



CNAES

HQP Research & Collaborative Exchange

Funding

Visit report

1. Exchange information

Visitor: Alex Yeung, PhD candidate, University of British Columbia

Supervisor: John Richardson

Host: Dr. Dave Kreutzweiser, Canadian Forest Service, Natural Resources Canada, Sault Ste. Marie, ON

2. Goals

The main goal of my visit is to continue with, and strengthen the collaboration with CNAES government partners within project II.2 ([Experimental manipulations to test the effects of forest management activities on physical, chemical and biological indicators of aquatic ecosystem services from headwaters of forested landscapes](#)). Specifically, pre-logging measurements of stream ecosystem structure and functions are to be carried out in Ontario, which would facilitate an across-forest-type comparison of logging impacts on headwater streams with study sites in British Columbia.

3. Description of the visit

My visit to Sault Ste. Marie, ON, was from Oct 26 – Nov 13, 2015. It involved fall sampling in 7 headwater streams in the Turkey Lakes Watershed (a long-term environmental research and monitoring watershed co-managed by Canadian Forest Service and Environment Canada), which was followed by laboratory work at the Great Lakes Forestry Centre (GLFC), Canadian Forest Service.

The purpose of the field work is to obtain data on stream invertebrate communities, organic matter decomposition, ecosystem metabolism, in-stream and riparian nutrient processes, from another pre-logging, yet hydrologically different, year. The now two-year dataset has captured some extent of inter-annual natural variability, which would be contrasted with the instantaneous changes in these study variables in response to logging activities scheduled next year. I gratefully received helpful field assistance and logistical support from HQPs (Scott Capell and Kevin Good; technicians at GLFC) in project II.2, as coordinated through Dr. Kreutzweiser. He also reserved lab space for me to store and process samples (e.g. soil collected from riparian zone, leaf packs retrieved from streams), and arranged necessary equipment to conduct experiments (e.g. incubation shaker and spectrophotometer used for determining the nitrification rates of stream sediments from ON and BC). The chemical analysis of my stream water samples was conveniently arranged in a lab in GLFC.

Overall, expected progress in field and lab work was made in this trip. I also benefitted from discussions of my PhD research with government scientists in GLFC working similarly on aquatic-riparian responses to forest disturbances (e.g. Paul Hazlett, Dean Thompson). I would begin to maintain regular contacts with them (in addition to Dr. Kreutzweiser), whose knowledge and insights would guide me through data analysis and interpretation, also to whom I would communicate future research outputs and their management implications. Therefore, I think I have contributed to strengthen the existing collaborative relationships with government partners in Theme 2, and made a positive start of establishing connections for future knowledge exchange.



Figure 1 (Left). Measuring stream discharge in a headwater stream in the Turkey Lakes Watershed region.



Figure 2 (Left). Checking samples of laboratory-based nitrification assays of stream sediments. In case the sample colour is of interest, darker blue indicate higher total extractable ammonium concentrations in the sample.