

CANADA

Occurrence of American marten within a connectivity corridor

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In response to a trapper's concern about loss of forested habitat and decreased number of American marten (*Martes americana*) captures, Canadian Forest Products Ltd. (Canfor) invited Alpha Wildlife Research & Management Ltd. to develop a series of connectivity corridors within the boundaries of its Operating Area. Within the Operating Area, $\geq 70\%$ of the forest cover has been lost due to natural disturbances such as blowdowns and anthropogenic activities such as logging. The Operating Area is located approximately 50 km southeast of Houston, British Columbia, and is part of the Sub-Boreal Spruce Biogeoclimatic Zone, where hybrid white spruce (*Picea engelmannii* x *glauca*) and subalpine fir (*Abies lasiocarpa*) are dominant climax tree species, and lodgepole pine (*Pinus contorta*) and trembling aspen (*Populus tremuloides*) pioneer the extensive seral stands. Alpha Wildlife identified a corridor network consisting of contiguous forest strips, usually > 400 m wide, of young (mid-seral), mature and old forest stands. This study assessed the capability of the corridor network to maintain the presence of marten and other furbearers throughout the landscape based on the distribution of animal tracks and the trapper's capture locations. Winter track surveys were conducted from 10 to 15 January, 2001 in 12 transects totaling 12.7 km. About 50% and 30% of the total length of transects crossed mature and old coniferous stands, respectively.

A total of 874 furbearer track crossings (including snowshoe hare [*Lepus americanus*]) were recorded. Snowshoe hare (64.6 %) and red squirrel (28.0 %) tracks were the most abundant. Only 7 marten tracks were recorded, all in stands with structural complexity: 4 in mature spruce stands, 2 in mature mixed coniferous stands (various associations of spruce, subalpine fir and pine), and 1 in an old mixed coniferous stand. We also recorded 13 fisher (*Martes pennanti*), 1 wolverine (*Gulo gulo*), 30 short-tailed weasel (*Mustela erminea*), 4 coyote (*Canis latrans*), and 9 lynx (*Lynx canadensis*) tracks.

Thirty martens were captured prior to track surveys: 23 were within the corridor network. Nineteen of the 30 captures occurred in mature and old mixed coniferous stands. The remaining 11 captures occurred in young forests, non-productive, or immature stands located ≤ 800 m from pine or mixed coniferous mature stands. An analysis of the population structure (30 martens with known locations plus 8 other martens captured within the landscape area, at unknown locations outside the corridor network) indicated that the captured population was dominated by adults (23). There were 15 juveniles for 12 adult females (≥ 1.5 years-old), a ratio of 1.3:1. The ratio of juvenile:female ≥ 2.5 years old was 1.9:1. The sex ratio of the captured population was ≥ 1.5 male:1 female in early December. Thereafter, it became even.

Because fur trapping occurred just before our track survey, we were unable to gather extensive information on marten-habitat relationships. However, all marten tracks and the majority of captures were in mature or old coniferous stands that provided marten with proper canopy cover and ground structural complexity (see Buskirk and Ruggiero 1994). The distribution of marten tracks and captures suggests that the corridor network has the capability of maintaining the presence of marten within the boundaries of the fragmented trapline. However, the viability of this population is uncertain. Although the captured population of this study is relatively small, data suggest that, at the local level, the population is likely overharvested. Strickland and Douglas (1987) concluded that the ratio of juveniles per female ≥ 2.5 years old in a sustainable harvest is usually at least twice the fecundity in each year. We did not gather information on fecundity. However, if we consider that mean fecundity usually is at least 2 young/female, our ratio of juveniles:female ≥ 2.5 years old is quite low. While this ratio could result from an abnormally low fecundity rate, data suggest that a high proportion of female martens were harvested. Strickland and Douglas (1987) indicated that a ratio of ≥ 3 juveniles: female ≥ 1.5 years old was also acceptable. In our analysis, this ratio was low. Fortin and Cantin (2000) considered that harvested populations should have a ratio of 1.5 male:1 female (i.e., 60% males). The even sex ratio of our sample also suggests that the marten population was overharvested.

The study area is infested with bark beetles (*Dendroctonus* spp.), and there are legitimate concerns relative to their control. Landscape level effects on marten have not been well investigated, however research indicates that fragmentation even at low levels ($< 30\%$ of marten home range area) can be negative (Potvin et al. 2000). When subjected to both

habitat degradation and intense trapping pressure, marten populations are less resilient and may disappear (Banci and Proulx 1999). Therefore, if a marten population is to be maintained within this highly fragmented landscape, it will be necessary to maintain valuable habitats within the corridor network, and reduce trapping effort in order to protect the breeding segment of the population.

We recommend that no marten trapping activities be conducted next year, and that more fieldwork be carried out to better assess the proposed corridor network, and identify sites that have a greater potential to maintain the breeding segment of a population.

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