August 2019 Water Quality Update

WLA water quality volunteers continue to work to help the lake. Our most important message is that all **property owners should understand and if needed stop water runnoff into the lake**… check out LakeSmart to learn more about how to do this.

Lake Stewards of Maine Water Monitoring Conference

The Watchic Lake Association Water Quality committee attended the annual Lake Stewards of Maine Lake Monitoring Conference on July 27th. The theme of this year's event was "**The Influences of Climate Change on Lakes: What's Coming, and What's Already Happening".**

Cathy Watson, Eileen and David Burnell

From the conference, we learnt that what we are observing on our lake is typical for lakes in Maine. The lakes are in a delicate balance with their environment and climate change is definitely having and will continue to have a major impact on our lakes.

Topics from Conference

- Early Ice-out/late Ice-in dates and the resulting longer growing season for algae in the lake
- Effects of Climate Change on lake water quality. With some recent case histories were some lakes have been pushed over the edge and had large algae blooms. One lake (Georges Pond) is not that different than Watchic Lake.
- Effects of Climate Change on invasive species. How invasive flora and fauna (plants, fish and other creatures) once unable to live in Maine are now moving in.

- A new field guide to Aquatic Phenomena in Maine Lakes. This App for smart phones was developed by LSM and is being launched in beta form. It should help you identify plants, animals and other creatures in and around Maine lakes.

See the agenda here (https://www.lakestewardsofmaine.org/lake-monitoring-conference-2/).

Watchic Lake Monitoring Activities

At Watchic Lake, the water quality committee has been out on the lake at least 10 times this season checking the water quality. You may have noticed that the water clarity is lower than usual. Water clarity can change for several reasons. This year one big influencer of lower clarity is the wet spring we had and the resulting increase in nutrients (especially phosphorus) that was washed into the lake. We measure clarity using a Secchi disk.

Figure 1 shows the readings this year and the historical average for 2016-2018.

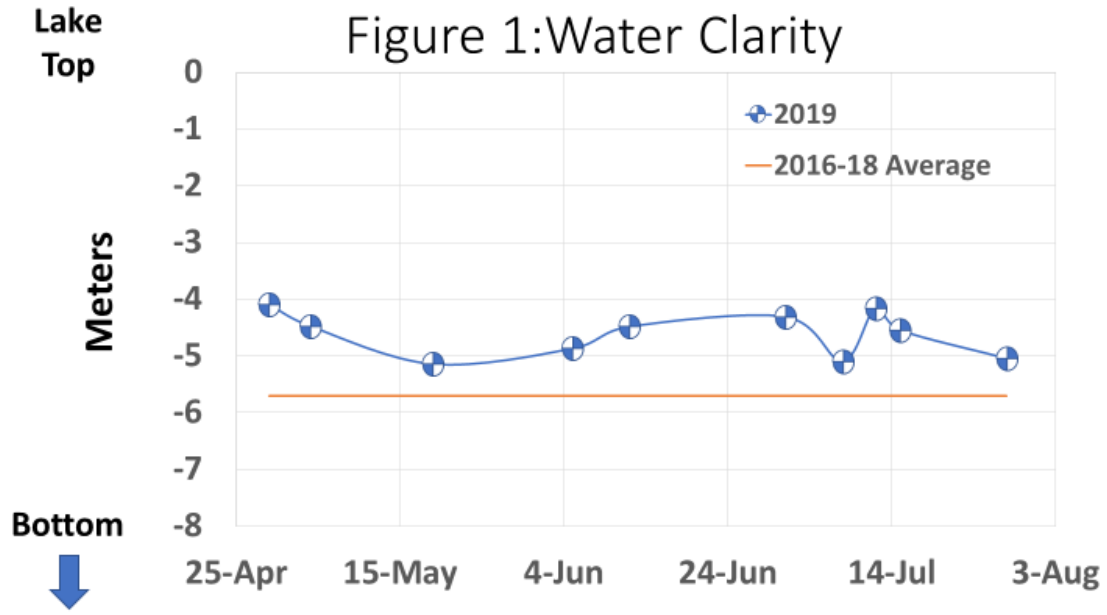
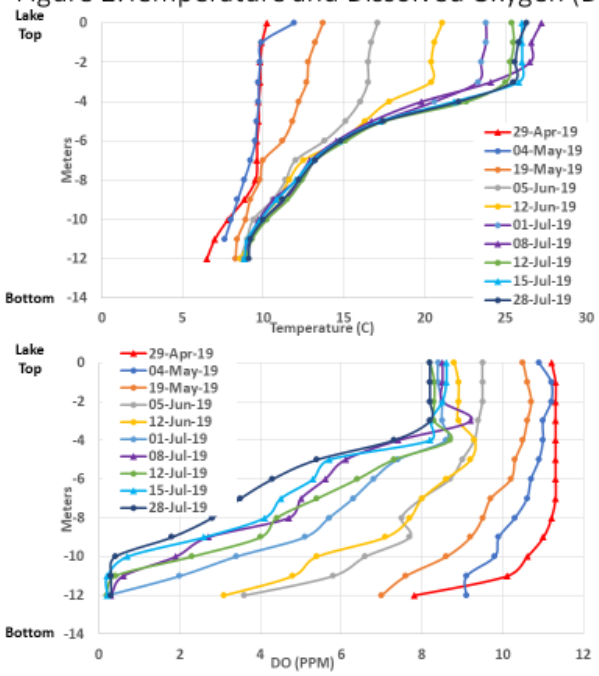


Figure 2 shows the water temperature and dissolved oxygen (DO) at 1-meter intervals from the top of the lake down.

As expected, the temperature in the lake has stratified, where the top is warm (this area is where we see most of the activity (e.g. algae growth) while the bottom remains cool. The DO pattern over time is also what we've seen in recent years. The lack of oxygen at the bottom of the lake will restrict fish species that like colder water, but may also cause phosphorus stored at the bottom of the lake to be released into the lake. This phosphorus can fuel further algae

growth. We will start measuring and tracking the phosphorus levels at the bottom of the lake this month to monitor for changes.

Figure 2:Temperature and Dissolved Oxygen (DO)



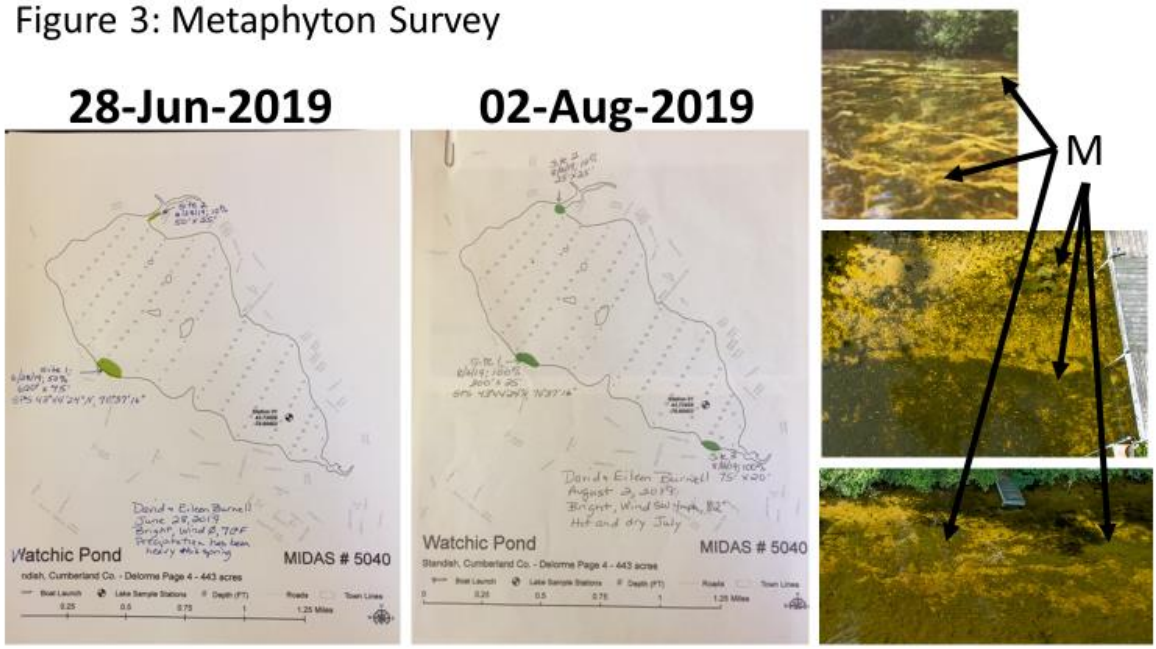
As usual, in the Spring, the whole lake was around 10 °C (50°F).
While the temperature at the top of the lake rose steadily until ~12-July, (where it settled at ~26°C (80°F)), the temperature at the bottom of the lake has remained ~9°C (48°F). Creating a thermocline in the lake water.

Dissolved Oxygen at the top of the lake has decrease slightly over the season and is now ~8 ppm.
However, at the bottom of the lake the dissolved oxygen has greatly reduced during the season. Starting ~1-July, we began to see depleted oxygen (≤2ppm) at the bottom of the lake.

Metaphyton Update

Metaphyton is cotton candy-like algae that usually floats near the top of the shallow water but can get stuck in lake vegetation and accumulate. This spring large accumulations of Metaphyton were reported just north of the Kiwanis Beach and in the mouth of Page Brook (see Figure 3). These have dissipated somewhat but are still present in those area. Another area near the mouth of Paine Brook has also been reported now. We will continue to monitor the areas and the rest of the lake for metaphyton. These algae, like most others, are fueled by extra nutrient entering the lake, most likely from storm run-off or septic tank issues.

Figure 3: Metaphyton Survey



Some of the things driving the recent observation may include:

- Warmer temperatures for longer periods of time:
    - Early Ice-Out/late Ice-In dates and the resulting longer growing season for algae in the lake.
    - Less ice thickness allowing more light into the lakes so plants and algae may not die off during the winter.
- More severe weather events (rain and droughts) resulting in more nutrients from storm run-off entering the lakes and streams.