



CNAES

HQP Research & Collaborative Exchange Funding

Visit report

A one-page report and photo (maximum 500 words) describing your visit. Include your original objective, and what you accomplished. This will be shared within the CNAES community.

1. Exchange information

Visitor: Gretchen Lescord and Jasmine Louste-Fillion, Laurentian University
Supervisor: John Gunn and Tom Johnston, Laurentian University
Host: Brian Branfireun, Western University

2. Goals

While visiting Dr. Branfireun at Western University's Biotron facility, we hoped to learn various digestion and instrumentation methods to analyze fish, invertebrate, and water samples for total Hg and methyl Hg.

3. Description of the visit

My PhD project ([theme 1, project 1.5](#)) examines mercury (Hg) cycling across the Attawapiskat watershed in the remote boreal forest of Ontario's Far North. Jasmine Louste-Fillion, a 3rd year undergraduate student at Laurentian University studying zoology, accompanied me on this trip to help analyze the ~1300 samples collected in 2014/2015 and gain experience working in an ultra-clean trace metal laboratory.

Our visit to the Biotron, which lasted approximately 7 weeks, was highly successful. Jasmine and I analyzed over 600 samples for methyl Hg using a base-organic hot block digestion and cold vapour atomic fluorescence spectroscopy (CVAFS) paired with gas chromatography (GC) for detection. Given the variety in Hg concentrations and the tissue matrix of our samples (fish with higher Hg concentrations vs. invertebrates with lower Hg concentrations), this digestion method in particular required troubleshooting, providing us with a thorough understanding of the chemistry behind each step. When not working on the methyl Hg samples, we analyzed fish for total Hg on 2 analytical set-ups: the direct mercury analyzer (DMA), which required no digestion, and CVAFS, which required a hot acid digestion. Both methods were used due to biomass constraints and an interest in precise %MeHg measures in small-bodied (<50 mm total length) fish. Approximately 600 fish were analyzed on the DMA and 100 small-bodied fish were also digested and analyzed with CVAFS. Lastly, we analyzed ~100 stream/river water samples collected across the Ring of Fire region for total Hg, the data from which will be shared among several CNAES projects.

Overall our experience at the Biotron was successful, educational, and enjoyable. Dr. Branfireun's lab personal were welcoming and extremely knowledgeable about all aspects of Hg analytical chemistry. We are happy to have made such valuable colleagues and look forward to working with Dr. Branfireun and his team further.