

THE BOREAL CARIBOU ECOLOGICAL MODEL

A planning tool for caribou habitat restoration

Stretching across Canada's boreal forests, boreal caribou hold special ecological, cultural, and social importance. However, boreal caribou populations are in decline across Canada, representing a significant conservation challenge. Habitat restoration has become a key tool in caribou recovery planning.

Caribou population growth is negatively affected by both natural and human-caused landscape disturbance. However, the mechanisms by which disturbance affects caribou can be complex and involve numerous factors of the ecosystem. Understanding the ecological pathways driving these relationships can:



Direct restoration planning to target the most critical mechanisms, based on local circumstances.



Identify possible confounding factors that need to be addressed in restoration programs to maximize the likelihood of success.



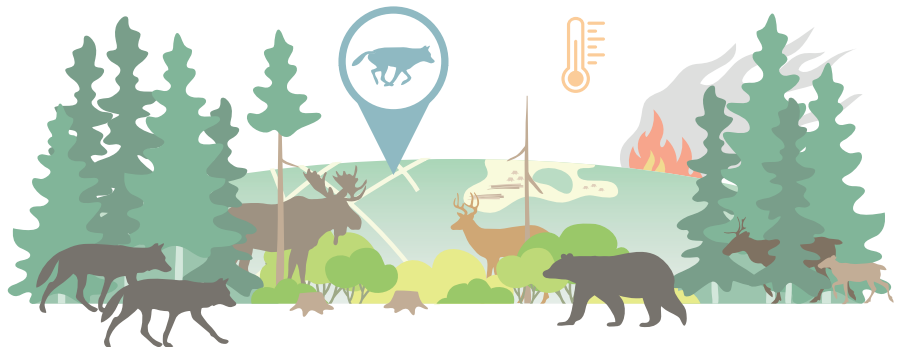
Support adaptive management by generating testable hypotheses and clarifying monitoring needs.

Informing restoration activities through common language

The Habitat Restoration Working Group of the National Boreal Caribou Knowledge Consortium (NBCKC) has developed a model of the pathways that can result in caribou population declines. These pathways typically function through four key types of factors:

PREDATION

Landscape change that increases primary prey density on the landscape results in increased predator density, which increases incidental predation on caribou. Linear disturbances can also provide predators better access into caribou habitats and increase their hunting efficiency.



NUTRITION

Adequate nutrition is essential for caribou survival and reproduction. A variety of factors can directly affect the abundance of winter (i.e., lichen) and summer forages (e.g., browse), such as fire, forest harvest, and climate.



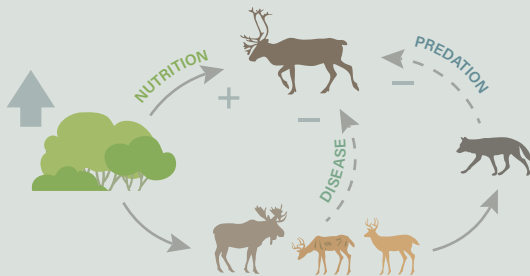
DISEASE

Factors that increase contact between caribou and other ungulates that carry disease, or benefit disease vector pervasiveness, such as warmer climates, may increase disease prevalence in caribou.



HUNTING

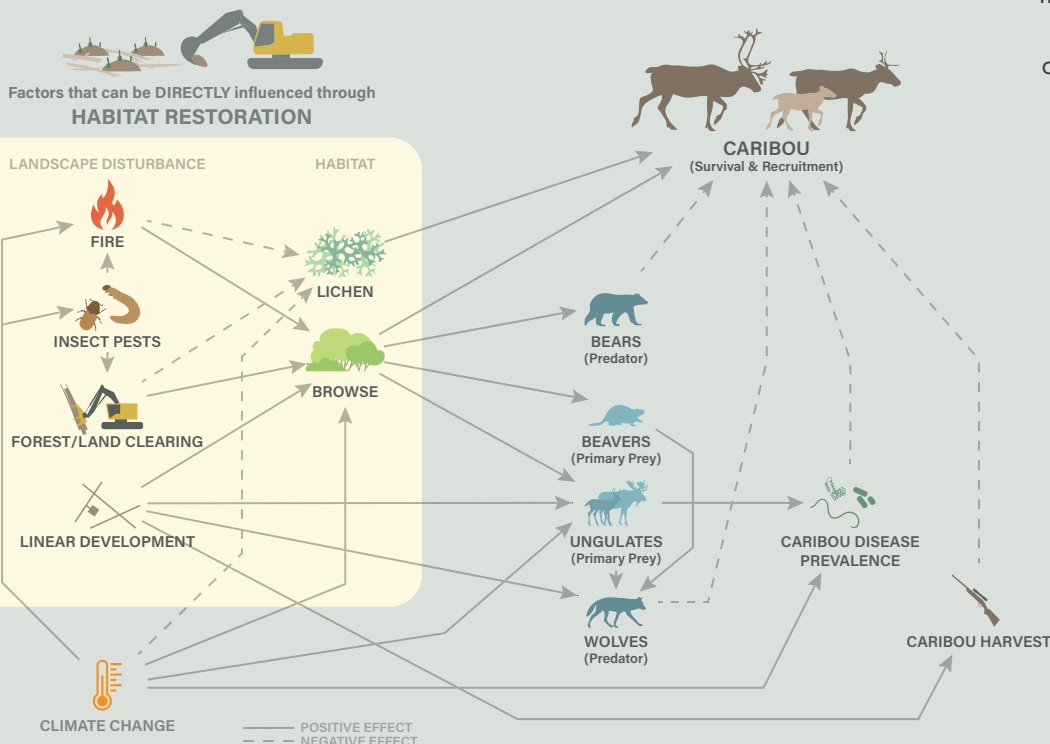
Some forms of landscape change can facilitate caribou harvest. While harvest no longer occurs in many caribou ranges, it may still be an important factor in some areas.



Understanding complexity by illustrating pathways

The pathways in the ecological model are not independent and their importance will vary across regions—for instance, predation may be the primary driver of some caribou populations but not for others. However, by mapping out these pathways users are empowered with more information about potential interactions and potential drivers of restoration success.

THE BOREAL CARIBOU ECOLOGICAL MODEL



Informing future restoration

The Habitat Restoration Working Group encourages practitioners, Indigenous communities and researchers to use this model and the associated report when planning restoration work.

Using the model can help: clarify relationships between caribou and other factors, inform monitoring programs, and refine research questions. Together, this will help users develop more targeted restoration efforts in their region.

Learn more

Read the full report here:
[report link]

Contact the NBCKC:
nbckc-cnsb@canada.ca