

Patterns of bird diversity in a lowland Amazon forest, Tiputini Biodiversity Station, Ecuador. John G. Blake ([www.umsl.edu/~blake](http://www.umsl.edu/~blake); [blakej@msx.umsl.edu](mailto:blakej@msx.umsl.edu)) and Bette A. Loiselle ([www.umsl.edu/~loiselle](http://www.umsl.edu/~loiselle); [loiselle@umsl.edu](mailto:loiselle@umsl.edu)), Dept. Biology & International Center for Tropical Ecology, Univ. Missouri - St., 8001 Natural Bridge Road, Saint Louis, Missouri 63121, USA.

Fundamental to understanding patterns of diversity is knowledge of the number of species present in a specific area and the extent of species turnover or change at different spatial and temporal scales. Tropical communities are rich in diversity but many species have very local or patchy distributions so that species composition often changes markedly over even small (10's to 100's of m) spatial scales. Relatively small changes in vegetation, topography, microclimate, or soil can strongly influence species distribution patterns, contributing to the high diversity characteristic of tropical forests. At present, there are few data sufficient to evaluate these patterns of diversity, particularly with respect to spatial patterns of vegetation.

The extraordinarily high diversity of tropical bird communities has attracted attention for well over a century but causes of that diversity are still poorly understood. High diversity may result from high alpha diversity (i.e. high numbers of co-occurring species), from high levels of beta diversity (i.e. substantial change in species composition from one local site to a second), or from a combination of both types of diversity. High beta diversity may arise because of change in species composition with distance (i.e. replacement of one species by an ecologically similar one between disjunct units of the same habitat) or because of habitat differentiation (i.e. addition or change in species because of change in type or configuration of habitats).

We are investigating spatial and temporal patterns of bird diversity (as well as aspects of community composition, population dynamics, and movement) within and between two 100-ha study plots located at Tiputini Biodiversity Station (TBS), Ecuador (~0° 38' S, 76° 08' W). The Station was established in 1995 by the Universidad San Francisco de Quito on a tract of undisturbed forest within the ha Yasuní Biosphere Reserve. We established the two 100-ha plots in terre firme forest in February 2001, with the assistance of TBS employees. We use a combination of mist nets and direct observations to record the occurrence and locations of birds within the two plots. All captures and observations are spatially referenced (i.e., geographic coordinates are recorded) for incorporation into a geographic information system (GIS) database for spatial analyses. These data will allow us to compare spatial patterns of diversity at various scales both within and between plots at TBS and between TBS and other sites in the neotropics. Over time, we also will be able to compare changes in the bird communities at TBS as well as address questions related to population dynamics (e.g., survival rates).

We have sampled birds with mist nets in March 2001, January and March 2002, 2003, and 2004. Birds have been mapped through repeated surveys of the plots during February and April of 2002 - 2004. Rates of species accumulation on the two plots were similar between plots in 2001 and 2002. Based on data from 2001 and 2002, it is clear that species diversity at TBS is among the highest recorded among tropical forests. Mapping records (>10,000 observations on each plot) indicate that at least 250 to 260 species occur on each plot (>300 species on both plots combined).

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