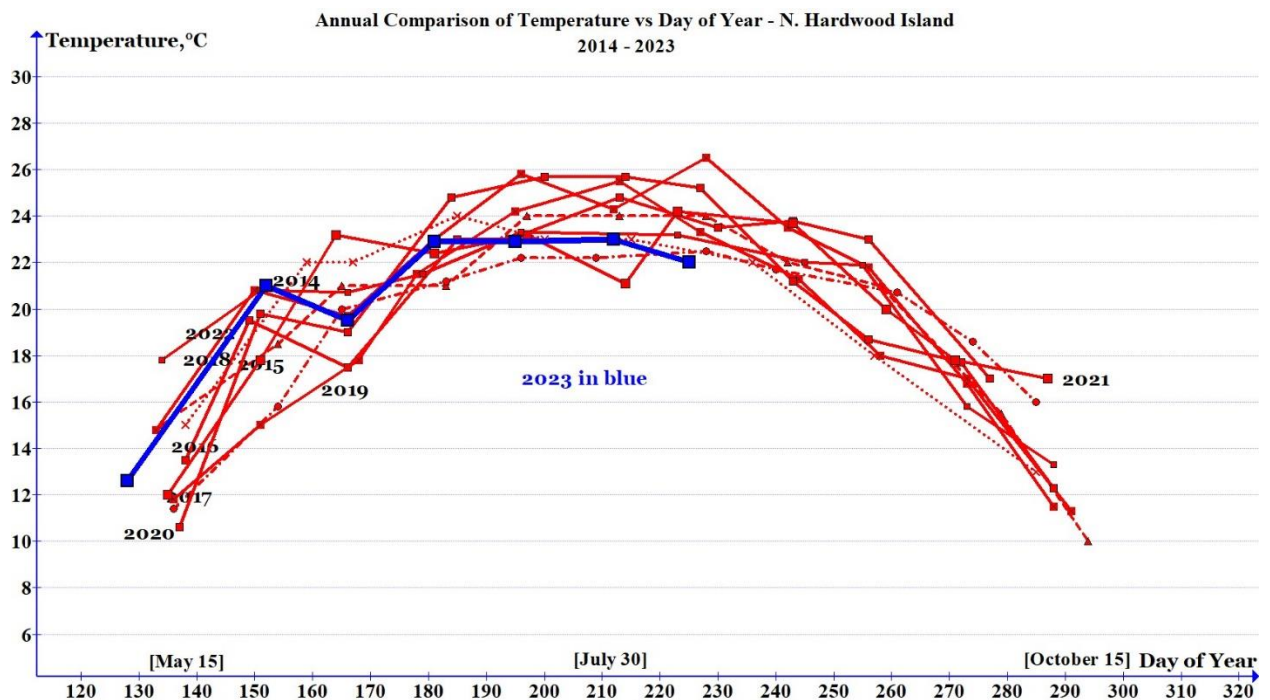


temperatures were at the higher end of the scale, whereas temperatures now are at the lower end of the scale, compared to all other years.

**Water Clarity:** Water clarity as expressed as a Secchi depth was 4.5 metres. In 2022, the water clarity was only 3.6 metres, 0.6 metres less clear than this year. In 2021 it was 3.5 metres.

**Water Depth:** The depth of the lake as measured at the gauge at the Waba dam was 139 cm as compared to the target depth of 131 cm. The increase in lake depth on the short term is partially due to the large amount of rain we have been receiving during the past 10 days or so. Assuming no more vast quantities of rain, the lake will slowly drain to its target depth.

**Cormorants:** Ten cormorants were spotted on the lake. We saw several juveniles perched on trees along with the adults. Twelve cormorants were counted on this date in 2022.



## White Lake Checkup: September 5, 2023

The morning of September 5<sup>th</sup> was clear and hot. We collected plankton samples and took temperature and water clarity measurements. We visited our usual nine sampling sites on White Lake (using GPS) and also measured the lake depth at the Waba Creek dam.

**Blue-Green Algal Bloom:** White Lake is currently experiencing an almost lake-wide blue-green algal bloom. The bloom is affecting areas from the southern end of Hardwood

Island all the way up to the narrows including Three Mike and Pickerel Bays. Some surface scum derived from this bloom is visible in some of these areas. In all of these areas, significant concentrations of the anabaena blue-green can be seen in the water column.

This bloom should be taken seriously and precautions taken to avoid poisoning from the possible presence of toxins. The Ministry of the Environment Conservation and Parks was notified and a staff scientist has already taken a number of water samples for analysis for toxins. We will keep you informed of any developments.

Please read the [information on blue-green algal blooms](#) available from the Leeds Grenville and Lanark District Health Unit.

**Water Temperature:** The average water temperature in the deeper parts of the lake was 22.9°C. Last year on this date, the water temperature was 22.1°C. In 2021, the water temperature was 22.0°C. In the shallow parts of the lake, the water temperature was 24.2°C indicating a heating trend in atmospheric temperatures.

**Water Clarity:** Water clarity as expressed as the Secchi depth was 4.3 metres. In 2022, the water clarity was 4.2 metres. In 2021 it was 3.5 metres.

**Water Depth:** The depth of the lake as measured at the gauge on the Waba dam was 129 cm as compared to the target depth of 128 cm. The depth cited in these Checkups are in centimetres above the sill of the dam structure.

**Cormorants:** Eleven cormorants were spotted on the lake. We saw several juveniles perched on rocky shoals along with the adults. Twelve cormorants were counted on this date in 2022. In place of cormorants roosting at one of their favourite locations on the lake, we spotted a juvenile bald eagle, apparently discouraging any cormorants from hanging around!

## White Lake Checkup: September 20, 2023

The morning of September 20 was clear, sunny and cold. We collected plankton samples and took temperature and water clarity measurements. We also collected water samples for total phosphorus, calcium and chloride determinations. These samples were sent to the Ministry of the Environment laboratories for analysis under the auspices of the Lake Partner Program (LPP). The LPP is a collaboration between the Ministry of the Environment and the Federation of Ontario Cottage Associations. This program is supported by volunteers who collect samples from over 500 lakes in Ontario creating a Provincial database available to citizens and scientists alike.

**Water Temperature:** The average water temperature in the deeper parts of the lake was 19.7°C down from 22.9°C on September 5th. In the shallow parts of the lake, the water temperature was 17.0°C indicating a cooling trend in atmospheric temperatures.

**Water Clarity:** Water clarity as expressed as the Secchi depth was 5.1 metres up from 4.2 metres on September 5th.



**Water Depth:** The depth of the lake as measured at the gauge on the Waba Creek dam was 122.7 cm as compared to the target depth of 122 cm. The depth cited in these Checkups are in centimetres above the sill of the dam structure.

**Cormorants:** Fifteen cormorants were spotted on the lake. All of the cormorants were at one location; the Rocky Isles at the narrows leading to the White Lake Village basin.

## **White Lake Checkup: September 30, 2023**

The lake on the morning of September 30 was cloaked in fog for the first half hour of our 10<sup>th</sup> sampling run of the year; one more to go! We collected plankton samples and took temperature and water clarity measurements.

**Algal Bloom:** Several people reported to us signs of an algal bloom on the lake. Some shorelines in isolated areas were covered with blue-green algae. Most significant was the major part of the bloom which affected about half of Pickerel Bay continuing half of the way across the lake towards the western shore. This is the second blue-green algal bloom recorded this season. A photomicrograph of the blue-green algae is shown below as well as a map showing (in green) the extent of the bloom. For more information on the [history of White Lake algal blooms](#), please download our report published in 2022.

For more information on algal blooms and recommended actions, please read the information provided by our local [Health Unit](#).

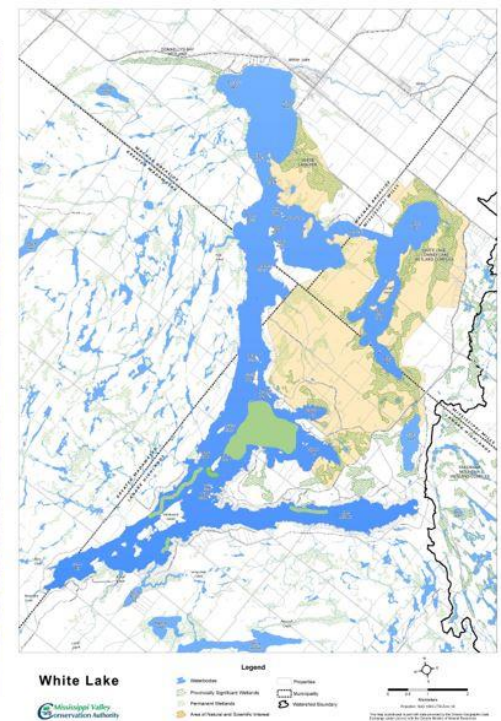
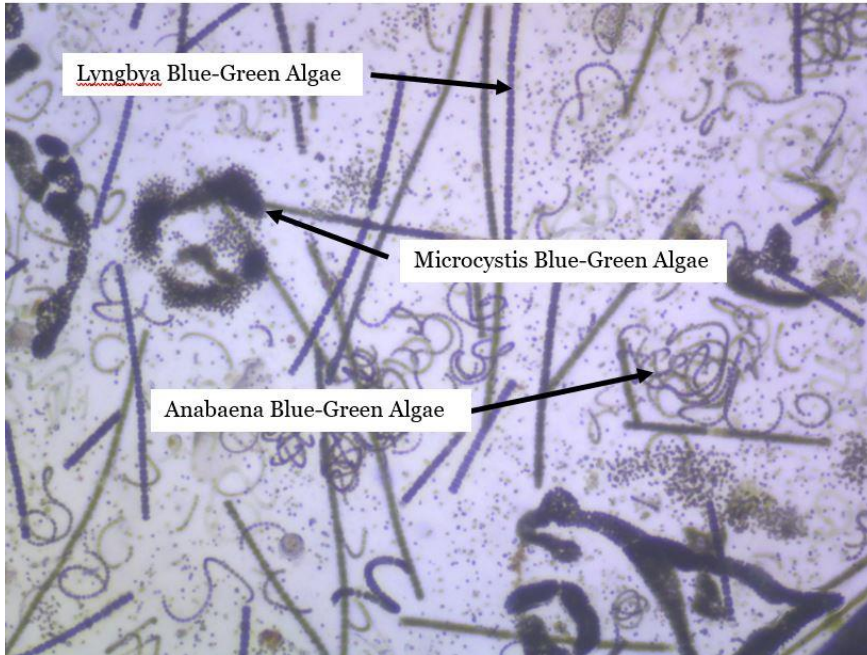
**Water Temperature:** The average water temperature in the deeper parts of the lake was 18.5°C as compared to a temperature of 16.0 °C recorded on the same date in 2022. The temperature taken in 2021 was 18.2°C

**Water Clarity:** Water clarity as expressed as the Secchi depth was 6.6 metres, up from 5.3 metres in 2022 and 4.5 metres in 2021.

The Secchi depth corresponds to half the distance sunlight can penetrate the lake. With a reading of 6.6 metres, this means that light can travel 13.2 metres. White lake has a maximum depth of only 9.1 metres.

**Water Depth:** The depth of the lake as measured at the gauge on the Waba Creek dam was 117 cm as compared to the target depth of 116 cm. This time last year, the depth was 11 cm above the target depth. The depths cited in these Checkups are in centimetres and correspond to the water level above the sill of the dam structure.

**Cormorants:** Five cormorants were spotted on the lake. All of the cormorants were at one location; the Rocky Isles at the narrows leading to the White Lake Village basin.



## White Lake Checkup: October 12, 2023

Suffering from White Lake Checkup fatigue? Well, this is the last one for 2023. As expected, it was a cold day and as is our custom we had hot tea and biscuits after we collected the last sample of the year...in the middle of the White Lake Village Basin.

In total, during 2023, we collected 321 water samples to be analyzed by the Ministry of the Environment's Lake Partner Program, 200 plankton samples for microscopic examination and over took over two hundred water temperature and clarity measurements. We also kept track and documented water levels and counted both loon and cormorant populations.

**Water Temperature:** The average water temperature in the deeper parts of the lake was 15.6°C as compared to a temperature of 13.5 °C recorded on the same date in 2022. The average temperature of the shallower parts of the lake was 12.2°C.

**Water Clarity:** Water clarity as expressed as the Secchi depth was 7.5 metres, up from 6.5 metres in 2022.

The Secchi depth corresponds to half the distance sunlight can penetrate the lake. With a reading of 7.5 metres, this means that light can travel 15 metres. White lake has a maximum depth of only 9.1 metres.

**Water Depth:** The depth of the lake as measured at the gauge on the Waba Creek dam was 115 cm as compared to the target depth of 107 cm. The lake depth will continue to be lowered until 107 cm is reached, where it will stay throughout the winter months. The depths cited in these Checkups are in centimetres and correspond to the water level above the sill of the dam structure.

**Cormorants:** Two lonely-looking cormorants were spotted on the lake. Both were at one location; the Rocky Isles at the narrows leading to the White Lake Village basin. I am sure their bags are packed and they will be heading south shortly.

**Compilation:** Within the next few weeks, a compilation of all of the 2023 Checkups will be published in a single document and will be posted on the [“Special Report” webpage](#).

To learn more about White Lake please read the [State of the Lake Report](#) and visit the White Lake Science and Information [website](#).

Contact us at [envwlpoa@gmail.com](mailto:envwlpoa@gmail.com) if you have questions or concerns or if you would like to be added to our emailing list and receive all of our reports, bulletins, and checkups.

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