Graduate Positions in Arctic Restoration Ecology

Three fully funded graduate positions in Arctic Restoration Ecology (1 PhD. and 2 MSc.) are available in the Departments of Soil Science and Plant Sciences at the University of Saskatchewan. This is a unique opportunity to join an interdisciplinary project spanning the fields of restoration ecology, soil science, and plant ecology. We will be examining the potential for using biological soil crusts and tundra surface organic layers to foster the recovery of arctic plant community assemblages and essential ecosystem functions following mining disturbance. Fieldwork will be conducted at a working mine site in Nunavut, Canada with opportunities to work closely with mine company staff. We will also be heavily involved in the development and delivery of an on-site education program for Nunavut youth integrating soil science, plant ecology, environmental monitoring, restoration and traditional ecological knowledge.

MSc. Project 1. This student will examine the establishment and recovery of actively restored biological soil crust communities on drilling waste. You will initiate a trial to test active soil crust restoration techniques, identify bryophyte and lichen species in the crusts to characterize crust community composition in relation to site micro environmental conditions, and measure ecosystem services such as photosynthesis and nitrogen fixation rates.

MSc. Project 2. This student will examine the active restoration of tundra vascular plant communities from locally collected propagules. You will initiate a trial to test the use of locally collected material on drilling waste sites, and will track the survival and establishment of vascular plants in relation to site micro environmental conditions.

PhD. Project 1. This student will examine how active restoration techniques influence the recovery of soil community structure. You will examine the belowground plant, bacterial, fungal, and archaeal communities in restoration treatments in relation to site micro-environmental conditions. You will use next generation sequencing techniques to characterize belowground communities, develop niche models for important species, and will link soil community structure to key soil ecosystem services. You will have opportunities to expand your work to additional questions, and to lead collaborations with other project members. These projects have an anticipated start date of either September 2018 or January 2019. Project 1 will be supervised by Dr. Katherine Stewart and Projects 2 and 3 will be co-supervised by Drs. Lamb and Siciliano. For more information: Eric Lamb: [http://homepage.usask.ca/~egl388/index.html](http://homepage.usask.ca/~egl388/index.html) Katherine Stewart: [https://agbio.usask.ca/faculty-and-staff/people-pages/katherine-stewart.php](https://agbio.usask.ca/faculty-and-staff/people-pages/katherine-stewart.php) Steven Siciliano: [https://www.usask.ca/toxicology/people/faculty/steven-siciliano.php](https://www.usask.ca/toxicology/people/faculty/steven-siciliano.php) Requirements: PhD. Project. A thesis based (research) MSc. degree with evidence of scientific productivity through the publication of one or more peer reviewed manuscripts. Graduate level experience and training in one or more of the following fields: plant ecology, soil science, soil microbial ecology, bioinformatics, restoration ecology. MSc. Projects. A BSc. or BSAg degree with a concentration in one or more of the following fields: bryology, plant ecology, soil science, or restoration ecology. Application Procedure Apply via e-mail to Eric Lamb (eric.lamb@usask.ca) with a package including: • Cover letter describing your background and research experience and indicating which project you are most interested in. • an up-to-date CV • unofficial transcript(s). A scan or .pdf copy is sufficient. • an example of your writing (e.g. a paper, extract from a thesis, or class project).