



## **Spatial Distribution and Dynamics of Breeding Bird Species and Communities in an Urban/Suburban Landscape**

**Project Number:** 23029S2  
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**Principal Investigator(s):**

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**Collaborators:** Prince George's County Planning Department, Maryland-National Capital Park & Planning Commission, and Washington, D.C., Division of Fisheries & Wildlife, Department of Health

**Statement of Problem:** In many metropolitan regions, suburban expansion is resulting in an overall reduction in the total area of forest and average forest patch area, increased isolation of forest patches from other forest habitat, and change in the land uses that surround forests. We use bird survey data from suburban Maryland and from Washington, D.C., to estimate the response of breeding birds to these and other land-use changes.

**Objectives:** General: To assess the effects of land-use changes associated with suburban expansion on the spatial distribution of birds, and on composition and dynamics of breeding bird communities.

Specific: 1) To estimate patch/point occupancy, colonization, and local extinction for breeding bird species and communities; 2) to relate these parameters to site and landscape characteristics, and to land-use changes associated with suburban expansion; 3) to map, and model potential changes in, the spatial distribution of breeding birds.

**Approach:** Bird survey points in Washington, D.C., and suburban Maryland, first surveyed in the early 1990s, are being re-sampled. In Prince George's County (MD), points are in forest patches, randomly selected from a Geographic Information System (GIS) developed by the Maryland-National Capital Park & Planning Commission. In Washington, D.C., PWRC biologists are assisting in design and conduct of DC Birdscape II, which samples points on a 500-m grid across the city, originally surveyed in 1993-1995 to estimate and map the citywide distribution and abundance of breeding birds. Analytical methods developed by PWRC quantitative biologists and others are being used to estimate patch/point-specific probabilities of occurrence for bird species, the

proportion of patches/points occupied by species, and rates of local bird species extinction and colonization. For Prince George's County, these estimates are being related to site and landscape characteristics and changes measured in the GIS, compared among forests experiencing different types of change, and used to map, and model potential changes in, the spatial distribution of forest-nesting birds countywide.

**Selected Reports and Other Products:**

Dawson, D.K., Robbins, C.S., and Darr, L.J., 2001, Effects of Urbanization on the Distribution of Area-Sensitive Forest Birds in Prince George's County, Maryland: *in* G.D. Therres, ed., Conservation of Biological Diversity—a Key to the Restoration of the Chesapeake Bay Ecosystem and Beyond, p. 207-213.

**Relevance and Benefits:**

This task addresses goals of the Wildlife program element, and the following project objective: Evaluate impacts of landscape changes on bird population ecology.