



## 18-ERPC- 03 BEST PRACTICES RECOMMENDATIONS

### Project problem

Boreal caribou are declining across their ranges, and low calf recruitment contributes to that decline. Anthropogenic disturbance is linked to predation risk; therefore, understanding the habitat preferences of caribou with calves during the neonatal period could help mitigate the impacts of disturbance on caribou calves during this vulnerable time. In addition, because caribou calves are vulnerable to a number of predators, understanding where predators are mostly likely to occur on the landscape and how caribou overlap with different predators is linked to calf survival could help identify high risk areas for calf mortality. Finally, understanding differences in habitat selection between caribou that lost their calves versus those with calves that lived could provide further information regarding areas of higher risk for calves as well as potential areas of refuge. Results from this project could help prioritize areas for restoration within caribou ranges to focus on calving habitat, with the potential for improving caribou calf survival and recruitment.

### Project objectives

To mitigate impacts on calf survival, land managers require a comprehensive understanding of caribou calving habitat and information regarding where caribou calves may be exposed to high predation risk. Our objective was to address knowledge gaps regarding caribou habitat selection during the calving period, and to investigate differences in habitat selection between caribou with calves that lived and caribou that lost their calves. Our project was focused within the ranges of two caribou herds: the Little Smoky and Chinchaga caribou ranges in Alberta and British Columbia.

Our specific research objectives were:

- i) To use GPS location data from adult female caribou to identify calving locations and to determine the landcover, topographic, and anthropogenic disturbance attributes associated with calving sites and selected or avoided by females with calves during the calving season (Chapter 2).
- ii) To use existing predator occurrence models developed within the Little Smoky and Chinchaga caribou ranges, or in similar and adjacent areas, to map predation risk during the calving season (Chapter 3).
- iii) To compare habitat selection of caribou with calves that lived to habitat selection of caribou with calves that died; specifically, to determine whether landcover,



topographic, and anthropogenic disturbance attributes and overlap with specific predators during the calving season are linked to calf fate (survival) (Chapter 4).

## Project results

- In Little Smoky, 73% of monitored females calved and 45% of those calves survived to 4 weeks. In Chinchaga, 58% of females calved and 55% of those calves survived to 4 weeks.
- In both the Little Smoky and Chinchaga herds, caribou selected calving sites in areas with lower densities of anthropogenic disturbance, and Chinchaga caribou also selected calving sites in wetter areas and at higher elevations.
- During the four weeks following calving (calving season), Little Smoky caribou selected areas with lower densities of anthropogenic disturbance (i.e., roads, pipelines, seismic lines, cutblocks and wellsites), and selected for mixed and broadleaf forest.
- During calving season, Chinchaga caribou selected areas with lower densities of some anthropogenic disturbance features (i.e., wellsites and cutblocks), flatter areas, and water and wetland habitat, but avoided mixed and broadleaf forest.
- Compared to caribou with calves that lived, Little Smoky caribou that lost calves were more likely to select areas with higher densities of pipelines, seismic lines, and cutblocks, and areas more likely to be used by wolves and grizzly bears but less likely to be used by cougars.
- Compared to caribou with calves that lived, Chinchaga caribou that lost calves were more likely to select areas with lower densities of roads and higher densities of wildfires. They were also more likely to select lower slopes and areas used by wolves and black bears.

## Actionable outcomes



- Spatially explicit surfaces of calving site and calving season habitat selection could be used in spatio-temporal planning of human activities (i.e. harvesting, building of infrastructure, and habitat restoration) in caribou ranges to mitigate their impacts on caribou and their calves during the vulnerable neonatal period.
- Probability of occurrence surfaces for wolves, grizzly bears, and cougars in the Little Smoky and for wolves, wolverines, and black bears in the Chinchaga can be used to target restoration activities in areas where species-specific predation risk is highest.
- The comparison of caribou that lost their calves versus caribou with calves that lived provides information regarding landscape features that predict where calf predation risk may be highest within Little Smoky and Chinchaga ranges. This information could be used to focus restoration efforts in areas where it will be of most benefit to improve calf survival rates, and most cost-effective for stakeholders.

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