

March 22, 2024

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## **RE: CERRI Research Priorities for the Weston Foundation Grant**

CERRI (Chisasibi Eeyou Resource and Research Institute) is a community-based research organization under the Cree Nation of Chisasibi. Its goal is to build community capacity through science programs, applied research, and traditional ecological knowledge. The community determines CERRI's research priorities, which are always linked to the Eeyou way of life.

More info: [www.cerri.ca](http://www.cerri.ca)

### **Priority 1. Assessing the distribution and types of coastal vegetation in Canada geese stop-over sites.**

The Canada goose (*Branta canadensis*) holds significant cultural, health, and subsistence value for the Eeyou people of Chisasibi, Eeyou Istchee, Quebec. Their tradition includes two annual "Goose Breaks," a communal hunting practice deeply rooted in Eeyou culture and practiced by local businesses. This practice, led by a "Goose Boss," ensures ethical, sustainable, and equitable distribution of the harvest, reflecting traditions that span generations. Notably, the James Bay Northern Quebec Agreement (1975) safeguards these hunting rights, guaranteeing harvest levels comparable to pre-1975, contingent on conservation and population availability. However, the introduction of hydroelectric dams in the late 1970s correlates with a notable decline in local goose populations despite a rise in the overall North American population of Canada geese. This anomaly may be attributed to changes in migratory patterns, potentially influenced by altered food availability, such as blackberries, a known favorite of geese. To address this, a study is needed to determine the relationships between terrestrial plant productivity and goose migration patterns, offering insights that could guide efforts to restore these high-value habitats and critical components of northern biodiversity. The study involves mapping berry fields, heaths, and wetlands and measuring their levels of productivity and quality. Fieldwork and developing a habitat value index based on biophysical parameters and traditional ecological knowledge are key components of the study. The study would require an

MSc or PhD student in marine or coastal ecology or geomatics, physical geography, or wildlife ecology.

## **Priority 2. Microbiome of James Bay eelgrass**

Microorganisms, including fungi, bacteria, and viruses, serve as key indicators of environmental health and change, yet our understanding of these tiny life forms in James Bay remains limited. Gaining insights into these marine microbes could illuminate the ecological dynamics of the Bay and their potential to cause disease in aquatic plants, and other impacts on endemic biodiversity. There's a particular interest in studying how microbial communities might be contributing to the ongoing decline and lack of recovery of eelgrass (*Zostera marina*) beds in James Bay. Eelgrass, crucial for the marine ecosystem and migratory waterfowl, is facing a decline due to various stressors, possibly including microbial infections. By focusing research on identifying the microorganisms living on the eelgrass's leaves, roots, and rhizomes, and pinpointing those capable of causing disease, we can enhance efforts to restore these vital underwater meadows. This research will employ microbiology and genomics techniques and is suitable for a graduate student (MSc or Ph.D.) or PostDoc specializing in plant pathology, molecular and cell biology, or marine microbiology, with a strong foundation in genetics, genomics, and bioinformatics.