Stable isotope and trace element analyses are non-invasive tools that are improving our understanding of multiple aspects of animal behaviour, including migration and diet, but for many species, the value of such approaches remains untested. Through field and laboratory-based studies, our validations aim to facilitate more accurate descriptions of ecosystem-level processes, in a way that is less disruptive to animals. Such improvements will clarify the risks of contaminant exposure for different species across the course of the annual cycle and will help identify the fate and impacts of critical contaminants in natural systems. Additionally, these advancements will benefit research programs that aim to predict potential impacts (primary and cumulative) of other stressors, including climate change and resource development, on ecosystems and wildlife. Ongoing projects in our lab are focused on preparation of tissues (primarily feathers, eggs, and blood) for stable isotope and trace element analyses, as well analyses of resulting data to evaluate migration strategies and dietary shift, with representative species including horned grebe, lesser yellowlegs, and semipalmated sandpipers, among others.  We are interested in working with undergraduate students to advance these projects and will provide training in good laboratory practice, as well as in preparation of reports and summary statistics. Depending on student interest, there are also opportunities for field work involving animal capture and sample collection.

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