Is it OK to Swim in Muskrat Lake?

By Megan Rae- Director of Media and Communications at the Muskrat Watershed Council on July 6,2018

With the arrival of a sudden and prolonged heat wave, many have asked the Muskrat Watershed Council if it is safe to swim in Muskrat Lake. You may have noticed that people do swim in Muskrat Lake and will partake in water sports like tubing, waterskiing, wakeboarding, or paddle boarding. We love to hear stories of people enjoying their lake to the fullest. Nevertheless, the question of whether it is safe to swim is an important one. For this reason, we would like to explain as best we can the current issues affecting Muskrat Lake and how this might influence your use of the lake.

MUSKRAT LAKE AND TRIBUTARIES

As many of you know, Muskrat Lake and its tributaries are facing a more pressing issue difficult to pin-down because it does not stem from a single source – we call this non-point source pollution. The most significant source of non-point source pollution in our watershed is nutrient loading from Phosphorous and Nitrogen. These nutrients enter our waterways through various pathways and over a large geographical area at volumes greater than the lake's ability to process through its own natural functions and cycles.

Previous studies on nutrient loading in other watersheds around the world determined some of the main causes of nutrient loading. These include fertilizer runoff (e.g., crops, golf courses, private homes, etc.), old or faulty septic systems, not fencing cattle from water, outdated wastewater treatment infrastructure, and the overuse of household products that contain reactive forms of phosphorous known as phosphates, which are readily available for use by plants and algae. An accumulation of nutrients from these sources will definitely affect a local water body over time.

What happens when nutrients are released from multiple sources into one waterway? As we see in Muskrat Lake, you will typically observe an increase in plant and algae growth and a decrease in dissolved oxygen available to other aquatic organisms, such as fish. Of course, a reasonable amount of algae and plants in an aquatic ecosystem is normal and beneficial, but too much and you begin to see the negative side effects.

One of the more serious side effects on Muskrat Lake is the build up and proliferation of blue-green algae blooms. What is the difference between blue-green algae and the filamentous algae you commonly see in the water? Blue-green algae is actually photosynthetic bacteria, specifically known as cyanobacteria, which can produce toxins harmful to humans and animals. Some of these toxins include neurotoxins (affect the nervous and respiratory system) and hepatotoxins (affect the liver). They are difficult to see with the naked eye unless they clump together. Some species of blue-green algae are identified by a pea soup-like appearance, while others by a general blue-green colour in the water. Certain factors must occur for a blue-green algae bloom to take form. Some of these factors include high surface water temperatures, large amounts of sunlight and high levels of phosphorus and nitrogen. Blue-green algae blooms mostly occur in the warmer months of summer to early fall. If there has been a recent blue-green algae bloom reported on the lake by the Renfrew County and District Health Unit, please respect the advisory. If there is no blue-green algae advisory released and you see something that resembles a blue-green algae bloom, what you decide to do is at your own discretion. We would recommend, however, that you take a photo and report it to the Renfrew County and District Health Unit.

If this is turning you off from swimming in Muskrat Lake, we would like to add that many resident cottagers and visitors have said they enjoy swimming in the lake from May to July, but as water temperatures rise, they become more cautious. In 2014, Algonquin College and the Muskrat Watershed Council initiated a Water Quality Monitoring Network with the Ministry of Environment and Climate Change, which continues today. We collect monthly samples from May to October from 24 sites in the Muskrat Lake Watershed, including the lake itself, Snake River, Muskrat River and other smaller tributaries. The data and water samples collected measure concentrations of several water quality parameters, including dissolved oxygen, several forms of phosphorous and nitrogen, temperature, pH, turbidity and conductivity, among many others. There has also been two scientific reports written by Environmental Toxicologist, Dr. Rebecca Dalton, which interpret our water quality data and identify areas of concern in the watershed, as well as include recommendations to mitigate nutrient loading in these areas. The Muskrat Watershed Council and our partners are working together to implement solutions based on those recommendations.

COBDEN BEACH

The biggest issue concerning the regular and prolonged beach closures at Cobden Beach is high levels of E.coli bacterial contamination, identified by the Renfrew County and District Health Unit, who conduct routine sampling of local beaches.

In an effort to improve the water quality at Cobden Beach for local residents and visitors, the Muskrat Watershed Council installed a laminar flow aeration system in combination with a biological enzyme treatment to encourage oxygen-rich water circulation, decomposition of organic material, and reduction in nutrients available for excessive plant and algae growth.

Installation of the aeration system took place in 2017 and is now in its first full season of operation. The Muskrat Watershed Council sees this as a long-term solution, as it will take 3 to 5 years before the system can create noticeable improvements in the beach's water quality. A volunteer for the Muskrat Watershed Council samples the beach weekly (on average) and records observations. We advise those who wish to swim at the beach to abide to the beach closure advisory designated by the Renfrew County and District Health Unit until lifted. Understand that swimming at any beach with an E.coli advisory is not responsible behavior, nor is it safe. Pets can also contract E.coli. Thus, please avoid bringing your pets to the beach if it is closed.

For more information about the Muskrat Watershed Council and our local initiatives including our water quality monitoring network or our Cobden Beach project, we encourage you to visit our website: https://www.muskratwatershedcouncil.com/. If you have more questions, please feel free to contact us by email at muskratwatershedcouncil@gmail.com