



Forest Ecology Research Group

Postdoctoral and graduate student positions available in the Forest Ecology Research Group through the Enhancing Northern Community & Ecosystem Resilience to Fire project

2023 was the first time in recorded history that global temperatures exceeded 1.5C above pre-industrial averages. The Canadian fire season associated with this temperature exceedance was one of shattered records; the urgency of preparing for and adapting to this best-case climate warming scenario and subsequent 2023-like fire seasons cannot be understated. The Northwest Territories (NWT) was one of the hardest hit parts of the country in 2023. 70% of the population was evacuated. Structures were lost in communities. Transportation corridors were closed, and communications were offline for considerable periods. There were also fire behavior surprises with implications for community and firefighter safety.

Recently burned areas have in the past slowed or stopped fire advance. This was not always the case in 2023, which created additional risk. This phenomenon was compounded by fuel buildup around communities created by a history of fire suppression that has led to longer fire free intervals. To keep NWT communities safe, we require improved information about how fires burned on the landscape in the past, how this is changing, what that means for future forest composition and fire risk, and how adaptation of fire management decisions around communities can reduce risk. This project will address these gaps, supporting operational fire management decisions and community protection planning.

As part of this newly funded collaboration between the Government of the Northwest Territories (GNWT) and Wilfrid Laurier University and funded through Natural Resources Canada's Wildfire Resilient Futures Initiative, we have one postdoctoral researchers and two PhD positions available through Laurier's Forest Ecology Research Group (<https://forestecology.ca>).

Objective 1: Improved fire history record for the Southern NWT.

This deliverable directly improves our understanding of wildland fire risk through the evaluation of changes in fire return interval through time and development of methods to scale up fire history using remote sensing data. This deliverable will also contribute to an evaluation of the links between fire return interval and forest values including carbon storage, wildlife habitat, and biodiversity. This objective will be achieved by a team consisting of 1 PDF (already identified) and 1 PhD.

PhD 1: Upscaling fire history using remote sensing methods

PhD1 will lead upscaling of fire history (quantified by PDF1) developing and applying remote sensing methods. This would extend fire history maps and connect this information with field-based plots where various ecosystem functions/services have been characterized (e.g., soil carbon stocks, wildlife habitat attributes, forest biodiversity, etc.). PhD1 would also work with the short interval reburn team to evaluate the efficacy of burn severity data products (i.e., dNBR) in forests experiencing short interval reburns.

Funding includes a competitive stipend for a PhD student and funds for field travel expenses and conference travel. The ideal candidate will be interested in boreal forest ecology, have experience in spatial analysis/GIS, and have strong writing and organizational skills. There will be some involvement remote fieldwork in locations in the southern NWT. Eligible applicants must have a class 5 driver's license.

The student will enroll in the PhD program in Biology at Wilfrid Laurier University in Waterloo, ON (<https://students.wlu.ca/programs/science/biology/index.html>) in Dr. Jennifer Baltzer's research group (<https://forestecology.ca>) and work closely with Ellen Whitman and Marc Parisien at the Northern Forestry Centre. Ideally, the student would enroll in May 2025 or take part in field campaigns during summer 2025 and enroll in the graduate program in September 2025 semester. This position will involve close collaboration with the GNWT and the Canadian Forest Service's Northern Forestry Centre.