



Photo: Harold Ambederard, Michaela Waterhouse

*This is a typical opening created using the group selection silvicultural system at Mount Tom.*

## Planning for Mountain Caribou: Habitat Management for a Species at Risk

VIRTUALLY ALL OF THE REMAINING MOUNTAIN CARIBOU IN THE WORLD live in British Columbia and they have declined in recent decades to about 1,900 animals. This situation has led the Committee on the Status of Endangered Wildlife in Canada to designate mountain caribou as threatened and the British Columbia Conservation Data Centre to place mountain caribou on the provincial red list. In 2007, the BC government announced the Mountain Caribou Recovery Implementation Plan designed to recover caribou to the pre-1995 level of 2,500 animals throughout their existing range in BC. Regional plans such as the Cariboo-Chilcotin land-use plan have placed a high priority on the maintenance of mountain caribou habitat to help facilitate recovery.

Mountain caribou require large areas of old-growth forests in the Englemann Spruce-Subalpine Fir and Interior Cedar-Hemlock biogeoclimatic zones. In areas where mountain caribou winter, there is typically two to three metres of snowpack resulting in a diet of almost exclusively arboreal lichens. Clearcut logging has a drastic, immediate effect on arboreal lichen and cutblocks take a century or more to recover lichen biomass<sup>1,2</sup>.

The Quesnel Highland Alternative Silvicultural Systems project was established in 1990 to find ways of maintaining caribou habitat in managed high-elevation forests. The project has developed in three stages:

1. A pilot trial (1990),
2. A replicated research trial (1992); and,
3. An adaptive management trial at Mount Tom (2001).

The Quesnel Highland project is a part of the national Forest Ecosystem Research Network of Sites (<http://cfs.nrcan.gc.ca/subsite/ferns/quesnel>).

The replicated phase of the Quesnel Highland study assessed the

lichen and tree regeneration response to 33% area removal through a group selection silvicultural system. The results are encouraging. For example, by ten years post-harvest the arboreal forage lichen biomass per tree increased on the residual trees in the harvested treatments compared to the trees in the no-harvest treatment areas<sup>3</sup>. Tree regeneration survival and growth is best in group selection openings >0.1 hectares<sup>4</sup>. However, the replicated trial with cutblocks of about 60-80 hectares could not be used to assess caribou response directly because of the relatively small size of the treatment units and the low densities of caribou. Additionally, operational aspects of the silvicultural system such as opening shape and size range flexibility need to be addressed. Caribou response and operational viability are the focus of the adaptive management trial at Mount Tom, east of Quesnel.

The goal of the Mount Tom adaptive management project is to continue to develop and test silvicultural systems that maintain caribou habitat while allowing for some timber harvesting. It is a large adaptive management trial that was operationally harvested from 2001 to 2009 with cutblocks now covering 1,160 hectares. By mutual agreement with West Fraser Mills Ltd. and the Ministry of Forests and Range, the remainder of the area will not be harvested for at least ten years. This will provide a large 2,000 hectare no-harvest control for comparing caribou use in partially cut and uncut habitat.

Similar to the replicated trial, the Mount Tom prescription was based on 33% area removal, including skid trails and in-block roads. Openings ranged in size from 0.2 to 1.0 hectare, with the exception of several 3.0 hectare clearcuts to allow comparison to clearcut conditions for measures of tree growth. A planned 80-year cutting cycle will result in



# Viewpoints

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Photo: Harold Armleder and Michaela Waterhouse

This is an example of the group selection system used at Mount Tom to protect the mountain caribou food source, arboreal lichen.

three age cohorts: 1-80, 81-160 and 161-240 years after the third entry. This should ensure a stand condition that continuously meets caribou needs.

This project is testing the effects of partial cutting on: lichen, stand stability, planted stock, and snow distribution and melt patterns. The adaptive management project also explores operational harvesting efficiencies<sup>5</sup>. Direct response of caribou to this large development will be measured using radio-telemetry now that the initial logging phase is complete. Results-to-date indicate:

1. Logging group selection openings in high elevation forest is operationally viable (although more costly than clearcutting)<sup>6</sup>,
2. The partial cuts are windfirm,
3. Planted stock is surviving and growing well especially on naturally raised microsites or mechanically constructed mounds, and
4. The quantity of lichen on residual trees is stable.

The project directly impacts forest management in the Cariboo region. Wildlife Habitat Areas (WHA) have been established with General Wildlife Measures (GWM) under Government Action Regulation (GAR) orders to designate 'no harvest' and 'modified harvest' areas for mountain caribou range. These decisions leave thousands of hectares available for modified harvesting (basically as applied at Mount Tom) in the Quesnel Highland making this project directly relevant to present and future forest management.

Providing quality, lichen-bearing habitat meets just one of the requirements for caribou. The caribou declines witnessed in recent years are a direct result of predation and an indirect result of habitat loss and fragmentation, and disturbance from motorized recreational activities<sup>7</sup>. The BC government's Mountain Caribou Recovery Implementation Plan attempts to address all of these requirements. Only if it is fully implemented and enforced

will mountain caribou have a future in British Columbia. 🐾

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