

*Abstract*

## Autumn foraging dynamics of woodland caribou in experimentally manipulated habitat

Eric M. Rominger<sup>1</sup>

Department of Zoology, Washington State University, Pullman, WA 99164, U.S.A.

<sup>1</sup> *Current address:* P. O. Box 704 Santa Fe, NM 87504, U.S.A.

*Abstract:* Unlike other North American cervids, woodland caribou (*Rangifer tarandus caribou*) in the Selkirk ecosystem do not forage on browse. Therefore, during autumn as forbs become senescent and deciduous shrubs defoliate, caribou foraging decisions are narrowed. Shallow snow depths preclude a diet shift to arboreal lichen (*Ascomycetes*) in standing trees, as is observed in late winter. The objective of this research was to determine the importance of the two principal forage items previously reported in autumn diets: (1) arboreal lichen on windthrown trees and (2) the evergreen shrub myrtle boxwood (*Pachistima myrsinites*). Foraging trials were conducted with three tame woodland caribou in six 5000 m<sup>2</sup> pens experimentally manipulated to either remove all windthrown trees and myrtle boxwood or retain extant myrtle boxwood and add "windthrown" trees by felling trees. Additionally, the pen design was such that half was in an old-growth stand of western red cedar (*Thuja plicata*) and western hemlock (*Tsuga heterophylla*) and half was in an adjacent clear-cut.

Arboreal lichen, as a result of a large bite size, had the greatest influence on intake rate. Caribou in pens with lichen bearing windthrown trees had significantly higher intake rates ( $P < 0.006$ ) and significantly lower ( $P < 0.01$ ) eating bite rate (exclusive of search time between plants). Foraging bite rate (inclusive of search time between plants) did not differ ( $P < 0.20$ ) due to treatment. Intake rates ( $P < 0.005$ ) and foraging bite rates ( $P < 0.03$ ) of caribou were significantly greater in timbered portions of pens. Search time was significantly greater ( $P < 0.005$ ) in clear-cut portions of pens. In the timbered portion of treatment pens, lichen comprised 34% of the total bites and 67% of the dry matter intake and arboreal lichen from windthrown trees comprised 27% of the total bites and 52% of the dry matter intake. These data suggest that arboreal lichen is an important dietary component earlier in autumn than previously reported and extends the period that woodland caribou subsist primarily or solely on arboreal lichen 30–60 days in high snowpack ecosystems of western North America.

Tame caribou autumn diets were comprised of <1% myrtle boxwood, in apparent conflict with observations of wild caribou in timbered habitats with myrtle boxwood. However, in these trials >95% of the myrtle boxwood occurred in the clear-cut portion of trial pens, and forages in clear-cuts have been reported to have significantly higher levels of secondary plant compounds. Total phenolics in myrtle boxwood samples collected from the clear-cut portion of trial pens and from clear-cuts in British Columbia were 3-times greater than levels in myrtle boxwood samples collected from old-growth stands in British Columbia. In addition, snow depths underneath the forest canopy never covered the primary forage species. I hypothesize that these woodland caribou foraged very little on myrtle boxwood because of (1) the availability of other forage species, and (2) the high level of phenolics present in myrtle boxwood during these trials.

**Rangifer**, Special Issue No. 10, 261

