

Survey of Winter-resident Grassland Birds Big Bend National Park

Source: K. Bryan

PROJECT SUMMARY



Bird in Big Bend National Park.

Introduction and Background

In winter of 2002 and 2003, an independent researcher began conducting a two-year inventory of winter-resident birds in grasslands in two parks in the National Park Service's Chihuahuan Desert Network. The objective of this study was to inventory selected grassland habitats in Big Bend and Guadalupe Mountains national parks for the presence, diversity, and abundance of wintering bird species. The data from this study may be used to develop bird monitoring programs in the Chihuahuan Desert Network. This summary presents information from the surveys at Big Bend National Park (NP). Summaries of the surveys conducted at the other Chihuahuan Desert Network parks are available on the Learning Center of the American Southwest website, www.southwestlearning.org.

Methods

In 2002, the researcher delineated, examined, and evaluated the grassland habitats in Big Bend NP. Grassland habitats included areas with large and variable shrub component, including denuded areas (areas stripped of vegetation), which are typical of Chihuahuan Desert. During this initial stage, the researcher worked with park staff and visited sites to locate representative examples of grassland habitat. Grassland habitats were grouped into broad, but definable and easily accessible habitat types.

A total of 13 transects representing four basic habitat types or aspects were established in Big Bend NP, ranging from 500 to 1,000 meters (1,640 to 3,280 ft), totaling 8,500 meters (27,900 ft). Transects were run three times each during the 2002–03 and 2003–04 field seasons. Three transects were established in tobosa grassland (North Rosillos, Bone Springs Draw, and fossil bone exhibit areas), riparian grasslands (Rio Grande Village, Black Dike area, and Castolon area), and Chisos foothills grasslands (Cattail Falls parking area, mile marker 3 west area, and mile marker 4 east area), and four transects were established lower desert grasslands (Tornillo Flats, Burro Mesa area, Maverick Road area, and mile marker 16 west area). Each site was photographed and recorded with

a Global Positioning System (GPS) unit.

Birds detected along each transect line were counted, identified and categorized as within 15 m (50 ft) of either side of the line or beyond 15 meters (50 ft). Visual and audible detections were recorded if the species was positively identified. After walking the transect line in one direction, the researcher collected data on the return trip by weaving back and forth across the transect line in an "S" formation to detect additional species or to relocate individuals from the first run to confirm their identification. New detections were considered "exit" observations. When possible, data were collected in the morning. Weather conditions and winter season bird activities occasionally delayed data collection until mid-day.

During the 2003–04 field season, the researcher collected basic habitat data to be used to analyze plant species composition and relative abundance. The data collection technique did not produce quantitative data on the various plants found along each transect, but did provide some information about the structure and composition of the habitat. Only woody, identifiable semi-woody plants, and grass species were recorded during this effort. Many plant species were dormant at the time of the survey and were difficult to identify. Specimens were collected to verify identity. Basic vegetation was analyzed for each transect site.

Results

Bird sampling

A total of 2,844 birds of 73 species were recorded during 78 transect runs in Big Bend NP. The highest number of species in the park was recorded in the riparian grassland habitat type at Rio Grande Village. The highest number of individual birds recorded at single habitat type was 588 in the lower desert grasslands at the Burro Mesa transect site. Both the lowest number of species and individuals observed were in the lower desert grasslands habitat type in the Tornillo Flats area.

Thirteen species were common to all four habitat types: greater roadrunner (*Geococcyx californianus*), Say's phoebe (*Sayornis saya*), loggerhead shrike (*Lanius ludovicianus*), common raven (*Corvus corax*), Bewick's wren (*Thryomanes bewickii*), northern mockingbird (*Mimus polyglottos*), green-tailed towhee (*Pipilo chlorurus*), Cassin's sparrow (*Aimophila cassinii*), Brewer's sparrow (*Spizella breweri*), black-throated sparrow (*Amphispiza bilineata*), white-crowned sparrow (*Zonotrichia leucophrys*), Pyrrhuloxia (*Cardinalis sinuatus*), and house finch (*Carpodacus mexicanus*). Some species were uniquely recorded in three habitat types: 5 in tobosa grasslands, 25 in riparian grasslands, and 4 in Chisos foothills grasslands.

Vegetation sampling

In 2003–04, 42 species of woody plants and 43 species of grasses were documented at the transect sites in Big Bend NP. The highest diversity of both woody and grass species were recorded in the Chisos foothills habitat type near Panther Junction. Only five woody species were recorded within all four habitat types and only three grass species were found in all four habitats. No woody species were uniquely recorded in tobosa grassland habitat, though all other habitats contained unique observations of woody and grass species.

Discussion

Bird populations in the Chihuahuan Desert, particularly winter residents, are typically highly dynamic. This may be related to precipitation derived from monsoons or summer rains. In general, birds were more abundant in Big Bend NP in 2002–03 than in 2003–04 and may be an example of the dynamic bird population. Nearly all sparrow species were more abundant in 2002–03 than in 2003–04. The Brewer's sparrow, a winter-resident species in Big Bend NP, was observed in 2002–03 but not in 2003–04. The black-throated sparrow, a permanent resident in the park, was also more abundant in 2002–03 than in 2003–04.

Changes in abundance also occurred with the scaled quail (*Cal-*



NPS/MISSY POWELL

Vermilion Flycatcher near the Beaver Pond.

lipepla squamata), which were abundant in summer of 2003 though only 12 individuals were detected in winter 2002–03 and 219 individuals were detected in 2003–04. In 2002–03, 17 sage thrasher (*Oreoscoptes montanus*) individuals, a species which exhibits normal patterns of sudden increases in population when natural checks and balances are altered, were observed while only 1 individual was documented in 2003–04.

One riparian grassland site in Big Bend NP was in the process of being restored. It may be necessary to reevaluate the vegetation composition in the survey areas for future winter-resident grassland bird surveys.

Literature Cited

Bryan, K.B. 2007. A survey of winter-resident grassland birds in Big Bend and Guadalupe Mountains National Parks.

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