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Plant and Environment Interaction

Evaluating mercury concentrations in edible plant and fungi species in the Canadian Arctic environment

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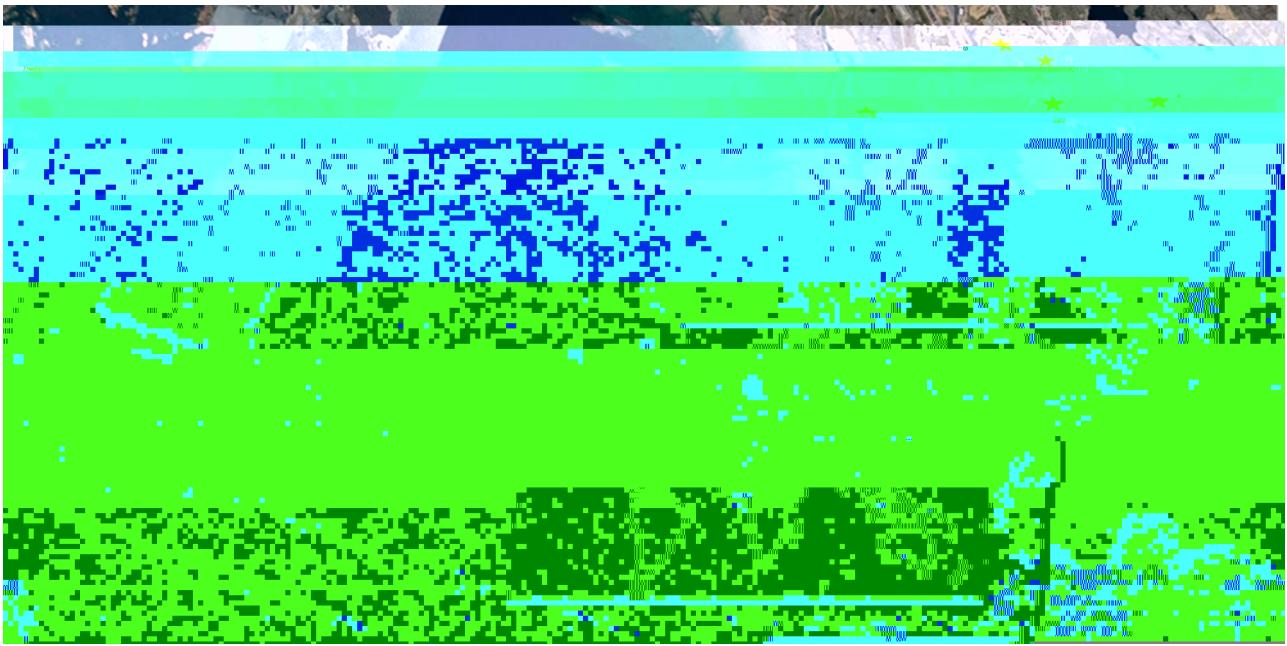
the terrestrial and aquatic ecosystems of the Canadian Arctic (Brown et al. 2018). Local sources of Hg in the Canadian Arctic (e.g., weathering of rock, waste incineration, and fossil fuel combustion) contribute marginally compared with international anthropogenic sources (Durnford et al. 2010; Shotyky, 2017). In 2005, Asia was the major contributor (65%) of all gaseous elemental Hg (GEM) [Hg(0)] in the Canadian Arc-

arthritis; and the Arctic willow (*Salix arctica* Pall.), used for its anti-infection properties and to treat upset stomachs. Berry plant species, including crowberry (*Empetrum nigrum* L.), blueberry (*Vaccinium uliginosum* L.), cranberry (*Vaccinium vitis-idaea* L.), and cloudberry (*Rubus chamaemorus* L.), are vital traditional food items that provide high nutritional value for Inuit across the Arctic (Boulanger-Lapointe et al., 2019). Berries are harvested in significant quantities in August and September and are eaten raw immediately or are frozen for later use. Berries are often used in jams, preserves, and beverages; are combined in breads and bannocks; and are commonly mixed with other traditional food items. The roots and leaves of berry plants are also sometimes eaten. Moreover, berry harvesting is an important seasonal cultural activity that enhances spiritual, personal, and community well-being for many Inuit (Boulanger-Lapointe et al., 2019). Other species, such as the common puffball (*Coprinus perlatum*), are consumed whole (Falandysz et al., 2012).

At high levels, Hg in its various forms can have serious negative health effects on humans. In particular, MeHg is highly toxic to humans, and even in small doses can result in lung and kidney failure; cause damage to the central nervous, digestive, and immune systems; and lead to severe brain damage or death (Petrucci et al., 2011; World Health Organization, 2017). To date, although there are numerous published arti-

TABLE 1 Common, Latin and Inuktitut names for plant, lichen and fungal species and the individual components sampled in Iqaluit, Nunavut

Common name	Scientific name	Inuktitut name	Plant components sampled
Alpine bistort (n = 3)	<i>Bistorta vivipara</i>	Tursaq	flowers, stem and leaves
Alpine sweetvetch (n = 3)	<i>Hedysarum americanum</i> (Michx.) Britton	unknown	



from 0.046 to 0.111 g g⁻¹ and median values up to 0.114 g g⁻¹ (Gamberg et al. 2015; Halbach et al. 2017; Leitch, 2006; Loseto et al. 2004; Obrist et al., 2017; Olson et al., 2018).

TABLE 3 Mean concentration, SD, median concentration, and sample size collected from combined plant samples of 28 plant species from Iqaluit, Nunavut and the surrounding area

Species	Sample size(n)
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TABLE 4

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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