Doctoral project

ASSESSMENT OF THE IMPACTS ON BIODIVERSITY OF NEW SILVICULTURAL TREATMENTS IN THE BOREAL FOREST

Project Background

Canada is the third largest country in the world in terms of forest area with over 347 million hectares. To date,

the most widely used silvicultural treatment has been clear-cutting. Over 93% of the area harvested in the

Canadian boreal forest has been done in this manner. The impacts of this method of harvesting on the virgin

forest in terms of loss of biodiversity, vulnerability of regeneration, natural disturbances and sustainability of

forest resources are well known. The boreal forest is in a critical situation due to homogenization, simplification

of forest structure, species standardization and generalized rejuvenation of the forest cover. For these reasons,

it is important to develop innovative silvicultural treatments to provide alternative forest management strategies. These treatments must ensure a diversification of the stands while increasing their capacity of adaptation and resilience to climate change.

Ecosystem-based forest management proposes the use of partial cuts. Partial cuts integrate ecological, economic and social objectives into silvicultural planning. Although partial cuts are increasingly used, they are

not adapted to Canadian conditions and remain poorly studied. A potential solution would be the use of regular shelterwood cuts (RSC). To this end, a silvicultural assessment of RPCs is required to provide tools for

applying these treatments in the Canadian forestry strategy.

Objectives and methodology

The general objective of this project will be to develop new partial cutting modalities for sustainable management in the boreal forest. It will also provide tools and prescriptions on silvicultural application conditions for implementation in Canada. From this objective, a main question arises, namely:

- What are the impacts of partial cutting on biodiversity? To answer this question, the biodiversity of birds,

plants and invertebrates will be studied,

Our experimental set-up is, in several respects, unique in the world. In particular, it is the first to experiment

with RPC in black spruce forests with application methods adapted to mechanized operations. It was established in 2003 by the Canadian Forest Service and deployed in black spruce stands located in the northern part of the Saguenay-Lac-Saint-Jean region, on the CÃ'te-Nord region and in the Abitibi-Témiscamingue

region. The system is composed of eight study blocks, each of which includes three experimental RPC treatments: a cut with regeneration and soil protection (CPRS), a cut with a seed bank and a control without

silvicultural intervention.

Study location

The student will be based in Amos at the GREMA (Groupe de Recherche en Écologie de la MRC Abitibi). GREMA is a dynamic and

multicultural place that welcomes students from all over the world. It offers a quality environment that allows the development of

research. GREMA has over 40 graduate students working on topics as diverse as modeling, silviculture, genetics, biodiversity,

ecophysiology and sustainable forest management.

Are you ready to start your PhD on this exciting topic? Send your curriculum vitae, a cover letter, a transcript, and contact information for

two references to Miguel Montoro Girona. (<u>miguel.montoro@uqat.ca</u>). Review of applications will begin on March 20, 2022 and will

continue until the position is filled.

Keywords

Sustainable forest management, biodiversity, partial cuts, forest ecology, regeneration, silviculture. Desired profile

• Education: Master's degree in ecology, forestry or biology with an interest in silviculture and its applications in the context of sustainable forest management in the face of climate change.

• Requirements: Driver's license, ability to work in a multidisciplinary team and to conduct field work in remote locations.

• Skills in statistical analysis and scientific communication (oral and written) will be taken into account.

• Attitude: We are looking for a dynamic, autonomous, curious, responsible and motivated person.

• Priority will be given to candidates from under-represented groups (Aboriginal people, ethnic and visible minorities, LGTBI+, women)

Director : Miguel Montoro Girona (UQAT)

Funding: \$21,000 per year for 3 years

Expected intake: Summer 2022

Project collaborators: Hubert Morin (UQAC), Nicole Fenton (UQAT), Patricia Raymond (MFFP), Yves Bergeron (UQAT), Annie Desrochers (UQAT), Guillaume Grosbois (UQAT), Alain Leduc (UQAM), Kaysandra

Waldron (SCF), Nelson Thiffault (SCF), Timo Kuuluvainen (University of Helsinki, Finland), Joakim Hjältén

(SLU, Sweden)