Relative importance of vegetation and weather to nest survival of shortgrass steppe passerines

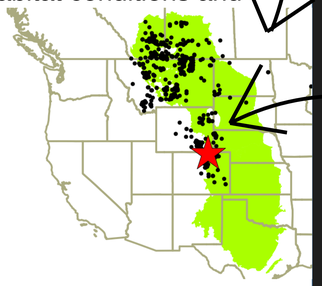
Amber Carver[1], Angela Dwyer[2], David Augustine[3], Diana Tomback[1], and Michael Wunder[1]

1. Department of Integrative Biology, University of Colorado Denver, Denver, Colorado
2. Bird Conservancy of the Rockies, Fort Collins, Colorado
3. NPA Crops Research Laboratory, USDA Agricultural Research Service, Fort Collins, Colorado

Introduction

Managing for McCown's Longspur is an interesting challenge.

- Species breeds on the **semi-arid western Great Plains**, in areas dominated by shortgrass[1].
- Not deterred by **grazing** and probably followed bison[2].
- Apparent nest success is higher under heavy grazing[3].
- **Populations** appear to have **declined**[4], perhaps due to adverse habitat management choices[5].
- Climate change may also alter habitat conditions and affect survival.



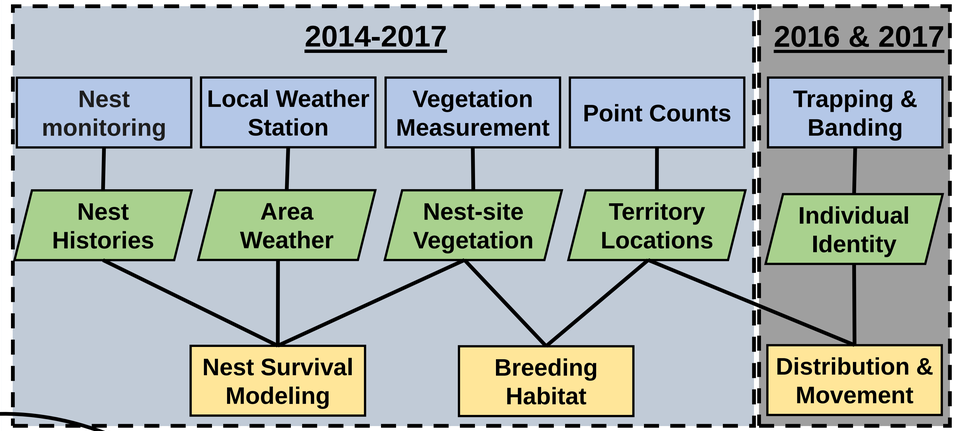
Can we use grazing to boost populations of McCown's Longspur, along with other birds breeding in the area?

- Grassland bird diversity relies on habitat heterogeneity[6].
- Using livestock as "ecosystem engineers" might benefit target species as well as others not currently listed[5].
- However, weather is important to survival in some species and may override management efforts.

Objectives

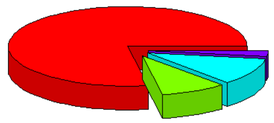
A. Quantify nest micro-habitat and nest survival for ground-nesting passerines (song birds).
B. Identify features most influential to nest survival, and determine whether that varies by species.
C. Quantify habitat use at local and regional scales.

Methods



Study Site: **Central Plains Experimental Range**
Timing: May-July, 2014--2017
Habitat: Predominantly shortgrass, with patchy midgrass

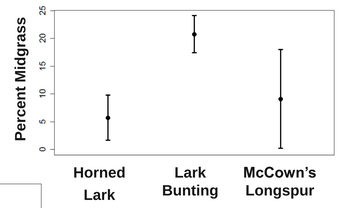
Preliminary Results (2014-2015)

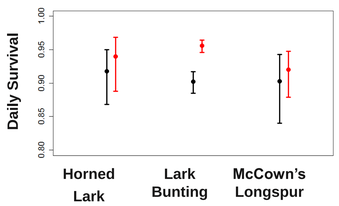


Most nests belonged to three species: **McCown's Longspur** (n=63), **Horned Lark** (n=51), and **Lark Bunting** (n=448). Nests of **other species** were rare.

Objective A:

- Lower % midgrass for McCown's Longspur and Horned Lark nests
- Nest Survival appeared higher in 2015 than 2014 for all 3 species.





Objective B *(2014 only)*:

2014 veg data suggest:

- (-) influence of dead veg on survival of McCown's Longspur & Lark Bunting.
- (-) influence of bare ground on survival of Lark Bunting, but not other species.
- Neutral influence of daily weather.

Objective C:

2014

- Nests Found: 27
- Capture Attempts: 11
- Banded Birds: 9 (82% of attempts, 33% of known nests)

2015

- Nests Found: 36
- Capture Attempts: 26
- Banded Birds: 23 (88% of attempts, 64% of known nests)
- One return from 2014, 0.15 mi. from prior nest.

Discussion

- Small sample size for McCown's Longspur makes analysis challenging.
- Percent midgrass distinguishes McCown's Longspur and Horned Lark nests from Lark Bunting.
- *However*, midgrass may not play big role in survival.
- Apparent increase in survival likely due to absence of major storms in 2015.

High spring rain in 2014 & 2015 likely explains high number of Lark Bunting, low number of others.

- Lark Bunting can be less common than McCown's Longspur in dry years.
- Low number of longspur nests during 2014 & 2015 suggests negative effect of rainfall.

Is McCown's Longspur nomadic, or does it return to the same place and simply not breed?

- Importance of weather to nest survival not supported by preliminary data.
- Adults likely either not breeding, or going elsewhere.
- Future plans include tracking individuals within and between seasons, which appears feasible.

The challenge for land managers is taking an adaptive approach, not assuming a technique will always work.

Literature Cited

1. Dechant JA. 2002. USGS Northern Prairie Wildlife Research Center, 140.
2. Mickey FW. 1943. The Auk, 181-209.
3. With KA. 1994. Condor, 1009-1019.
4. Sauer JR, et al. 2013. North American Fauna, 79(79):1-32.
5. Derner JD, et al. 2009. Rangeland Ecology & Management, 62(2):111-118.
6. Knopf FL. 1996. Island Press, Covelo, CA, 135-148.

Visit the project at:
Facebook.com/cperbirds