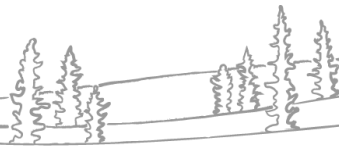




Understanding Food Security in the Northern Boreal Forest

Interdisciplinary research to understand changes in the food-web dynamics and threats to food security in the northern boreal forest



What is the Boreal Forest Food Web Dynamics Project?

This is a new, collaborative project that has received funding from Laval University's Sentinel North program for 2020-2025. The project is conducted in collaboration with the GNWT Department of Environment and Natural Resources. We will study the food web in the boreal forest where bison, boreal caribou and moose (prey species) and wolves and bears (predators) interact with each other and with the landscape. The project will use GPS location data and camera collar data from individual animals, as well as a lot of computer work to build statistical models and analyze the data. In the end, we hope our results can help monitor and predict the future security of northern wildlife food resources and contribute to the health and well-being of northern communities.

This project is just getting started, and we want to gather input from people who rely on these animals for food so we can make the project as useful as possible.

What are the questions? What do we want to learn?

Some of our current questions include:

- How do species in the boreal forest food web (see picture) influence each other? For example, do boreal caribou and moose react to the presence of wood bison, or to each other? Do any of these animals change the way they choose areas to live, or how they move on the land, in response to other species?
- Where will important wildlife species end up in the future, under the influence of climate change and other human disturbances? Will they move northward as the climate warms?
- Is there anything we can do to help keep healthy populations of animals that are important for harvesting, in areas that are accessible to people who are harvesting them now?
- Where are the best places to reduce human-wildlife conflicts? What are the conflicts?
- Your organization may have other questions. We'd like to hear them!

How can we answer these questions?

Funding for this project is based on using GPS locations and camera collar videos from animals of different species in the same areas around the same time. We will also collect high resolution images taken from a plane to remotely count large mammals. These valuable data can be combined with information about the landscape, vegetation and habitat in different areas.

With the information obtained from GPS collars and image analysis, graduate students will develop models describing how each type of animal uses the landscape, based on how that animal interacts with the land, plants, other species, and human developments. These models will also predict the distribution (locations on the landscape) and population size of each species in the future. Future predictions will explore the impacts of expected changes, such as climate warming, more wildfires, and more human development.

Why is this project valuable?

Healthy animal populations are important to provide harvesting opportunities to northern communities. This project will identify areas where current harvesting opportunities might change in the future so that communities can plan for food security.

Human-wildlife conflicts can make the protection of the species involved in conflicts more difficult, in addition to being an important issue for the communities involved. This project will help identify areas more prone to conflicts and identify solutions to these conflicts.

Where will this project take place?

- Mackenzie wood bison range and Tłı̄chǫ All-Season Road study area.
- The project may expand to include the Slave River Lowlands.

How can I, or my Indigenous Government Organization (IGO), get involved?

We need your input to better understand the study area and the concerns of the people who live there. To do so, we want to know more about:

- What species are of particular importance to communities, and why?
- Which species (and benefits provided by these species) are at risk according to communities?
- Are there certain conflicts between human and wildlife species (like vehicle collisions) that are particularly preoccupying to communities?

Contact

This interdisciplinary research is being done in partnership with the Government of the Northwest Territories and Université Laval with financial support from Sentinel North.



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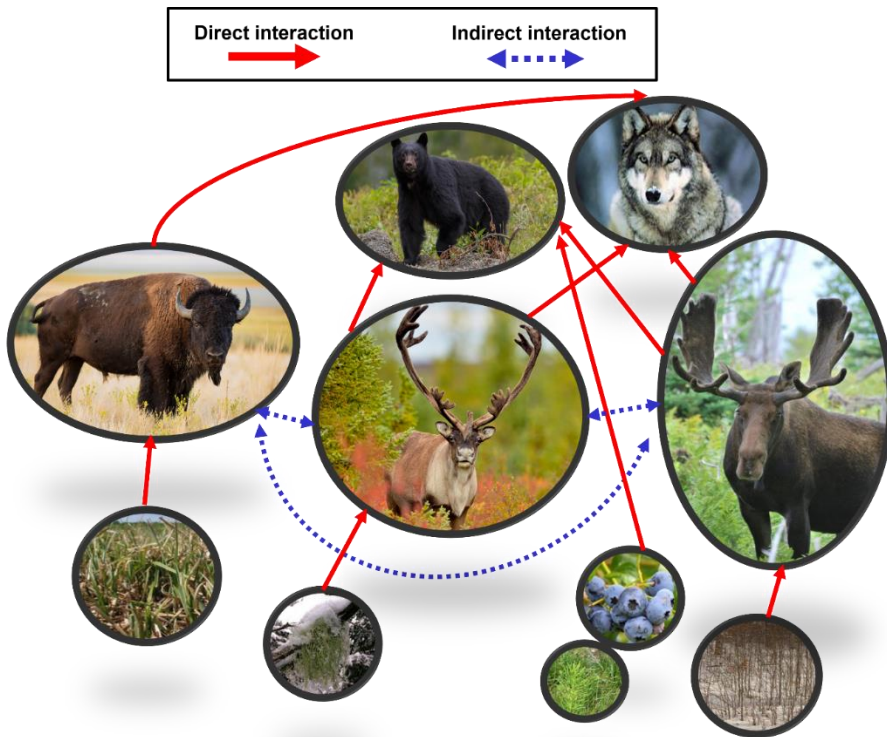
To find out more about the project, contact:

Daniel Fortin: daniel.fortin@bio.ulaval.ca

Jérôme Cimon-Morin: Jerome.Cimon-Morin@sbf.ulaval.ca

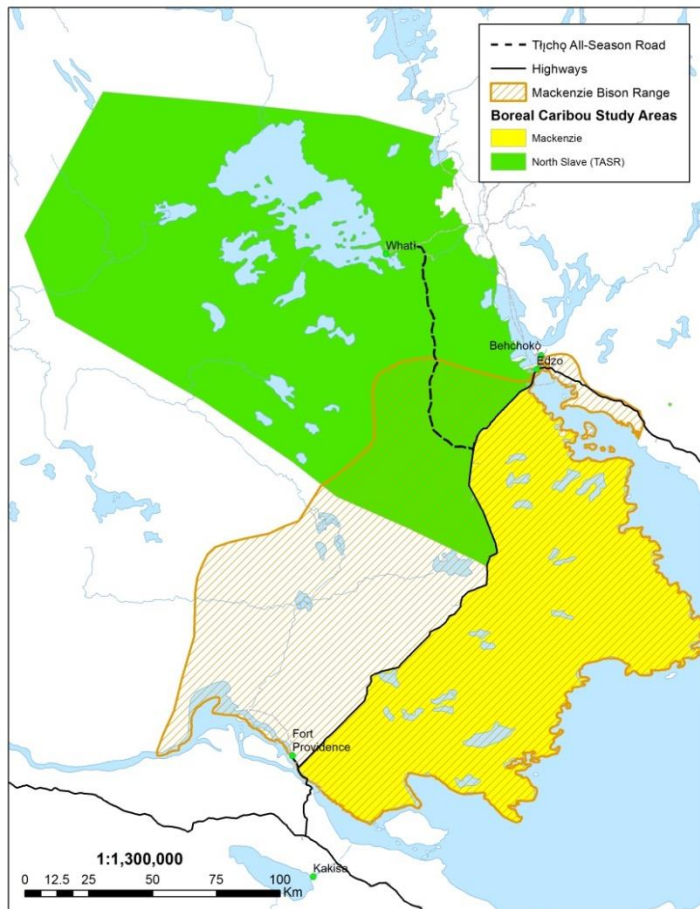
Allicia Kelly: allicia_kelly@gov.nt.ca

James Hodson: james_hodson@gov.nt.ca



Food Web Image:

This picture shows examples of how plants and animals in this food web can influence each other in direct and indirect ways. We want to learn more about these interactions and use this information to understand how things might change in the future, so northern communities can continue to safely rely on northern wildlife food resources.



Map of the proposed study area

Mackenzie bison range and Mackenzie and North Slave (Tłı̄ch̄q All-Season Road) boreal caribou study areas.