

## Harmful Algal Blooms – How Can We Help?

Based on the analysis of a large number of chemical and physical parameters over the past 35 years, the waters of Kahshe Lake are in reasonably good condition and have displayed no discernable trend in the levels of algal friendly nutrients – phosphorus and nitrogen. However, the Conservation Committee’s 2021 Near-Shore Water Sampling Project (NSWSP) which was funded by the Kahshe Lake Ratepayers’ Association has now shown that the evaluation of water quality via spring sampling from mid-lake sites may not be representative of nutrient levels closer to shore where algal blooms have been detected late in the season in both 2020 and 2021.

The NSWSP findings have demonstrated that more intense summer and fall rainfall events appear to be accelerating the leaching and migration of nutrients from our septic systems and from managed lawns and beaches located close to the shoreline which attract large numbers of Canada geese.

Although the District Municipality of Muskoka has not yet undertaken the planned ‘Causation Study’ on Kahshe Lake, the NSWSP findings from 2021 provide some advanced insight into the linkage between near-shore water chemistry and algal bloom development. As such, the members of the Conservation Committee have developed some actions property owners can take to mitigate the migration of algal friendly nutrients to near-shore waters. This has resulted in the development of the following recommendations:

Nutrient Source Reduction	Examples of Specific Actions
Operating and Maintaining Your Septic System	<ul style="list-style-type: none"> <li>▪ Have your tank and leaching bed inspected by a trained septic inspector for signs of failure and plugged tiles;</li> <li>▪ Have an effluent filter installed and cleaned annually to minimize solids entering and plugging the tiles of your leaching system;</li> <li>▪ Have your tank pumped every 3-5 years or earlier if the depth of bottom sludge and top scum exceed 1/3 of the tank depth;</li> <li>▪ Avoid overloading the system by spreading out washer and dishwasher loads throughout the day to give solids time to settle in the tank before moving out into the leaching bed.</li> <li>▪ Divert roof drainage and runoff from patios, paths and other hard surfaces away from the septic tank and leaching bed.</li> <li>▪ Keep the leaching bed vegetated with shallow-rooted grass and if possible, minimize shade from any tree canopy as much as possible to maximize evaporation.</li> <li>▪ Make sure soaps, detergents and other cleaning materials that enter the septic system are phosphate-free.</li> </ul>
Managing Your Waterfront Property to	<ul style="list-style-type: none"> <li>▪ Maintain as much tree, shrub and other vegetative cover as possible to minimize impervious surfaces and absorb rain water to reduce erosion and direct rain droplet impact on exposed soils.</li> <li>▪ Clear native vegetation only where necessary for paths, building footprints and septic systems.</li> </ul>

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Minimize Soil Runoff, Erosion and Leaching	<ul style="list-style-type: none"> <li>▪ Ensure that foot paths or driveways leading to the waterfront have lateral drainage escapes and are constructed with or covered by rough, porous surfaces such as wood chips.</li> <li>▪ Divert roof/gutter water runoff from on-site buildings into rock-filled leaching pits to minimize direct runoff to the lake.</li> </ul>
Managing Your Shoreline to Keep it Natural and Less Attractive to Canada Geese	<ul style="list-style-type: none"> <li>▪ Maintain as much of your shoreline as possible in a natural condition to make it less attractive to Canada geese and to provide shade and habitat to the many native species that can be found in this zone.</li> <li>▪ Avoid the construction of new retaining walls, as although they have been used to reduce shoreline erosion, they can have undesirable side effects of increasing back-flow action which can stir up nutrient laden sediments.</li> <li>▪ Avoid importing sand to create or expand beach areas, as this is no longer permitted by the Ministry of Natural Resources and Forestry (MNRF).</li> <li>▪ If a lawn is desired, keep it well back from the waterfront to minimize its attractiveness to grazing by Canada geese.</li> <li>▪ If your lawn does attract large numbers of geese or other grazing or roosting waterfowl, there are some measures that can be used as deterrents which do not contravene the protection provided to these birds by the <u><i>Migratory Birds Convention Act, 1994</i></u>: <ul style="list-style-type: none"> <li>○ <b>Barriers</b> to impede access to grazing, block their view of hiding predators and to interfere with open flight escape routes to the water. These can include plant barriers like tall grass, shrubs or bushes, fences high enough to block their view, grids of rope/wire strung across the pathway or winding pathways to the waterfront to block direct escape routes.</li> <li>○ <b>Modification</b> of lawn management to mow less frequently to promote longer, more coarse-textured grass, to leave an area closest to the shore uncut or to start seeding with more coarse-textured grasses that are less favoured by geese.</li> <li>○ <b>Scaring</b> tactics, including the use of horns or sirens as long as they don't negatively affect your neighbours, flagging tape, streamers, distress sounds/tapes, motion- activated water sprinklers, scarecrows and placement of effigies of predators or use of helium balloons shaped to resemble hawks and other avian predators.</li> </ul> </li> <li>▪ Other more permanent control options such as re-location, use of firearms and egg sterilization all require a permit from Environment Canada.</li> </ul>
Avoiding the Use of Fertilizers for Lawn and Flower Gardens	<ul style="list-style-type: none"> <li>▪ Fertilizers contain the two main nutrients involved in algal blooms – phosphorus and nitrogen, and should not be applied to promote lawn or garden growth.</li> <li>▪ As most soils in around Kahshe Lake are coarse textured, they have low capacity to adsorb and retain these nutrients which then migrate to the underlying rock surface or enter the ground water and in both cases, migrate to the lake.</li> </ul>

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