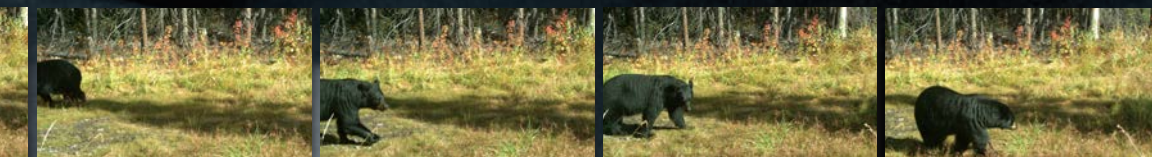


BC Boreal Caribou Research and Effectiveness Monitoring Board

ANNUAL REPORT 2015



BC Boreal Caribou Research and Effectiveness Monitoring Board (REMB) ANNUAL REPORT 2015



CONTENTS

Highlights	1
Background	2
About Boreal Caribou	3
Inventory and Research Activities	4
Supporting development of a Revised Boreal Caribou Implementation Plan	7
Other projects	7
Financial Summary	8
Project Partners	back cover

Highlights



Supported 16 projects valued at \$1M to improve our understanding of Boreal Caribou ecology

Planning investments of more than \$2M in new and ongoing initiatives

Improving research capacity through new partnerships with academia and agencies

Providing expertise to government to support revised management planning

Partnering with First Nations to learn and share

Launching restoration planning in critical areas

Background

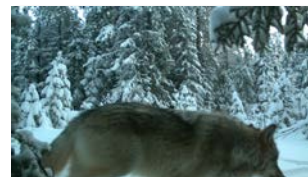
The BC Boreal Caribou Research and Effectiveness Monitoring Board (REMB) was established in 2011 to support the BC government's *Implementation Plan for the Ongoing Management of Boreal Caribou* (hereafter BCIP). The BCIP outlines measures to achieve objectives for Boreal Caribou in northeast BC, which include:

- Establishing Resource Review Areas where petroleum and natural gas tenure sales are deferred for a minimum of five years;
- Identifying and designating under the Oil and Gas Activities Act Boreal Caribou habitat areas where PNG activities are mitigated;
- Establishing operating practices to be applied to oil and gas activities in designated Boreal Caribou habitat areas;
- Restoring Boreal Caribou habitat;
- Managing Caribou predators and their primary prey; and,
- Conducting research on Boreal Caribou and their habitat.

The REMB was established through a Memorandum of Understanding (MoU) signed in August 2011 by the BC Ministry of Forests, Lands and Natural Resource Operations, BC Ministry of Energy, Mines and Natural Gas (now Natural Gas Development), BC Ministry of Environment, the Canadian Association of Petroleum Producers (CAPP), and the Explorers and Producers Association of Canada (EPAC).

CAPP and EPAC agreed to support implementation of the BCIP through a levy on oil and gas permitting and production, which provides up to a maximum of \$2 million annually for 5 years. The BC Oil and Gas Commission administers the REMB through the BC Oil and Gas Research and Innovation Society (BC OGRIS, formerly SCEK, the Science, Community & Environmental Knowledge Fund).

This report presents highlights of the REMB's work conducted to March 2015.



About Boreal Caribou

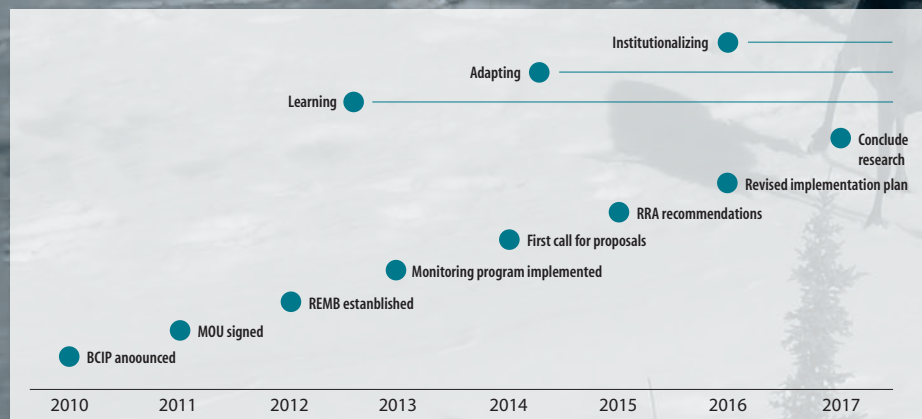
Boreal Caribou are an ecotype of Woodland Caribou (*Rangifer tarandus caribou*), which range throughout the boreal forest from Alaska to Newfoundland. They are closely related to the Barren Ground Caribou of northern Canada and Alaska and also to Reindeer, which are native to northern Scandinavia and Russia. Woodland Caribou are distinguished from their close relatives primarily by the habitats they use. Instead of ranging in large herds across vast areas of open tundra, they occur in small groups in forested regions. Although they may undertake seasonal movements of varying distances, they generally do not migrate long distances.

The boreal ecotype of Woodland Caribou predominantly use lowland bog and fen habitats that are characteristic of Canada's boreal plains. These habitats provide a refuge from predation for Caribou because Wolves, their primary predator, tend to remain in upland areas and hunt Moose and other locally abundant ungulates.

Scientists believe that habitat change in the boreal forest, caused by industrial development, wildfire, climate change and other stressors, are altering both the abundance and distribution of Wolves and their primary prey. These changes are resulting in high predation rates on Caribou and population declines in large portions of their range.

Boreal Caribou have been listed under Canada's *Species at Risk Act* as *Threatened*, and are on BC's provincial Red List of species and ecosystems considered threatened or endangered.

REMB TIMELINE



Inventory and Research Activities



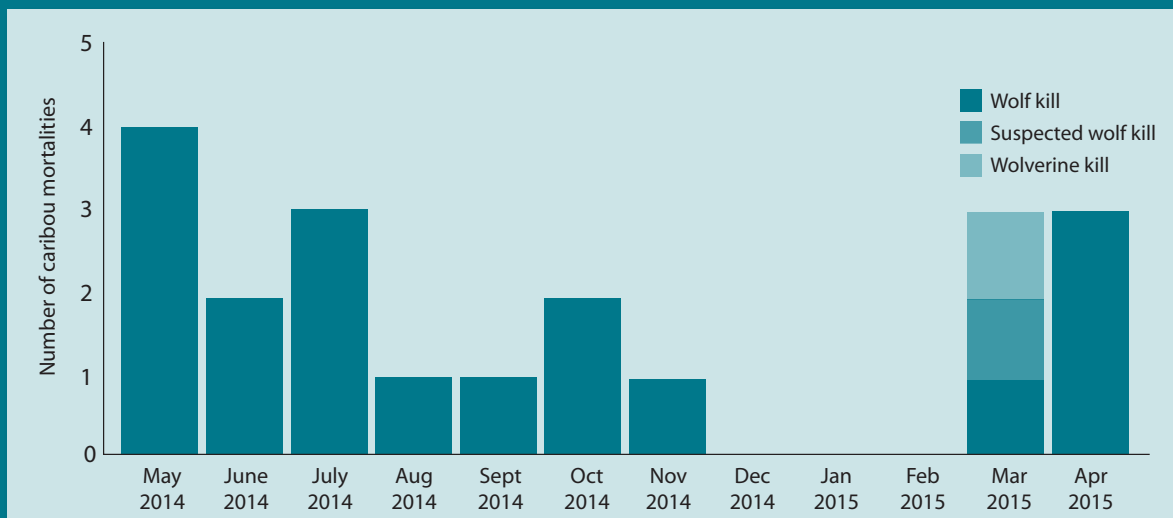
**BOREAL CARIBOU RANGES IN BC
AND SCATTER OF TELEMTRY POINTS**

Caribou Monitoring

The REMB began capturing and radio-collaring Boreal Caribou in northeast BC in December 2012. Since then, 224 adult females have been tracked via GPS satellite monitoring or by periodic aircraft surveys. This has generated a substantial database of Caribou movement and habitat use data (more than 100,000 individual data points), as well as critical information about adult survival and recruitment.

Some radio-collared Caribou venture beyond BC's borders into Alberta and the Northwest Territories. Similarly, Boreal Caribou radio-collared in those jurisdictions venture into BC. BC, Alberta and NWT cooperate extensively and share information to ensure accurate and efficient monitoring of the larger, regional population.

In the past year, 35 new GPS radio-collars were deployed to maintain the REMB's target sample of 10-20% of the estimated population of each of the six Boreal Caribou ranges in BC. Twenty-three radio-collared Caribou died during the year. Mortalities were detected through special signals emitted by radio-collars when they are stationary for a period of time. Twenty-one mortalities were either



Inventory and Research Activities

CONTINUED

caused, or suspected to be caused, by Wolves. There was also a case of predation by a Wolverine and one accidental death. Over the past 3 years, 75 Caribou mortality investigations have been conducted throughout the study area.

Both adult survival and recruitment of young Caribou into the adult population improved substantially in 2014-15 over 2013-14, but the improvement was insufficient to result in a positive population growth rate in 5 of the 6 Caribou ranges in BC. Monitoring will continue to determine whether the trend continues.

Wolf Monitoring and Census

The REMB has been deploying radio-collars on Wolves throughout northeast BC since the project began. Because Wolves are the primary predator of Caribou, understanding their movements and behaviour is an important component of the REMB's work.

In addition to following Wolves via radio telemetry, the REMB conducted aerial surveys in January 2015 to locate packs and count individuals. Wolves are difficult to census in forested areas, but following observed tracks to locate packs resulted in minimum counts of the population in three Boreal Caribou core habitat areas. Wolves were much more abundant than hypothesized. Densities ranged between 6.4 and 13 wolves/1000 km².

The REMB is planning to conduct additional surveys next year in other areas to better characterize the distribution and abundance of Wolves. These data will be integrated with other ecological information to refine our understanding of the broader predator-prey system and its impact on Boreal Caribou.

The Role of Moose in the Predator-Prey System

In cooperation with the University of Northern British Columbia (UNBC), the REMB initiated a significant research project this year on Moose in northeast BC. The abundance and distribution of Moose is an important driver of the Wolf population, and as Wolves become more abundant, Caribou tend to decline. However, there are many outstanding questions about how these three species interact, and how habitat and landscape condition influence the dynamics of the system. The research is focusing on the following questions:

- 1 How is Moose distribution and abundance related to human-caused habitat change inside and outside of core Boreal Caribou habitat?
- 2 How is Wolf use of Boreal Caribou habitat related to Moose distribution and abundance?
- 3 How does predator and prey abundance and behaviour interact to put Boreal Caribou at risk?

To answer these questions, the REMB, in cooperation with the BC Ministry of Forests, Lands and Natural Resource Operations, deployed GPS satellite collars on 38 Moose in three core Caribou habitat areas (Fortune, Clarke and Chinchaga) to begin collecting data on how Moose are using Caribou habitat and other features. UNBC will be analyzing these data with Caribou and Wolf distribution information to model the overall system and generate recommendations for changing management to benefit Caribou populations.

Because Wolves are the primary predator of Caribou, understanding their movements and behaviour is an important component of the REMB's work.



Inventory and Research Activities

CONTINUED

Habitat Restoration Planning

Several lines of evidence suggest that landscape condition is indirectly influencing Boreal Caribou population dynamics. Although the condition of habitat can affect Caribou in a variety of ways, the principal concern is the role that linear features such as seismic lines, roads and pipeline corridors play in facilitating the movement of Wolves. Packs can travel faster and farther on cleared paths and they might be encountering Caribou more often as a result.

In developing new areas companies now use techniques that are designed to minimize impacts on, and recovery time of, native habitats; however, there are many legacy features that are recovering very slowly because of the way they were constructed. Setting these legacy features on a trajectory of faster recovery is the goal of habitat restoration.

In northeast BC the REMB is setting the stage for broad scale restoration by undertaking a major new planning initiative in the Parker Caribou range. Habitat restoration is technically and logistically challenging, and the REMB is committed to ensuring

that restoration is implemented to maximum benefit for the lowest cost, and in a manner that provides the greatest opportunity to test the effectiveness of innovative treatments. This requires careful planning to identify features that will benefit most from treatment, determining what treatments to apply, and arranging and sequencing treatments as a scientific experiment.

The Parker range was chosen as the first range in BC for this type of planning because it is home to one of the smallest Boreal Caribou herds and is therefore at high risk, and because it is located close to the City of Fort Nelson, which helps to minimize costs. If successful, similar programs could be initiated in other ranges to address legacy impacts.

Elsewhere in northeast BC, the REMB is supporting restoration activities through the development of a “restoration toolkit.” Roll-out of the toolkit included a workshop with company staff to help them design and implement appropriate treatments.

In northeast BC the REMB is setting the stage for broad scale restoration by undertaking a major new planning initiative in the Parker Caribou range.



Supporting development of a Revised Boreal Caribou Implementation Plan

Although the REMB is continuing its research and inventory activities, sufficient information has been collected to date to begin considering how management in northeast BC could change to improve prospects for Boreal Caribou in the region. As a result, the REMB has been providing technical and analytical support to the BC government to ensure that the most current and relevant research and inventory information is used by policy makers as they consider changes to land use designations and to industrial practices currently in place.

Other projects

In addition to projects highlighted above, the REMB supported several other initiatives in 2014-15, including:

- Boreal Caribou Health Study
- Understanding the causes of calf mortality
- Reducing predator use of petroleum development roads
- Natural habitat recovery and the responses of caribou, people and other wildlife
- Image classification of anthropogenic features
- Feasibility of direct management action to benefit Boreal Caribou (e.g., captive breeding)
- First Nations role in Wolf management
- Capturing and modelling First Nations' traditional Caribou knowledge

Additional information on all of the REMB's projects is available at the BC OGRIS website (www.bcogris.ca).

The REMB hosts a popular webinar series in which researchers and managers present emerging results from projects of interest. Schedules are posted on the website and previous webinars are available for download.



Financial Summary

STATEMENT OF FINANCIAL POSITION (000's) AS AT MARCH 31, 2015

ASSETS

Current assets

Cash	\$ 5,829
Accounts receivable	3
Due from the OGC	489
Prepays	19
	6,340

Capital Assets

Caribou collars	178
Total Assets	6,518

LIABILITIES AND NET ASSETS

Current liabilities

Accounts payable	249
Deferred contributions	2,000
Due to the OGC	27

Fund balance	4,242
Total liabilities and net assets	\$ 6,518

STATEMENT OF OPERATIONS AND CHANGES IN NET ASSETS (000's) FOR FISCAL YEAR ENDED MARCH 31, 2015

Revenue

Fees from well applications	\$ 508
Levies on production	1,801
Contributions	—
Interest	27
Total	2,336

Expenses

Project costs	935
Amortization expense	56
Loss on disposal of assets	11
Extension and communication	14
Professional services	158
Management fees & miscellaneous	30
Total	1,204

Excess of revenue over expenses	1,132
Fund balance, beginning of year	3,110
Fund balance, end of year	\$ 4,242



Although the REMB is continuing its research and inventory activities, sufficient information has been collected to date to begin considering how management in northeast BC could change to improve prospects for Boreal Caribou in the region.



PROJECT PARTNERS



Alberta Biodiversity Monitoring Institute
Blueberry River First Nations
Caslys Consulting Ltd.
Diversified Environmental Services, Inc.
Ducks Unlimited Canada
EcoLogic Research
The Firelight Group
Foothills Research Institute
Golder Associates Ltd.
Nexen Energy ULC
Prophet River First Nation
University of Alberta
University of Calgary
University of Northern British Columbia
Wildlife Infometrics Inc.

