

BC Boreal Caribou Research and Effectiveness Monitoring Board **ANNUAL REPORT 2014**



BC Boreal Caribou Research and Effectiveness Monitoring Board (REMB)

ANNUAL REPORT 2014

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Partners and Funders back cover



PHOTO CREDITS: **Ron Bleakley** (Nexen Energy ULC); **Brad and Diane Culling** (Diversified Environmental Services); **Craig DeMars** (University of Alberta); **Chris Pasztor** (BC Ministry of Forests, Lands and Natural Resource Operations); **Dan Webster** (Eco-Web Ecological Consulting Ltd.) DESIGN: **Alaris Design**

Highlights



Supported seven projects totalling more than \$900,000 in 2013–14 to refine our understanding of boreal caribou ecology in northeast BC

Planning at least 14 projects totalling \$1.7M in 2014–15 to inform revised management, test techniques, and address outstanding information gaps

Maintaining a large sample of >170 radio- and satellite-monitored caribou and >20 wolves to improve our knowledge of population trends and habitat use

Initiated a boreal caribou health study and supported nutritional research to understand the role of disease and condition in caribou population dynamics

Supported monitoring of industry operating practices

Initiated support for site-level restoration and mitigation research

Secured mapping for habitat use analyses and operational planning

Continued to establish the scientific basis for recommended changes to boreal caribou management in 2015 and beyond

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 recovery objectives for boreal caribou in northeast BC, which include:

- Establishing Resource Review Areas (RRAs) where petroleum and natural gas (PNG) 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 PNG 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.

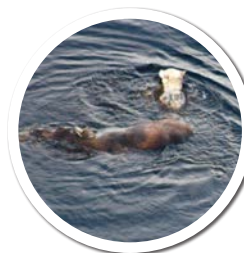
The REMB was enabled through a Memorandum of Understanding (MOU) signed in August 2011 by the BC Ministry of Forests, Lands and Natural Resource Operations (FLNRO), BC Ministry of Energy, Mines and Natural Gas (MNG), BC Ministry of Environment (MoE), the Canadian Association of Petroleum Producers (CAPP),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

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

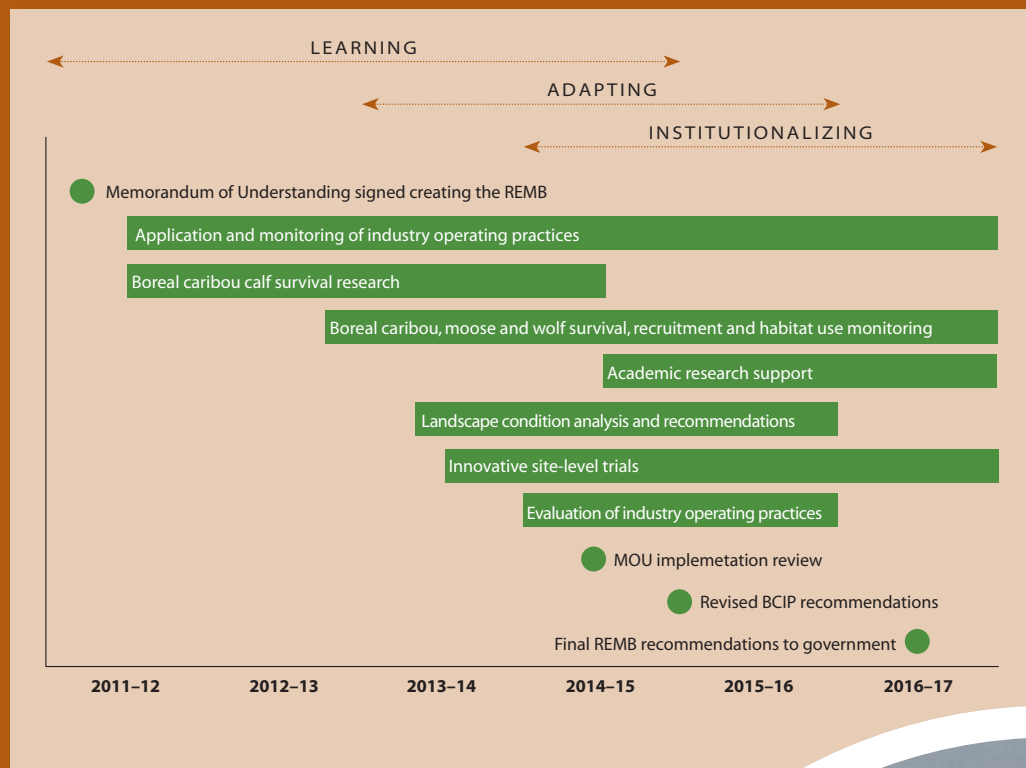
This report presents highlights of the REMB's work conducted in the 2013–14 and plans for 2014–15.



BOREAL CARIBOU RANGES IN BC



Work Plan and Milestones



Within 5 years the REMB will be delivering recommendations to the BC government on key aspects of the BCIP, including (where necessary):

- Amendments to areas managed for boreal caribou, including Resource Review Areas (RRAs);
- Preferred restoration treatments and their required extent and distribution;
- Targets for predator and/or prey management;
- Revisions to industry operating practices; and,
- Other actions required for successful implementation of the BCIP.



Inventory and Research Activities

Although available evidence suggests that the region likely experienced a net increase in the caribou population during 2011–2013, spring conditions and perhaps disease contributed to an overall decline during the past year.

Caribou monitoring

By April 2013, the REMB had increased the sample size of radio-collared boreal caribou in northeast BC to 175, or 15–20% of the estimated population. In addition, 22 wolves were collared in the range of boreal caribou in BC. GPS satellite collars were monitored weekly by direct data transmission and VHF radio-collars were monitored monthly by aircraft. Mortalities were investigated as soon as practical in order to identify causes.

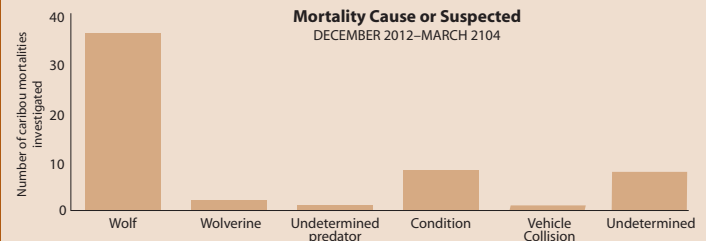
Aerial surveys of radio-collared caribou cows and accompanying calves were also flown in June, November and March to determine calf survival and recruitment. Both adult female survival and calf recruitment were low during 2013–14, likely due to snow crusting conditions in the spring that impaired caribou movements but enabled travel by wolves. There is also evidence that disease might also have played a significant role during the spring and summer of 2013.

Caribou survival and recruitment was lower this year than in previous years. Although available evidence suggests that the region likely experienced a net increase in the caribou population during 2011–2013, spring conditions and perhaps disease contributed to an overall decline during the past year.

Investigations continue to suggest that predation by wolves is the most common, proximate cause of death of adult female caribou. “Condition” refers to caribou that were likely compromised by disease and/or nutritional problems. Mortalities were classified as “undetermined” where remains were insufficient to indicate the cause of death.



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Inventory and Research Activities

CONTINUED

Understanding the causes of calf mortality

High rates of calf mortality due to predation are a key demographic factor contributing to population declines of boreal caribou herds in northeast British Columbia. A four-year project was initiated in 2011 to assess how caribou and their main predators – wolves and black bears – use space and select habitat during the calving season. Primary objectives of the project are to: 1) identify important characteristics of caribou calving habitat; and 2) identify landscape attributes with a strong influence on the probability of calf survival. Preliminary results suggest that female caribou disperse widely on the landscape during the calving season and predominantly select calving areas with a high proportion of nutrient-poor fens. The project's final report will be completed by December 2014 and expected outcomes include a predictive map of caribou calving habitat and an assessment of calving habitat quality within caribou range. It is anticipated that these outcomes will enhance caribou management strategies and better inform landscape-level planning in northeast BC.

Boreal caribou health study

Infectious diseases and other determinants of health may negatively impact caribou populations through direct and indirect effects on survival and reproduction. Biological samples collected from live-captured and dead caribou are currently being evaluated for a suite of bacterial, viral, and parasitic diseases. Other aspects of caribou health are also being explored including nutrition, body condition, chronic stress levels, and selected indicators of immune status.

Preliminary findings suggest that the species diversity, prevalence, and intensity of gastrointestinal parasites may be relatively low in boreal caribou from northeast BC. However, two pathogens that may adversely impact caribou reproduction or survival have been identified. Up to 22% of adult female caribou live-captured in 2013 may have been exposed to the protozoan parasite *Neospora caninum*, which is a known cause of abortions, neonatal morbidity, and neonatal mortality in other ungulates and is increasingly recognized as a potential cause of diminished reproductive success in free-ranging caribou populations. The bacterial pathogen *Erysipelothrix rhusiopathiae* was also identified in the tissues of five radio-collared caribou and one un-collared caribou that died during spring or summer 2013. Approximately 30% of caribou live-captured in winter 2012/2013 had also been exposed to this organism. *E. rhusiopathiae* is known to cause both chronic illness and outbreaks of acute disease or per acute death in free-ranging deer, moose, and muskoxen. To our knowledge, this is the first record of this pathogen in free-ranging caribou from North America.

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Inventory and Research Activities

CONTINUED

Findings to date indicate that health and disease may be important considerations for the long-term sustainability of boreal caribou in northeast BC.

The findings to date indicate that health and disease may be important considerations for the long-term sustainability of boreal caribou in northeast BC. This program will provide vital baseline information on the health status of caribou herds in the region. To inform regional management and conservation initiatives results will also be examined in conjunction with ancillary biological and ecological data to evaluate temporal and spatial relationships between caribou health, growth, reproduction, and survival. Moreover, investigative approaches and standardized health monitoring protocols developed for this study will be broadly applicable to other caribou research programs in BC and elsewhere.

Reducing predator use of petroleum development roads

Increasing predation rates by wolves is hypothesized to be a main driver of population decline in many boreal caribou herds. One proposed mechanism linking elevated predation rates to landscape alteration is that predator movement into and within caribou habitat is facilitated by linear disturbances such as roads, pipelines and seismic lines. This project focuses on the development and testing of innovative mitigation methods for inhibiting predator use of petroleum development roads and seismic lines immediately adjacent to roads. The outcomes of this project will be used to enhance industry operating practices aimed at reducing predator impacts within caribou range.

Other projects

The REMB also initiated support for several other projects, including:

- the development of a habitat restoration toolkit (2014–15);
- research on the role of natural revegetation in habitat restoration efforts (2015); and,
- piloting innovative methods to better characterize the anthropogenic footprint from satellite imagery (2014).

Project reports for all REMB activities can be found on our website:
<http://www.scek.ca/boreal-caribou>



Current Management Responses

Auditing operating practices

Oil and gas operations located within Ungulate Winter Ranges (UWRs) or Wildlife Habitat Areas (WHAs) established for boreal caribou are required to adhere to *Interim Operating Practices for Oil and Gas Activities in Identified Boreal Caribou Habitat* (IOPs). The Commission uses IOPs during application review. If applications are consistent with the IOPs, they are routinely processed. Applications that are inconsistent with the IOPs are still considered, but they must be accompanied by a rationale that includes an assessment of the effects of the proposed activity on boreal caribou and their habitat. The Commission often applies specific permit conditions to proposed work, in relation to mitigation planning and impact avoidance.

The Commission conducts compliance and enforcement activities in the field to determine whether exploration and development is consistent with the IOPs. Where there are inconsistencies, enforcement action may be taken. In 2014, the REMB provided partial funding for a pilot audit of the IOPs. The Commission is working towards conducting routine audits of oil and gas activities in UWRs and WHAs.

The results of such audits will be used to plan future OGC analyses and REMB projects, including:

- assessing the effectiveness of the IOPs;
- identifying challenges to implementation (e.g., seasonal conditions, terrain); and,
- developing new IOPs that address boreal caribou habitat protection and restoration, including improved standards for interim reclamation, habitat restoration and overall reduction of the industrial footprint created by oil and gas activities.



Work Plan for 2014–15

The REMB is planning to support at least 14 projects totalling more than \$1.7M in 2014–15, including:

- Supporting the development of recommendations for revising the BC government's Boreal Caribou Implementation Plan, including recommendations regarding future management of RRAs, based on the extensive monitoring information that the REMB has collected to date
- Initiating a research project to study the distribution and abundance of moose in relationship to landscape condition, and its consequence for wolf abundance and caribou survival
- Developing habitat maps for operational use by companies and regulators that indicate the location and condition of important caribou areas, as determined by the REMB's monitoring work
- Continuing health and nutrition studies to better understand their role in caribou population dynamics
- Supporting site-level restoration and mitigation actions, as well as evaluation of operating practices

These projects will contribute significantly to the REMB's purpose by supporting the implementation of the BC government's implementation plan; in particular, by addressing data gaps, promoting sound practices and enabling an adaptive management approach.



Financial Summary

As at March 31, 2014

STATEMENT OF FINANCIAL POSITION AS AT MARCH 31, 2014

ASSETS

Current assets

Cash	\$2,721,175
Accounts receivable	530
Due from the OGC	605,895
Prepays	16,667
	3,344,267

Capital Assets

Caribou collars	128,015
Total Assets	3,472,282

LIABILITIES AND NET ASSETS

Current liabilities

Accounts payable	327,625
Due to the OGC	34,954
Holdback payable	—
Deferred contributions	—
	362,579

Fund balance	3,109,703
Net assets	\$3,472,282

STATEMENT OF OPERATIONS AND CHANGES IN NET ASSETS FOR THE YEAR ENDED MARCH 31

Revenue

Interest	\$7,333
Contributions	25,000
Fees	414,400
Levies	1,671,168
Total	2,117,901

Expenses

Project costs	765,294
Professional services	85,068
Amortization expense	30,481
Management fees	14,520
Miscellaneous	8,019
Total	903,382

Excess of revenue over expenses	1,214,519
Fund balance, beginning of year	1,895,184
Fund balance, end of year	\$3,109,703

Partners and Funders



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