Postdoctoral and graduate positions available with the Forest Ecology Research Group as part of the Future Harvest Partnership

As part of the SSHRC Sustainable Agriculture Research Initiative "Future Harvest Partnership", there are funded positions for one postdoctoral researcher and two PhD students available through Wilfrid Laurier University's Forest Ecology Research Group (https://forestecology.ca). All these positions can be based in Waterloo, Ontario or Northwest Territories. The ideal candidates will spend 4-5 months conducting field data collection in Northwest Territories. Evaluation of applications will begin in November and continue on a rolling basis until all positions are filled.

The Future Harvest Partnership is a multi-year collaboration between Wilfrid Laurier University, the Territorial Agrifood Association and the Government of the Northwest Territories Department of Industry, Tourism and Investment. Supported by an interdisciplinary team of leading academics from across North America, and informed by Indigenous Governments and traditional knowledge, the Partnership engages with food producers and local communities of the Northwest Territories to co-create research and generate useful insights for innovation and policy that can inform the development of a climate-resilient local food system.

PhD 1: Evaluate the retention of fire retardant in northern ecosystems and its impacts on terrestrial and aquatic communities

Background: Northern food systems are unique in Canada in the heavy reliance on subsistence or country foods (e.g., fish, wildlife, berries). Understanding impacts of wildfire on country foods requires both an understanding of the direct impacts fire on terrestrial and aquatic ecosystems as well as the impacts of various fire management activities. One management tool of particular importance is the application of flame retardants. Flame retardants include a range of chemicals that are sprayed in advance of an approaching fire to try to slow or stop its advance. They are an effective and important fire management tool. However, they have the potential to impact terrestrial and aquatic environments within and around their application zone. In the Northwest Territories, as in many other regions, fertilizer salts are an important component of flame retardant. These are basically synthetic fertilizers used in agriculture in other regions. These chemicals have been shown to lead to both soil salinization, altering growing conditions in impacted terrestrial areas and contribute a pulse of nutrients to neighboring water bodies, leading to nutrient enrichment and in some cases eutrophication and algal blooms.

Details: To build a resilient food system in the NWT, communities require an understanding of how fire and fire management impact traditional food systems. Fire suppression was required around many NWT communities in summer 2023 and concerns have been raised about the safety of food harvested on these lands. To address this concern, we will evaluate the impact of flame retardant application in northern plants and soils where food is harvested and/or grown. Our goals will be to 1) map the application of flame retardant in NWT in 2023 based on fire management records and calibrate this with Landsat data to more precisely map the spatial distribution of flame retardant and develop methods to apply this in previous years; 2) apply tools developed in 1 to evaluate the persistence of flame retardant on the landscape; 3) Quantify the spectral response of lakes whose catchments received flame retardant to evaluate changes in productivity and detect algal bloom activity.

Funding includes a competitive stipend for the graduate student and funds for field assistants, travel expenses, and field supplies. The ideal candidate will have experience in spatial statistics, GIS, and remote sensing data products. Further, the candidate should have strong writing and organizational skills. The position will require some fieldwork for ground truthing purposes. Fieldwork will involve periods in remote field locations in the Northwest Territories and sampling in areas with at times difficult

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access. This position will be jointly supervised by Drs. Jennifer Baltzer and Heidi Swanson (Wilfrid Laurier University).

Students will enroll in the graduate program of the Department of Biology at the 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). Ideally, students would take part in field campaigns during summer 2026 and enroll in the graduate program for the Fall 2026 semester.

Interested students should contact me directly (kwakulich@wlu.ca) with a resume, transcript (unofficial is fine) and, if possible, a piece of your own written work. In your cover letter, please indicate your motivation for pursuing this position and highlight any barriers, career interruptions, or other life events that may have modified your path if you feel comfortable sharing these.