



## Caribou and Grizzly Bears Response to Pine Forests Killed by Mountain Pine Beetle

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Mountain pine beetle (MPB) continues to spread along the eastern slopes of the Rocky Mountains and threatens extensive areas of mature lodgepole pine forest. How MPB infestations and management activities might affect habitat conditions for central mountain caribou and grizzly bears that live in these areas is a conservation concern.

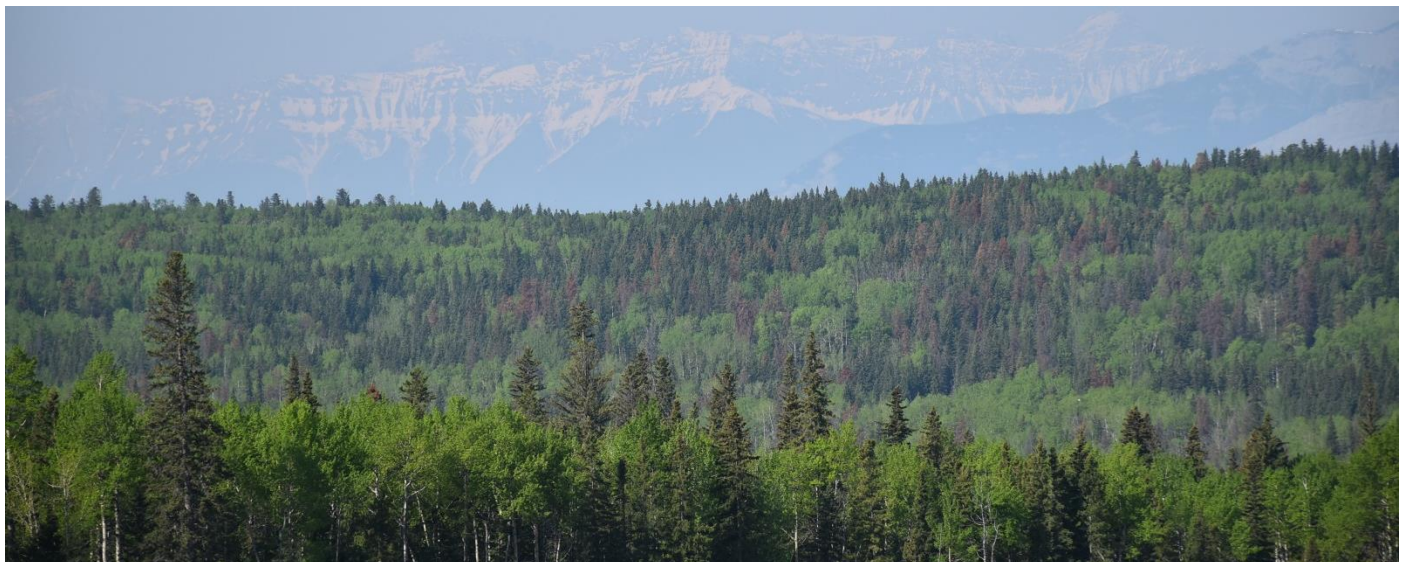
Although we have studied these species for many years, there is little research that evaluates how the habitat value of mature pine for caribou and grizzly bear might change when pine is killed by MPB or following single-tree cut and burn control. In addition, tools currently being used to manage caribou and grizzly bear habitat do not distinguish mature pine from other forest cover types, nor do they consider changing conditions due to MPB.

### Objectives

This project aims to fill this knowledge gap and develop new tools that will help support recovery goals for these provincially threatened species. In our first year, we developed habitat models to quantify, and evaluate changes in, the value of mature pine forest for central mountain caribou herds and grizzly bears in the 10 years following MPB infestations and MPB control efforts in west-central Alberta.

### Methods

We used Extended Alberta Vegetation Inventory to map pine and pine-dominant stands within the ranges of the Narraway and Redrock-Prairie Creek caribou herds and the Grande Cache, Swan Hills, Yellowhead, Clearwater, Livingstone, and Castle Bear Management Areas. Using long-term GPS locations from adult female caribou and grizzly bears, we calculated, by season, how frequently they were in mature stands where pine is present and pine-dominant stands ( $\geq 50\%$  of area is pine), and how this compares to random locations.



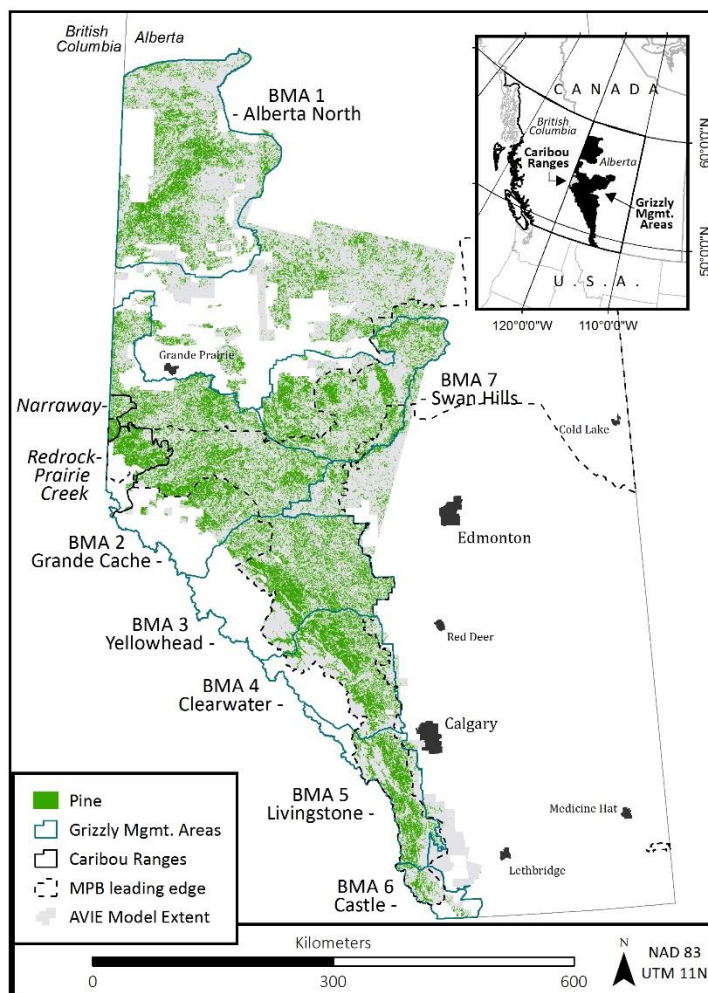


### Caribou Results

- Narraway and Redrock-Prairie Creek caribou spent 69 and 68% of their time in pine stands.
- Narraway caribou spent less time in pine during early winter (66% during November 29 – February 4) than late winter (73% during February 5 – May 5).
- Conversely, Redrock-Prairie Creek caribou spent more time in pine during early winter (72%) than late winter (64%).
- When caribou used mature pine forest, the Narraway herd selected pine-dominant stands both in early and late winter, but the Redrock-Prairie Creek herd only selected pine-dominant stands in late winter.

### Grizzly Bear Results

- Grizzly bears spent about 35% of their time in mature pine stands.
- The use of pine stand by grizzly bears was highest during spring (38% during May 1 – June 15), lower in summer (36% during June 16 – July 31), and lowest in fall (32% during August 1 – October 15).
- When grizzly bears used pine forest, they avoided pine-dominant stands in each season.



These findings show that while Narraway and Redrock-Prairie Creek caribou herds behave differently, mature pine, and in particular pine-dominant stands, is likely important winter habitat for both herds. On the other hand, grizzly bears use of mature pine was relatively low and they consistently avoided mature pine-dominant stands across seasons. This would suggest that mature pine forest is likely less important habitat for grizzly bears.