Institut de recherche en biologie végétale
Centre sur la biodiversité de l'Université de Montréal

M.Sc. project : Mycorrhizas and decomposition

Project description
In northern forests, soil carbon (C) storage results from slow decomposition of organic matter. Determining the drivers of decomposition in these ecosystems is thus critical to understand climate change. One key driver that has received relatively little attention is the influence of mycorrhizal fungi. Mycorrhizal fungi can slow down decomposition by competing for nutrients with free-living decomposers, but it has been proposed that this depends on mycorrhizal type. The objective of this M.Sc. project is to test whether ectomycorrhizal (ECM) fungi slow down organic matter decomposition to a greater extent than arbuscular mycorrhizal (AM) fungi in temperate forest.

Approach
The M.Sc. student will measure decomposition rates from soil organic horizons in ECM- and AM-dominated forest stands, after experimentally restricting (or allowing) access by extra-radical mycorrhizal hyphae. The field component of the project will take place at Université de Montréal's biological field station (Station de biologie des Laurentides), where we are currently characterising neighbouring forest stands of similar ages, with similar soils, slope, aspect and topography, but which are either dominated by ECM (beech, birches, pine, fir) or AM (maples, cedar) tree species. This will provide a powerful natural experiment to test the hypothesis that mycorrhizal type drives decomposition and soil C storage.

Funding
The project is funded by a 'Établissement de nouveaux chercheurs' grant from the Fonds de Recherche Nature et Technologies Québec (FRQNT) awarded to Etienne Laliberté, who would act as the M.Sc. supervisor. The amount of the M.Sc. scholarship will depend on the candidate's skills, but will meet or exceed the minimum amount set by the Department. However, preference will be given to candidates with the willingess to apply, and potential to attract, an external M.Sc. scholarship (e.g. NSERC, FRQNT). The M.Sc. student will be based at the Institut de recherche en biologie végétale of Université de Montréal, located in the Montreal Botanical Garden.

Minimum requirements
- B.Sc. in biology, ecology, botany or related field
- Valid driver's license
- Excellent oral and written communication skills in English, and willingness to learn French

Applications
Interested candidates should send the following documents by email to Etienne Laliberté (etienne.laliberte@umontreal.ca): (i) letter of motivation, (ii) CV, (iii) full B.Sc. transcript, and (iv) names and contact details of at least two referees **on or before July 3, 2015**.

Aerial view of the Station de biologie des Laurentides.

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