



PHD PROJECT IN FOREST ECOLOGY

Title: Innovative Silvicultural Treatments to Reach Sustainable Boreal Forest Management in Boreal Forests: Assessing Impacts on Biodiversity and Regeneration

Context: Canada is the third largest country in the world in terms of forest area with 347 million ha. Until today, the most used silvicultural treatment has been total cutting, representing 93% of the area harvested in the Canadian boreal forest. The impacts of this method of cutting on the virgin forest in terms of loss of biodiversity, vulnerability of regeneration to natural disturbances and sustainability of forest resources are well known. We are experiencing a critical situation in the boreal forest due to the homogenization and simplification of forest structure, the standardization of stands in terms of species, as well as the general rejuvenation of the forest cover. For these reasons, it is important to develop innovative silvicultural treatments in order to provide alternative forest management strategies that aim to stand diversification, and to increase adaptive capacity and resilience to climate change in Canada's boreal forest. Ecosystem-based forest management proposes the use of partial cutting to integrate ecological, economic and social objectives into silvicultural planning. Although partial cuts are increasingly being used, they are not adapted to Canadian conditions and remain little studied). For this, a silvicultural assessment of these silvicultural practices, capable of providing tools for applying these treatments in Canada's forest strategy, is required.

Objectives and Methodology: The main objective of this project is to develop new partial cutting modalities to achieve sustainable management in the boreal forest, as well as to provide tools and prescriptions for the silvicultural implementation in Canada. To achieve this objective, our project raises the following three questions: (i) What are the impacts of the use of partial harvesting on biodiversity? (ii) Could competition from hardwoods jeopardize the establishment of black spruce seedlings after partial harvesting? and (iii) Is the application of these experimental treatments economically and financially viable? This project will investigate the potential of partial harvesting to promote landscape-scale stand structure diversity, ensure economic stability of the forest sector, and maintain biodiversity and ecosystem services, all in order to achieve sustainable forest management.

Keywords: biodiversity, sustainable forest management, forest ecology, disturbances, regeneration, silviculture.

Preferred qualifications:

- **Education:** Master's degree in ecology, forestry or biology with an interest in silviculture and its application in a context of sustainable forest management in the face of climate change.
- **Requirements:** Driver's license, ability to work in a multidisciplinary team and to carry out field work in remote locations. Skills in statistical analysis and scientific communication will be taken into account in the selection process. We are looking *for* a dynamic, autonomous, responsible and motivated person. The applicant has to be systematic and accurate, in combination with a curious and critical approach, be good at cooperation and at the same time able to work independently.
- **Equity, diversity and inclusion** (EDI's principles): Priority will be given to candidates from under-represented groups (Aboriginals, ethnic and visible minorities, LGTBI, women).

Photo credit : Miquel Montoro Girona

Start date: Summer 2021

Location: The student will be based at the Forest Research Institute (IRF; <https://www.uqat.ca/programmes/irf/>) at the Amos campus of the Université du Québec en Abitibi-Témiscamingue (UQAT). The IRF is dynamic, multicultural and international and provides a quality environment for students to develop their research, with 12 professors and more than 60 graduate students working on very diverse topics such as forest dynamics, silviculture, genetics, biodiversity, ecophysiology and sustainable forest management. IRF students also benefit from professional development resources and opportunities (scholarships, participation in conferences, workshops) offered by the Centre for Forest Research (www.cef-cfr.ca). In addition, the student will be a member of the Research Group in Ecology of MRC Abitibi (GREMA), the cold forest-international research group (<https://forets-froides.org/>), the Chair in Sustainable Forest Management (<http://chaireaafd.uqat.ca/>) and will actively collaborate with our partners (Minister of Forests, Wildlife and Parks (MFFP), Resolute Forest Products, University of Quebec in Chicoutimi, Rayonier Advanced Materials - RYAM Forest Management and Canadian Forest Service (CFS)). As part of this project, the student will also have the option of completing an international internship funded with our collaborators in Finland (Helsinki University) or Sweden (Swedish University of Agricultural Sciences, (SLU)).

Funding: \$21,000 annual scholarship for 3 years.

Supervision : Miguel Montoro Girona (<https://bit.ly/34LfttX>), Hubert Morin (<https://bit.ly/2JNwbUo>) and Nicole Fenton (<https://bit.ly/393slyW>).

Project collaborators: Patricia Raymond (MFFP), Yves Bergeron (UQAT), Annie Desrochers (UQAT), Guillaume Grosbois (UQAT), Alain Leduc (UQAM), Kaysandra Waldron (CFS), Nelson Thiffault (CFS), Timo Kuuluvainen (Helsinki University), Joakim Hjältén (SLU).

To apply: Are you ready to begin your Ph.D. on this fascinating topic? Send (1) your CV including contact information of three references, (2) a cover letter outlining their academic background and research experience, as well as (3) a academic transcript to Miguel Montoro Girona (miguel.montoro@uqat.ca). Review of applications will start on February 10, 2021 and continue until the position is filled.

A professional adventure in the great boreal forest awaits you!

Links:

- City of Amos : <https://amos.quebec/>
- Aiguebelle National Park : <https://www.sepaq.com/pq/aig/>
- MRC-Abitibi : <https://mrcabitibi.qc.ca/>
- Abitibi-Témiscamingue Tourism : <https://www.abitibi-temiscamingue-tourism.org/>



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