

Chapter Four

Habitat Associations of Birds and Small Mammals Along a Gradient of Forest Use

I study the habitat associations of animal species and species assemblages (51 bird and 8 small mammal species) along a disturbance gradient at Chitre Village, northeastern Nepal, in order to establish baseline quantitative knowledge of species-habitat associations for the Temperate Sikkim-East Nepal Himalaya, and to better understand how local forest use practices impact the composition and structure of regional wildlife habitats. I use cluster analysis, based on mean habitat values at occupied sites, to identify three species associations: a closed-canopy assemblage, disturbed forest assemblage, and village environments assemblage. Within these assemblages, I identify species that are closely associated, or not, with the characteristic compositional and structural features of three progressively-disturbed habitat zones (closed-canopy forest, disturbed forest, and village environments). I also identify species that are closely associated with features of the forest canopy, understory, and anthropogenic disturbance. Species and species assemblages were best distinguished in multivariate habitat space by an ordination axis consisting of disturbance variables. Secondary ordination axes consisted of variables related to the density of woody plants. Finally, I use territorial spot-mapping and binary logistic regression to develop habitat models for seven understory passerine species. Model parameters that best distinguish between occupied and unoccupied sites for these species were related to abundance of late-successional and pioneer plant species, height and density of large trees, abundance of mesic and xeric understory plant species, and anthropogenic disturbance. Few previous studies have used comparable methodological rigor to study the ecology of small Himalayan birds or mammals, and none has employed a Design II habitat study, which assesses habitats and breeding densities of known individuals.