

Water Quality Committee Meeting – 7/9/23

Jennifer, Charlie, Susan, Jim, John, Mary

Testing for toxins from cyanobacteria/blue-green algae: The chief cyanotoxins of concern are microcystins, which can reach significant levels in the later stages of a bloom as the cells begin to die and decay.

There is a rapid test available from ABRAXIS for total (free/soluble and bound/cellular) microcystins in the 0-5 ppb range for source drinking water. This will be confirmed with Linda Bacon as the best choice prior to our ordering it. Mary will email her and also try to find out the microcystins levels measured in Webber Pond last September.

(WHO recommends a safety level <1 ppb for microcystins in drinking water; EPA recommends a health advisory level of 0.3 µg/L (ppb) for children pre-school age and younger; for school-age children through adults, the recommended levels are 0.3 - 1.6 µg/L).

When conditions merit it, or someone raises a concern, we can send photos to Linda Bacon for her input and do a rapid test for microcystins if recommended. These tests are expensive, so we need to be testing only when it makes sense.

Managing the water level is a balancing act, as always. Today we will put back two boards on the left side [that were removed for doing a mini-flush].

Susan brought up some feedback from people around the lake – they seem to support making the dam easier to operate, and also generally support the road work [to reduce runoff]. But some complain about the Alewives run – some blame the fish for water quality issues; others think we lose water because of the fish. There were complaints about the water being too high last fall, causing shoreline erosion. It might be useful to remind people that we cannot control the forces of nature (chiefly weather), but that we are monitoring the lake carefully in terms of water level and water quality. Improvements to these efforts are being paid for with funds from the Alewife fishery.

Jim is measuring temperature, pH and phosphorus about a foot below the surface. Recent measurements showed a significant increase in phosphorus and pH.

June 23: pH 8.6; no detectable color for the colorimetric test for phosphorus

July 6: pH 9.2; blue color detected indicating phosphorus [at a level that can generate algal bloom]

Today's sample had no detectable color; possibly indicates effectiveness of the mini-flush.

It is likely that algal growth uses more CO₂, which in turn may account for a rise in pH. This will be explored further. Jim also noted that the sediments in Webber Pond are not the type that provide a good buffering capacity, so pH changes may be more dramatic than in other Maine lakes where there are carbonates in the sediment. Jennifer noted that algae will grow in a pH range of 7-9, but above 10 the algal toxins become a problem. Most fish do not like the higher pH; also, largemouth bass prefer temperatures up to 75 and so they move to the deeper water as the lake warms.

We discussed possible treatments to mitigate algae blooms. Hydrogen peroxide was used successfully in a canal in Fort Myers, FL; alum (aluminum sulfate) has been used in several Maine lakes, including a portion of China Lake. But the state funding (grants) for this are no longer available, and this would be very expensive. It also could have unintended consequences with respect to the ecology of Webber Pond. Other ideas are welcome!

We still have work to do in terms of getting people to take responsibility for runoff at their shoreline property, as well as the camp roads. John mentioned that there is some discussion at the town Planning Board regarding more regulations, which of course many/most people around Webber will not like. Current regulations are not being enforced so adding more may be futile.

Future actions:

We need a team to do testing; a team to handle buoys; a team to do dam management. Charlie is in charge of the Secchi disk readings, and Jennifer will take that over when he leaves at the end of the summer. Ericka has ordered new official buoys; when those arrive we'll need a volunteer(s) to put the buoys in.

Maine is getting wetter and warmer due to climate change, which will increase the likelihood of conditions that favor algal blooms, including cyanobacteria. Nutrient reduction, especially phosphorous, is currently the best strategy for sustained management.

Useful reference links:

<https://www.maine.gov/dep/water/lakes/cyanobacteria.html#:~:text=Fortunately%20most%20Maine%20lakes%20do,been%20found%20to%20produce%20cyanotoxins>

https://www.epa.gov/sites/default/files/2019-07/documents/cyanobacteria_and_cyanotoxins_fact_sheet_for_pws_final_06282019.pdf.pdf

https://www.globalhab.info/files/Cyano_mitigation_GlobalHAB2019.pdf

From: Bacon, Linda C <linda.c.bacon@maine.gov>
To: Susan Traylor <birchpt@aol.com>
Cc: John Reuthe <john@ereuthe.com>
Sent: Monday, October 3, 2022 at 06:43:21 PM EDT
Subject: RE: Fwd: Secchi reading

The sample that Nate dropped off had a concentration of 1.0 ug/L of microcystin...considerably lower than what we got in the scums.

It is above the infants/non-school-aged children 10-day drinking water limit, but below the adult/school-aged children 10-day drinking water limit.

Out of an abundance of precaution, I'd still avoid accidental or intentional ingestion and unless you are absolutely sure your pets won't drink the water, keep them out as well.

Linda