

How can my family and I help to combat climate change as cottagers?



Photo by: Cormac Trainor (2021 Contest winner)

Over the last one-hundred years, Gull Lake has been a destination for Minden residents, cottagers, and people looking to enjoy the lake activities. It is also home to wildlife, fish and abundant vegetation. The increase of human activity poses a threat to our lake. As human stewards of the lake, we must take action to ensure the protection of the lake and the surrounding wildlife. This essay explains the role of phosphorus in lake health, the impact of phosphorus imbalance, and how climate change exacerbates the phosphorous issue. This essay will conclude with how the Gull Lake community can reduce phosphorus use and prevent it from reaching the lake.

Phosphorus is a natural chemical element found in water bodies. This element supplies healthy nutrients to the fish and plants, but can cause problems when its levels have even the slightest imbalance. This element can be found in household cleaning products, sewage, fertilizers, and manure. Over time, phosphorus can collect in lakes causing algae blooms and accelerated nutrient growth resulting in depleted oxygen levels. The depletion of oxygen from plant overgrowth is called eutrophication. Fish and aquatic plants depend on dissolved oxygen to survive and with too much eutrophication, fish will not survive. Currently Gull Lake is classified as oligotrophic (less water vegetation) but could become eutrophic faster if humans do not not consider their phosphorus use.

If we are not careful, increased phosphorus in our lake could cause algae blooms leaving the lake slimy and smelly. Throughout the last few years, blue/green algae

(Cyanobacteria) was found in lake bays in a neighboring district, Muskoka. Algae blooms don't just affect the water quality, but can release algal toxins harmful for swimmers. Additionally, nutrient growth occurs when phosphorus levels rise. Bacteria decompose decaying plants and use dissolved oxygen in the process. Therefore, when there is an excessive amount of aquatic plants, the oxygen level is negatively impacted. When dissolved oxygen levels get too low, small fish aren't able to consume sufficient oxygen, destroying a key factor of our aquatic ecosystem.

Climate change is becoming more relevant everyday causing more extremes in global weather. Higher temperatures favor the release of phosphorus in lakes and increase the growth of algae and bacteria. Therefore, it is important for cottagers to prevent phosphates from reaching the lake. This can be done through septic management, being selective with household/property products and shoreline preservation. A septic tank is capable of leaking and should be changed regularly. Changes are recommended every two-three years, but no later than five years. When families are doing laundry, washing dishes and cleaning, it is important to buy products which are phosphate free. Finally, fertilizers and manures used outside contain phosphorus which can be carried to the lake with runoff and groundwater. Shorelines are the greatest way to filter out the chemical because the roots prevent erosion and collect synthesized products. Shorelines do not work as well when they are altered by humans. If natural features have already been removed, there are still opportunities to improve and naturalize the shore. Here is a link to a list of native Haliburton vegetation species that one can add to a property to restore the lake line.

<https://www.cohpoa.org/wp-content/uploads/2016/02/Native-Trees-Shrubs-and-Plants-for-Shoreline>. In addition to shorelines, cottagers need to find phosphate free fertilizer. Regardless, people should refrain from using excessive amounts of fertilizer and manure close to the lake.

In conclusion, phosphorus poses an immediate threat to Gull Lake. Climate change already exacerbates eutrophication naturally from increasing warm temperatures, so it is extra important that the Gull lake community prevents phosphorus from also accelerating this process. If the community is not careful, algae blooms will make the lake slimy and murky. Algal toxins (from algae overgrowth) can be accelerated by phosphorus which means risks to swimmers. Finally, dissolved oxygen levels can drop causing deterioration of Gull Lake's aquatic ecosystems. Fortunately, as discussed in the essay, there is lots the community can do to prevent the acceleration of climate change locally. Climate change will continue to affect Haliburton making it essential we protect what makes this county special, the thousands of freshwater lakes.

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Works Cited

Denchak, Melissa, and Melanie Sturm. "Freshwater Harmful Algal Blooms 101." *NRDC*,

27 Sept. 2019, www.nrdc.org/stories/freshwater-harmful-algal-blooms-101.

Ethan. "Phosphates in Household Cleaning Products – Safe Household Cleaning."

Safehouseholdcleaning.com, 2018,

www.safehouseholdcleaning.com/phosphates-cleaning-products/.

Haliburton County Master Gardeners. *Shoreline Preservation*.

www.cohpoa.org/wp-content/uploads/2016/02/Native-Trees-Shrubs-and-Plants-for-Shoreline.pdf. Accessed 2 July 2022.

Lake Plan Steering Committee, et al. *Gull Lake -Lake Plan*. 2015,

static1.squarespace.com/static/59a4975ebebafb944464bd59/t/59bebcf72278e7565e7ef0a6/1505672451026/Gull-Lake-Plan-FINALMay-6_2015-print.pdf.

Muskoka Lake association. "Home." *Mla.on.ca*, mla.on.ca/. Accessed 1 Aug. 2022.

Scheider, Maureen. "Why Is Phosphorus Bad? Part 1: Environmental Impact." *Ruekert &*

Mielke, Inc., 17 July 2017,

www.ruekertmielke.com/blog/2017/7/25/why-is-phosphorus-bad-environmental-impact#:~:text=Excess%20nutrients%20such%20as%20phosphorus%20and%20nitrogen%20exist.

Sorko Services. "Effects of High Phosphate Levels in Water." *Effects of High Phosphate*

Levels in Water, 12 Dec. 2019,

www.sorkoservices.com/2019/12/12/effects-of-high-phosphate-levels-in-water/.

Toronto Star. "2021 Muskoka Blue-Green Algae Blooms All Now Resolved as of Jan. 27,

2022." *Thestar.com*, 8 Feb. 2022,

www.thestar.com/local-huntsville/news/2022/02/08/2021-muskoka-blue-green-algae-blooms-all-now-resolved-as-of-jan-27-2022.html?rf&itm_source=parsely-api