



Terry Larsen

Caribou and Grizzly Bear Response to Pine Forests Killed by Mountain Pine Beetle

Mountain pine beetle (MPB; *Dendroctonus ponderosae*) continues to spread along the eastern slopes of the Rocky Mountains in Alberta and threatens vast areas of lodgepole pine (*Pinus contorta*) forest. However, the impact of MPB infestations on wildlife whose habitat consists largely of pine forest remains largely unknown, and is a significant conservation and management concern. In particular, wide ranging species such as caribou (*Rangifer tarandus*) and grizzly bear (*Ursus arctos*) may be significantly impacted by MPB infestations. Although these species have been studied for decades in the province, there is limited scientific information available to managers on which to base management decisions relative to MPB. Understanding how caribou and grizzly bear may respond to pine forests killed by MPB would fill an important knowledge gap in Alberta, and will provide information that could be used to support conservation and recovery goals for these provincially threatened species.



Objectives

The first objective of this research is to develop models that quantify the habitat value of lodgepole pine forest to caribou and grizzly bear, and to evaluate changes in habitat value for caribou and grizzly bear following MPB infestations (~10 years since tree death) in west-central Alberta. We hypothesize that following MPB infestation and tree death, the habitat value of pine for caribou will decrease associated with a decline in terrestrial lichens, whereas for grizzly bear the habitat value of pine will increase as vascular and herbaceous plant species increase.

The second objective of this research is use the caribou and grizzly bear habitat models to develop an interactive GIS-based planning tool. The tool will allow managers to predict changes in caribou and grizzly bear habitat conditions based on user-defined MPB scenarios.



Outputs

1. Habitat models will provide improved knowledge of caribou and grizzly bear response to pine forest unaffected and affected by MPB. Because we will conduct the analysis at multiple scales, we will be able to understand the habitat value of pine forests to caribou and grizzly bear alone and in the context of the broader landscape. Scale is an important consideration because as forest species composition and human activity levels changes across the landscape, so does habitat conditions for caribou and grizzly bear.
2. An interactive GIS tool that integrates the caribou and grizzly bear habitat models will allow users to run MPB infestation scenarios and predict associated changes in habitat conditions.
3. A workshop will be held for forest practitioners as an introduction on how to use the tool. Participants will be encouraged to engage the group relative to their own management questions and needs.
4. The information and tool generated from this research will assist managers in making planning decisions that supports caribou and grizzly bear recovery.



Partners and Previous Work

This fRI Research project is an extension of an ongoing collaboration between the Grizzly Bear and Caribou Programs. Previously, biologists Laura Finnegan, Karine Pigeon, and Barry Nobert with the Caribou Program and Gord Stenhouse and Terry Larsen with the Grizzly Bear Program conducted a joint study to quantify how food supply for these species would change following tree mortality associated with MPB infestation, wildfire, and management actions (forest harvesting and single tree cut and burn techniques). Preliminary models and a tool have been developed from this work, which allows users to predict changes in understory vegetation distribution and abundance associated with MPB infestation. This project builds on this research and our knowledge of caribou and grizzly bear ecology.

The research team has and continues to work with forest industry partners and the provincial Government on these projects.

Contact

Laura Finnegan, Caribou Program Lead: lfinnegan@friresearch.ca

Terry Larsen, Grizzly Bear Biologist: tlarsen@friresearch.ca