

Theme 1, Project 1.3

Biomonitoring under Changing Climate Conditions: Assessing Seasonal Variability of Benthic Macroinvertebrate Communities

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**Abstract**

The vast “Ring of Fire” region is considered to be one of the most promising mineral exploration areas to be discovered in Ontario in almost a century. Multiple stresses to the natural ecosystems are anticipated with mining development and climate change, which is predicted to impact hydrological and temperature regimes. Quantifying seasonal variation of habitat characteristics and benthic macroinvertebrate (BMI) communities at proposed biomonitoring reference sites, and determining the influence that the ecozone location may have on that variability, are important components of designing future bioassessments for the region. In this study, we examined seasonal variability in habitat characteristics and BMI communities by sampling 43 stream sites in the post freshet, mid-summer and fall of 2015 that are distributed across the two ecozones in the future mining region. BMI communities varied among sampling seasons, but less variation was observed between the post-freshet/ summer sampling than between comparisons to the fall. Ecozone did not have an impact on the seasonal variability of BMI communities. This is hypothesized to be due to selecting stream sites with similar characteristics (rocky bottoms, flowing water, wadeable), as well as the stream sites having similar riparian vegetation.

Keywords: Ring of Fire, Seasonal Variability, Ecozones, Benthic Macroinvertebrates

Geographic Location: Ring of Fire region of northern Ontario

How does your project link to Canadian aquatic ecosystem services?

The Ring of Fire region spans a pristine, undeveloped area of northern Ontario which is likely face multiple stressors of mining developments and climate change in the near future. My work plays a part in creating a monitoring program capable of detecting the impact of development on the vital ecosystem services that this region provides.