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Differential Use of Agricultural Fields and Rangeland Nesting Habitat by McCown's Longspur (*Calcarius mccownii*) and Chestnut-Collared Longspur (*Calcarius ornatus*) in Western Nebraska

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INTRODUCTION

The Nebraska Natural Legacy Plan (NNLP) lists both McCown's Longspur and Chestnut-collared Longspur as Tier I and Tier II species of conservation concern, respectively (Schneider et al. 2005). McCown's Longspur is listed as a Tier I species (highest conservation priority) in Nebraska because of regional population declines (Schneider et al. 2005), and because it is also listed on the Partners in



McCown's Longspur near nest, June 2005, Kimball Co, Nebraska. Photo by Larry Snyder, Rocky Mountain Bird Observatory.

Flight WatchList (Fitzgerald and Pashley 2000). The breeding distribution of McCown's Longspur in Nebraska is suggested to be the westernmost counties of the Panhandle (With 1994), although limited information on the breeding ecology of this species exists for Nebraska. In fact, Mollhoff (2001) only recorded McCown's nesting in the westernmost Panhandle, specifically Kimball and Sioux Counties, although both geographic areas are believed to harbor sizeable breeding populations (Sharpe et al. 2001). McCown's Longspur habitat is shortgrass prairie with short stature vegetation with areas of intermixed bare ground (With 1994, Mollhoff 2001, Sharpe et al. 2001). Threats to the regional population include habitat conversion and fragmentation, and management practices that maintain taller vegetation (Schneider et al. 2005).

Breeding populations of the Chestnut-collared Longspur have been much reduced in Nebraska, and the area in which it is presumed to breed within the state is largely disjunct from other regional breeding populations (Hill and Gould 1997). Even within the state, breeding records are scattered with most probable nesting attempts occurring in the most western and more northern counties of the Panhandle (Mollhoff 2001). As with McCown's Longspur, sizeable Chestnut-collared Longspur breeding populations are believed to occur in Sioux and other northern Panhandle counties, as well as across Kimball County, although breeding numbers and locations likely shift from year to year in response to moisture levels (Sharpe et al. 2001). The Chestnut-collared Longspur prefers to nest in grazed/burned areas with taller vegetation (Rosche 1982, Hill and Gould 1997) than does McCown's Longspur. It is thought to breed in pastures of the northern Panhandle where grass height was predominantly 20-30 cm, slightly taller than those areas (10-20 cm) where they are thought occur in the southern Panhandle (Mollhoff 2001). These two species of longspur only breed in proximity to one another when a mosaic of grassland microhabitats is available (With 1994), thus accommodating each species' breeding habitat requirements.

In 2002 the Nebraska Prairie Partners (NPP), a cooperative partnership between the Rocky Mountain Bird Observatory (RMBO) and Nebraska Game and Parks Commission (NGPC), initiated surveys to identify the relative abundance and extent of the breeding distribution of Mountain Plover in Nebraska. One of these surveys was aimed at gaining access to private lands across the Kimball Grasslands Biologically Unique Landscape (BUL) and locating/marketing Mountain Plover nests on agricultural fields. During these surveys, we routinely encountered McCown's and Chestnut-collared Longspurs displaying breeding and nesting behaviors (e.g. falling leaf display). We opportunistically recorded data on McCown's and Chestnut-collared Longspur nests during Mountain Plover nest marking surveys to gain knowledge of their distribution and nesting habits within Nebraska. We couple these data with data from section-based surveys conducted across western Nebraska by RMBO during the 2006 and 2007 field seasons, where both longspur species were also recorded along with general habitat data. The purpose of this paper is to provide information on nesting locations and general habitat information for both McCown's and Chestnut-collared Longspurs breeding in Nebraska.

## METHODS

*Study Area and Field Surveys*

We conducted surveys across the Kimball Grasslands BUL (Schneider et al. 2005) in the southwestern Panhandle, including sections located in northwestern and south-central Kimball County. This study area lies adjacent to the northern boundary of the Pawnee National Grassland in Colorado, a large, relatively contiguous shortgrass prairie. The predominant composition of Kimball County is dryland agriculture (64%) intermixed with native rangeland (33%) on the xeric tablelands surrounding the Lodgepole Creek drainage (USDA 2002 Census of Agriculture: NASS Fact Finder).

Nesting observations for both Chestnut-collared and McCown's Longspurs were recorded during NPP Mountain Plover nest marking activities, which were initiated between mid-April and the end of June in 2007. Technicians drove parallel transects with ATV's (5-10 mph) down strip rows (millet stubble, wheat stubble, and fallow bare) and through native rangeland when fields were too muddy following rain events. During the 2007 field season, a total of 23,575 acres (22,455 acres of dryland agriculture and 1,120 acres of rangeland) was surveyed with nest marking methods from which longspur species were recorded. When longspurs were flushed off nests, technicians backed away from the area until the adult returned, at which point the actual nest location was determined before approaching the area again. Because longspurs were not the target species of this activity, little time was allowed for adults to return before a general nesting GPS location and associated landuse data were recorded (personal observation of nesting adult flushing behavior when adults with nests were located). When adults returned quickly we recorded a GPS point at the nest, associated land use surrounding the nest, and species of longspur.

In both 2006 and 2007, RMBO conducted 3 point count surveys on randomly selected sections across the shortgrass prairie ecoregion (Bird Conservation Region 18) in western Nebraska. These surveys were developed to address the entire community of birds, not longspur species in particular, observed within these sections, and are used to suggest approximate distributions and relative abundances of breeding grassland birds across the study area. Section based surveys were conducted between mid-May and the end of June, a time period that corresponds largely with the presence of resident birds (e.g., migrants for most species have moved through already), so detections during these surveys were taken to infer nesting by resident birds within the Nebraska portion of BCR 18. During the 2006 and 2007 field seasons, respectively, 645 sections (583 on native rangeland, 62 on dryland agriculture) and 619 sections (558 on native rangeland, 61 on dryland agriculture) were surveyed. While some habitat association data were collected on sections during these surveys, we focus on general landscape features (e.g., landuse within section) where birds were detected. Our section survey results were not corrected for any detectability issues (e.g., sections where longspurs may have been present but were not detected) and should therefore be considered with caution.

## RESULTS AND DISCUSSION

The earliest observations of McCown's Longspur flocks migrating into the study area during the 2007 field season was 1 April, but whether any of the birds observed in these flocks were local breeders is beyond the scope of this study. Thus, the earliest date for the onset of nesting during the 2007 field season could not be determined. Longspurs were documented on a total of 11 different properties across the Kimball Grasslands BUL, with the majority of nests being located in south-central Kimball County. Between 30 May and 15 June 2007, a total of 37 McCown's Longspur breeding locations was recorded, including 7 nests (2 of which were located in fallow bare agricultural strips). Sixteen of these breeding locations were located in heavily grazed rangeland, while the other 21 were in agricultural fields (2 in millet stubble and 19 in fallow bare). All breeding locations were in areas that were either heavily grazed or were agricultural land with extensive areas of bare ground in the general nesting area.

A total of 16 Chestnut-collared Longspur breeding locations was recorded during nest marking surveys, with 2 confirmed nests. All 16 breeding locations for Chestnut-collared Longspurs were situated in rangeland that was moderately grazed, and only overlapped with McCown's when patches of buffalograss and blue grama were present amongst prairie three awn and needle and thread grasses in surveyed pastures. This combination of grasses likely created the mosaic of short and mixed grass prairie that was suitable for both species. While a single Chestnut-collared adult was observed foraging in a millet stubble field during nest marking, no Chestnut-collared nests were ever located in agricultural fields. Four other longspur breeding locations were recorded in rangeland, but the species was not determined.

Both McCown's and Chestnut-collared Longspurs were found nesting across the Kimball Grasslands BUL, although McCown's were encountered much more often. Increased McCown's Longspur observations is likely explained because McCown's were also found nesting within agricultural fields, and the majority of native rangeland within the Kimball Grasslands is often intensively grazed by cattle, creating a grassland habitat more conducive to McCown's nesting. Remaining

Table 1. Results of nest location surveys and section surveys for McCown's and Chestnut-collared Longspurs in the BCR 18 portion of Nebraska in 2006 and 2007.

	McCown's Longspur		Chestnut-collared Longspur	
	2006	2007	2006	2007
Nests / Nesting Areas in Rangeland	---	16	---	16
Nests / Nesting Areas in Crop Fields	---	21	---	0
Total Rangeland Sections Surveyed	583	558	583	558
Total Crop Field Sections Surveyed	62	61	62	61
Total Observations in Rangeland Sections	14	12	25	17
Total Observations in Crop Field Sections	0	0	0	3

grassland in Kimball County occurs on ridges and breaks, which typically support shorter vegetation and bare ground which is also more suitable breeding habitat for nesting McCown's Longspurs. The NNLP lists habitat conversion and fragmentation as a major threat to the persistence of McCown's Longspur populations in Nebraska, but anecdotally it appears that McCown's will nest in agricultural fields. Whether or not these nesting attempts are successful and result in a contribution to the local population was beyond the scope of this study but is an important question that needs to be addressed in evaluating the conservation status of this Tier I listed species in Nebraska.



McCown's Longspur nest, June 2005, Kimball Co, Nebraska. Photo by Larry Snyder, Rocky Mountain Bird Observatory.

Section survey results for McCown's Longspur in 2006 revealed detections in 14 different sections in Sioux (9), Box Butte (3), and Kimball (2), with almost 95% of the birds occurring in Sioux County (122 birds) and only 2 birds observed in Kimball County. Results for the 2007 surveys were similar in that detections of McCown's only occurred on 12 sections, with Sioux County accounting for nearly 85% of the detections (only 4 in Kimball County), but they were detected across a wider area that included Sioux, Dawes, Banner, Kimball, and Dundy Counties. Whether the single observation in Dundy County was a possible migrant or significant find is unknown, but the other detections correspond with the accepted range of McCown's Longspur in Nebraska. However, in contrast to the nest marking surveys that occurred across Kimball County, no McCown's were detected on dryland agricultural sections (n=123) during section surveys.

In 2006 Chestnut-collared Longspurs were detected on a total of 25 sections spread across Sioux, Box Butte, and Sheridan Counties, with Sioux County accounting for nearly half the sections (11) and more than 85% of the total count (270 birds). Results for Chestnut-collared in 2007 were very similar with only the addition of detections in Dawes County contributing to the total of 20 occupied sections, where again Sioux County accounted for nearly half of the sections (8) and nearly 85% of the total count (117 birds). However, in 2007 there were 3 detections (2 in Dawes and 1 in Box Butte) of Chestnut-collared Longspurs in agricultural fields, but whether these birds were actually breeding in these fields is open to speculation.

Several points of interest arise when looking at the results of these various surveys, specifically the lack of detections of McCown's Longspur on agricultural sections and the relatively low number of detections of McCown's and Chestnut-collared Longspurs in Kimball County section surveys. While associated with short stature vegetation and areas of bare ground on native rangeland (With 1994), to the best of our knowledge McCown's Longspur as not been reported to nest in agricultural fields as was observed in the NPP study. Knowing that McCown's Longspur is breeding in agricultural fields and not being detected by traditional survey techniques raises the question of what effect sampling allocation (effort) may be having on the results of studies where similar section-based surveys are being utilized. In the RMBO section surveys, a significant amount of effort was allocated to sampling agricultural habitat; however, McCown's were not located on dryland crop sections. The RMBO results also would suggest that McCown's is a somewhat uncommon breeder and the Chestnut-collared is absent or only a rare breeder in Kimball County, when during nest marking surveys we encountered both species quite commonly during the breeding season. Breeding bird atlas surveys were a little more accurate in representing longspurs in Kimball County (Mollhoff 2001), but results of this study suggest that more species-specific work might be required to better understand the populations of McCown's and Chestnut-collared Longspurs breeding in Nebraska.

No studies have been conducted on McCown's or Chestnut-collared Longspur nest survival in rangeland and agricultural fields in Nebraska, and understanding nest survival rates on both rangeland and agricultural fields will be required to better understand the conservation needs of McCown's (and possibly Chestnut-collared) Longspur in Nebraska. Considerable variation was observed in clutch sizes for both species, but whether this variation was because nests were located before all eggs were laid or whether eggs/chicks had been depredated from the nest is uncertain, and at this point is based on a small sample size. Mollhoff (2001) suggested and we are in agreement that additional information on the nesting ecology of these two species in Nebraska is required before conservation actions can be addressed for either species. However, what is known about these species is that nesting habitat is available and is being utilized by both McCown's and Chestnut-collared Longspurs across the western portion of the Panhandle, including both native rangeland and agricultural fields.

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## LITERATURE CITED

- Fitzgerald, J.A. and D.N. Pashley. *Partners in Flight Bird Conservation Plan for the Dissected Till Plains*. Brentwood, MO: Partners in Flight, 2000.
- Hill, D.P. and L.K. Gould. *The Birds of North America: Chestnut-collared Longspur*, Number 288. Ed. A. Poole and F. Gill. Philadelphia: The Academy of Natural Sciences of Philadelphia, 1997.
- Mollhoff, Wayne, J. *The Nebraska Breeding Bird Atlas 1984-1989*. Nebraska Ornithologists' Union Occasional Paper Number 7. Lincoln, NE: Nebraska Game and Parks Commission, 2001.
- Rosche, R.C. *Birds of Northwestern Nebraska and Southwestern South Dakota, An Annotated Checklist*. Crawford, NE: Cottonwood Press, 1982.
- Schneider, R., M. Humpert, K. Stoner, and G. Steinauer. *The Nebraska Natural Legacy Project: A Comprehensive Wildlife Conservation Strategy*. Lincoln, NE: Nebraska Game and Parks Commission, 2005.
- Sharpe, R.S., W.R. Silcock, and J.G. Jorgensen. *Birds of Nebraska: Their Distribution and Temporal Occurrence*. Lincoln, NE: The University of Nebraska Press, 2001.
- With, K.A. *The Birds of North America: McCown's Longspur*, Number 96. Ed. A. Poole and F. Gill. Philadelphia: The Academy of Natural Sciences of Philadelphia: 1994.