

Wood ash recycling program could help save Muskoka's forests and lakes

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Implementing a new residential wood ash program to restore calcium levels in Muskoka's forest soils and lakes could help replenish the area's dwindling supply of crayfish and maple sap, according to new research co-led by York University.

Calcium levels in soil and lakes are essential for the growth of all forms of life, but the levels across central Ontario are declining due to decades of acid rain. It could take centuries for this [calcium](#) to rebuild on its own.

Researchers discovered that residential [wood](#) ash—a common household waste derived from wood-burning fireplaces and wood-fired ovens—was rich with the nutrients needed for restoring growth, including about 30 per cent calcium.

The study, published today in the journal *FACETS*, shows that adding controlled doses of cold residential wood ash to the watershed of Muskoka's forests could help solve the calcium decline problem and boost forest growth.

"Calcium is an essential nutrient for all living things," said Norman Yan, a senior scholar and professor emeritus of biology in the Faculty of Science, who co-led the study. "When you suffer from low calcium, you get osteoporosis and the ecosystem can suffer from osteoporosis as well. Many scientists have called this calcium decline problem ecological osteoporosis."

Supplementing watershed soils with calcium-rich wood ash may also improve the region's crayfish stock, [water quality](#), seedling regeneration and sugar maple tree production of sap, used to make [maple syrup](#).

"Lack of calcium has slowed the growth, reproduction and development of trees in Muskoka's forests," said Yan, chair of Friends of the Muskoka Watershed, a not-for-profit environmental organization that has conducted the research with York University, Dorset Environmental Science Centre, and Queen's University.

While forest programs using industrial wood ash exist in areas of Europe such as Sweden, the use of the non-industrial residential wood ash has not been researched and tested until now, said the study co-author, Shakira Azan, a former post-doctoral biology student and research associate at York University.

"A lot of people in Muskoka burn wood for heat and some send it to the landfill so, by collecting and recycling their wood ash, we are diverting waste from landfills," said Azan, an environmental project lead at Friends of the Muskoka Watershed.

The second phase of the research is AshMuskoka, a three-year pilot project which aims to be Canada's first residential wood ash recycling program. The project team, which launched in January, is working on securing 200 homeowners to donate their wood ash. This fall, researchers will conduct small-scale wood ash additions to test dosage needs, develop tools to identify site-specific doses, and determine the benefits and harm of residential wood ash applications. The first test site will be three sugar bushes in Muskoka, where maple syrup producers are eager to see if the controlled doses will restore the bushes to good health and yield [maple sap](#).

More information: Shakira S.E. Azan et al, Could a residential wood

ash recycling programme be part of the solution to calcium decline in lakes and forests in Muskoka (Ontario, Canada)?, *FACETS* (2019). DOI: [10.1139/facets-2018-0026](https://doi.org/10.1139/facets-2018-0026)

Provided by York University

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