



PHD IN ECOLOGY AND FORESTRY MANAGEMENT :

Towards a Fine and Integrated Reading of Tree Resilience in a Changing Climate

Summary: While species richness is often seen as an indicator of resilience, boreal forests reveal that it is the ecological strategies of key species that guide forest trajectories. These strategies — differing in productivity, resilience, and reproduction — form the foundation of approaches aimed at understanding and predicting forest responses to global changes. They are often analyzed through the lens of ecological succession or functional traits that track changes in forest composition over time and space. "Acquisitive" species, which are fast-growing and short-lived, dominate early stages, while "conservative" species prevail in later stages. However, these approaches do not always account for the complexity of physiological responses and adaptive capacities of trees in the context of climate change. This doctoral project proposes to explore a complementary approach, focusing on the internal dynamics of trees: endogenous signals — particularly soluble sugars and plant hormones — that influence physiological trajectories during key periods of the growing season. These signals promote essential adaptive responses such as heat tolerance or frost resistance. They offer a finer, more dynamic understanding of ecological responses, often more immediate and sensitive to environmental conditions than traditional morphological traits.

Project Start Date: Fall 2025 (September – December) or Winter 2026 (January – April)

Scholarship: A research scholarship of \$24,000 CAD per year for four years will be awarded to the selected candidate.

Profile Sought: We are looking for a person with a background in forestry, biology, natural products chemistry, ecology, plant physiology, or a related field. A strong interest in plant physiology and integrative approaches to ecology is essential, as these fields are at the core of our work. We particularly value a positive, persevering attitude, combined with natural kindness, in a collaborative work environment. Creativity, scientific curiosity, and the ability to conduct projects independently are also important. The supervision fosters autonomy, curiosity, and co-construction, and interested candidates will have the opportunity to develop skills in plant biochemistry, modeling, imaging analysis, or ecophysiology, depending on their profile. This project is carried out in an open, collaborative, and life-respecting research approach. The research team places great emphasis on inclusivity, well-being, and equity in training paths. Individuals from diverse backgrounds, including Indigenous peoples, racialized individuals, LGBTQIA+ individuals, and people with disabilities, are warmly encouraged to apply.

Location, Supervision, and Research Environment: The selected candidate will be based at the Forest Research Institute (IRF) at the University of Quebec in Abitibi-Témiscamingue (UQAT) campus in Rouyn-Noranda. They will be supervised by Valentina Buttò (IRF-UQAT), a specialist in functional ecology and forest modeling, and Serge Lavoie (UQAC, Université Du Québec à Chicoutimi), a specialist in natural products chemistry.

Required Documents: To express your interest, please send a CV, a cover letter, copies of your transcripts (which can be unofficial), and the contact details of two referees to Valentina Buttò (valentina.butto@uqat.ca) and Serge Lavoie (s3lavoie@uqac.ca).



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