

The Effect of Food Supplementation on the Survival of a Small Songbird, the Dark-eyed Junco (*Junco hyemalis*), Using Mark-Recapture and Radiotelemetry Methods

Andrew Spellmeyer
Faculty: Chris M. Rogers

Department of Biological Sciences, Fairmount College of Liberal Arts and Sciences

The North American Breeding Bird Survey indicates long-term decline of a medium-sized, granivorous sparrow, the Dark-eyed Junco (*Junco hyemalis*). Reduction in food availability due to habitat removal and degradation on the wintering grounds may be a source of decline. Access to predictable food stores affects the parameters of home range size and likely plays a role in predation risk. We measured the effect of food supplementation on the survival of individual juncos during a 70-day wintering period in four consecutive years using mark-recapture methods. Confirmation of bird locations via radiotelemetry suggests mark-recapture may lead to overestimation of mortality due to individual dispersal. However, a minimal estimate (correcting for dispersal) indicates food supplementation leads to a significant increase in overwinter survival. Populations with predictable seed stores likely spend less time searching for food and more time avoiding predators, thus increasing survival of supplemented birds. Increased overwinter survival may reverse annual decline.