

# Mercury Speciation in gull (*Larus argentatus*) guano samples and changes over two summer seasons on Brier Island, Nova Scotia

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Biovectors can transport contaminants to remote locations through excretion, shedding feathers and decomposition of carcasses. Big Meadow Bog on Brier Island is home to nearly 3000 mating pairs (2019) of herring gulls (*Larus argentatus*) each year during their nesting season (April-August). Mercury is a concern in food webs as it can cause irreversible effects to the nervous and reproduction systems in organisms. The presence of migratory seabirds may influence the mercury and nutrient biogeochemistry in this wetland.



Herring gull perching on post in Big Meadow Bog



Before sample collection



After sample collection

Five plastic posts were deployed in Big Meadow Bog for birds to excrete on. More than 50 samples were collected between May and August 2018-2019, in bi-weekly increments. Samples were dried, homogenized and analyzed for total mercury directly. Extractable phosphate, nitrate and sulphate were also measured.

Analysis equipment will be used from both Nelson O'Driscoll and Jennie Rand's laboratories.



Measuring extractable phosphate



Measuring total mercury



Haley Geizer collecting guano samples

It is still unknown if gulls alter the mercury cycle directly from concentrations in their feces or by providing nutrients to microbial processes that transform mercury speciation. This study aims to quantify the annual deposition rates of mercury and nutrients being introduced to Big Meadow Bog by herring gulls. This research is not only significant for conservation of this wetland but many other locations worldwide that are influenced by migratory seabirds.



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