



Why has lake water quality changed?

By Judi Brouse

If we were all in one room and I asked whether you thought the water quality of your lake had changed, most of you would put up your hands. If I asked whether you thought there were more algae, most of you would put up your hands. If I asked whether you thought there were more aquatic plants, most of you would put up your hands.

And you would be right; changes are happening in our lakes, and we need to understand why. The rule of thumb is that the more phosphorus there is in a lake, the higher the chance of experiencing an algae bloom. However, since 1996, overall phosphorus levels in lakes across Muskoka have remained fairly consistent, with phosphorus levels that represent fairly healthy lakes that can support a wide variety of plants and wildlife. So, if phosphorus levels are not increasing, what is happening to lakes and what can we do about it?

The most predictable thing about Mother Nature is that we don't understand her or how the natural world is evolving. Nature is not simple and a simple answer that says that we will have good clean, clear lakes if we reduce our phosphorus is naïve. There are multiple stressors acting on our lakes and we can control only a few of them. Some stressors include invasive species (spiny water flea, Eurasian water milfoil and purple loosestrife), physical changes to shorelines (hardened shorelines and removal of vegetation) and acid deposition.

However, perhaps the most significant and least understood stressor is climate change. Scientists don't fully understand the impact a changing climate will have on our lakes but here are a few early observations:

1. Warmer temperatures mean what would have fallen as snow will instead come down as rain. Currently, the snow pack acts as a natural reservoir, storing water through the winter that will melt and be released during the spring and summer, filling our lakes for recreational use. If that precipitation falls as winter rain, it will be lost for summer use and lake levels could be lower.
2. Precipitation magnitudes and frequencies are expected to increase. Heavy rains or flooding can affect water quality because large volumes of water can transport both nutrients and pathogens into waterbodies and also overload storm and wastewater systems.
3. Higher water temperatures and changes in the timing, intensity, and duration of precipitation can reduce dissolved oxygen levels, which can have an effect on aquatic life. In particular, there may be changes in the small plant and animal life that form the base of the food chains in our lakes and provide us with the healthy fish, birds and mammals we all enjoy.
4. Warmer temperatures will likely result in earlier ice-out dates. As temperatures warm earlier, our lakes may stratify earlier and deeper, leading to a reduction in bottom oxygen late in the summer and the possibility of increased phosphorus loading in the bottom water.
5. Warmer temperatures will also likely result in new types of algae in our lakes and increased algae blooms.

These changes are already starting to occur. What can we do to keep our lakes as healthy as possible? The message is still the same. If we maintain healthy, vegetated shorelines, we provide Mother Nature with the resilience to adapt to a changing climate. Specific actions you can take include:

1. Carpool to the cottage to reduce your carbon footprint.
2. Create or maintain a shoreline vegetation buffer zone.
3. Redirect drains and downspouts away from your lake. Any steps that increase the time taken for water runoff to reach your lake will promote absorption of the nutrients and pathogens by the soil.
4. Use phosphate-free detergents and vegetable-based soaps and shampoos.
5. Do not use chemically produced fertilizers on lawns or gardens.
6. Maintain properly functioning septic systems that are set back as far as possible from your lake.

So, back to the original question. Why have our lakes changed? The better question might be: 'Have we done everything we can to reduce environmental stressors and strengthen the natural resilience of our lakes and watersheds to cope with future change?'

No matter what we do, change is going to happen. As lake residents, we have a responsibility to help manage our lakes so that our children and grandchildren will be able to continue to enjoy them.

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