



Research Connections: Cumulative Effects

Assessing the long-term economic interactions between industrial forestry activities, non-renewable resource extraction and caribou recovery

Note 3

Lead Researcher: Denys Yemshanov (GLFC) **Project Type:** Cumulative Effects and Caribou **Project Status:** Active (2021–2022)



Need/Drivers

This project will develop economic assessment tools that can be used to help evaluate the relationship between harvesting, resource extraction activities and caribou recovery policies. Protection of caribou habitat aims to limit the impact of human activities that cause forest fragmentation. Recovery efforts for woodland caribou aim to create a large network of interconnected habitat areas, and eliminate movement corridors for predators to reduce the exposure of caribou populations to predation. Caribou protection measures usually call for a reduction or deferral of some industrial forestry operations, which may in turn increase the cost of harvesting and timber supply. A better understanding of the trade-offs between forestry, resource extraction goals and caribou protection measures can inform caribou recovery policies that can be implemented with as little impact as possible on forestry activities in boreal forest regions. This project's overarching objective is to inform governmental decision-makers on the planning of long-term caribou restoration and recovery measures, as well as long-term impacts of these measures on resource extraction activities, such as harvesting and oil and gas exploration.

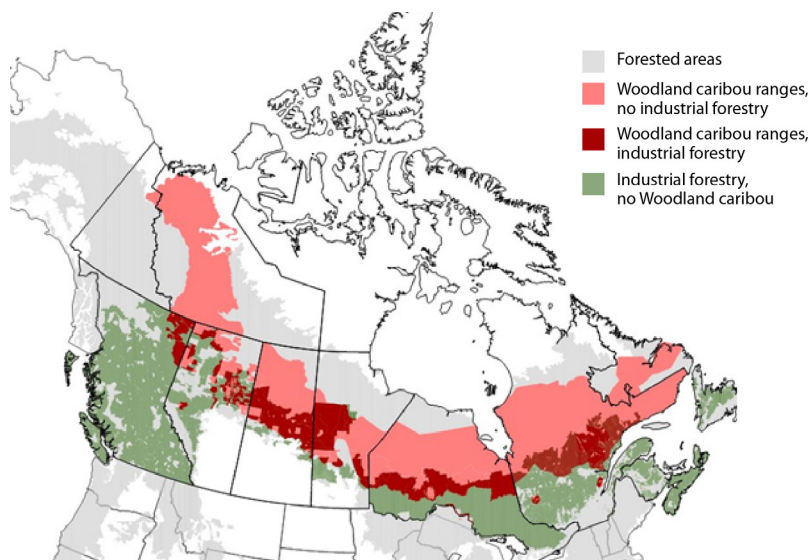
Approach

The project will develop and use the following economic planning tools:

- **Spatial optimization models of landscape-level caribou recovery measures** that aim to maximize caribou access to habitat and reduce landscape fragmentation by optimizing networks of interconnected caribou habitat in a landscape
- **Forest management planning models** that will ensure that optimal harvest projections incorporate both revenue maximization and environmental sustainability criteria

These components will be linked in an optimization model that can be used to assess the impacts of caribou protection policies on the cost and extent of harvest and resource extraction activities.

This project will undertake a number of case studies for data collection. The project will involve conducting regional case studies in priority areas in Alberta and Ontario. These priority areas include the Cold Lake First Nations (started in 2019); Armstrong forest with the Whitesand First Nations (started in 2020); Pic River in the Kenogami forest in northern Ontario (started in 2020); and in the Churchill caribou range in northwestern Ontario (started in 2021).



Woodland caribou ranges and regions of industrial forestry activities in Canadian boreal forests.

Anticipated Impacts

This project will deliver assessments that will provide insight on the interplay between ecological, economic and operational limitations of caribou protection measures in the case study areas. Decision-makers will be able to determine the most cost-effective caribou restoration policies in areas that are affected by resource extraction. It will also assist with caribou range planning. This project can help ensure a balanced account for caribou management, while also considering the interests of other major forest sector stakeholders that are operating in the boreal landscape.

Project Location

Priority caribou ranges and First Nations land in Ontario and Alberta

CFS Team Members

Denys Yemshanov (GLFC), Ning Liu (GLFC), Marc-Andre Parisien (NoFC), Quinn Barber (NoFC), Mackenzie Simpson (GLFC)

Collaborators

Dr. Rob Rempel (FERIT), Dr. Art Rodgers (OMNRF), Dr. Triin Hart (NorthWinds Environmental Services), Dr. Jeff Cameron (NorthWinds Environmental Services), Dr. Robert Haight (USDA Forest service, Northern Research Station), Dr. Frank H. Koch (USDA Forest Service, Southern Research Station), Prof. Salimur Choudhury (Lakehead University)

Indigenous Collaborators

Cold Lake First Nations, Whitesand First Nations