

MSC OR PHD OPPORTUNITIES: ALTERED SPATIAL STRATEGIES IN DISTURBED LANDSCAPES: ADAPTIVE OR MALADAPTIVE RESPONSES?

BACKGROUND: Anthropogenic disturbance and climate change threatens numerous species by disrupting important trophic relationships and by altering the behaviour of impacted species. How animals respond to any perceived threat or stimulus is predicated on that species' cue-response system - how an animal reacts when presented with a particular stimulus. The ability for individuals to alter their response to change is known as behavioral plasticity. Such plastic responses should have evolved to maximize fitness when animals face changes in ecological contexts.

Anthropogenic change such as disturbance from mining and logging represents a novel stimulus to which populations may lack an evolutionary history to react appropriately. Other forms of disturbance, for example wildfire, may serve as an evolutionary proxy for animal cue-responses. The question remains, however, whether such responses are appropriate under novel anthropogenic disturbance or if they may represent a form of evolutionary trap. Animals may, therefore, either react to novel stressors or not, and these responses may or may not confer a fitness advantage.

In addition to plastic responses, populations may be able to adapt to novel scenarios if there are sufficient difference among individuals (animal personality), such that certain individuals who respond appropriately have a fitness advantage in the new environment. Species may therefore persist in the face of change in two ways: if their cue-response systems allow them to respond appropriately, animals may acclimate to the disturbance by being plastic and directly altering movement strategies. Alternatively, if there is sufficient variation among individuals, novel phenotypes may evolve that are well adapted to new environments.

Caribou are a species of key conservation concern. Anthropogenic disturbance is commonly considered the main threat to caribou, however the exact mechanism, and how caribou may fare under continued resource development, remains uncertain. This project will investigate the adaptive nature of caribou movement and habitat selection in a changing world.

OPPORTUNITY: I am looking for a motivated MSc or PhD student to join my research group to investigate how disturbance gradients affect movement and habitat selection of individual caribou in Northern Ontario, with a focus on individual differences, plasticity, and capacity for individuals or populations to acclimate or adapt to change. This position will also provide the student with the opportunity to collaborate with caribou researchers from across Ontario and Canada.

REQUIREMENTS: I am looking to recruit students with a passion for ecology and wildlife, with a willingness to learn techniques in animal movement and habitat selection. Candidates should have a BSc in Biology, Ecology, Zoology, Natural Resources Management, or a related field (MSc for PhD candidates). Experience with R statistical software and Geographic Information Systems is an asset.

BENEFITS: MSc students will be compensated at ~\$18,000/year and PhD candidates at ~\$28,000/year. Domestic students will also be eligible for a graduate assistantship valued at ~\$11,000/year, for a total of ~\$29,000 for MSc students and ~\$39,000/year for PhD students. Funds will also be available for a computer and travel to conferences. Students will also be encouraged to apply for external funding opportunities such as NSERC PGS-M/D.

START DATE: September 2025 or January 2026

LOCATION: Nested at the interface between the northern boreal and temperate forest, Lakehead University in Thunder Bay, ON is a fitting location to study caribou. Indeed, no university in Ontario is located closer to caribou populations, like some of interest to this research. Lakehead is a comprehensive university with a reputation for innovative programs and cutting-edge research. Lakehead has approximately 10,000 students and 2,160 faculty and staff. With an emphasis on collaborative learning, independent critical thinking, and a multidisciplinary teaching approach, Lakehead offers a variety of degree and diploma programs at the undergraduate, graduate, and doctoral levels through its nine faculties. The Faculty of Natural Resources Management at Lakehead focusses on the interface between conservation and resource management. Thunder Bay is also home to a vibrant arts and culture scene and areas around Thunder Bay provide extensive opportunities for outdoor recreation.



For more information, please e-mail Dr. Michel Laforge at mlaforge@lakeheadu.ca. To apply, please send a cover letter, CV, and 2-3 references (preferably as a single PDF file) to Mike Laforge at mlaforge@lakeheadu.ca. Review of applicants will begin May 6th, 2025 and will continue until the position is filled.