

The Influence of Thermal Protection on Winter Den Selection by Porcupines, *Erethizon dorsatum*, in Second-Growth Conifer Forests

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I investigated den type selection by Porcupines (*Erethizon dorsatum*), in relation to the thermal cover provided by the den type, over a period of four winters. Porcupines used log dens, stump dens and rock dens in proportion to the thermal cover provided by each den type. Based on behavioural observations of Porcupines, I assumed that the lower critical temperature for porcupines in my study area was -4°C. Both stump and rock dens provided adequate thermal protection, under most ambient conditions, to allow Porcupines to maintain their body temperature, without increasing basal metabolic rate. In most cases rock and stump dens maintained den temperatures above -4°C until ambient temperatures reached -12°C or lower. In contrast log dens provided poor thermal protection, even in years of thick snowcover. When ambient temperatures dropped below -4°C, den temperatures within log dens were also recorded below -4°C. Log dens were used least often by Porcupines, whereas stump and rock dens were used most often. Despite the large number of potential dens available to Porcupines within the study area, den use was generally limited to three dens per porcupine per winter. The limited use of dens by an individual porcupine during winter may be related to the energetic cost of finding a new den or it may be related to specific selection criteria used by Porcupines.

Key Words: Porcupines, *Erethizon dorsatum*, winter, lower critical temperature, temperature differential, winter den, den selection, den sharing, thermal cover, thermal protection, British Columbia.