Effects of Selection Cutting on the Diversity and Abundance of Birds in Hardwood Forests of Algonquin Provincial Park

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We examined the effects of selection timber harvests of various ages (0–10, 11–20, 21–30, and >40 years old) and the supply of wildlife trees (scattered conifers, mast trees, and supercanopy trees) on bird assemblages in 96 mature sugar maple (*Acer saccharum)*–yellow birch (*Betula alleghaniensis)*–hemlock (*Tsuga canadensis)* forest stands in Algonquin Park, Ontario, during 1992, 1993, and 1995. Species richness and total abundance of birds did not differ among cut classes. However, canonical correspondence analysis (CCA) suggested significant differences in bird communities among all cut classes, except for 11-20 versus 21–30 cut classes (Monte Carlo bootstrap test, CCA). Log-linear analyses suggested that the abundance of 10 species changed as a consequence of selection cutting. Blackburnian warbler (*Dendroica fusca)*, blue-headed vireo (*Vireo solitarius*), brown creeper (*Certhia americana*), least flycatcher (*Empidonax minimus)*, and ovenbird (*Seirus aurocapillus)* were less abundant in cut forest, whereas chestnut-sided warbler (*Dendroica pensylvania)*, mourning warbler (*Oporunus philadelphia)*, Nashville warbler (*Vermivora ruficappilla)*, rose-breasted grosbeak (*Phecticus indovicianus)*, and ruffed grouse (*Bonasa umbellus)* were more abundant in cut stands. Based on log-linear regression analyses, the abundance of Blackburnian warblers, black-throated green warbler (*Dendroica virens)*, and blue-headed vireos was significantly related to the density of scattered conifers, the abundance of rose-breasted grosbeaks was related to the density of mast-producing trees, and the abundance of Blackburnian warblers, black-throated green warblers, brown creepers , and ovenbirds was related to the density of supercanopy trees (60+ cm dbh). Our modelling suggests that some of the impacts of cutting may be reduced as hardwood stands become regulated and a higher residual basal area is maintained. However, some species, such as ovenbirds and chestnut-sided warblers, may still be less or more abundant in cut stands. Current guidelines for the retention of scattered conifers appear to be adequate for most species, but guidelines for supercanopy trees may be too low. Our results provide an inconclusive evaluation of the effectiveness of current mast tree guidelines.