

INTERNSHIP OFFER

Title of the internship: *Ecophysiology of the species used for revegetation of mining remains*

Host institution: University of Sherbrooke, Sherbrooke (Québec), Canada

Period: May 2018 - August 2018

Location of the research activities: This internship, based in Sherbrooke, includes field season and greenhouse and laboratory work. During the months of May and June, you will assist a doctoral student (Chiara Chelo) on a project of revegetation of mining sites. You will have to spend several days in northern Quebec.

Prerequisites: basic knowledge in biology and ecology is sufficient

Language and level required: English B1, French A1

Responsible person at host institution (e-mail): PhD student Chiara Chelo (Chiara.Chelo@USherbrooke.ca)

Contact person at sending institution: Dr. Emmanuele Farris (emfa@uniss.it)

Web site: <http://www.billshipleys.recherche.usherbrooke.ca/>

Programme of the internship:

Description of PhD research project.

The development of *phytotechnologies* for revegetation of mining remains.



BEFORE



AFTER

Study site.

It's a new mining in the North of Québec, north of Chibougamau city, and it's called Nemaska Lithium. It plans to manage its remains with a view to environmental recovery with a mining project that's called Whabouchi project. For this reason the mining company has approached to my research team.



Problems to be addressed.

Mining activities transform the environment and produce pollution. The final result consist in vast areas of mining remains with land being unproductive with little or no biological activity. So a potential "Achilles' heel" of the surface mining it's the negative impact on the environment.



Objectives.

The main objectives of my research are two:

- number 1. The development of sustainable, ecologically and continuous revegetation strategies for mixed remains for new mining in the north of Québec according to the local land use.
- number 2. Studying the local composition of vegetation to select the most promising plants and microbes for the revegetation and for the CO₂ remove on study site which is produced by emissions from the ore transportation towards the refining facilities 800 km away in Shawinigan city.



Methodology.

For outplanting trials on site, we employ indigenous trees and shrubs species able to restore soil functions, to remove the CO₂ on site during the photosynthesis and form symbiotic associations with the nitrogen fixing organisms on the root system.



Expected benefits.

This research best of both worlds to mining industry and academic partners.

About benefit to the mining industry: This research will assist remains management, on the Nemaska mining site, with a scientifically sound, socially accepted, and economically viable strategy to revegetate the mixed remains.

About benefit to the University of Sherbrooke: This research will provide an advancement of fundamental knowledge of the plant-microbe associations, which are needed to drive and rehabilitate hostile environments such as those created through mining activities.

And it also provides an exceptional training opportunity for you.

Bibliography.

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Corbin J.D. and Holl K.D. 2012. Applied nucleation as a forest restoration strategy. *Forest Ecol. Man.* 265: 37–46.

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