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Abstract

Distribution and abundance of birds relative to elevation and biogeoclimatic zones in coastal old-growth forests in southern British Columbia

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This study examined birds and their association with forest structure and elevation in 1992 and 1993. The research sites were located in old-growth forest stands (251+ years) distributed between 400 and 1500 m elevation in south coastal British Columbia. The use of simple and multiple regressions revealed that the variation in mean abundance of most bird species was in part explained by elevation, and was likely due to stand structure and other factors (e.g., forage productivity) that vary with the elevational gradient. However, total bird abundance and richness responded weakly to elevation; instead, density of huge snags (≥ 100 cm DBH) per hectare more consistently accounted for the variation in these two measures.

Distributions of bird species are described according to two biogeoclimatic zones—the Coastal Western Hemlock and the Mountain Hemlock. Biogeoclimatic classification, which is based on plant associations and climate, is used for forest management in British Columbia. Mean abundance of 10 bird species differed significantly between the biogeoclimatic zones in at least one of the study years. Biogeoclimatic zones also effectively classified bird species into two different communities using multidimensional scaling and mean similarity analysis. However, richness and total bird abundance did not differ significantly between zones indicating that community structure was similar, although composition and dominance differed by zone. The authors, therefore, suggest that representation of old-growth forest by biogeoclimatic zone helps maintain bird diversity. To maintain the observed distributions of bird species, however, oldgrowth habitats should be represented over the entire elevational gradient and include variation in forest stand structure.

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