

Habitat Use, Distribution and Abundance of Overwintering Grassland Sparrows in Cibolo Preserve, Boerne, TX

Introduction

This proposes to examine distribution, abundance and diversity of overwintering grassland sparrows in multiple open fields at Cibolo Preserve. Research on grassland sparrows have shown consistent and troubling declines in grassland birds on their breeding grounds for many years. While not universal or across the entire range of most species, declines due to habitat loss or alteration and pesticide poisoning reveal that the losses are real, and in most cases, continuing.

Of interest by researchers over the past several years is how overwintering grounds impact survival of our grassland birds. In Texas alone, more than one million acres of open space was converted to other use in the past year. Included in these lands are grasslands and shrub-grasslands that provide habitat for many grassland species.

The scattered grasslands of Cibolo Preserve are known to be important habitat for a variety of overwintering grassland sparrows, including two Species of Greatest Conservation Need, the Grasshopper and LeConte's Sparrows. Transect surveys have shown their presence, numbers varying year to year.

This project seeks to conduct research to better assess the populations of these and other grassland sparrows through a mark-recapture effort using mist nets. We believe this method of surveying cryptic, often hard-to-identify small brown birds will provide an enhanced understanding of true numbers of those species, particularly the aforementioned Grasshopper and LeConte's Sparrows, two birds whose cryptic nature make identification in the field difficult due to their short escape flights, dropping into the long vegetation shortly after being flushed during transect surveys.

Specifically, we propose to examine the following:

1. Determine diversity of overwintering grassland sparrows across Cibolo Preserve.
2. Examine year-to-year variability in numbers of species as well as look at recapture data year-to-year, i.e. how many birds return to the area each year.
3. Determine how field size and vegetation structure, specifically, vegetation height, ground cover and dominant species, influence species composition and numbers.
4. Examine abundance, year-to-year variability and habitat preference of Grasshopper and LeConte's Sparrows based on vegetative structure and field size.
5. Examine within-season, field-to-field movement of birds based on recapture of banded birds.
6. Compare mark-recapture efforts with transect surveys in identical fields.

7. Compare reliability of transect surveys versus mist netting efforts, examining time expenditure for training and conducting the surveys by community scientists between the two methodologies, specifically in reference to LeConte's and Grasshopper Sparrows. Do results support one method over the other from a time and commitment perspective or are they both reliable for these kinds of surveys on grassland birds?
8. Explore the importance of grassland remnants to overwintering birds in suburban and urban areas. Can these areas sustain overwintering populations over time to a degree that deems their protection of long-term value, and are there land management practices that could enhance the importance of these grassland areas?

Procedures

We will conduct mist netting operations on up to ten grassland fields within Cibolo Preserve (see attached map). Fields range in size from 1.3 ha to 18.38 ha (measurements are approximate using Google Earth).

Sampling will be done by setting up two, four-net arrays of 12-meter mist nets per field. Fields will be sampled twice during each field season.

With each array, birds will be driven into the nets from each of the two sides, one at a time using community scientists and researchers walking through the field in the direction of the nets. We will also use available "beater" poles that will help flush birds in the direction of the nets.

Captured birds will be carefully removed from the nets by trained individuals, placed in mesh holding bags and taken to the banding tables for processing. For each bird captured, we will identify each to species, determine the age of the bird using molt limits (if possible), collect weight and wing length. A numbered, metal band, issued by the USGS Bird Banding Laboratory, will be placed on one of the two legs and the bird will be released back to the area.

Banding effort will be conducted weekly between November and March each winter season from 2020 to 2023.

