SCEK Project Profile

Project Name:	Assessing caribou survival in relation to distribution and abundance of moose and wolves
Project Number:	BCIP-2015-09
Proponent:	University of Northern British Columbia
SCEK Funding Envelope:	Boreal Caribou
Timeframe:	April 1, 2015 to March 31, 2016 (year 1)

Project objectives

The objectives of this project are to determine:

1. If moose distribution and abundance is related to human-caused habitat change inside and outside of core caribou habitat?;

2. If wolf use of caribou habitat is related to moose distribution and abundance?;

3. If predator and prey abundance and behaviour interact to put caribou at risk?; and

4. What biotic, landscape, and anthropogenic attributes affect the survival of boreal caribou (with particular reference to those attributes that can be managed)?

Project Background

Many factors affect the outcomes of predator-prey interactions, particularly when those interactions involve multiple prey species, general predators, and a complex landscape. Factors most likely to affect survival of boreal caribou include the complexities of moose-wolf-caribou interactions such as apparent competition, and changes in selection resulting from changes to habitats on the landscape.

Understanding moose-wolf-caribou dynamics and their interaction with landscape condition will help identify elements of the caribou system that are under management influence, and will allow optimization of management activities. That landscape change increases the abundance of moose and wolves and leads to lower caribou survival, is a frequently cited hypothesis, but remains largely untested. This research will focus on quantifying these relationships across gradients in anthropogenic disturbances and moose and wolf densities, and will use the fine-scale data provided by GPS monitoring to test more sophisticated hypotheses related to the outcomes of survival analyses.

Project description

This 2-year project will assess whether resource selection by moose affects mortality of caribou, and if caribou with higher spatial overlap with moose have higher rates of wolf predation.

Under a separate project, moose will be radio-collared in northeast BC in three areas encompassing a range of moose habitats, in combination with various levels of anthropogenic disturbance and collared caribou and wolves. Telemetry data on caribou and wolf populations collected under the Boreal Caribou Telemetry Program will be provided by the REMB for use in this study.

Project approach

The project will involve the following approach:

1. Receive and analyze moose telemetry data throughout the project.

2. Until sufficient new telemetry data are available, use existing data and models to predict where habitat use by moose, caribou, and wolves overlaps

3. Develop initial caribou risk model on the separation (spatially and temporally) between moose and caribou as well as the interacting effects of linear features and early seral habitat. The model will help determine if variation in the selection strategies of caribou across monitored populations, contributes to differences in spatial overlap with moose, and whether there are thresholds in moose abundance (defined by collared moose mortalities or moose predation events determined from collared wolf movements) before caribou mortality is observed.

4. Identify those factors related to landscape change, moose selection, and wolf predation that contribute to caribou mortality; and

5. Identify management activities that may increase caribou survival.

Project deliverables

The following project deliverable will be provided:

1. Annual (year 1) Report— describing the project activities and initial findings in the first of this 2-year project.

Project team members

- Dr. Michael Gillingham, NRES Institute, University of Northern British Columbia
- Dr. Katherine Parker, NRES Institute, University of Northern British Columbia
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