



Agate Fossil Beds National Monument

Priority Grassland Birds *Resource Brief*

Importance

Grassland bird species are among the most rapidly declining birds in North America. Habitat degradation and climate change are some of the major threats facing these species. Agate Fossil Beds NM lies within the Shortgrass Prairie Bird Conservation Region 18 (BCR 18). Currently only about 52% of historic shortgrass prairie remains (Samson et al. 2004). As a result, many grassland birds have been listed as species of concern by both state/federal agencies and conservation organizations. In this shortgrass prairie stratum, four species in particular have been identified as species of concern: Grasshopper Sparrow (GRSP), Lark Bunting (LABU), Lark Sparrow (LASP), and Western Meadowlark (WEME).

Objectives

- Conduct bird surveys at Agate Fossil Beds NM using the established Heartland Network and Rocky Mountain Bird Observatory (RMBO) bird monitoring protocols to determine species composition, density, and abundance of breeding birds.
- Place the Agate Fossil Beds NM bird community in the context of the shortgrass prairie stratum by comparing densities of four priority grassland species with densities of same species at two National Grasslands also located in the Shortgrass Prairie Bird Conservation Region



Photo by Dan Licht

Grasshopper Sparrow

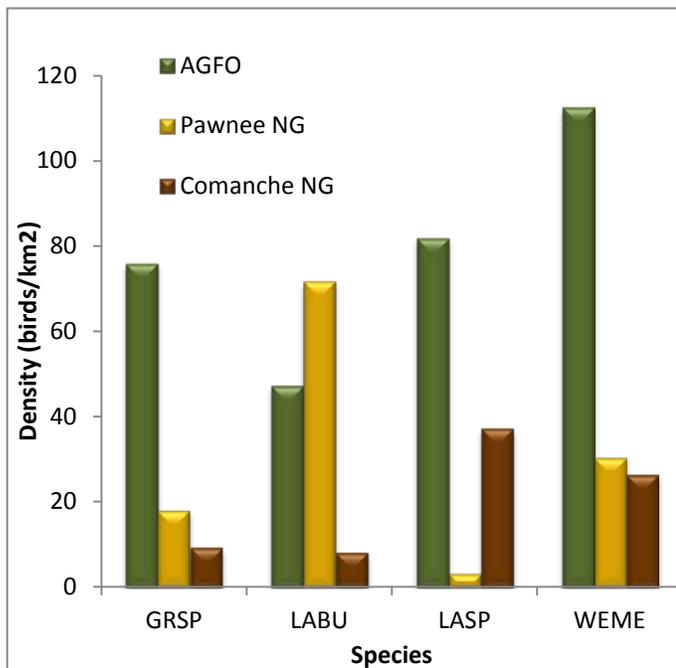
Methods

Heartland Network established permanent sampling locations for monitoring breeding birds by overlaying a systematic grid of 400m x 400m cells. Forty plots were established in prairie habitat. Point counts were conducted in the morning for a total of six minutes at each point. The species detected, sex, distance from the observer, and minute of bird detection were recorded. Birds were surveyed at each point five times between 18 May and 23 June in 2010 by a RMBO technician. These methods allowed for detection probability through application of Distance theory (Buckland et al. 2001) and Occupancy estimation (MacKenzie et al. 2002). In addition, RMBO staff conducted point counts in the Pawnee National Grasslands (NG) and Comanche National Grasslands also located in the BCR18.

Current Status of Grassland Species:

We were able to estimate density for the four grassland bird species of concern using the DISTANCE program at the three BCR 18 sites. The Grasshopper Sparrow had a much higher density ($D=75.9$ birds/ km^2) at Agate Fossil Beds NM than in either of the National Grasslands.

Although the Lark Bunting density was highest at the Pawnee NG ($D=71.8$ birds/ km^2), the density of Lark Buntings at Agate Fossil Beds NM was still relatively high at a density of 47.3 birds/ km^2 . The Lark Bunting is the most difficult species to assess because their populations tend to follow annual environmental factors, such as rainfall. For both the Lark Sparrow and the Western Meadowlark, the highest densities were found at Agate Fossil Beds NM compared to the National



Grassland sites also located in the Shortgrass Prairie Bird Conservation Region. All of these density estimates were robust ($CV < 50\%$).

Management Applications

- Agate Fossil Beds NM can serve as a reference site to help interpret regional trends for species of concern.
- Changes in grassland birds can indicate changes in surrounding landscape dynamics.
- Long-term monitoring of grassland birds will provide trend information that allows land managers to make informed management and conservation decisions.

The relatively high densities of grasslands priority species found at Agate Fossil Beds NM suggest that this park unit is an important reference area for grassland birds in the context of this region. Additionally, these results imply a diverse grassland because it supports a wide array grassland birds that have different micro habitat preferences (A. Poole 2011).

References

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