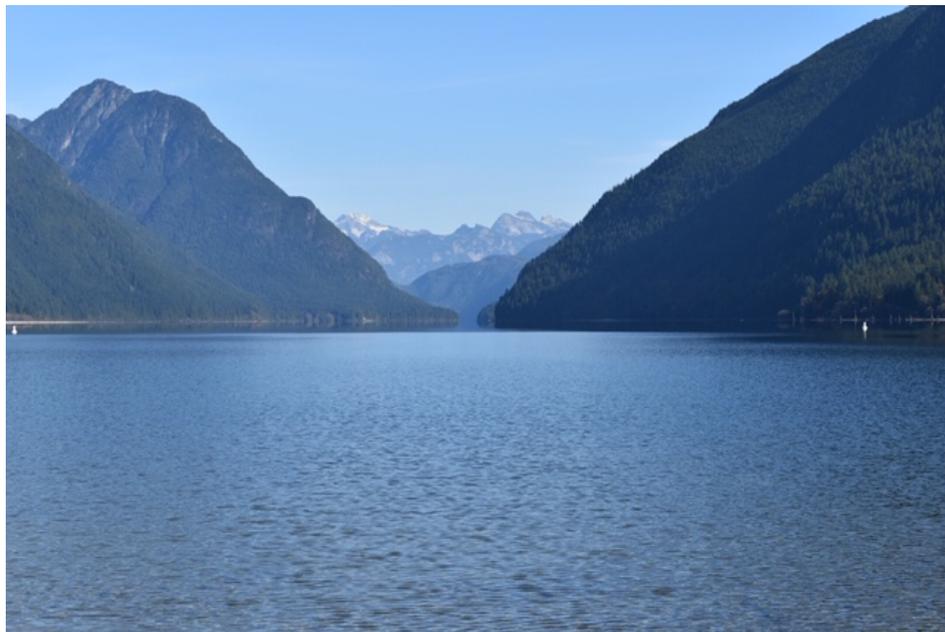


# 2019 SECCHI DIP-IN



BC Lake Stewardship Society

## Background

The Secchi Dip-In is a program of the North American Lake Management Society (NALMS). The mission of the Society is to forge partnerships among citizens, scientists, and professionals to foster the management and protection of lakes and reservoirs for today and tomorrow (NALMS, 2018). The Secchi Dip-In began in 1994 to demonstrate that volunteers can provide accurate, consistent information for lakes. As of the latest annual report from 2016, a total more than 46,500 records on more than 7,800 waterbodies have been submitted from twelve countries (Snyder, 2017). Data was submitted for lakes in eight countries (Canada, Denmark, Ireland, Italy, Serbia, Sweden, Turkey, and the United States) during the 2016, including lakes in thirty (31) U.S. states and three (3) Canadian provinces (Snyder, 2017).

The Secchi Dip-In program is an ongoing effort to have trained volunteers gather water quality data on an annual basis, particularly in July. Secchi Dip-In participants include trained monitoring volunteers, individuals interested in volunteer-based science efforts, and lake enthusiasts (Snyder, 2017).

## The History of the Secchi Disk

Pietro Angelo Secchi, an astrophysicist and scientific advisor to the Pope, created the Secchi disk in 1865, when he was asked to measure the clearness of the water in the Mediterranean Sea. Secchi created a white disk attached to a line, which he lowered into the water and recorded its depth. He continued “dipping” from season to season and year to year and compared his readings over time. Since then, various sizes of disks have been used, with the most common being an 8-inch diameter plastic disk with black and white quadrants.

## How is the Secchi Disk Used?

The process is simple: using the attached line, lower the Secchi disk into the water until it is just out of sight. Record this depth using the marked 1 metre increments on the line. Now, raise the disk slightly until you can just see it and record this depth. The average of the two depths is your Secchi disk reading.

## British Columbia's Dip-In Participation

Since 2002, the BC Lake Stewardship Society has coordinated BC's participation in the North America-wide annual Secchi Dip-In. This year (2019), 29 volunteers completed 50 dips on 33 lakes which is a slight increase from last year. We had several volunteers that submitted dips for multiple lakes in their area. Two dips were outside of the timeframe of the Dip-In, which takes place in the month of July. Overall, since 2010, there has been a 35% decline in the number of lakes with Secchi depth readings collected during the BC Secchi Dip-In. This is concerning because long-term trends are important indicators of the changes a lake is experiencing. These long-term data sets are valuable and without them it is difficult to track trends.

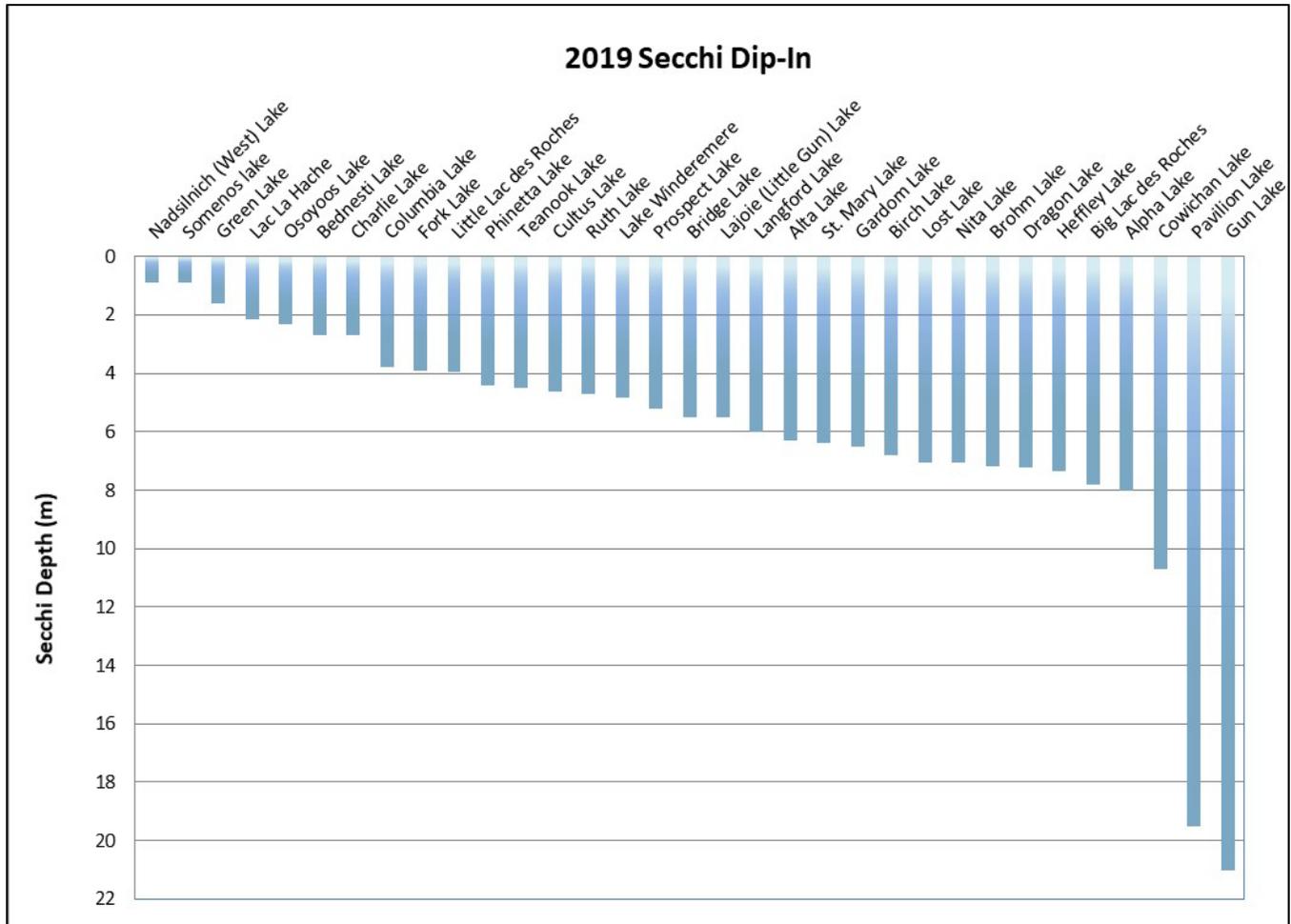
## Temperature and pH

This year, we received temperature readings for 18 lakes, and pH readings for 6 lakes. Last year we had 21 temperature readings and 5 pH readings.

This year, the coldest reading was from Gun Lake (Omineca/Peace region) at 16°C, and the warmest reading was 24.6°C at Somenos Lake (Vancouver Island region). Continuous long-term collection of this data can also provide us with valuable information about climate change and water quality trends.

### Clearest Lake?

The deepest Secchi reading was recorded at Gun Lake (Thompson-Nicola region) at 21 m. The second deepest Secchi depth measured was Pavilion Lake (Thompson-Nicola region) at 19.5 m.



### What Does the Secchi Disk Tell Us?

The Secchi disk gives us a reading of water transparency according to the depth of the measurement. The volume of suspended particles contained in the lake water affects transparency. These suspended particles can be a combination of things such as zooplankton, algae, pollutants, and silt. Secchi data collected year after year can provide valuable information on trends in transparency for monitored lakes. Every lake is different in size, shape, depth and geography, and each has its own combination of particles. Each Secchi reading provides a “snapshot” of the water quality in the lake at that particular time.

## What Can Cause Changes in the Secchi Reading?

Readings that show a trend of **decreasing** depth for a lake during the Dip-In (in the summer) may be the result of one or more of the following factors:

- i. Environmental variability associated with annual climatic variation
- ii. Higher nutrient levels which can increase algal growth
- iii. Erosion of the shoreline or erosion from site development near the lake
- iv. Recirculation of bottom sediment from motorboat activity
- v. Discolouration of the water from wetland runoff and/or plant decomposition
- vi. Reduced zooplankton populations

Additionally, most lakes will experience increased boat activity on weekends and holidays. Taking a Secchi reading on the day after a weekend or holiday may show different results than a reading taken at a different time of the week. This can reveal the effect increased boat activity has on the transparency of a lake. Significant storm events, storm water runoff, and turnover can also alter Secchi readings.

Readings that show a trend of **increasing** depth can be the result of one or more of the following:

- i. Environmental variability associated with annual climatic variation
- ii. Low nutrient levels, which can decrease algal growth (lower productivity of the lake)
- iii. Little or no mixing of the lake water (sediments settle to the bottom)
- iv. The effects over time of shoreline restoration – clarity may increase if shoreline enhancement projects have been accomplished and consequently erosion and/or pollution sources have decreased
- v. Increased zooplankton populations

## Become a Dipper!

Please encourage others to take part in the 2020 Secchi Dip-In. If Secchi depth is measured in a lake routinely for many consecutive years, the data can be analyzed for trends in water clarity. This could be valuable for examining the effects of climate change.

To become a dipper for the 2020 Secchi Dip-In, please contact the BCLSS office. An email reminder with instructions and data sheets will be sent out in the spring. A **FREE** Secchi disk is provided to every new member or member group and can also be purchased through our office.

## References

North American Lake Management Society (NALMS). 2018. [www.nalms.org](http://www.nalms.org)

Snyder, V. 2017. *2016 SDI Report*. North American Lake Management Society. Accessed October 15, 2018. [http://www.secchidipin.org/wordpress/wp-content/uploads/2017/05/v2.0\\_SDI-2016-Annual-Report-updated-05-30-2017.pdf](http://www.secchidipin.org/wordpress/wp-content/uploads/2017/05/v2.0_SDI-2016-Annual-Report-updated-05-30-2017.pdf)