

DOES CLEAR-CUTTING ALTER AVIAN DISTRIBUTIONS? A MULTISCALE, LANDSCAPE APPROACH

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ABSTRACT

In the boreal forest, fires, insect outbreaks, and severe weather are thought to be the main disturbance sources which revert late successional forests to earlier stages. At the landscape scale, these disturbance processes create a habitat mosaic which supports many types of wildlife. Clear-cut logging is often argued to be ecologically sound because it mimics the natural disturbance regime of the boreal forest; however, many aspects of the two processes are different and it is unclear whether wildlife respond similarly to these two disturbance processes.

We tested the hypothesis that clear-cutting mimics the disturbance regime of forest fires in terms of avian response by comparing the probability that a bird species is present in 100 square kilometer plots subjected to cutting and fires (treatment) to plots only subjected to fires (control). To account for differences in the extent of habitat types between treatment and control plots, a multivariate logistic model was constructed for each of 114 bird species. This model related habitat extent and composition (based on Landsat Thematic Mapping (TM) satellite imagery), of 354 control plots, to the probability of observing a particular species of bird as reported by the Ontario Breeding Bird Atlas. After equating burns for cuts, the probability of observing each species of bird for each of the 40 control plots was calculated from the logistic models and compared to what was actually reported in the Atlas. Species were then grouped into guilds based on migration strategy (i.e., neotropical migrant, short-distance migrant, or resident) and general habitat preference (i.e., forest interior, edge, or open habitats) and whether or not they were cavity nesters, to test for guild-level effects. Finally, the above procedure was repeated at larger spatial scales by combining adjacent plots to test if the results of the study are scale dependent.

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