NSERC Canadian Network for Aquatic Ecosystem Services

CNAES
HQP Research & Collaborative Exchange Funding

Visit report

1. Exchange information

Visitor: **Kelli Charbonneau, MSc Candidate, University of New Brunswick (Saint John), Theme II**
Supervisor: **Karen Kidd (University of New Brunswick Saint John) & Michelle Gray (University of New Brunswick Fredericton)**
Location, Dates: **Erik Emilson's Lab at the Great Lakes Forestry Centre (GLFC) in Sault Ste. Marie, ON; February 4 – 16th, 2018**

2. Objective/Purpose

In Fall 2017, my field team and I deployed mesh bags filled with a known mass of alder leaves ("leaf packs") in 13 streams of the Batchawana and Pancake River Watersheds. This was my second round of leaf pack deployment, with the first being in Fall of 2016. 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 was to work on processing my leaf packs from 2017 at the GLFC, where the appropriate equipment and support are available. A secondary objective was to enhance collaboration with CNAES government partners within Theme II.

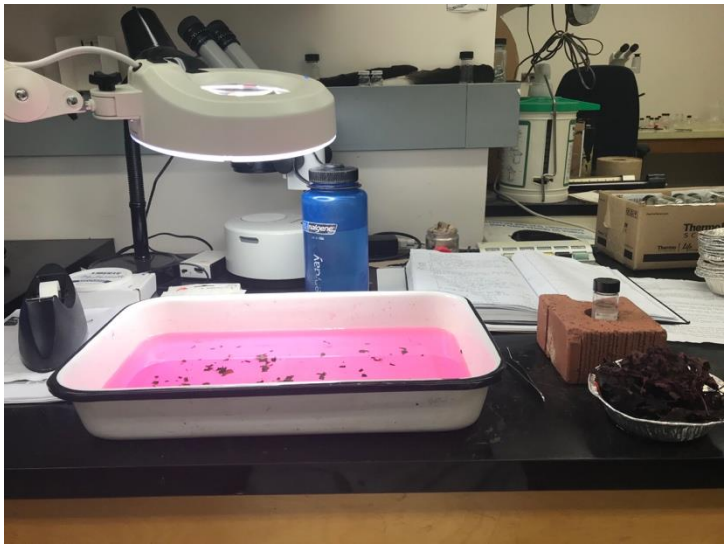
3. Description of the visit

My two weeks spent in Erik Emilson's lab at the GLFC were very productive. Last year, I was given the opportunity through the CNAES HQP Exchange Program to visit this facility and learn the basics of leaf pack processing and some preliminary identification of macroinvertebrates by conventional taxonomic methods. This year, my efforts were focused on separating the leaf material from the invertebrates, while GLFC technician Scott Capell would be in charge of IDing the macroinvertebrates to Genus level. This delegation of work was implemented to maintain consistency among samples, as well as to help process the leaf packs and extract the data as efficiently as possible.

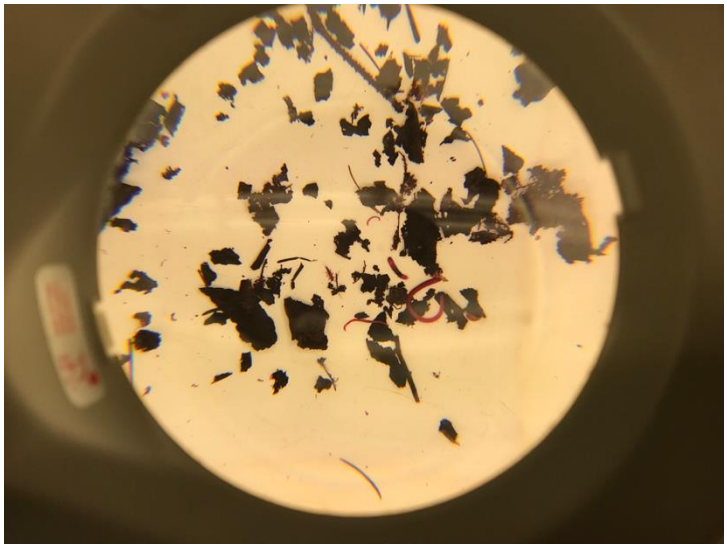
Invertebrates were separated from leaf material via elutriation, a technique using a tub of turbulent water outflowing into a stack of sieves (4 mm to 250 μm). Leaf material and macroinvertebrates retained in the sieves were transferred to sorting trays, where macroinvertebrates were picked using forceps. 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 by Scott, and leaf material was retained in aluminum dishes, dried, and weighed to determine the extent of leaf-litter breakdown. During my time at the GLFC, I was able to process samples for the majority of my sites, which is an important step as I seek to wrap up my lab work and begin the data analysis and writing stage of my MSc thesis.

Not only did this exchange afford me the opportunity to accelerate sample processing and continue to develop practical lab skills related to my MSc project, but discussions I had with Erik and his technicians also helped me to address previous problems in my research and determine plausible next steps. In particular, Erik and I discussed my study design and statistical methods that might be appropriate for my data and

research question. I strongly 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 Emilson lab for their support in making this exchange possible.



Leaf material (right) and tray of separated debris and macroinvertebrates (left) from leaf packs deployed in streams of the Batchawana and Pancake River Watersheds during Fall 2017.



Close up view of debris and macrovinvertebrates (seen here in pink due to phloxine B dye) from leaf packs deployed in streams of the Batchawana and Pancake River Watersheds during Fall 2017.