

Project Profile

Project Name:	Develop Predictive Seasonal Habitat Selection Maps for Female Boreal Caribou in NEBC
Project Number:	BCIP-2019-01
Proponent:	Alberta Biodiversity Monitoring Institute (Dr. Craig DeMars)
Funding Envelope:	Boreal Caribou
Timeframe:	September 15, 2018 to January 31, 2019

Project objectives

The objective of the project is to develop predictive maps of seasonal habitat selection by female boreal caribou in northeastern British Columbia. These maps will complement existing maps of habitat selection by female boreal caribou during the calving season.

Project description

Predictive maps will be developed using resource selection functions, a widely used modelling approach where environmental attributes (or “resources”) associated with GPS (or “used”) locations are compared to environmental attributes of random (or “available”) locations generated within the spatial scale of interest. In this project, the GPS locations are from radio-collared female caribou occurring in all boreal caribou ranges in northeast British Columbia.

To facilitate comparison with existing maps of calving habitat selection, seasonal maps will be developed at a second-order scale where resources associated with caribou GPS locations falling within a specific season will be compared to resources associated with random locations within a herd’s range. Seasons will be defined as follows:

- Summer (15 July – 14 September);
- Rut / Fall (15 September – 30 November); and
- Winter (1 December – 15 April).

The predictive ability of developed maps will be assessed using k-fold cross-validation. This process develops a predictive map with a sample of the caribou location data then assesses how well the map predicts the withheld caribou locations.

Project background

Boreal woodland caribou (*Rangifer tarandus caribou*) are federally listed as Threatened due to population declines throughout much of their distribution. Population declines have been linked to unsustainable rates of predation ultimately facilitated by landscape disturbance within caribou range and climate change. Because of the link to landscape disturbance, mitigating disturbance impacts has become a management priority. Inherent to developing effective management strategies is understanding and predicting the spatial distribution of caribou.

In northeastern British Columbia, predictive maps have been developed for the calving season of boreal caribou but do not yet exist for other seasonal periods. While the calving season is demographically important, other seasons may also have high influence on caribou population dynamics, necessitating that management strategies take into account potential temporal shifts in space use by caribou.

Project deliverables

The deliverables from this project include the following:

1. Seasonal maps of predicted habitat selection by boreal caribou in northeastern British Columbia. Maps will be developed for the summer, rut (fall) and winter seasons and will be provided in a raster format that can easily be displayed using common Geographic Information System software.
2. Short report / vignette outlining how the maps were developed, their intended usage, and caveats to their interpretation.