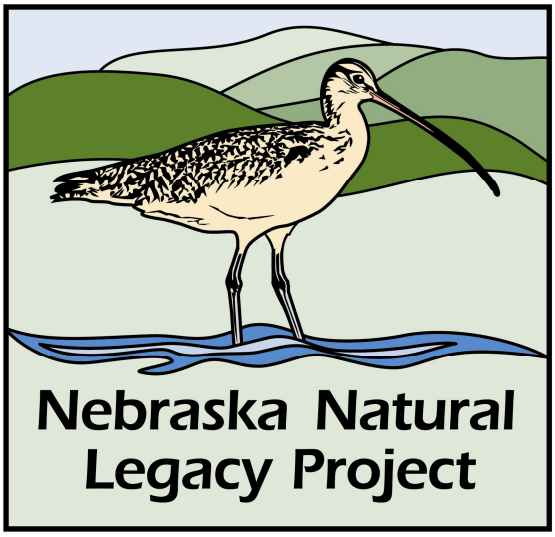
McCown's Longspur
(*Rhynchophanes mccownii*)

A Species Conservation Assessment
for
The Nebraska Natural Legacy Project



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The mission of the Nebraska Natural Legacy Project is to implement a blueprint for conserving Nebraska's flora, fauna and natural habitats through the proactive, voluntary conservation actions of partners, communities and individuals.

Purpose

The primary goal in development of at-risk species conservation assessments is to compile biological and ecological information that may assist conservation practitioners in making decisions regarding the conservation of species of interest. The Nebraska Natural Legacy Project recognizes the McCown's Longspur (*Rhynchophanes mccownii*) as a Tier I at-risk species. Some general management recommendations are made here regarding the McCown's Longspur (MCLO); however, conservation practitioners will need to use professional judgment to make specific management decisions based on objectives, location, and a multitude of variables. This resource was designed to share available knowledge of MCLO that will aid in the decision-making process or in identifying research needs for the benefit of the species. Species conservation assessments should not be stagnant documents but rather will need to be updated as new scientific information becomes available. The Nebraska Natural Legacy Project focuses efforts in the state's Biologically Unique Landscapes (BULs), but it is recommended that whenever possible, practitioners make considerations for a species throughout its range in order to increase the outcome of successful conservation efforts.

Common Name	McCown's Longspur
Scientific Name	*Rhynchophanes mccownii*
Order	Passeriformes
Family	Calcariidae
G-Rank	G4
S-Rank	S3
Goal	7
Distribution	Limited
Criteria for selection as Tier I	Declining; PIF Watch List
Estimated population in NE	200 - 1,000
Estimate based on	BBA field surveys
Trends since 2005 in NE	Unknown
Range in NE	Panhandle - primarily Sioux, Scotts Bluff, Banner, and Kimball counties
Habitat	Shortgrass prairie with mixedgrass, short-stature vegetation, and prairie dog colonies
	Climate Change Vulnerability Index: Not vulnerable, presumed stable
Threats	Habitat fragmentation and conversion; management that maintains higher vegetation structure; prairie dog control
Research/Inventory	Identify habitat requirements; continue surveys to assess distribution and abundance; evaluate use of agricultural fields
Landscapes	Kimball Grasslands, Oglala Grasslands, Panhandle Prairies

Status

According to the last review in 2003, the state Heritage status rank for MCLO is S3, U.S. national status is N4B, N4N and global conservation rank is G4 (NatureServe 2009). The global trend for the population of MCLO is highly variable or unknown (RMBO 2005). But, a drastically reduced breeding range has been reported (Bent 1968, Krause 1968) with less abundance (With 2010). The species is listed on the Partners in Flight (PIF) Watch List. Twelve percent of the world breeding population of MCLO uses Bird Conservation Region (BCR) 18 – Shortgrass Prairie (RMBO 2005) which spans the panhandle of Nebraska. In BCR 18, MCLO exhibits slight to moderate decline of both breeding and non-breeding conditions (RMBO 2005). The portion of MCLO's distribution within Nebraska is limited. The Nebraska Natural Legacy Science Team set a goal of maintaining seven populations in the state (Schneider et al. 2011), assuming there is little movement between populations and fates of populations are not correlated. Moderate viability (40% chance of survival) of each population gives >99% probability of at least one population surviving 100 years (Morris et al. 1999). The lifespan of individual MCLO is unknown.

Principal Threats

MCLO has exhibited drastic declines in northern parts of its range (NatureServe 2009). Its breeding habitat has become fragmented as the landscape has been converted from grassland to other uses (Schneider et al. 2011). Loss of native shortgrass prairie has been detrimental to the wintering range of MCLO as well (Sedgwick 2004). Management practices that maintain higher vegetation structure create conditions unsuitable for MCLO (Schneider et al. 2011). And, the elimination of black-tailed prairie dog (*Cynomys ludovicianus*) colonies impacts MCLO (Schneider et al. 2011).

High predation rates seem to limit populations of MCLO more so than food availability (Greer and Anderson 1989). Predators of MCLO include thirteen-lined ground squirrels (*Spermophilus tridecemlineatus*), short-eared owls (*Asio flammeus*), Swainson's hawks (*Buteo swainsoni*), and loggerhead shrikes (*Lanius luduvicianus*) (Dubois 1937, With 1994, Sedgwick 2004). Other likely predators in Nebraska include American badgers (*Taxidea taxus*), Wyoming ground squirrels (*S. elegans*), striped skunks (*Mephitis mephitis*), red fox (*Vulpes vulpes*), swift fox (*V. velox*), coyotes (*Canis latrans*), long-tailed weasels (*Mustela frenata*), deer mice (*Peromyscus maniculatus*), American crows (*Corvus brachyrhyncos*), and snakes (Dubois 1937, Mickey 1943, Felske 1971, Greer and Anderson 1989, With 1994, Sedgwick 2004). As may be expected, nestlings have been much more susceptible to predation than adults during the breeding season (Felske 1971).

Species Description

The breeding male is streaked above, with black crown, whitish face, black whisker markings, and a black band across his breast. The female and winter male are duller in color and more streaked. MCLO can be identified by its tail pattern in flight, which is largely white, with central pair of tail feathers black and with narrow black band at tip. It has a large conical bill. Average size of MCLO is 15 cm (6 in) long; wing span is 28 cm (11 in); and weight is 23 g (0.8 oz).

Habitat and Range

MCLO are typically found in sparse shortgrass prairies, plowed and stubble agricultural fields, and areas with little vegetative litter or bare ground (Felske 1971, Dechant et al. 2002). However, historically MCLO avoided agricultural fields (DuBois 1935, Mickey 1943, Dechant et al. 2002), suggesting that they only moved into fields when shortgrass prairie became scarce. They frequent prairie dog communities. In Nebraska, they occupy locations in the panhandle during migration and the breeding season (Sharpe et al. 2001, Panella 2010, Schneider et al. 2011).

Known territory requirements vary by region with a range from 0.5-1.5 ha (Dechant et al. 2002). And while a patch of habitat may be just large enough for MCLO nesting attempts, it is unknown as to the lower size limits where number of nest failures begins to increase.

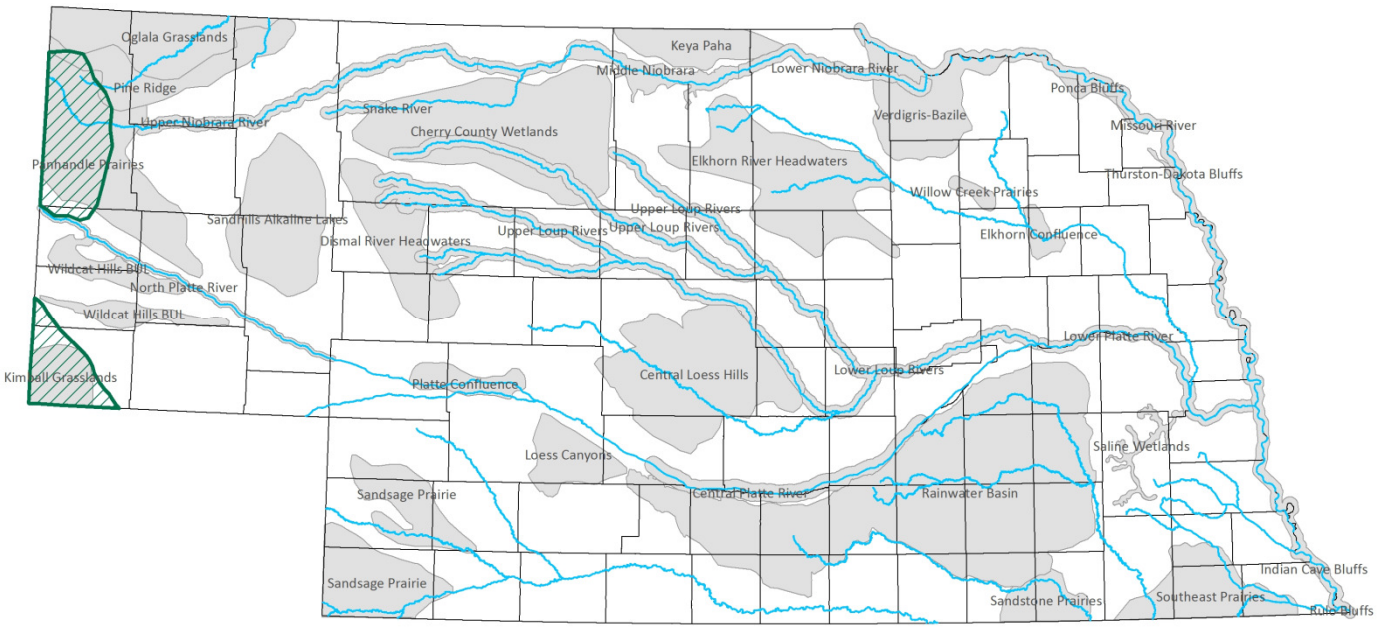

FIGURE 1. Current range of MCLO in Nebraska based on field observations, museum specimens, and expert knowledge. Map courtesy of Nebraska Natural Heritage Program, Nebraska Game and Parks Commission.

Dispersal and Migration

Virtually no data are available on the dispersal of MCLO. Since 1960, only one of 667 banded MCLO was encountered again (USGS 2011). In studies, banded juveniles have not been found again, indicating wide dispersal from breeding ground or high mortality (With 2010). MCLO are migratory; breeding and wintering range is entirely within North America (With 2010). MCLO winter in southwestern U.S. and northwestern Mexico (Mickey 1943, Krause 1968). There are no data on individual distances traversed during migration (With 2010).

Diet

MCLO feed primarily on insects (e.g., grasshoppers, beetles, and moths) and other arthropods in the summer and ingest seeds from grasses and forbs in fall and winter (With 2010).

Reproduction

MCLO probably can breed by 1 year of age (With 2010). The breeding season occurs mid-March to mid-August (With 2010). But the species may remain on breeding grounds as late as October to November (Johnsgard 1980). The birds nest in dry, shortgrass plains. Pairs may nest in close proximity to each other (Mickey 1943, Felske 1971). The female lays 2-5 pale green eggs with dark brown and black spots in a grass-lined hollow or scrape on open ground (With 2010). Nests are sometimes associated with dung from cattle (With and Webb 1993) or horses (DuBois 1935) but usually associated with bunch grasses, some shrubs, or cacti (With 2010). Female incubates 12 days (DuBois 1937, Mickey 1943). Males have been observed performing aerial displays above the nest site (With 2010). Both parents tend young that leave the nest after 10 days and fly 12 days after hatching (DuBois 1923). Some pairs raise second broods; this may be limited by the energy reserves of the female (Felske 1971, With 2010). Subsequent or replacement nests within individual territories may be located an average of 30.4 m from first nest (With 2010). Brown-headed Cowbird (*Molothrus ater*; BHCO) brood parasitism can occur, but it is unclear if this is having a significant effect on MCLO population (Friedmann 1963, Maher 1973, Dechant et al. 2002).

Research and Conservation Strategies

A multitude of factors should be considered before implementing any conservation actions for species. Within the guidelines of state and federal law, the Nebraska Natural Legacy Project recommends: 1) consider, but do not limit options to, scenarios that benefit both the species of interest and property owners, 2) consider species dispersal and landscape context, 3) plan for multiple years, and 4) do no harm. According to PIF, "long-term planning actions are needed to ensure that sustainable populations [of MCLO] are maintained in regions with high responsibility for these species. Actions often target many species at once, for example long-term multi-species monitoring programs, or broad plans/programs targeting suites of species sharing a habitat" (Panjabi et al. 2005).

In Nebraska, conservation considerations should be made for MCLO in at least three Biologically Unique Landscapes: Kimball Grasslands, Oglala Grasslands, and Panhandle Prairies. These landscapes offer the best opportunities for conservation of MCLO within Nebraska based on current knowledge. Landowners may be interested in implementing any of several USDA-NRCS conservation programs on their properties as appropriate that may benefit MCLO and other wildlife: Conservation Reserve Program, Environmental Quality Incentives Program, Wildlife Habitat Incentives Program, Grassland Reserve Program, Farm and Ranch Lands Protection Program, and WILD Nebraska. Given the principal threats identified, conservation efforts for MCLO (summarized in Table 2) may want to employ the following management strategies:

1. Application of Toxaphene on the landscape has caused nestling mortality of MCLO (Dechant et al. 2002). Furthermore, this chemical became a public health concern when it polluted water supplies, and all uses of it in the US were banned by 1990 (EPA 2012). Malathion application at 560 g/ha (8 oz/a) does not seem as lethal (With 2010). Additional pesticide overuse may impact MCLO and public health. Use pesticides sparingly.

2. The size and number of shortgrass prairies has declined. This has caused a decrease in the abundance and distribution of MCLO (Roy 1958, Ligon 1961, Phillips et al. 1964, Oberholser 1974). As permitted, protect MCLO's habitat from further agricultural and urban development (Oberholser 1974, Dechant et al. 2002, With 2010).

3. Fire suppression on lands that were historically subject to periodic burns has increased woody and shrubby vegetation densities. This dense vegetation-type is less suitable for MCLO. Consider prescribed prairie burns during MCLO's non-breeding season to improve the condition of the landscape to short-stature grassland for the birds (Krause 1968, Oberholser 1974, With 2010). Consult "Native Grassland Management Guidelines for Nebraska's Wildlife Management Areas" for prescribed fire recommendations in prairie (Steinauer et al. 2011).

4. MCLO is naturally a species of shortgrass prairie. Limit vegetation height and forb cover because numbers of MCLO are positively correlated with grain stubble and bare ground but negatively associated with vegetation height (Martin and Forsyth 2003, Dechant et al. 2002). Studies suggest that MCLO are more common in summer-fallow and spring cereal fields than in winter wheat where they are essentially absent (Martin and Forsyth 2003). Grazing can keep habitat suitable for MCLO. Breeding densities were as high as 40.8-46.9 pairs/100 ha in pasture grazed 60% above-ground plant material (Giezentanner 1970), but a somewhat lower percentage of grazing may be preferable for management of MCLO. Consult "Native Grassland Management Guidelines for Nebraska's Wildlife Management Areas" for other grazing considerations (Steinauer et al. 2011).

5. To limit predation of nests of MCLO, keep grazing to no more than 40% annual above-ground net primary production (With 1994). For vegetation that is already short, prevent overgrazing, especially if precipitation is low (Oberholser 1974, Ryder 1980, Dechant et al. 2002). Also limit shrub density within 1 m of nesting locations, because a MCLO nest placed near shrubs is 2-3 times more likely to be depredated (With 1994). More prevalent nest predators near shrubs likely include thirteen-lined ground squirrels (With 1994).

6. The extermination of prairie dogs, a keystone species, may adversely affect MCLO (Sedgwick 2004, Schneider et al. 2011). The removal of prairie dogs can cause habitat and landscape changes that decrease overall biodiversity (Sedgwick 2004). Advocate for and educate others on the importance of sustainable populations of prairie dogs as members of healthy ecological systems for MCLO and many other species.

7. The infrastructure required for oil, gas, and wind developments can fragment wildlife habitat and affect many species. Potential negative effects on MCLO have not been studied, but it is worthwhile to minimize these types of disturbances on this Tier I species (Knopf 1996, Sedgwick 2004). It is estimated that 82% of avian fatalities at wind

turbines, excluding those in California, are of migratory passerines (Erickson et al. 2002). Applicable best management practices for prairie passerine interactions with wind development are available from the Colorado Renewables and Conservation Collaborative (CRCC 2010).

Information Gaps

Research priorities for management of MCLO include studies on the effects of landscape management practices on MCLO (With 2010). Also, we do not have a clear understanding of prey responses (e.g., grasshoppers) to habitat changes (Sedgwick 2004). There is a need to determine natal dispersal of MCLO. Band returns and re-sightings for this species are severely lacking. We do not have measurements of lifetime reproductive success (With 2010). Information is needed regarding appropriate patch size for nesting success of MCLO and reducing susceptibility to BHCO nest parasitism (Dechant et al. 2002). There are no population genetics datasets for the MCLO (With 2010). Research to better comprehend threats and needs in MCLO's wintering range could also benefit the species (Sedgwick 2004).

Considerations for Additional Species

At-risk species and keystone species that share habitat with MCLO should be considered in management plans for MCLO. On-the-ground conservation for MCLO may affect or be influenced by at-risk species that can be found in the same Biologically Unique Landscapes as MCLO. Table 1 lists a sample of at-risk species you may want to consider while planning for MCLO's habitat on the landscape. This list will not apply to all sites that MCLO occupy nor is the list all-inclusive.

TABLE 1. At-risk and other species identified in the Nebraska Natural Legacy Project that inhabit biologically unique landscapes with MCLO (Schneider et al. 2011) may necessitate consideration in habitat management plans.

Animals

- Colorado Rita Dotted-blue (*Euphilotes rita coloradensis*)
- Nine-spotted Ladybird Beetle (*Coccinella novemnotata*)
- Regal Fritillary (*Speyeria idalia*)
- Baird's Sparrow (*Ammodramus bairdii*)
- Burrowing Owl (*Athene cunicularia*)
- Chestnut-collared Longspur (*Calcarius ornatus*)
- Ferruginous Hawk (*Buteo regalis*)
- Long-billed Curlew (*Numenius americanus*)
- Mountain Plover (*Charadrius montanus*)
- Cheyenne Northern Pocket Gopher (*Thomomys talpoides cheyennensis*)
- Pierre Northern Pocket Gopher (*Thomomys talpoides pierreicolus*)
- Black-tailed Prairie Dog (*Cynomys ludovicianus*)
- Swift Fox (*Vulpes velox*)

Plants

- Blowout Penstemon (*Penstemon haydenii*)
- Barr's Milkvetch (*Astragalus barrii*)
- Short's Milkvetch (*Astragalus shortianus*)
- Colorado Butterfly Plant (*Gaura neomexicana coloradensis*)
- Gordon's Wild Buckwheat (*Eriogonum gordonii*)
- Large-spike Prairie-clover (*Dalea cylindriceps*)

TABLE 2. Summary of suggested management for MCLO in Nebraska. The following should be interpreted as general guidelines based on the best available knowledge at the time of this publication. See Research and Conservation section of this document for more detail and Literature Cited section for sources of additional information.

FOCUS	STRATEGIES	MITIGATION and CONSIDERATIONS
Limit pesticide use	Organophosphate (e.g., Malathion) application should not exceed 560 g/ha (8 oz/a)	MCLO can serve as a natural control of grasshoppers (a primary food source)
Shortgrass/mixedgrass prairie conservation	Develop and implement programs to preserve, conserve , and manage native prairie	Habitat objective should be at least 1 ha (approx. 2.5 acres) for adequate breeding territories
Prescribed prairie fire	Conduct burns outside of nesting season (e.g., before mid March; in November)	Habitat objective to reduce shrubs/woody vegetation within 1 m of nesting sites
Relatively heavy grazing	Keep native grasses short and reduce forbs	Grazing level should be approx. 40% consumption of the above-ground plant material
Discourage heavy predation on MCLO	In addition to the above considerations, prevent overgrazing (60% or more above-ground plant material)	Extremely bare ground may increase predation, particularly of nestlings
Prairie dogs as a keystone species	Sustain prairie dogs at an ecologically-functional level	MCLO are often associated with prairie dog towns
Minimize development of energy infrastructure	Discourage oil, gas, and wind developments in hotspots for MCLO, especially in native prairies and major migration corridors	Rehabilitate native prairies of at least 1 ha; establish conservation easements; negotiate management agreements with energy companies

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