

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Distribution, Abundance, and Habitat of Madrean Breeding Birds in the Northern Sierra Madre Occidental and adjacent Sky Islands

Type of Project: Research
Discipline: Natural Resources
Funding Agency: US Fish and Wildlife Service
Other Partners/Cooperators: University of Montana
Effective Dates: 6/1/2012 - 10/31/2013
Funding Amount: \$31,639

Investigators and Agency Representative:

FWS Contact:

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Project Abstract:

Information on the distribution, abundance, and habitat use of birds is unavailable across large areas of the highland forests of the Sky Islands region and adjacent Sierra Madre Occidental of eastern Sonora and western Chihuahua. Establishing baselines, mapping bird distributions, and modeling bird-habitat relationships across a broad suite of populations of Madrean breeding birds is essential for guiding conservation planning, monitor responses to climate change and shifting land use, and identifying specific habitat resources that are important targets for management. Without these data, important populations may be lost before they are identified and conserved, especially in environments that are changing rapidly such as those affected by climate and land-use changes. Despite over a century of ornithological work in Sonora, Mexico (Van Rossem 1945, Marshall 1957, Russell and Monson 1998, Flesch 2008) the status and distribution of many species of breeding and migratory birds is unknown in some regions including those near some Natural Protected Areas in the highlands of eastern Sonora and western Chihuahua, which are managed by the Comisión Nacional de Áreas Naturales Protegidas (CONANP). In these regions of Sky Islands and the northern extent of the Sierra Madre Occidental (SMO), information resources for managing and conserving birds are vastly different on either side of the international border. In southern Arizona, information on distribution and abundance of birds are largely available, whereas in neighboring northern Sonora and western Chihuahua, information is sparse even for species of profound conservation concern and most data are historical (e.g. Mearns 1907, Marshall 1957, but see Lammertink et al. 1996, Monterrubio et al. 2002, Flesch 2008, Gonzalez-Rojas et al. 2008). Aside from recent ongoing efforts, bird communities across the Sky Islands of Sonora and the adjacent SMO have not been studied systematically since the 1950s with few exceptions.

For birds, the Sky Islands region is important because it provides the northernmost breeding habitats for many Madrean species, the southernmost breeding habitats for many Rocky Mountain species (Howell and Webb 1995, Russell and Monson 1998), and critical migratory pathways and stopover habitats that link the wintering and breeding grounds of >100 migratory species (Hutto 2000). In fact, bird communities in the highland forests of the Sky Islands are particularly diverse because they are composed of species with varied evolutionary histories and affinity to the Madrean, Petran (Rocky Mountain), Chihuahuan, and Sonoran biogeographic provinces and because the region is situated in a broad transition zone between the Nearctic and Neotropical faunal realms. For these and other reasons this region of Mexico was designated an Área de Importancia para la Conservación de las Aves (AICA) in Mexico (Arizmendi and Marquez-Valdelamar 2000). Yet, despite the region's importance to birds, threats from illegal logging and climate change are accelerating and isolated stands of conifer forests already at or near the lower-elevation thresholds of their moisture tolerances are being stressed by drought likely driven by climate change.

In spring 2009, we began filling significant information gaps for breeding birds across the Sky Islands region of Sonora. During the past three field seasons, we have assessed the breeding status, distribution, abundance, and habitat use of birds across this region (Flesch et al. 2009, 2010a, 2011) during bird surveys and associated environmental sampling at 804 points along 115 transects in 16 Sky Islands. Through this work, we have identified eight breeding species that were not known to occur in the region, many formally unknown populations, and are establishing a current baseline that has not been available in the region since the early 1950s. During 2012, we will complete fieldwork for this project by surveying an additional 8-12 Sky Islands and portions of the adjacent SMO in Chihuahua. To implement this effort, we have formed an internationally collaborative team of scientists and resource managers, and are working cooperatively with local landowners. Through this collaboration we are closing significant information gaps while helping to build capacity for conservation and research in northern Mexico through outreach, training, and employment for local biologists in Mexico.

Outcomes with Completion Dates: 10/31/2013

Keywords: Distribution, Abundance, Habitat, Madrean Breeding Birds, Northern Sierra Madre Occidental, Sky Islands, US Fish and Wildlife Service, University of Montana