

Decline of the Gray Jay (*Perisoreus Canadensis*) in Algonquin Park

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The gray jay (*Perisoreus canadensis*) is a non-migratory bird of North American boreal and sub-alpine forests dependent on stored food for its winter survival and late winter breeding. As indicated by the occupancy of 44 territories in Algonquin Park, the local gray jay population declined by 40-50% between 1970 and 2000. There was complete disappearance of breeding pairs on nine territories dominated by hardwoods and lesser declines (25-35%) on 35 territories dominated by lowland forests of black spruce (*Picea mariana*) or upland coniferous forests of white spruce (*Picea glauca*), balsam fir (*Abies balsamea*), and white pine (*Pinus strobus*). Concurrent with these declines, there has been a trend towards earlier breeding and reduced reproductive success. We hypothesize that earlier breeding may be associated with a trend toward milder winters and that lower reproductive success may be due to increased perishability of stored food. The gray jay may be an example of a species whose persistence is threatened by global warming along lower latitude or lower elevation edges of its range.

Response of Nest Predator Guilds and Avian Productivity to Selection Cutting in Algonquin Provincial Park, Ontario

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The effects of even-aged forestry practices on birds are well-known, but only two studies have been published to date on the effects of selection cutting on birds. For my undergraduate thesis (1998), I looked at how single-tree selection cutting altered the physical structure of Algonquin's tolerant hardwood forest, and how those changes led to corresponding changes in the forest songbird community. It remains uncertain whether edge effects (i.e., increased nest depredation rates) exist in contiguously forested landscapes. Most work to date on this question has been based on artificial nest studies, making it essential to determine the accuracy of artificial nest studies before extrapolating results to real nests. It is currently required under the Crown Forest Sustainability Act (RSO 1995) that all forest management practices in Ontario's Crown forests be 'ecologically sustainable'. For the past two summers (1999 and 2000), I have expanded on my previous research to evaluate the ecological sustainability of single-tree selection cutting in terms of avian productivity. Specific objectives were: 1) to determine if changes in nesting success and composition of potential nest predator guilds occur as a function of the selection cutting systems; 2) to determine if functional edges are created by the selection cutting system in a contiguously forested landscape ('true' edges: along logging roads, 'psuedo' edges: perforation of canopy); 3) to identify key nest-site habitat characteristics for six bird species; and 4) to determine the availability of these nest-site-specific characteristics in stands at various temporal stages in the selection cutting rotation. Data analyses are incomplete at this point. This talk will present an outline of research activities conducted and present preliminary results.