



CNAES

HQP Research & Collaborative Exchange

Funding

Visit report

1. Exchange information

Visitor: Kelli Charbonneau, MSc Candidate, University of New Brunswick (Saint John), CNAES Project Theme II.3

Supervisor: Karen Kidd, University of New Brunswick (Saint John)

Location, Dates: Dave Kreutzweiser's Lab at the Great Lakes Forestry Centre (GLFC) in Sault Ste. Marie, ON; April 30th – May 13th, 2017

2. Objective/Purpose

In Autumn 2016, my field team and I deployed mesh bags filled with leaf material ("leaf packs") within 12 streams of the Batchawana and Pancake River Watersheds. Leaf packs are used to estimate leaf-litter breakdown resulting from biological and physical in-stream processes, as well as to determine the community structure of leaf-dwelling macroinvertebrates (who are sensitive and effective bioindicators of ecosystem disturbance). The primary objective of my exchange to the GLFC was to learn the procedure for picking and identifying macroinvertebrates from the leaf-litter of my leaf packs by conventional taxonomic methods. A secondary objective was to enhance collaboration with CNAES government partners within Theme II.

3. Description of the visit

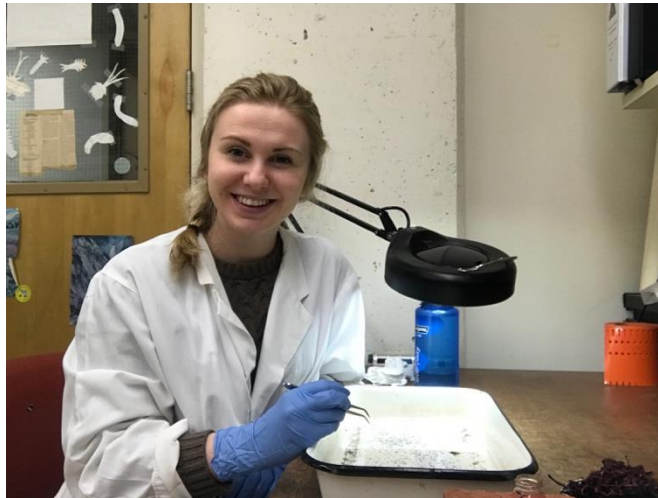
My two weeks spent in Dave Kreutzweiser's lab at the GLFC were a great learning experience. In my first week, I was taught how to separate macroinvertebrates from leaf material via elutriation, a technique using a tub of turbulent water outflowing into a stack of sieves (4 mm to 500 μ m). Leaf material and macroinvertebrates retained in the sieves were transferred to sorting trays, where invertebrates were picked using forceps. To aid my ability to spot the macroinvertebrates in the tray among other debris, a protein-binding dye powder (phloxine B) was added to the sample, turning the macroinvertebrates a highly visible bright pink colour. Macroinvertebrates were preserved in ethanol to await identification, and leaf material was retained in aluminum dishes, dried, and weighed to determine the extent of leaf-litter breakdown.

My second week was spent learning how to identify the collected macroinvertebrates to genus. GLFC technicians and CNAES HQP Scott Capell and Kevin Good, who had previously assisted with my field work, were thorough and patient in teaching me how to use taxonomic keys and distinguishing features (i.e., mouth parts, gills, etc.) to identify the macroinvertebrates. We also discussed the prevalence, distribution, sensitivity, etc. of the taxa that were identified, and particularly how these considerations might inform my research question. It was especially helpful to learn from technicians who are familiar with my project and study sites. I feel that this type of one-on-one training was invaluable in enhancing my ability to ID invertebrates, and to interpret the community data within the scope of my project. I also had some time to discuss my study design and future field plans with Dave, who is a member of my examining committee and is extremely knowledgeable in this field.

Not only did this exchange afford me the opportunity to learn practical lab skills related to my MSc project, but discussions I had with Dave and his technicians have helped me to address previous problems in my research and determine plausible next steps. I feel that this experience has made me a more competent researcher in the field of biology, and I am very grateful to CNAES and the Kreutzweiser lab for their support throughout my exchange.



Leaf material (left) and macroinvertebrates (right) separated from leaf packs deployed in streams of the Batchawana and Pancake River Watersheds during Autumn 2016.



Looking for macroinvertebrates in a tray of debris from leaf packs deployed in streams of the Batchawana and Pancake River Watersheds during Autumn 2016.