

# Use of Historical and Current Bird Banding Data to Detect Avian Population Trends in Suburban Illinois

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## Abstract

Expanding human populations and their growing need for space have greatly accelerated the natural rates of extinction and extirpation. As native habitats and ecosystems are clear-cut or altered to fit our expanding needs, populations of resident bird species are shrinking, becoming extirpated, or being forced to move.

We examined avian populations in the midst of DuPage County's suburban sprawl. Our primary objective was to develop an index of the local bird community against which past and future changes could be compared with shifts in land use and other factors. We banded birds during the summer of 1998 and compared these data to historical records dating to the 1930s. Our data indicated two major trends, first an overall decrease in the size of populations; second, an increase in the species diversity of the area. The alteration of landscape structures by human expansion is likely causing the population declines while the invasion of non-native species has increased local diversity.

We suggest similar long-term studies be conducted and continued as an efficient mechanism for monitoring environmental quality and avian diversity.

Birds are useful indicators of the state of the environment in which they live because they are relatively easy to study and their ecology is well known (Greenwood et al. 1993). Due to the sensitivity of birds to changing environmental conditions, avian communities act as a living gauge to the health of our environment. Alterations in a community typically alert us to environmental stresses (i.e. pollution in the local area, along migratory stops, or in the birds' winter range) and/or ecological changes (i.e. introduced species, shifting land-use patterns).

Bird banding at Benedictine University (formerly known as St. Procopius College and Illinois Benedictine College) in Lisle Township, DuPage County, Illinois is a long-standing tradition. Three Benedictine monks (Fathers Hilary Jurica, Edmund Jurica and Victor Laketek) began banding birds as a hobby in 1930. Their efforts continued through the years except for a brief hiatus in the 1940s for wartime work. By mid 1958, they had banded their 50,000th bird (Bach 1958) and by 1959 they ran the fourth-largest banding station in the 17 inland states (Weston 1959). The deaths of the Jurica brothers during the 1970s led to the demise of the banding station.

Prior to our study, the monks' historical data had been stored in their original form and, with the exception of a few cursory summaries, had been largely unanalyzed. We set out to collect new data that could then be compared with the previous information. This allowed us to evaluate population numbers and species diversity, and estimate the evenness of the local bird populations for our specific time frame. Analysis of avian community changes in Lisle Township is important because the health of the bird community correlates to the local environment's overall well being. It can also help us predict impacts of future environmental perturbations and thus allow us to make adjustments to minimize damage to local ecosystems.



*Male Cardinal, Plainfield, Illinois.  
Photo by Kathleen Savaiano.*

## Methods

We captured birds within and beside the campus cemetery at Benedictine University in Lisle Township, Illinois (41° 46' 30" N, 88° 5' 58" W). The cemetery is approximately 0.33 hectares of grassland with a scattered collection of mature coniferous trees and a row of developed coniferous shrubs. At the time of this study mixed deciduous-coniferous woods, a cornfield, and a parking lot bordered the cemetery. A small pond, surrounded by deciduous-coniferous forest with dense undergrowth, is located just south and east of the cemetery.

We banded birds between 10 June 1998 and 7 August 1998 and examined historical data covering only this same summertime period. Peak migration for Illinois occurs at mid-May and mid-September (pers. comm. Jim Frazier, DuPage Birding Club); thus, these data reflect only local breeding birds and not migratory species. Nesting and nestling data are not included in our summaries.

We used two types of traps, the Brenkle water trap and a walk-in sparrow trap (McClure 1984). A total of 13 traps were used, six Brenkle and seven sparrow traps.