Species richness, Densities, Habitat Relationships, and Conservation of the Avian Community of the High Altitude Forests of Totonicapan, Guatemala

Cleary, Katherine
Guatemala 2007-2009
Colorado State University - Environmental & Natural Resources

The Northern Central American Highlands, which include the mountains of Chiapas, Guatemala, El Salvador, and Honduras, are a recognized endemic bird area (Stattersfield et al. 1998) as well as a biodiversity "hotspot" (Myers et al. 2000). The coniferous forests of the regional park "Los Altos de San Miguel Totonicapán" lie within this region. Despite the importance of this area for global avian biodiversity, little research has been conducted in Los Altos, in part because the local Mayan authorities who manage the forest prohibit entry of all outsiders. As part of my Peace Corps Masters International work, I lived for 2½ years in the town of Totonicapán and gained entry to the forests of Los Altos. I worked with local community agencies to design a research project that provides both valuable baseline information on avian community composition, distribution, and abundance, and also a set of environmental education materials and income generation opportunities to help local communities achieve bird conservation. During the rainy and dry seasons in 2008 2009, we used standard distance sampling methods to conduct point counts at 34 locations in the forest. To explore patterns of bird habitat use, we measured 13 vegetation covariates at each point.

Community level analyses with program COMDYN indicated a high level of species richness which did not fluctuate between seasons, and canonical correlation analysis at the community level revealed that average diameter at breast height of trees and understory density were relatively strong predictors of bird community composition. Species level analysis of selected species revealed interesting patterns of detection probabilities and densities varying between seasons. Finally, species habitat relationships were explored using an AIC framework and a model averaging approach to determine the relative importance of vegetation covariates in predicting point level density of selected species. Results from this study reveal the previously unknown composition, distribution, and habitat use patterns of the avian community, and provide the Totonicapán Forestry Office, CONAP (Guatemalan National Park Service), and the local Maya K'iche' authorities with the first baseline information on avian ecology in the forests of Los Altos.