

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Distribution and Status of Breeding Birds in the Sky Islands of Northern Sonora

Discipline: Natural Resources
Type of Project: Research
Funding Agency: National Park Service
Other Partners/Cooperators: University of Montana
Effective Dates: 9/26/2008-8/1/2013
Funding Amount: \$48,900

Investigators and Agency Representative:

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Project Abstract: The Madrean Sky Island region includes more than 30 distinct mountain ranges at the northern end of the Sierra Madre Occidental and is bisected by the international boundary between the U.S. and Mexico. These mountains have been referred to as Sky Islands because they support isolated "islands" of montane vegetation dominated by pine (*Pinus* sp.) and oak (*Quercus* sp.) that rise up out of lowland "seas" of desert scrub and grassland. Although the Sky Island region is ecologically distinct and world renowned, information resources that are available for managing and conserving wildlife are vastly different on either side of the international boundary. In southern Arizona, the distribution and abundance of wildlife and vegetation communities are largely known whereas in neighboring northern Sonora, Mexico there is little information and what does exist is largely historical. Despite these limitations, national parks and other protected areas that are managed by the NPS and other agencies in the U.S. and by the Comisión Nacional de Áreas Naturales Protegidas (CONANP) in Mexico, offer excellent opportunities to conserve, manage, and enhance natural resources throughout the Sky Island region. Starting in spring 2009, we propose to fill significant information gaps in the Sky Islands of northern Sonora by studying distribution and abundance of breeding birds and linking these data with existing information from Arizona. To enable site-specific recommendations for management and conservation, we will describe relationships between birds and habitat and assess threats to wildlife. With use of existing data from NPS' Sonoran Desert Network and other sources, we will describe biogeographic relationships in the region and assess the relative effects of vegetation, climate, spatial, biotic, and historical factors in explaining distribution and diversity. To implement this effort, we will form an internationally collaborative team of scientists, resource managers, and non-governmental groups (NGOs), and work cooperatively with local landowners. This project will provide important educational opportunities to Mexican natural resource managers with both public and private affiliations and to the researcher by supporting a half-time research assistantship at the University of Montana. To estimate bird abundance, we will use distance sampling along line transects from early May until late July. Distance sampling involves measuring the perpendicular distance to birds detected from a line or point and allows estimates of abundance to be adjusted for variation in detectability. We will place transects along canyon bottoms and on forested slopes in both random and representative areas across a range of forest types. To assess biogeographic relationships across the entire Sky Island region, we will compile data on abundance, occupancy, breeding status, and species richness for Sky Islands in the U.S., synthesize these data with information that we collect in Mexico, and use a variety of techniques (e.g. principal components analyses).

Outcomes with Completion Dates: This project will require four years to complete. During the spring and summer of 2009-2011 we will conduct field work in the Sky Islands then enter and manage data obtained during these efforts in the fall and winter. By December 15 of each of year, we will provide a detailed progress report summarizing our preliminary results and summarizing our effort. During these first three years, we will obtain remotely sensed images of forest cover for each our study mountains and compute a range of spatial and topographic metrics. After completion of field work, we will prepare a detailed final report and present our results to resource managers, scientists, and the public in a number of public and private settings. We have requested an end date of August 1, 2013 in the event that extensive wildfires, access issues, or other complications prevent our efforts during one or more field seasons. All data that we collect will be supplied to NPS' Sonoran Desert Network Inventory and Monitoring Program Office in Tucson, to Chiricahua National Monument, and to CONANP. A copy of the final report in electronic form will be delivered to both the Rocky Mountains CESU and Desert Southwest CESU offices for posting on the web.

Keywords: University of Montana, Chiricahua NM, sky islands, breeding birds, Sonora, Mexico, habitat