

## BC Journal of Ecosystems and Management

**Volume 5 - Issue 1**

Published by FORREX Forum for Research and Extension in Natural Resources

### Abstract

#### **Movements, foraging habits, and habitat use strategies of northern woodland caribou during winter: Implications for forest practices in British Columbia**

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Land managers face increasing challenges as they try to balance timber harvesting with the habitat requirements of wildlife, including those of woodland caribou in north-central British Columbia. With the aim of conserving caribou by improving forest practices, we employed a hierarchical, scale-explicit approach to study the processes governing movement and distribution of the northern woodland caribou ecotype. Investigations of foraging sites north of Prince George, British Columbia revealed that caribou in forested and alpine areas cratered at locations with relatively low snow depths and relatively large amounts of terrestrial lichens. When snow depth, snow hardness, and snow density increased, caribou fed more frequently at trees supporting abundant arboreal lichens. Feeding activities of caribou in forested foraging patches were positively related to the biomass of several terrestrial lichen species and to decreasing snow depth; the number of arboreal feeding sites increased as snow depth and hardness increased. We identified three scales of habitat selection based on movement rates of caribou fitted with GPS collars. For all scales, caribou selected pine-lichen woodland and windswept rocky slopes. Predation risk was greatest for caribou travelling between habitat patches, was lowest for caribou in alpine habitats, and had no apparent influence on intra-patch movements.

Land use plans should address the needs of northern woodland caribou by ensuring that large patches of widely distributed pine-lichen woodland are maintained on the landscape, recognize the limiting effects of deep snow (i.e., > 50–80 cm), and encourage silvicultural strategies that minimize the creation of early seral-stage forests adjacent to caribou movement routes.

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