

# **Mountain Caribou Recovery Implementation Plan Adaptive Management Component Terms of Reference**

These Terms of Reference (ToR) support the October 2007 BC Mountain Caribou Recovery Implementation Plan (MCRIP) and guide the development of an adaptive management strategy.

## **Background: October 2007 Mountain Caribou Recovery Implementation Plan (MCRIP)**

The goal of the MCRIP:

*To halt the decline of mountain caribou within seven years for each Planning Unit and recover mountain caribou to 1995 population levels (2500 animals) across the mountain caribou range within 20 years in those Planning Units with greater than 10 animals.*

This recovery goal will be realized through the following six recovery objectives:

### *1. Protect all high suitability early and late winter habitat*

The Mountain Caribou Science Team identified habitat loss as the primary underlying cause of mountain caribou population declines with mortality by predators as the principal proximate cause. Halting and reversing this habitat loss is a central tenet of the Recovery Implementation Plan. Government's goal is to protect 95% of the high suitability winter habitat within identified herd areas. Accommodations will be made to protect local forest operator viability and to address isolated or otherwise ineffective habitat by increasing protection elsewhere, ensuring future recruitment of high suitability habitat.

### *2. Ensure the effectiveness of protected habitat by managing the human footprint*

Activities such as snowmobiling and commercial winter backcountry recreation (e.g., heli-skiing) can displace mountain caribou from their preferred early- and late-winter habitat. These activities need to be managed in order to secure effective habitat for mountain caribou. The Recovery Implementation Plan commits government to work with users to manage their activities in a manner that does not displace mountain caribou. Where activities cannot be undertaken without displacing mountain caribou, areas will be closed to those activities. Consultations with users are currently underway and many areas have already been closed through legal designations or voluntary agreements.

### *3. Manage predator populations where they are preventing the recovery of mountain caribou populations*

Although habitat loss was identified by the Science Team as the underlying cause of mountain caribou population declines, unsustainable predation rates on mountain caribou

have resulted in significant declines in populations since the mid-1990s. Thus, habitat protection alone will not reverse negative population trends in the short-term. The Recovery Implementation Plan commits government to undertake a variety of measures to address unsustainable predation rates on mountain caribou. These measures include changes to hunting allocations to increase harvest of cougars and wolves, incentives for trappers to trap wolves, non-lethal control measures such as wolf sterilization, and targeted removal of individuals or packs where necessary.

#### *4. Manage the primary prey of caribou predators to better reflect historic conditions*

Habitat alteration and hunting allocations combined with fewer severe winters in recent years have resulted in higher populations and wider distributions of moose and deer than hypothesized historic averages. This in turn has resulted in higher populations of predators, mainly wolves and cougars, which prey opportunistically on mountain caribou. The Recovery Implementation Plan commits government to reduce prey populations through changes in hunting allocations to reduce prey(?) numbers.

#### *5. Augment critically endangered herds that are feasible to recover*

Small populations are slow to recover, even with favourable environmental conditions. Augmenting small mountain caribou populations (10-50 individuals) with animals transplanted from healthy herds elsewhere can increase population growth rates and more immediately reduce the demographic risks associated with small populations. The Recovery Implementation Plan commits government to augmenting critically small herds. In addition, government is considering using maternity pens to protect transplanted cows and their newborn calves from predators.

#### *6. Support adaptive management and research to increase the probability of successful recovery*

The Science Team identified key uncertainties related to mountain caribou ecology and the efficacy of proposed recovery actions. Implementation efforts will need to be monitored closely and assessed to determine whether the strategy needs to be modified in order to meet recovery goals. In addition, research addressing knowledge gaps should be supported. The Recovery Implementation Plan includes the development of adaptive management and effectiveness monitoring plans for habitat, recreation and predator-prey management efforts.

These Terms of Reference (ToR) address the implementation of Objective #6 – supporting adaptive management and research to increase the probability of successful recovery.

### **Purpose**

To develop a strategy that identifies knowledge gaps and guides the integration of monitoring and research activities related to all management levers, assesses progress in

meeting recovery goals, guides adjustment of future management, and optimizes learning.

## **Project Objectives**

- Recommend criteria, indicators and management thresholds for each management lever;
- Develop a framework that structures research and monitoring activities range-wide to balance learning outcomes and management priorities; and,
- Develop a process to integrate monitoring and research information in order to assess the progress of the MCRIP in meeting its goals, identify required changes in management to improve outcomes, and to identify research priorities.

## **Project Description**

The MCRIP is comprised of a number of management actions that are being implemented across the range of mountain caribou to meet specific population goals for each planning unit. The mix of management actions differs in response to the specific threats faced by different mountain caribou herds. The initial mix of management actions being implemented in the first phase of the recovery implementation project is based on: a) preliminary recommendations of the Mountain Caribou Science Team; and, b) priorities set by respective agencies based on relative risk to mountain caribou, feasibility and available resources.

What is required is an overall strategy to rationalize and adjust the mix of management actions over time, based on monitoring and research information. The adaptive management strategy will provide the framework for this by developing 3 components:

### **1. Develop criteria, indicators and management thresholds for each management lever and project outcomes.**

The basis of the adaptive management strategy will be a series of criteria, indicators and management thresholds related to each of the management levers: habitat protection, recreation management, predator-prey management and augmentation:

**Criteria** describe the value or desired outcome of management (e.g., reduce predation risk to mountain caribou to promote a positive population growth rate).

**Indicators** describe the measurable(s) associated with the criteria (e.g., wolf density in caribou and matrix habitat during summer).

**Thresholds** describe the values of the measure that trigger management change (e.g., remove wolves when density exceeds 6.5 wolves/1000 km<sup>2</sup>).

Both the implementation and effectiveness of management actions will need to be monitored.

Some of this work has been completed or is underway for some management levers. For example, an effectiveness monitoring strategy related to heli- and cat-skiing operating procedures is currently in development. In addition, MOE has established targets for desired outcomes related to caribou population growth, and is developing targets for predator-prey populations.

The strategy will not propose specific monitoring protocols to measure indicators. These will be developed during implementation.

## **2. Develop a framework that structures research and monitoring activities range-wide to balance learning outcomes and management priorities**

To be effective, adaptive management requires a study design. Where contrasting treatments and controls can feasibly be applied, “active” adaptive management allows us to learn most reliably from monitoring outcomes. Where only a single treatment can be applied due to policy, geographic, or other constraints, “passive” adaptive management can be used but it should still be guided by a well thought-out plan. Both approaches will reduce uncertainty and better direct future management and research efforts.

The management actions being undertaken range-wide need to be structured in such a way to ensure that we generate results that can be used reliably. Concurrently, management actions will be driven by the relative risk to herds and the need to meet recovery goals. Outlining a process to structure the overall project to meet these competing goals will be the major task of this component of the strategy.

## **3. Develop a process to integrate monitoring and research information**

The MCRIP is a complex project with several management levers being implemented with different intensities in different areas of a very large range. Monitoring is going to generate data from different indicators that could be contradictory, uncertain, or even unavailable. A process is needed to reconcile this information in a way that can answer the following questions:

- a) Is the project meeting its recovery goals?
- b) How does management need to change in duration, intensity and extent to improve outcomes where they are unacceptable?
- c) What are the key uncertainties and what research is required to address them?

### **Guiding Principles**

- The adaptive management design will balance the need to “learn by doing” with the risk to mountain caribou subpopulations;
- Monitoring is the key to successful implementation of the strategy, and indicators must be feasible and efficient to measure;

- The strategy will ensure a systematic approach to altering management, tied to defined monitoring outcomes and timelines; and,
- The strategy should be transparent to agencies and stakeholders to ensure that management, monitoring and research priorities are clear and based on the best available information.

### **Team Members, Roles & Responsibilities**

Lead: Steve Wilson

Team members: Brian Nyberg

Participants: agency staff, Science Team members and stakeholders as required

### **Deliverables and Timeline**

1. Review and approval of TOR (Sept 15)
2. Preliminary list of criteria, indicators and thresholds (Oct 31)
3. Internal review (Nov 15)
4. Draft strategy document (Dec 15)
5. Internal review (Jan 15)
6. External review (Jan 31)
7. Final strategy document (Feb 15)