Congruence of Constant-Effort Mistnets and Point-Count Routes: Indexing Abundance and Detecting Trends

Edward Debevec (Institute of Arctic Biology, University of Alaska Fairbanks, Fairbanks AK 99775; 907-474-5641; e-mail: fnemd@uaf.edu)
Eric Rexstad (Institute of Arctic Biology, University of Alaska Fairbanks, Fairbanks AK 99775; 907-474-7159; e-mail: ffear@uaf.edu)

Two monitoring methods are being applied to passerines 1992-97 as part of the long-term ecological monitoring program in Denali National Park and Preserve, namely, constant effort mistnetting (as part of the Monitoring Avian Productivity and Survival (MAPS) program), and point count routes. We examined data for the Rock Creek watershed from each of these sources for the eight species identified by both protocols as most readily monitored to note agreement/disagreement in the inferences derived from the methods regarding status and trends in avian species.

MAPS indexes abundance in units of catch per unit effort, or net hours, whereas point counts measure abundance by frequency of occurrence (percent presence over 24 stations). Each of the eight species exhibited temporal variation in the respective indices. The correlation between these indices ranged from 0.67 for orange-crowned warblers to -0.22 for American tree sparrow (Spearman rank correlation). Results from a permutation test indicate that relative agreement in annual status between the methods is only found for yellow-rumped warblers (P=0.03).

Using these methods to assess trends, we employed a randomization technique that determines the slope of a regression line compared to all possible temporal permutations of the observed population index. A marginally significant slope was found with MAPS for one species, American tree sparrow (P=0.07), but none with point counts (P>0.14 for all species). Using a standardized regression approach, we found significant differences between methods in detected trends for common redpoll (P=0.02) and American tree sparrow (P=0.04).

It appears that, at least for some species, these methods of monitoring produce different pictures of the passerine community regarding temporal changes in abundance. This result must be moderated by the brief duration of time series examined, for which the power of these procedures is admittedly limited.