

Landbirds



SONORAN DESERT

PROJECT SUMMARY



Great Horned Owl

Landbird Monitoring in the Sonoran Desert Network

*University of Arizona and
National Park Service*

Introduction and Background

Landbirds are a conspicuous component of many ecosystems. They have high body temperatures, rapid metabolisms, and occupy high trophic levels. Because they can respond quickly to changes in resource conditions, landbirds are considered good indicators of ecosystem health. Landbirds were chosen as a focus for monitoring in the Sonoran Desert Network for this reason and because they are specifically identified in the management objectives of many Sonoran Desert Network parks.

In addition, landbirds are highly detectable relative to other vertebrates, and they can be efficiently surveyed with the use of several standardized methods. Landbirds also come under the legal mandates of the Endangered Species Act (1973) and Migratory Bird Treaty Act. Monitoring changes in landbird population and community parameters can be an important component of any comprehensive, long-term monitoring program.

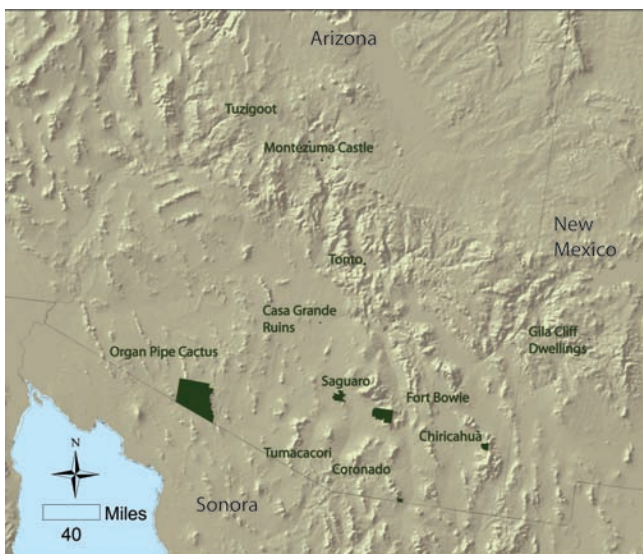


Figure 1. Parks in the Sonoran Desert Network

Methods

The Sonoran Desert Network uses the point-transect survey method (sometimes called “point counts”) to monitor landbird population parameters. The point-transect method, which is the most widespread and accepted method for surveying landbirds, involves estimating the linear distance to individual birds while standing at a fixed point in space for a predetermined amount of time. Estimating the distance to each bird allows density to be estimated via a species-specific detection function that accounts for variation in detectability due to surveyor, environmental, or weather-related factors.

Surveys begin in the morning after the initial “dawn chorus,” approximately 20 minutes before local sunrise. The daily field schedule for each surveyor involves visiting approximately 10 points each day, arranged in transects or groups of individually placed points. The use of point-transect surveys will provide data that are comparable both within and among parks, and also will facilitate comparisons with data from other locations in North America—especially other National Park Service units—where the same survey methods are used. On most field days during the first year of surveys, vegetation data will be collected after the bird surveys are completed.





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Sampling Design

Because bird communities in riparian and upland areas tend to be vastly different, the sampling frame was stratified for most parks—except some areas of Saguaro’s Rincon Mountain District (RMD)—according to upland versus riparian areas. Bird-survey point locations were then assigned within each of these. The dominant vegetation communities represented by upland areas in Sonoran Desert Network parks can be roughly stratified into four types: desert, semi-desert grassland, pine-oak forest and woodland, and mixed conifer forest.

Landbird surveys will be conducted at all Sonoran Desert Network parks during the breeding and spring migration seasons only. In general, surveys will be in areas that are easily accessible and present no safety problems. For most smaller parks, this means that all areas will be included in the sampling frame. The sampling frame for larger parks (Chiricahua NM, Coronado NM, Organ Pipe Cactus NM, and Saguaro NP) will be more restricted because of topography and limited access to remote areas. Surveys will be conducted annually at all low-elevation parks, and every 3–5 years at higher-elevation parks (Chiricahua NM, Coronado NM, Gila Cliff Dwellings NM, and higher-elevation areas of Saguaro NP).

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Avian Species that Occur in Sonoran Desert Network Parks



Photo credit: NPS

Harris hawk
Parabuteo unicinctus



Photo credit: Don Dirks

Cactus Wren
*Campylorhynchus
brunneicapillus*



Photo credit: Don Dirks

Curved-bill Thrasher
Toxostoma curvirostre



Photo credit: NPS

Red-tailed Hawk
Buteo jamaicensis



Photo credit: NPS

Yellow-billed Cuckoo
Parabuteo unicinctus

