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Research Connections: Cumulative Effects

National bio-economic analyses of timber supplies, forest management, caribou and cumulative effects – trade-offs, cost effectiveness, risks and opportunities

Note 13

Lead Researchers: Dan McKenney, John Pedlar and Lisa Venier **Project Type:** Cumulative Effects and Caribou **Project Status:** Active (2021–2022)

Need/Drivers

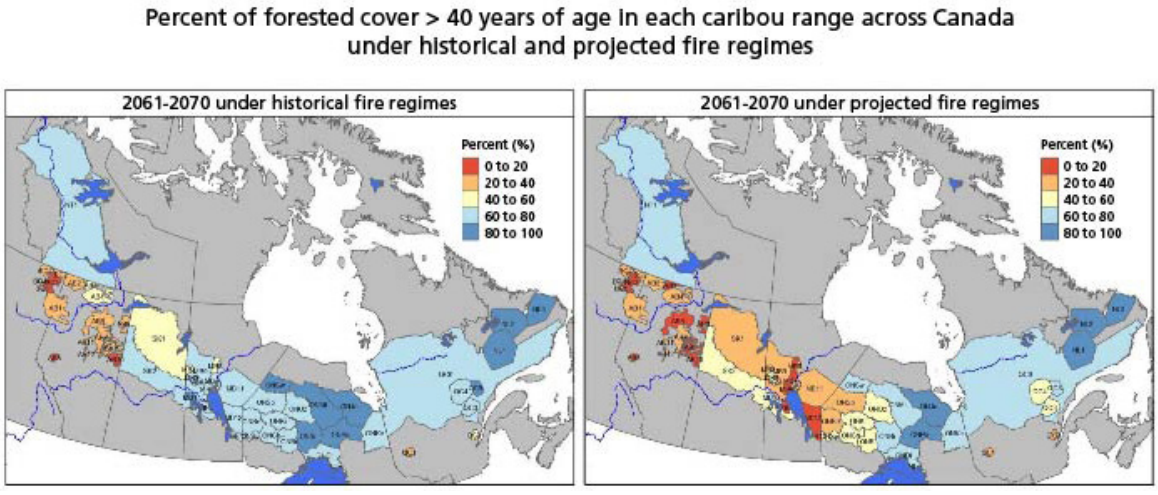
Both caribou and cumulative effects challenges require objective evidence driven analysis for the development of effective policies. There are currently no national-scale quantitative perspectives on economic and ecological trade-offs related to caribou, forest management and other land uses. This project will examine economic and ecological trade-offs through time in a spatially explicit manner. The primary objective of this project is to help inform national level policy and strategic decision-making. It will help inform Environment and Climate Change Canada (ECCC), Natural Resources Canada (NRCan), and Forest Products Association of Canada (FPAC) about economic costs, benefits and trade-offs surrounding industrial forest activities and caribou habitat. As part of the project, we will also develop data and provide historical perspectives on land use, economic development and wilderness quality, thus supporting broader analyses on cumulative effects beyond caribou.

Approach

This project aims to fill a knowledge gap by developing new national-scale datasets that include socio-economic considerations and climate change impacts. The project will utilize new and existing spatial data on historical land use, develop a number of economic and ecological indicators, and explore the trade-offs between harvest volumes, harvest costs, areal coverage of various forest types and age classes, and more. The computer-based modeling framework used in this project will simulate both human and natural forest landscape processes through time and explore the impact of potential management actions, including alternative caribou habitat targets and altered harvest rules. The project presents a novel approach to analyzing trade-offs between industrial activities and caribou habitats, while also considering the potential climate change impacts and linkages to Indigenous treaty areas. This approach should help minimize the trade-offs between economic development and habitat protection, improve dialogue, and help focus attention on knowledge and research needs. The research team is developing novel data products to understand historical, ecological and economic effects of the forest sector, including a National Mill History database and several National Wilderness Quality products. These aspects will create longer-term capacities for additional study of the role(s) of Canada's forest sector both historically and going forward.

Anticipated Impacts

The information gained through this work will offer quantitative, spatially explicit perspectives on trade-offs, risks, needs and opportunities related to caribou, forest management and other land uses. End-users will be able to better understand and consider trade-offs regarding caribou survival both now and in the future as climate change influences the landscape. As part of our work, we will consider the implications of alternative forest management strategies on caribou habitats.



Forested cover in caribou ranges across Canada under historical and projected fire regimes.

Project Location

The project involves nationally scaled modeling that covers the boreal forest, including all caribou ranges across Canada.

CFS Team Members

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Collaborators

Maria Klimas (and her team, ECCC - Economic Analysis Directorate), Dr. Josie Hughes and Amanda Martin (ECCC S&T Division), Kate Lindsay (FPAC), Ben Filewod (University of Toronto), Dr. Mark Kuhlberg (Laurentian University)

Publications

Venier, L.A., Walton, R. and Brandt, J.P. 2021. Scientific considerations and challenges for addressing cumulative effects in forest landscapes in Canada. *Environmental Reviews* 29 (1): 1–22. https://doi.org/10.1139/er-2019–0072

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