

Burrowing Owls Wintering in South Texas

http://www.cerc.usgs.gov/frs_webs/gulf_coast/research/owls.htm

Burrowing owls (*Athene cunicularia*) are unique migratory birds. In the western U.S. and southern Canada, they breed in dry grasslands, using animal burrows, such as those of prairie dogs, for nest sites. In the winter, burrowing owls migrate to California, Arizona, New Mexico, Texas, and parts of Mexico. Although they do not nest during the winter, they still require burrows for protection.

Burrowing owls, small, long-legged birds of open country from Canada to Mexico, are declining at an alarming rate. The burrowing owl is one of only 11 species of birds identified for joint protection



Photo courtesy of Jerry Batey.

Road culverts are typical winter homes for burrowing owls in south Texas.

by an international environmental agreement among the U.S., Canada, and Mexico. It is listed as endangered in Canada and threatened in Mexico. In the United States, the U.S. Fish and Wildlife Service currently classifies the burrowing owl as a Species of Management Concern and has initiated a formal review of its

population status.

South Texas is a major wintering area for the burrowing owl, based on recent bird surveys conducted by the TGCFRS, Texas A&M University-Corpus Christi (TAMU-CC), and the Canadian Wildlife Service (CWS). The importance of south Texas to burrowing owls was not formerly known because the owls disperse widely over this large region of Texas, and they inhabit highly altered or disturbed habitats normally not considered good wildlife habitat.

South Texas historically featured coastal prairie and native brush, but with the conversion of much of this region to agriculture, native grasslands containing animal burrows have also been lost. As

a result, burrowing owls wintering in south Texas use road culverts (usually along roads adjacent to cultivated fields) instead of natural burrows. Vehicles pose a serious threat for burrowing owls roosting along roads.

The TGCFRS joined TAMU-CC and the CWS to study the winter ecology of this species, in hopes of finding answers to why burrowing owl numbers are declining. Reversing the decline in burrowing owl populations is a goal for this research team.

Long-term objectives for burrowing owl research and conservation in south Texas are:

1) Using a questionnaire to identify landowners who have burrowing owls on their land to help estimate winter population size.

2) Developing educational materials and partnering with local news media to improve public awareness of this species.

3) Constructing artificial burrows made from industrial drain pipe, placed away from roads, then monitored over several winters.

4) Identifying and tracking



Photo courtesy of Matthew Rowe.

Burrowing owl (*Athene cunicularia*).

movements during the winter period by fitting the owls with leg bands and radio transmitters.

5) Determining daily activities and behavior of burrowing owls using video surveillance at selected burrow sites.

6) Calculating winter survival rates and determining causes of mortality.

7) Determining winter diet by identifying prey remains in regurgitated pellets.

8) Mapping owl locations and territories using Geographic Information System (GIS) software.

9) Assessing contaminants that may occur in the owl diet by sampling insects and small rodents near known roosts, then analyzing these prey items for contaminants.

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Texas Gulf Coast Field Research Station

Columbia Environmental Research Center

Introduction

http://www.cerc.usgs.gov/frs_webs/gulf_coast/

The Texas Gulf Coast Field Research Station (TGCFRS) has studied the ecology, distribution, and habitats of birds in south Texas since 1987. TGCFRS staff work on bird projects in some of the most unusual and harsh environments in the U.S. The following research topics are described in this fact sheet:

- Redhead Ducks and the Laguna Madre
- Rio Grande Breeding Bird Surveys
- Grassland Birds in Coastal Prairies
- Burrowing Owls Wintering in south Texas

Redhead Ducks and the Laguna Madre

http://www.cerc.usgs.gov/frs_webs/gulf_coast/research/laguna_madre.htm

Nearly 80% of all redheads (*Aythya americana*) in North America are concentrated in winter on two highly saline lagoons along the western rim of the Gulf of Mexico, the Laguna Madre of Texas and the Laguna Madre of Tamaulipas, Mexico. TGCFRS scientists have investigated many aspects of redhead winter ecology, including distribution and abundance, habitat use, foods and foraging ecology, trace element contaminants, feeding behaviors and time-activity budgets, nutrient reserves, stable isotope composition in body tissues and foods, mineral composition of flight feathers, molt status, and salt gland development.

Redheads in winter depend very heavily on rhizomes of shoalgrass, a species of seagrass. From the arrival of the first redheads in October to the departure of the last birds in March, about 80% of the diet of redheads wintering in south Texas consists of shoalgrass rhizomes. Dependence of redheads on shoalgrass rhizomes is a continuing, long-term phenomenon.

Redhead ducks use both saltwater habitats of the Laguna Madre and nearby freshwater wetlands on the adjoining mainland and barrier islands. Sharply distinct differences in use of the two types of habitat are apparent; nearly all

feeding occurs in salt water, and nearly all drinking occurs in coastal ponds, sources of drinking water for redheads feeding in the highly saline Laguna Madre.

Both coastal ponds and the Laguna Madre must be considered as vital parts of the Texas winter range of redheads. The continued integrity of the Laguna Madre of Texas and the Laguna Madre of Tamaulipas as functional ecosystems is essential to the maintenance of the western Gulf of Mexico as the major winter range of this species of migratory waterfowl.

Most important among current issues are open-bay disposal of sediments from maintenance

dredging of the channel of the Gulf Intracoastal Waterway in the Laguna Madre of Texas, and its subsequent effect on light transmission and seagrass photosynthesis. Other prominent issues highlighted by the close linkage between redheads and shoalgrass are the persistent brown tide in the Laguna Madre and its effect on light transmission, and continuing widespread decline of shoalgrass meadows.

A declining trend in winter food resources in the face of historically high redhead numbers could reverse the positive outlook for redheads and, conceivably, could even lead



Redheads (*Aythya americana*) arrive at a coastal pond, vital winter habitat.

to a population crash. Current focus is therefore on development of a redhead population model. A number of long-term data sets of redhead numbers and habitat conditions are being used to construct a conceptual redhead model with Laguna Madre (winter range) and prairie pothole (breeding range) subcomponents. The population model will include management options which can be evaluated for their effects on numbers of redheads.

Rio Grande Breeding Bird Surveys

http://www.cerc.usgs.gov/frs_webs/gulf_coast/research/riogrnd.htm

<http://www.cerc.usgs.gov/pubs/pubs.htm#bird>

Texas is ornithologically the richest state in the nation, supporting more than 600 documented species. South Texas is particularly rich in avifauna, however, the Laredo area (in Webb County) has been poorly studied. Even the most basic inventories of flora and fauna remain inadequate.

From 1996-1999, the TGCFRS scientists conducted breeding bird surveys along the Rio Grande in Webb County. Two research reports



The green jay, a south Texas tropical species, is found in Webb County, Texas.

“Breeding Bird Surveys at the Galvan Ranch, Webb County, Texas” and “Surveys of Night Birds along the Rio Grande in Webb County, Texas”) were produced based on work conducted on the 69,000 acre Galvan Ranch, located about 60 km upriver from Laredo.

A third report, “Breeding Bird Surveys and Ecotourism Potential at Laredo, Webb County, Texas” was completed after conducting surveys on public lands within the city of Laredo. While Laredo traditionally has been outside of the usual destinations for birders, it can now be considered a new and very exciting birding destination in south Texas. This trilogy of reports on the bird life

of Laredo and Webb County will be the catalyst for change (now available online at: <http://www.cerc.usgs.gov/pubs/pubs.htm>).

The Laredo and Webb County area remains largely unspoiled by urban sprawl and intensive agriculture. Much of Webb County is still dominated by extensive vistas of Tamaulipan thorn scrub, an ecosystem unique to southern Texas and the northeastern states of Mexico.

Results of the USGS surveys established that the Laredo area is a remarkably rich region for bird species. Some discoveries are very rare tropical species, and even within south Texas are severely restricted geographically.

Prior to the surveys, many of the species discovered were thought to exist only in very small numbers near the delta of the Rio Grande (more than 300 km downriver). However, many tropical bird species were found to be flourishing in Webb County. Important tropical species found include the white-collared seedeater, red-billed pigeon, and green parakeet.

Three very rare species were found to occur in Webb County in small numbers: the clay-colored robin, the gray-crowned yellowthroat, and the masked duck. Other tropical birds seen regularly in this borderland region of Texas include green jay, Audubon’s oriole, least grebe, ringed kingfisher, and common pauraque, to name a few.

Important management information was also gained from the Webb County research projects. This aspect of the study was included to assist landowners wishing to benefit from birding revenue by providing them with



Surveys of Night Birds Along the Rio Grande in Webb County, Texas

October 1, 2000



U.S. Department of the Interior
U.S. Geological Survey

recommendations for managing their properties for birds.

The USGS research found that stock tanks or other freshwater ponds attract a greater diversity of bird species and bird numbers if they have irregularly shaped and gently sloping shorelines. This is a significant finding for this ranching area, where stock tanks generally are constructed in a rectangular shape with steep banks.



Breeding Bird Surveys and Ecotourism Potential at Laredo, Webb County, Texas

April 1, 2000



U.S. Department of the Interior
U.S. Geological Survey

Grassland Birds in Coastal Prairies

http://www.cerc.usgs.gov/frs_webs/gulf_coast/research/lanwr.htm

Among all migratory birds, grassland species have experienced the most significant declines in numbers, as their native habitats have been reduced in size to mere fragments of what once existed. Conversion of native grassland to cropland and the modern custom of fire suppression have contributed to this drastic degradation of the prairies.

In Texas, it is estimated that less than 5% of the high-quality coastal prairie existing before settlement still remains. Additional concerns in Texas are overgrazing and the predominance of exotic grass species introduced for use as livestock forage.

While grassland birds, as a group, are not well studied, most research has focused on breeding ecology. In contrast, grassland bird distribution, abundance, and ecology during winter remain poorly studied. For these reasons, a one-year study, in cooperation with the U.S. Fish and Wildlife Service, was initiated to survey wintering grassland birds at Laguna Atascosa National Wildlife Refuge (LANWR) in south Texas.

The olive sparrow, a south Texas “specialty”, is a bird that breeds in dense brush, not grasslands. During this winter study, however, TGCFRS researchers found olive sparrows in grasslands composed of a mixture of native grasses and forbs.



Photo courtesy of Ellen Sweptson.

The objectives of the study were to assess the effect, if any, of grassland type (native grass vs. exotic grass), grassland tract size, and vegetative diversity on bird numbers and species composition.

Bird surveys were conducted at grasslands of each type, size, and diversity class. Transects of 100-meters long were placed in each of 21 grassland sites randomly selected at LANWR.

Field crews conducted monthly bird surveys along each transect beginning in December, 1999, and ending in February, 2000. Bird surveys and vegetation sampling followed the Project Prairie Birds protocol for wintering grassland bird surveys along the Texas coast.

An additional aspect of this study was to mist net grassland birds at selected transect sites during the winter survey period. Captured birds were fitted with leg bands, then released. The leg bands enable researchers to monitor movements of these migratory birds. Mist netting also provides an opportunity to compare mist net results with transect results.

The most common exotic grass species on the refuge are buffelgrass and Kleberg bluestem.



Set across a coastal prairie in Laguna Atascosa National Wildlife Refuge, fine-as-hair mist nets capture grassland birds in flight.



Savannah sparrow.

A variety of native grass species were found on the refuge, including pappusgrass, Louisiana cupgrass, and Arizona cottontop, as well as the native salt-tolerant species (*Spartina* sp. and *Sporobolus* sp.). In general, areas dominated by exotic grass species have a low vegetative diversity (i.e., low number of plant species) and, in turn, may support fewer animals.

The most abundant bird species identified during the project were savannah sparrows and sedge wrens. Other birds observed were olive sparrow, Lincoln’s sparrow, Eastern meadowlark, Cassin’s sparrow, grasshopper sparrow, and LeConte’s sparrow.

Upon completion of this project, refuge managers will have information useful in determining if actions are needed to control exotic grasses in Texas coastal prairies. Management recommendations for bird use and grassland tract size will also be made for coastal prairies in south Texas.

Photo courtesy of Robert Benson.

Photo courtesy of Robert Benson.