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# **Influence of Roads, Cover Type, and Forest Harvesting on Mountain Caribou Mortality Risk, Purcell Mountains, British Columbia**

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**Abstract:** Changes in forest structure, including those induced by fire and forest harvesting, are believed to have both regional and local influences on predator-prey systems. In locations where woodland caribou (*Rangifer tarandus caribou*) occur, increased predation upon caribou brought about by such changes has sometimes been implicated in caribou population declines. Roads associated with forestry development may also expose caribou to non-predation mortality risks. A red-listed ecotype of woodland caribou, known as mountain caribou, occurs in 13 populations within moist coniferous forests of east-central and southeastern British Columbia. In the southern Purcell Mountains, I compared vegetation cover characteristics between 1034 mountain caribou radiolocations and 15 sites at which caribou died. Comparisons were made at three spatial scales (2200-, 900-, and 350-m radii around live or dead locations), matching those used in an earlier analysis of habitat selection. Although some results had low statistical significance, at all three scales mortality sites had more roads, logged area, and young forest, and less alpine or barren land and avalanche chutes. Old forest and burned areas were less common at mortality sites at the two broader scales, but were more common at the finest scale. Thus, caribou mortality risk appears to be affected by cover type and the degree of forest harvesting within the surrounding landscape, with landscapes having higher proportions of roads, logged areas, and young forest representing the greatest apparent predation risk. The weaker and somewhat mixed results at the finest scale (350-m radius) may indicate that (a) there was too little spatial separation between caribou and other species at that scale for habitat partitioning to be effective in minimizing predation risk; (b) forested areas of all types offered a higher risk to caribou than open habitats at high elevation; (c) there may have been sufficiently large spatial differences between sites where caribou were first attacked and where they were consumed to influence the fine-scale results; or (d) location errors may have been large enough to influence results at the finest scale. Management for mountain caribou should focus on retaining intact natural habitats, particularly over large, contiguous tracts rather than in smaller, discontinuous patches.

**Key Words:** habitat, mountain caribou, woodland caribou, mortality, predation, *Rangifer tarandus caribou*, British Columbia