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Fact Sheet

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Finding Enough Good Food to Eat Can be Challenging for Caribou in Northeastern British Columbia

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Introduction

Nutrition underpins virtually every life process in animals and is fundamentally important to populations due to its effects on survival and reproduction. Yet little is known about the nutritional environment available to woodland caribou during summer. In an earlier NCASI fact sheet on caribou (What Do Caribou Eat and Why Is It Important?), we noted that even plant species commonly selected by caribou vary in their nutritional benefit to a foraging caribou. Similarly, the

nutritional value of plant communities can vary substantially among environments common across caribou ranges in western Canada—alpine, montane forest, upland boreal forest, and boreal wetland.

Nutritional value of the environment is determined by the ability of caribou to satisfy their nutritional requirements. This is influenced by which plant species caribou choose to eat, and the availability and quality of those species. Many study methods exist for estimating forage quantity and quality of plant communities for ungulates, but most of these methods do not include information on relationships between forage characteristics and levels of nutrition obtained by foraging animals. NCASI's research uses bottle -raised tame caribou that allow for accurate measurements of bite mass, bite rate, foraging time, and species and parts of plants consumed—all of which are used to directly measure the nutritional value of plant communities to caribou.



Dr. Kristin Denryter collects fine-scale foraging data from a tame female caribou in a willow-dominated alpine community of northeastern British Columbia. Photo credit: Rachel Cook

Are Most Habitats Nutritionally Adequate for Caribou?

We found that patterns of nutritional value varied greatly among plant communities available to caribou in northeastern British Columbia during summer. Less than 25% of the 124 sites we sampled over three summers provided caribou with adequate digestible protein and energy intake in a 24-hour period to satisfy the most basic requirements for a female caribou and her calf. In addition, the magnitude of nutritional inadequacies was stark: more than a third of sites sampled failed to provide caribou with even half of their digestible protein and energy requirements.

Strong selection by caribou for habitats offering the best nutrition may lessen nutritional deficiencies; however, performance of caribou females and their calves (e.g., survival, growth, reproduction) may be reduced at the levels of nutrition we documented in northeastern British Columbia. Evidence that the nutritional environment may be limiting performance of caribou in northeastern British Columbia has been supported by recent measurements of body fat of wild caribou. Thus, caribou in this region may be more challenged to meet their nutritional requirements than previously assumed.

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Plant species composition and, in turn, the nutritional value to caribou varies dramatically across plant communities common on caribou ranges in northeastern British Columbia. Photo credit: Rachel Cook

Which Plant Communities are Best for Foraging Caribou?

On summer ranges, plant communities with relatively good nutrition are those that provide a diversity of palatable deciduous shrubs, forbs, mushrooms, and lichens. These include willow-dominated alpine communities and, depending on the site potential, some young montane and boreal communities. Generally, younger forests have not been

considered suitable for caribou because of low availability of lichens or high predation risk, yet during summer and early autumn, younger forests often provide superior nutritional resources compared to older forests for caribou. In contrast, old-growth forests and boreal peatlands—valuable habitats for caribou because they serve as refugia from predators and can have high abundance of lichens—were among the most nutritionally inadequate plant communities available to caribou in northeastern British Columbia during summer and early autumn.

Conservation plans may benefit caribou by recognizing the value of floristic heterogeneity and diverse plant communities across landscapes, in appropriate balance with communities such as older forests that provide caribou refuge from predators and relatively abundant winter forage.



A tame caribou beds in a boreal bog peatland, a plant community offering the lowest level of nutritional resources for caribou during summer, yet often emphasized in management plans. Photo credit: Rachel Cook

Reference:

Denryter, K., R. C. Cook, J. G. Cook, and K. L. Parker. 2022. Animal-defined resources reveal nutritional inadequacies for woodland caribou during summer–autumn. Journal of Wildlife Management 1–32. https://doi.org/10.1002/jwmg.22161

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