



# White Lake Checkups

**2022**

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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. Below is a compilation of the White Lake Checkups issued in 2022.

## **White Lake Checkup: May 31, 2022**

We completed our 2<sup>nd</sup> sampling of White Lake at 9 stations in all parts of the lake. The morning of the 31<sup>st</sup> was sunny and still, virtually no wind. Here are some results we got and observations we made. Results are for the main body of the lake.

**Water temperature:** 2022: 20C; 2021: 17.8C (2.2 degrees warmer than last year)

**Water Clarity** (Secchi Depth): 2022: 5.4 m; 2021: 5.6 m. Water clarity was the same as the previous year. These measurements show that light can reach a depth of 11.2 metres, which means that the entire bottom of the lake is exposed to sunlight. The maximum depth of White Lake is 9.1 metres.

**Zebra mussel veligers (larvae):** In our sampling, we counted an average of 15.4 zebra mussel veligers per litre of water. All things being equal, there are now 1.2 trillion (that's 1.2 followed by 12 zeros) veligers in White Lake looking for a home near you!

**Scum:** In certain parts of the lake, especially near the northern end of Stanley Island and close to the East shore, there was a significant layer of scum on the water. Microscopic

examination revealed that the scum was a mixture of spruce/pine pollen, fluff from poplar trees and billions of exoskeletons from very small emerging flying insects. All good stuff but not inviting for a swim.



### **White Lake Checkup: June 15, 2022**

We completed our third lake sampling session, once again visiting 9 sites on the lake from Three Mile Bay to the Village Basin at the north end of White Lake.

Visible on large areas on the surface of the lake were floating mats of decaying pollen. Hopefully, these mats will soon sink to the bottom of the lake and start the process of becoming part of the sediment record.

Water temperatures were 20.7 C in the southern part of the lake, which is the same temperature recorded two weeks ago. Last year at this time, the lake had reached 22.8 C, over 2 degrees higher.

Water clarity readings were 3.9 m (Secchi depth) compared to 4.1 m in 2021. If you would like to learn more about water clarity, download the Environment Bulletin on water clarity: [https://wlpp.ca/linked/water\\_clarity\\_bulletin\\_sept\\_2017.pdf](https://wlpp.ca/linked/water_clarity_bulletin_sept_2017.pdf)

The lake water level at the dam was 146.3 cm, 6.4 cm higher than the target depth at this time of year. Last year at this time, the water level in the lake was 138 cm, 8.3 cm below our June 15<sup>th</sup> reading. What a difference rain makes!

We sighted only 2 Double-Crested Cormorants on White Lake.

## **White Lake Checkup: June 28, 2022**

We have completed our fourth (of eleven) water sampling runs on White Lake. It takes us from three to four hours to visit and sample all of our sites. We use GPS to ensure that we sample at the correct location each and every time. We boat about 50 km every two weeks.

**Water Temperature:** The water temperature was 21.8 C, about 1 degree cooler than last year on June 28, 2021.

**Water Clarity:** A Secchi depth of 4.7 m was read which means that sunlight can penetrate to a depth of 9.4m, which is deeper than the deepest spot on the lake (9.1 m).

**Depth:** The depth of White Lake at the dam was 148 cm, which is 5 cm higher than the target depth. In contrast to 2021, when the lake depth at this time as 134 cm, 14 cm lower than target depth.

Currently, the lake level is being drawn down as part of the regular schedule. Maintaining high water levels throughout the summer is not good for the lake. White Lake has a relatively low flushing rate of less than 1 volume per year. This means that if water is not removed from the lake during the summer months, excess nutrients stay in the lake rather than be removed by outflow at the dam.

During the 1970s, water levels were kept high at the request of cottagers. What resulted was the collapse of the pickerel fishery and the appearance of algal blooms.

If you would like to learn more about the history of White Lake Water quality and algal blooms, please have a look at these two documents:

[https://wlpp.ca/linked/history\\_white\\_lake\\_water\\_quality.pdf](https://wlpp.ca/linked/history_white_lake_water_quality.pdf)

[https://wlpp.ca/linked/white\\_lake\\_algal\\_blooms\\_1860\\_to\\_2021.pdf](https://wlpp.ca/linked/white_lake_algal_blooms_1860_to_2021.pdf)

**Cormorant Count:** A total of 11 cormorants were observed on White Lake. They were perched on trees on the West side of the lake opposite Dead Man's Island. That's a relatively small number of cormorants considering the lake has a surface area of 22 sq. kilometres (0.5 cormorants/sq.km). Contrast this to the 73 cottages/homes/trailers,etc. per sq.km. of lake!

## White Lake Checkup: July 15, 2022

July 15 marks the midpoint of our annual sampling program. On that day, 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 23.1 Centigrade. For Fahrenheit-friendly people, this corresponds to 73.6 F. The temperature last year at this time was 23.6 C.

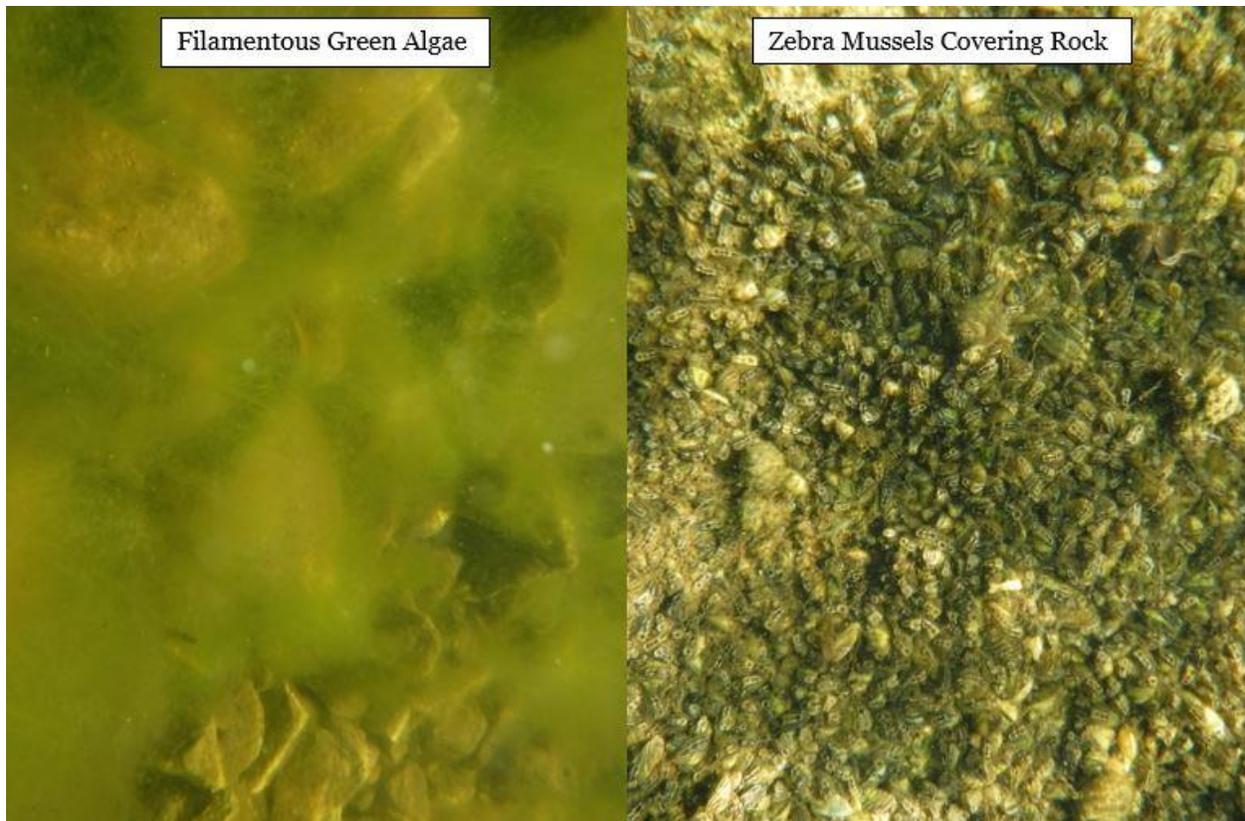
**Water Clarity:** Water clarity as expressed as a Secchi depth was 4.4 metres, one half metre greater (clearer) than last year. This may be an indicator that zebra mussels are again increasing in number (see below).

**Water Depth:** The depth of the lake as measured at the gauge at the dam was 139 cm as compared to the target depth of 140 cm. Bravo! The depth of the lake at this time last year was a full 8 cm lower!

**Algal Bloom:** We are into the annual (since 2016) filamentous green algal bloom. Large patches of the stuff can be found in most parts of the lake. See attached photo. This alga is not dangerous, just unsightly.

**Zebra Mussels:** They're back! A couple of years ago zebra mussel numbers decreased as a result of the die-off of the first generation of zebra mussels which invaded the lake in 2015. This year, very large colonies of zebra mussels can be found on submerged rocks. See attached photo. The density of these mussels can be higher than 100,00 individuals per square metre, each capable of filtering 1 litre of lake water per day. It is possible that the increased clarity of the lake (see above) is a consequence of the large number of mussels now growing in the lake.

**Double-Created Cormorants:** We observed only three cormorants on our 50 km run on White Lake.



### **White Lake Checkup: July 29, 2022**

The morning of July 29<sup>th</sup> was sunny, but a bit windy. Still, a good day for our routine end-of-month water sampling run on White Lake. Below is a summary of some of the data we collected.

**Temperature:** The water temperature (taken at 4 m depth) was 23.9 C compared to a temperature of 22.0 C on this date in 2021.

**Water Clarity:** The water clarity, expressed as a Secchi depth, was 4.1 metres whereas last year it was 3.5 metres. The increased water clarity (+.6 m) could be due to the growing number and size of zebra mussels in the lake. Each mussel can filter about 1 litre of water per day, and there are many millions of them in the lake.

**Water Depth:** The water depth at the white Lake dam was 137 cm which corresponds exactly with the planned water depth of 137 cm. This time last year, the water depth was 7 cm below the planned depth.

**Rainfall:** Environment Canada publishes monthly rainfall data which we can use to compare rainfall from year to year. In 2021, the total rainfall for the months of April, May and June was 174 mm. Rainfall for these three months in 2022 was 278 mm, an increase

of 60%. This goes a long way to explain the current water levels as compared to those of 2021. Data for July is not yet available.

For more information on White Lake, please visit the White Lake Science and Information Website at [www.wlpp.ca](http://www.wlpp.ca).

## **White Lake Checkup: September 2, 2022**

Our 8<sup>th</sup> water sampling run was completed on September 2, 2022. We again sampled 9 sites using our GPS to assure that we are sampling at the same location month after month, year after year. We collected water clarity and temperature data and plankton samples using a specialized filtration net. It was a beautiful day to be on the lake and we enjoyed the 45 km boat ride.

**Water Temperature:** The average temperature for the deep-water sites (main part of the lake) was 22.1 C. The lake temperature last year on this date was 23.9 C, almost two degrees warmer. Note that water temperature for the shallow sites at the North end of the lake was 20.0 C, two degrees cooler than the Southern part of the lake indicating a cooling trend.

**Water Clarity:** The Secchi depth was measured at 4.2 metres, which means that sunlight can penetrate to a depth 8.4 metres. The maximum depth of White Lake is 9.1 metres. The Secchi depth measured on the same date last year was 4.8 metres. At that time, sunlight could reach the very deepest part of the lake.

**Water Levels:** The water level at the dam was measured at 134.6 cm. which is 6.5 cm above the target level. This time last year, which was a dry year, the water level was 8 cm below target levels. This is significant because these data clearly show the influence of weather on lake levels. The measured lake levels this year on September 2 was 15 cm greater than that measured on this date in 2021.

**Cormorant Count:** We counted 15 cormorants located at three separate sites on the lake. This count is consistent with numbers from the last several years, indicating a stable cormorant population.

## White Lake Checkup: September 30, 2022

September 30<sup>th</sup> marked our tenth sampling run on White Lake. It was a beautiful windless sunny day kicked off for one of us (CG) with a parade of 8 racoons walking by the dock.

This was not the only wildlife we encountered. While sampling the deepest part of the lake near Pickerel Bay, we spotted a bald eagle attacking a loon with her baby. The eagle circled overhead several times before zooming down on the two loons. The adult loon was letting out a single cry to alert other loons in the area. Within metres of pouncing on the loons, both birds dove and avoided disaster! The bald eagle flew away and we continued our work.

**Water Temperature:** The water temperature at the deeper sites (main water body) was 16.0 C. Warmer temperatures prevailed on the same day last year where a temperature of 18.2 C was recorded.

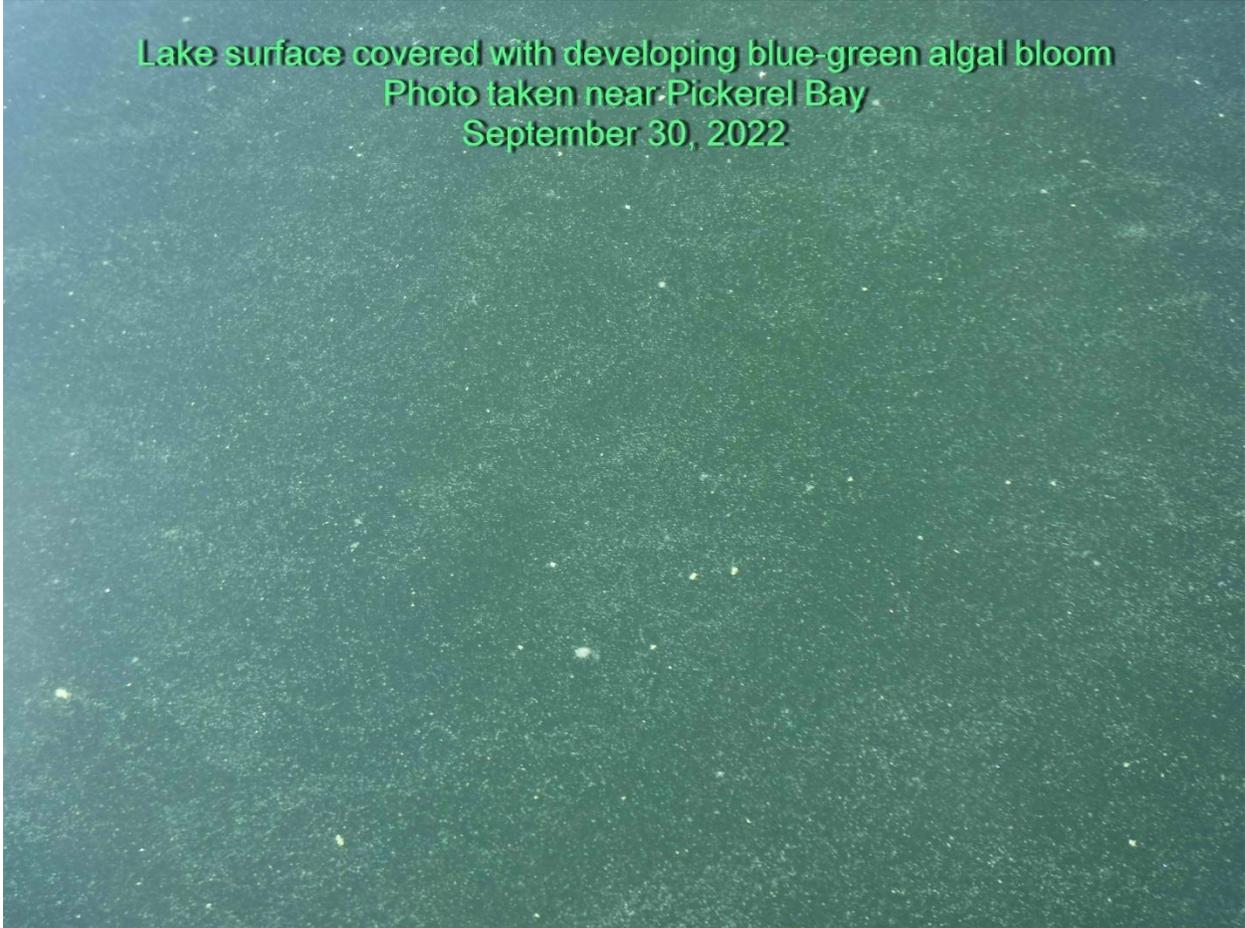
**Water Clarity:** Water clarity, as expressed as the Secchi depth, was 5.3 metres. This time last year, the Secchi depth was 4.5 metres, so the water is clearer this year than last year. The Secchi depth represents half of the distance that sunlight can travel towards the bottom of the lake. Since the deepest spot in the lake is 9.1 metres, it is clear that light can reach the bottom of all parts of the lake. During the summer months, such water clarity encourages the growth of aquatic plants.

**Water Depth:** The depth of the lake at the dam was measured at 127 cm, which is 11 cm higher than the target depth for this time of year. Water levels are currently being lowered to a target depth of 107 cm by October 15<sup>th</sup>, the date of our final sampling run for this year.

**Cormorant Count:** We spotted only two cormorants on the lake.

**Blue-Green Algal Bloom:** In several parts of the lake (Three Mile Bay, McLaughlin's Island all the way to Waba Island north of Stanley Island), the characteristic surface 'scum' associated with a blue-green algal bloom was evident. See attached photo. This was verified using a microscope. At writing, we are watching the bloom to determine if it will dissipate or intensify. We will keep you posted on our observations.

Lake surface covered with developing blue-green algal bloom  
Photo taken near Pickerel Bay  
September 30, 2022



### **White Lake Checkup: October 15, 2022**

It was cold! Our 11<sup>th</sup> and final lake sampling run was completed on October 15<sup>th</sup>. Air temperatures ranged from 5 to 10 degrees Celsius. There were only a few boats on the lake and the wind was increasing announcing the coming wind and rainstorm that hit the lake later in the day.

We spotted a bald eagle perched on a rock tearing into its most recent prey. It flew off as we approached. There were a few loons remaining on the lake, but no cormorants.

**Water Temperature:** The water temperature in the main part of the lake was 13.5 °C. Last year at this time the temperature was 17.4 °C, nearly 4 degrees higher. The water temperature in Hayes Bay, the shallowest of our sampling sites, was only 11.8 °C. Last year, the same site was 6.4 °C higher at 18.2 °C. Shallow sites both heat up and cool down faster than deeper parts of the lake. Shallow areas are more vulnerable to changes in air temperature and so indicate either cooling or warming weather trends.

**Water Clarity:** By October, water temperatures have decreased significantly as have daylight hours. This results in the death of much of the plankton in the lake leading to

increased water clarity. A Secchi depth reading could only be taken in the deepest part of the lake. A depth of 6.5 metres was recorded, approximately the same as for 2021 on this date.

**Water Levels:** The depth of the lake at the White Lake dam was 123 cm. Last year at this time, the depth was 126 cm, or about the same. The target depth for October 15 is 107 cm, so the lake is 16 cm HIGHER than planned for. The lake will continue to drain until it reaches 107 cm, which is the target depth for the winter.

There are a number of good reasons for lowering lake levels during winter. These include: 1) Allows for fish spawning shoals to be cleaned by ice and waves; 2) Removes suspended algae, plankton, etc. carried with water leaving the lake at Waba Creek; 3) Kills zebra mussels in the near shore by depriving them of water and/or exposing them to freezing temperatures.

**Phragmites:** We removed a small cell of invasive phragmites that was spreading in a field adjacent to Wabalac Road. We will be returning in the spring to effect further removal if required.

**Sunset Bay Boat Launch:** The boat launch and adjacent area saw improvements by Lanark Highlands Township. In addition to installing a portable toilet, bear-proof garbage container, emergency pin number and a picnic table, a large sign was erected containing important information about boating safety, etc. Of note to us is a sign concerning the control of invasive species entering or leaving the lake. The sign is pictured below.



New Signage at the Sunset Bay Municipal Boat Launch