

Management Plan for the McCown's Longspur (*Rhynchophanes mccownii*) in Canada

McCown's Longspur



2014

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PREFACE

The federal, provincial, and territorial government signatories under the Accord for the Protection of Species at Risk (1996) agreed to establish complementary legislation and programs that provide for effective protection of species at risk throughout Canada. Under the *Species at Risk Act* (S.C. 2002, c.29) (SARA), the federal competent ministers are responsible for the preparation of management plans for listed species of special concern and are required to report on progress within five years.

The Minister of the Environment and the Minister responsible for the Parks Canada Agency are the competent ministers under SARA for the management of McCown's Longspur and have prepared this management plan as per section 65 of SARA. It has been prepared in cooperation with the Governments of Alberta and Saskatchewan as per section 66(1) of SARA.

Success in the conservation of this species depends on the commitment and cooperation of many different constituencies that will be involved in implementing the directions set out in this plan and will not be achieved by Environment Canada and the Parks Canada Agency, or any other jurisdiction alone. All Canadians are invited to join in supporting and implementing this management plan for the benefit of the McCown's Longspur and Canadian society as a whole.

Implementation of this plan is subject to appropriations, priorities, and budgetary constraints of the participating jurisdictions and organizations.

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EXECUTIVE SUMMARY

McCown's Longspur is a stout, sparrow-sized grassland bird (family Calcariidae) that breeds in the short- and mixed-grass prairie of northwestern North America. In Canada its breeding range is restricted to southern Alberta and southwestern Saskatchewan. The winter range includes the southwestern United States and northwestern Mexico. Approximately 23% of the species' global breeding range occurs in Canada.

As of 2010, the Canadian population was estimated to be between 50,000 and 500,000 individuals. The population has declined approximately 10% per year over a 40 year period commencing in the late 1960's. McCown's Longspur was listed as a Species of Special Concern under Schedule 1 of the *Species at Risk Act* in 2007 because of drastic population declines and continuing threats.

McCown's Longspur breeds and winters in short-grass and mixed-grass prairie with sparse vegetative cover. This may explain their recent tendency to use cultivated lands as the amount of grassland habitat declined steeply during the 20th century.

The major threats to the species are the loss and degradation of grassland habitat due primarily to conversion of native habitat to cropland and forage production, and alteration to grazing practices and fire regimes. Other threats include loss and degradation of wintering habitat, nest predation pressure, conversion of native habitat to industrial infrastructure, tillage and seedling operations, application of pesticides and inclement or extreme weather conditions.

The objective of this management plan is to maintain or improve the recent (since 1996) population and distribution of McCown's Longspur in Canada. This management objective should be achievable by conserving large tracts of grasslands (rangeland) and by promoting and implementing management practices that effectively minimize losses of nests to agricultural machinery and reduce exposure of the species to harmful pesticides.

Conservation measures that are required to achieve the management objective are outlined in this plan along with research required to address knowledge gaps. Such measures will help focus conservation actions. The adoption of suitable management practices and the conservation of rangeland, as well as outreach and communication programs, ongoing population monitoring and research that address important knowledge gaps will be key management actions for this species.

TABLE OF CONTENTS

PREFACE I

ACKNOWLEDGMENTS..... I

EXECUTIVE SUMMARY..... II

1. COSEWIC* SPECIES ASSESSMENT INFORMATION..... 1

2. SPECIES STATUS INFORMATION 1

3. SPECIES INFORMATION 2

 3.1. Species Description 2

 3.2. Populations and Distribution 2

 3.3. Needs of McCown's Longspur 5

4. THREATS 7

 4.1. Threat Assessment 7

 4.2. Description of Threats 8

5. MANAGEMENT OBJECTIVE PRIOR TO THE MOST RECENT DECLINE..... 11

6. BROAD STRATEGIES AND CONSERVATION MEASURES 12

 6.1. Actions Already Completed or Currently Underway 12

 6.2. Broad Strategies 13

 6.3. Conservation Measures 13

7. MEASURING PROGRESS 14

8. REFERENCES..... 15

APPENDIX A: MCCOWN'S LONGSPUR CONSERVATION STATUS 19

APPENDIX B: EFFECTS ON THE ENVIRONMENT AND OTHER SPECIES 20

1. COSEWIC* SPECIES ASSESSMENT INFORMATION

Date of Assessment: April 2006

Common Name (population): McCown's Longspur**

Scientific Name: *Calcarius mccownii***

COSEWIC Status: Special Concern

Reason for Designation: This species has experienced a severe population decline since the late 1960s. This trend appears, however, to have slowed in the past decade. The species is threatened by continuing habitat loss and degradation. It may also risk exposure to pesticides associated with increased breeding in cultivated fields.

Canadian Occurrence: Alberta, Saskatchewan

COSEWIC Status History: Designated Special Concern in April 2006.

* COSEWIC – Committee on the Status of Endangered Wildlife in Canada

** At the time of this assessment, the scientific name for McCowan's Longspur was *Calcarius mccownii*. It has since been changed to *Rhynchophanes mccownii*.

2. SPECIES STATUS INFORMATION

Globally, McCown's Longspur (*Rhynchophanes mccownii*) was ranked by NatureServe as apparently secure (G4) in 2003 (NatureServe 2012). The species is also considered apparently secure in both the United States (N4B, N4N) and Canada (N4B). In Saskatchewan, it is ranked as vulnerable (S3) overall but its breeding population is considered to be apparently secure (S4B). In Alberta it is ranked as vulnerable to apparently secure (S3S4) (NatureServe 2012). The species' conservation status ranges from "presumed extirpated" to "apparently secure" in various American states (Appendix A).

Approximately 23% of the McCown's Longspur's global breeding population occurs in Canada (Rocky Mountain Bird Observatory [RMBO] 2012). The species has been listed since December 2007 as Special Concern under Schedule 1 of the federal *Species at Risk Act* (SARA). It is not listed provincially in either Saskatchewan or Alberta. In the United States, McCown's Longspur is not listed federally or by any of the states where it occurs, however it has been identified as a national Bird of Conservation Concern indicating that it could become a candidate for listing under the *Endangered Species Act* if no conservation measures are undertaken (U.S. Fish and Wildlife Service 2008). The species is a Partners in Flight's Continental Stewardship Species (RMBO 2012) and a high priority species for the Canadian Bird Conservation Region 11 (Environment Canada *draft*).

3. SPECIES INFORMATION

3.1. Species Description

McCown's Longspur is a sparrow-sized bird (length: 14-16cm, mass: 25-29g) with a stout bill and a distinctive white tail marked by a black "T" (black center and tip) which is noticeable in flight when its tail is fanned (DuBois 1937; Rising 1996; Dunn and Alderfer 2006). Breeding males are grey with a visible breast band as well as a black bill, crown, and malar stripe; wings are greyish-brown with a chestnut wing bar (Aslop 2002). Breeding females lack the black plumage of males, are greyish brown with brown streaking on the crown, back, and rump, have lighter under-parts, faint chestnut colouring on the median coverts, and a pale bill. In winter, males are similar in appearance to breeding females but still retain a faint black breast band and a chestnut wing bar (Aslop 2002). Wintering females lack the distinctive streaking (Rising 1996; Dunn and Alderfer 2006).

McCown's Longspur can also be identified by the male's characteristic warbling "flight song" and territorial flight display. Breeding males fly high up in the air and descend like a "parachute" with their wings spread upwards, tail fanned, singing and floating all the way back to the ground (DuBois 1937). In flight, males might be mistaken for Chestnut-collared Longspur (*Calcarius ornatus*), however the breeding Chestnut-collared Longspur male is very distinctive with an entire black breast, belly, and wing patch, a rich chestnut collar, and a white tail marked with a visible black triangle (Aslop 2002).

3.2. Populations and Distribution

McCown's Longspur is native to western North America and its breeding range is restricted to the short- and mixed-grass prairie of the northwestern Great Plains (Figure 1; With 2010). Since the 1900s, its breeding range has drastically contracted (Stewart 1975) and the species is now extirpated from southeastern Saskatchewan, large areas of North and South Dakota, western Minnesota, and Oklahoma (Kantrud and Kologiski 1982; Sedgwick 2004; With 2010). The current breeding distribution extends from southern Alberta and southwestern Saskatchewan south through Montana and Wyoming to north-central Colorado and western Nebraska (Rising 1996; Sedgwick 2004; With 2010; NatureServe 2013). Within this range the distribution has been described as fragmented and disjunct (Sedgwick 2004; COSEWIC 2006; With 2010) with sporadic breeding occurrences in southern Montana and northern Wyoming (J. Carlson pers. comm. 2012). Breeding ranges can shift over time in response to changing climatic and moisture conditions (With 1994; Sedgwick 2004; COSEWIC 2006).

The winter range includes the prairies of the southwestern United States and northwestern Mexico. The winter range includes southwestern Oklahoma, Texas, southern New Mexico, southeastern Arizona and northern Mexico, from northern Sonora and Chihuahua to northern Durango (Sedgwick 2004; With 2010; Macias-Duarte et al. 2011). Occasional winter sightings include southern California, Idaho, Utah, and Nevada, western Kansas and southeastern Colorado (Sedgwick 2004; COSEWIC 2006, With 2010). It is estimated that about 42% of the population winters in Mexico (RMBO 2012). Migratory grassland birds such as McCown's Longspur may have low site fidelity on the wintering grounds and their movements may be largely influenced by annual changes in the distribution of resources required for winter survival (Pool et al. 2012).

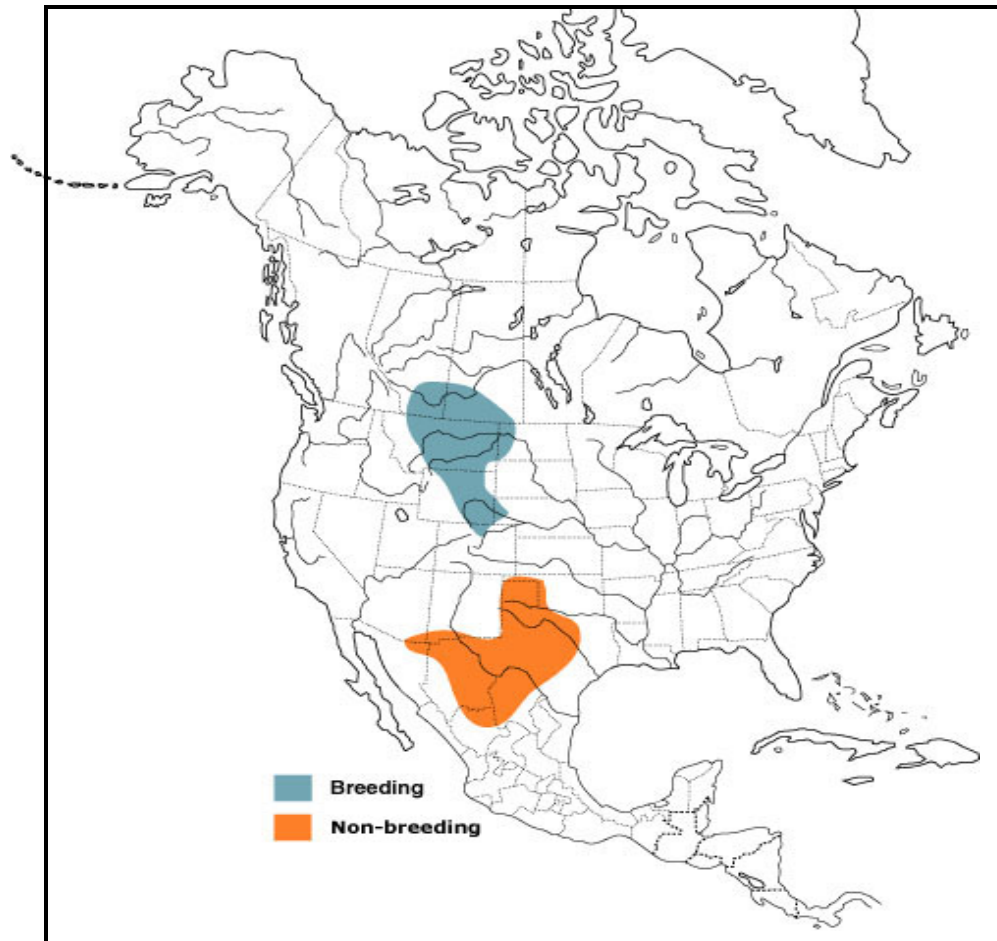


Figure 1. Distribution of McCown's Longspur in North America (from With 2010).

Canadian Range

In Canada, McCown's Longspur breeds in southeastern Alberta and southwestern Saskatchewan. The breeding range in Alberta is restricted to the Grassland Natural Region, where records are found as far west as Lethbridge, and as far north as Drumheller, Hanna and Youngstown (Semenchuk 1992; Rising 1996). However, breeding records are primarily concentrated south of the Red Deer River (COSEWIC 2006, Federation of Alberta Naturalists 2007). In Saskatchewan, the breeding range encompasses the Prairie Ecozone, extending from the southwestern corner of the province as far north as Saskatoon and as far east as Regina (Smith 1996; COSEWIC 2006). However, current breeding records are mostly restricted to the Mixed-grass ecoregion in the southwestern part of the province. McCown's Longspur occurs in low numbers within the Cypress Upland ecoregion but are absent from high elevation areas (Environment Canada 2010; S. Davis pers. comm. 2013). Although unlikely (COSEWIC 2006), it has been reported that the breeding range previously extended into Manitoba (Taverner 1927 in Sedgwick 2004).

The extent of occurrence in Canada was estimated to be 212,000 km² and the area of occupancy (AO)¹ was estimated to be 67,000 km². However the AO was based on the remaining native grassland available and since not all native grassland is suitable habitat, this is an overestimate (COSEWIC 2006). Additionally, since the COSEWIC status report was written, the Canadian range has contracted by as much as 10% (RMBO 2012), thus these estimates are likely much lower.

Global Abundance and Trend Data

There is no historical data on McCown's Longspur population abundance but due to the drastic reduction of the breeding range across North America the population has been reported to have declined from the turn of the century, especially from 1905-1930 (Stewart 1975; Sedwick 2004). Similar declines were reported on the wintering grounds, particularly from Arizona and Texas, and again after 1940 in the Texas panhandle (Sedwick 2004).

The North American population was estimated to be 560,000 individuals based on Breeding Bird Survey (BBS) data from 1998-2007 (RMBO 2012, Blancher et al. 2013). However this estimate is imprecise due to the species' small population size, erratic population fluctuations, and the low number of survey routes on which the species is observed (n=106) (COSEWIC 2006; Sauer et al. 2011). Across the entire breeding range, long-term trends are negative (a decline averaging 1.2% per year from 2000-2010) whereas for U.S it is slightly positive but non-significant (Sauer et al. 2011). Abundance on wintering grounds tends to vary annually (Figure 2) and this has been attributed to changes in habitat quality and available resources which may be a function of summer precipitation (Pool et al. 2012). Large annual population fluctuations in species distribution and abundance throughout the wintering range poses a challenge to determine population trends.

Canadian Abundance and Trend Data

Based on Breeding Bird Survey data from 1998 to 2007 the Canadian population has been estimated to be 130,000 individuals (RMBO 2012, Blancher et al. 2013). The accuracy of this estimate is considered poor however, and the true population in Canada was estimated to be between 50,000 and 500,000 birds (Environment Canada 2009). This estimate is 50% less than the 1990s estimate (COSEWIC 2006). Long term monitoring data from the BBS, shows a strong decline in numbers of McCown's Longspur (Figure 2). Analyses of BBS trend data indicate that the population declined from the 1970s to 2009 at a rate of 10.6% per year (Environment Canada 2010). A similar rate of decline (-10.7% per year) was recorded more recently during the period 1999 to 2009 (Environment Canada 2010), suggesting that the Canadian population of McCown's Longspur has not stabilized in recent years, as was reported by COSEWIC (2006).

¹ AO -The smallest area that is necessary and occupied by the species, excluding unsuitable habitat (COSEWIC 2010).

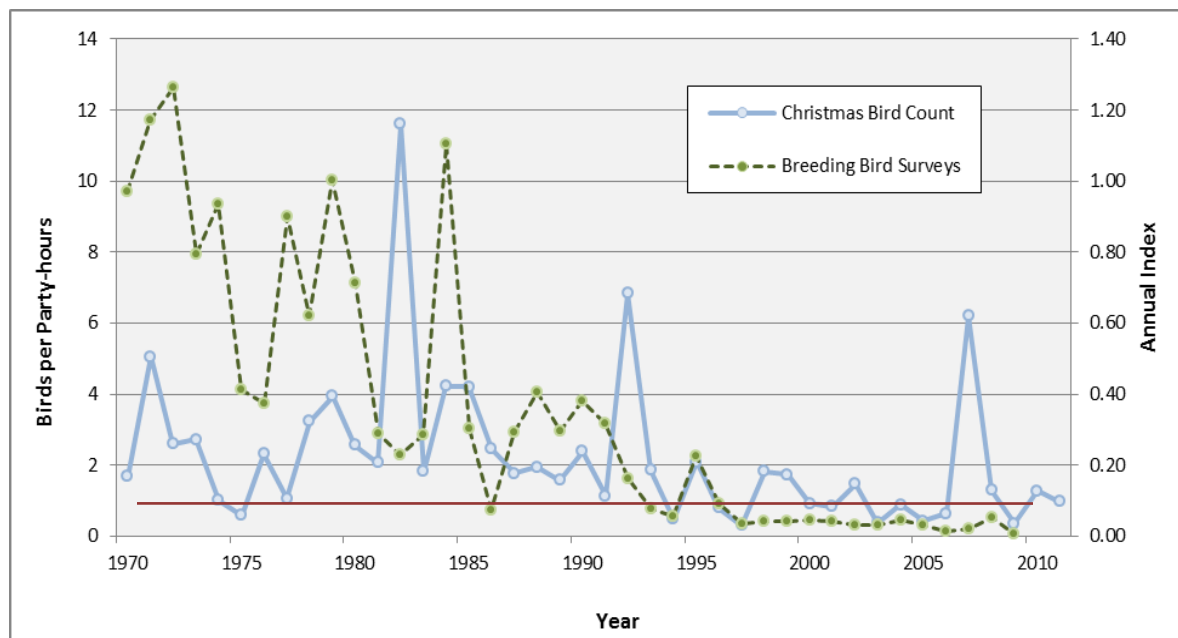


Figure 2. Population trend data for McCown's Longspur. Data is based on Christmas Bird Count on wintering grounds from 1970 to 2011 and Breeding Bird Surveys on Canadian routes from 1970 to 2009 (data obtained from Environment Canada 2010 and Christmas Bird Count, 1970 to 2011). The red line indicates the 1996 management objective for Canada based on the Breeding Bird Survey annual index (see section 5).

3.3. Needs of McCown's Longspur

Habitat and Biological Needs

Breeding Habitat

McCown's Longspur breeds in short-grass prairie characterized by open, arid, sandy soil with sparse litter and vegetative cover (Felske 1971; Maher 1973; Dechant et al. 1999; With 2010). Nesting areas can be relatively bare with as much as 52% exposed soils (Creighton and Baldwin 1974) and an average vegetation height of only 5 cm (Creighton and Baldwin 1974). Dominant vegetation consists of short-grasses like Blue Grama (*Bouteloua gracilis*) which are interspersed with cacti (e.g., *Opuntia polyacantha*) and limited midgrasses (e.g., *Hesperostipa comata*, *Koeleria macrantha*, *Pascopyrum smithii*) (Felske 1972).

Although the core range of the McCown's Longspur includes true short-grass prairie, structurally similar habitats, such as mixed-grass prairie that has been moderately or heavily grazed, are also commonly used (Giezentanner 1970, Felske 1971; Maher 1973; Ruder 1980; Kantrud and Kologiski 1982). In southern Alberta, McCown's Longspur was more common and abundant on season-long grazed native pastures when compared to tame, early-season grazed (grazed before July), or deferred (grazed after July) pastures (Prescott and Wagner 1996). The species avoids idled or deferred native grassland (Felske 1971; Prescott et al. 1993; Prescott and Wagner 1996). McCown's Longspur abundance did not differ significantly between summer and fall grazed

pastures (Dale and Bélair unpubl. data). Regional soil types, vegetation structure, precipitation, and climate all likely interact and influence this species breeding habitat selection (Ryder 1980, Kantrud and Kologiski 1982).

Males establish and defend unique territories upon arrival on the breeding grounds (Mickey 1943, Felske 1971). Territories do not overlap and range in size from 0.6 to 1.4 ha (Felske 1971; Greer and Anderson 1989; With 2010). Territories are frequently located on hilltops where the microclimate is favorable for early snow melt and drier, warmer nests and where conditions may be better for feeding and aerial territorial displays (Giezentanner 1970, Felske 1971, Creighton and Baldwin 1974). Nests which are built by the female are located on barren ground on south or southwestern hillsides (Felske 1971) in shallow depressions, either in the open or placed beside a grass clump, cactus, low shrub, or sometimes cow patties (With 1994, 2010).

Wintering Habitat

Winter habitat is similar to breeding habitat and consists of predominately open, short grass prairie, overgrazed pastures, plowed fields, desert grasslands, dry lake beds, and playas (shallow prairie wetlands) (Smith 2004; With 2010). Dominant vegetation includes a matrix of Blue Grama and Buffalograss (*Bouteloua dactyloides*) interspersed with other short grass species (Grzybowski 1982; With 2010). Large numbers of McCown's Longspur have also been found to inhabit Black-tailed Prairie Dog (*Cynomys ludovicianus*) colonies in the Chihuahua desert of northern Mexico (Macias-Duarte et al. 2011). In New Mexico it has been associated with wintering species like Burrowing Owls (*Athene cunicularia*) and Horned Larks (*Eremophila alpestris*) (New Mexico Partners in Flight 2007).

During both winter and summer, adult diets primarily consist of seeds (Maher 1974; Grzybowski 1982; With 2010). Maher (1974) found that diet of adult McCown's Longspur in Saskatchewan consisted of 60-90% seeds throughout the breeding season (May to August), and the remainder was made up of ants (Hymenoptera: Formicidae), grasshoppers (Orthoptera: Acrididae), and various arthropods. When compared with several other sympatric grassland species, the animal food consumed by McCown's Longspur had the lowest diversity (Maher 1974). Nestling diet is predominantly comprised of grasshoppers, the percentage of which increases as breeding season progresses (Creighton and Baldwin 1974, Maher 1974). Beetles, moths, and butterflies, along with other taxa, make up the rest of the diet.

4. THREATS

4.1. Threat Assessment

Table 1. Threat Assessment Table.

Threat	Level of Concern ¹	Extent	Occurrence	Frequency	Severity ²	Causal Certainty ³
Habitat Loss and Degradation						
Conversion of native habitat to cropland and forage production	High	Widespread	Current	Continuous	High	High
Loss and degradation of wintering habitat	Medium	Widespread	Current	Continuous	Unknown	Low
Conversion of native habitat to industrial development	Medium	Widespread	Current	Continuous	Medium	Medium
Changes in Ecological Dynamics or Natural Processes						
Alterations to natural grazing and fire regimes	Medium	Widespread	Current	Continuous	Medium	Medium
Nest predation pressure	Medium	Widespread	Current	Continuous	Medium	Medium
Accidental Mortality						
Tillage and seeding operations	Medium	Widespread	Current	Continuous	Medium	Low
Pollution						
Application of pesticides	Low	Widespread	Current	Continuous	Unknown	Low
Climate and Natural Disasters						
Inclement or extreme weather conditions	Low	Widespread	Anticipated	Recurrent	Unknown	Low

¹ Level of Concern: signifies that managing the threat is of (high, medium or low) concern for the conservation of the species, consistent with the population and distribution objectives. This criterion considers the assessment of all the information in the table.

² Severity: reflects the population-level effect (High: very large population-level effect, Moderate, Low, Unknown).

³ Causal certainty: reflects the degree of evidence that is known for the threat (High: available evidence strongly links the threat to stresses on population viability; Medium: there is a correlation between the threat and population viability e.g. expert opinion; Low: the threat is assumed or plausible).

4.2. Description of Threats

Threats are listed in order of decreasing level of concern. Threats ranked as “low level of concern” in Table 1 are not described in this section.

Conversion of Native Habitat to Cropland and Forage Production

In Alberta and Saskatchewan, about 57% and 79% of native grasslands have been lost, primarily, though not exclusively, to agriculture in the past century (Nernberg and Ingstrup 2005). By 1996, cropland, summer fallow and improved pasture accounted for about 70% of all land use in the Canadian prairies (Agriculture and Agri-Food Canada 2000). While most of the prime land was converted long ago, some conversion has continued to occur in recent years. Between 1985 and 2001, about 6-8% and 8-11% of remaining native grasslands were converted to other uses within different grassland ecoregions of Saskatchewan and Alberta, respectively (Watmough and Schmoll 2007). Most of these losses were the result of small remnant grassland areas within larger mosaics of cultivated land being converted to cropland (Watmough and Schmoll 2007). In western Canada, it is anticipated that the bio-fuel industry will grow rapidly in the coming years in order to meet a federal regulation enacted in 2010, requiring an average of 5% renewable energy content in gasoline. The growth in this industry is anticipated to increase competition for grains among livestock, food and fuel sectors, resulting in the sacrifice of forage and pasturelands to grain and biomass production, and to a shift in livestock production to increasingly marginal land, which is environmentally fragile (Alberta Agriculture and Rural Development 2008). There is concern that the pending transfer of management of federal community pastures back to the provinces and possibly to the private sector could result in conversion of grassland habitat to cropland or tame pasture. However, this concern is based solely on speculation.

Declines in McCown's Longspur abundance and distribution have been attributed to land use practices that destroy native grassland (With 2010). Historically, the species was not known to breed in agricultural cropland (DuBois 1935, Mickey 1943). More recently it has been reported that the conversion of grassland to cropland may lead to McCown's Longspur occupying croplands, particularly small-grain stubble fields (wheat, barley, oats), summer fallow (field taken out of production for a year), and spring-seeded crops with developing sprout growth (Stewart 1975; Martin and Forsyth 2003). Birds nesting in cropland may experience relatively low reproductive success because of nest losses due to farm machinery (Best 1986; Lokemoen and Bieser 1997) or exposure to pesticides (COSEWIC 2006)(see following sections). Although speculative at this point, this shift in habitat use from rangeland (large tracts of grasslands) to cropland may result in a greater proportion of the population breeding in ecological sink habitats (Pulliam 1988) resulting in low rates of survival and reproduction and ultimately population declines.

Loss and Degradation of Wintering Habitat

Threats on the wintering grounds are likely contributing to the current population decline (Felske 1971; Stewart 1975; Montana Partners in Flight 2000), however, for many grassland species lack of data on migration routes and wintering sites, specifically, habitats used, wintering ecology, and the severity and scope of the each threat associated with these habitats, makes it challenging to understand the causes of the widespread declines (Knopf 1994; Environment Canada *draft*). Nevertheless, threats on the wintering grounds, as described below, are likely similar to many of those present on the breeding grounds.

Approximately 58% of the McCown's Longspur population winters in the United States (RMBO 2012). Thirty percent of its wintering range occurs on public lands (North American Bird Conservation Initiative United States Committee [NABCIUSC] 2011). Major challenges identified on public lands include the prominent demand for natural resources especially by the energy sector, as well as invasion of invasive species, the need to restore natural fire regimes across the landscapes, and the growing urban population (NABCIUSC 2011). In Texas, where the majority of land is privately own, the most significant land change trends reported for 2007 were ownership fragmentation, conversion of native rangelands to non-native pastures, and rapid urbanization (Wilkins et al. 2009). Ownership fragmentation which occurs when large farms and ranches are divided into smaller ones can negatively impact wildlife conservation and management (Wilkins et al. 2009).

Within the Chihuahua desert of northern Mexico where the species is known to winter, the reduction by as much as 73% of Black-tailed Prairie Dog populations (Macias-Duarte et al. 2011) likely has had a direct impact on short-grass specialists like McCown's Longspur.

Alterations to Natural Grazing Practices and Fire Regimes

McCown's Longspur is indigenous to native short-grass prairie and short, sparse mixed-grass prairie, in which they co-evolved with grazing ungulates (Knopf 1994; With 1994). Historically, the growth and spread of woody vegetation in grasslands was limited by frequent fires and grazing by American Bison (*Bison bison*), Pronghorn (*Antilocapra americana*), and prairie dogs (*Cynomys* sp.) (Knopf 1994). The prairie landscape has changed dramatically, now containing a mosaic of pastures, cultivated lands and areas of human development. Shrubs and trees have fragmented and encroached onto the grasslands partly due to fire suppression, and lack of or reduced grazing (Knopf 1994; With 1994) as well as planting of shrubs to protect farm yards and reduce soil erosion. Although McCown's Longspur avoids dense stands of woody vegetation, they will nest in association with short, sparse shrubs. With (1994) found that half of the McCown's Longspur that nested in moderately grazed pastures had nests that were associated with shrubs. However, nests placed beside shrubs were 2-3 times more likely to be predated than nests associated with other cover types (i.e., cactus and grass). With (1994) postulated that McCown's Longspur may not have evolved nest-placement strategies to reduce predation in lightly to moderately grazed pastures.

McCown's Longspur's use of grassland varies according to grazing practices. Pasture management that produces tall, thick grass are not suitable whereas management that yields short, sparse vegetation are preferred (Prescott et al. 1993; Prescott and Wagner 1996; reviewed by Dechent et al. 2002). Rangeland management that strives to increase the range condition/health of pastures may lower habitat suitability for McCown's Longspur, particularly if there is an increase in the density and height of grass cover.

Conversion of Native Habitat to Industrial Development

McCown's Longspur was not detected within 50m of a natural gas well pad in southwestern Saskatchewan (Kalyn-Bogard 2011). However, abundance was not influenced by gas well density or proximity, but rather was most influenced by vegetation structure (Bogard and Davis in review). More research is required to determine the effects of natural gas and oil development on McCown's Longspur populations.

Nest Predation Pressure

Nest predation is the primary cause of reproductive failure (Greer and Anderson 1989; With 1994; Sedgwick 2004). Thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*) has been observed preying on nests (With 1994) and several other mammalian, avian, and reptilian species are suspected predators (DuBois 1937; Mickey 1943; Felske 1971; Greer and Anderson 1989; With 2010). Predation rates are generally high, ranging from 30-75% of nests (With 1994, With 2010). Increases in predator populations, or changes in vegetation that influence foraging success, may cause lower longspur reproductive success. Nest predation appears to be influenced by nest-site vegetation (With 2010). With (1994) found that McCown's Longspur nests associated with shrubs were 2-3 times more likely to be predated than nests not associated with shrubs. Not only do shrubs provide cover for longspur nests, but also for ground squirrels that use shrubs for cover while foraging (With 1994).

Tillage and Seeding Operations

McCown's Longspur is often observed in cropland (McMaster and Davis 1998; Martin and Forsyth 2003; Dale et al. 2005). Nests in cropland are susceptible to being destroyed by agricultural machinery when field operations coincide with the nesting period. Best (1986) suggested that losses of nests to agricultural machinery could effectively render crop fields 'ecological traps' for birds attracted to nesting in those fields. Lokemoen and Bieser (1997) reported that nesting success of grassland birds was relatively low under different types of tillage regimes. However the scarcity of comparative studies of grassland bird nesting success in short grass and mixed grass prairie and associated croplands makes it difficult to assess the severity of this threat.

Application of Pesticides

Due to its preference for sparse vegetation and bare ground, McCown's Longspur regularly nests in cultivated lands (Felske 1971, Martin and Forsyth 2003). During a four year period, an average of 24% (range: 19.4% - 42%) of observations of McCown's Longspur were in

cultivated fields (Dale et al. 2005). Longspurs occupying cultivated lands are likely to be at a higher risk of exposure to pesticides than those nesting in grassland habitat. The direct and indirect effects of recently-used and currently-used pesticides on survival and reproduction of McCown's Longspur are not known.

For example, the productivity and nestling growth of Chestnut-collared Longspur, a similar species were unaffected by experimental spraying of pastures with two grasshopper-control insecticides, even though parents in deltamethrin-sprayed pastures had to forage further from nests to maintain the same prey delivery rates as parents in unsprayed pastures (Martin et al. 2000). The lethal risk of insecticide toxicity has been shown to be a good predictor of declining trends in populations of grassland birds in the United States (Mineau and Whiteside 2013) however it is not known whether such insecticides pose a similar risk to grassland birds in the Canadian prairies.

In years with extremely high numbers of ground squirrels, widespread use of rodenticides, such as 2% strychnine in a grain-based bait, may pose a risk to grassland songbirds. Mortality of Chestnut-collared Longspur, Vesper Sparrow and Horned Lark was reported following experimental application of grain-based rodenticides at ground squirrel burrows (Proulx et al. 2011). However rodenticide use is low in most years (Proulx et al. 2011); thus the risk it poses to grassland songbirds is expected to be low in most years.

Thus, while clear-cut evidence is lacking to support the contention that the use of modern-day pesticides is adversely affecting McCown's Longspur populations, the use by the species of cropland where spraying is likely to occur remains a concern.

5. MANAGEMENT OBJECTIVE PRIOR TO THE MOST RECENT POPULATION DECLINE

The objective of this management plan is to maintain or improve the recent (since 1996) population and distribution of McCown's Longspur in Canada as determined through the North American Breeding Bird Survey. The year 1996 was selected as a benchmark because it represents the year prior to the most recent Canadian population decline (Fig. 3). This species is threatened by degradation and alteration of grassland habitat on the breeding and wintering grounds, and its propensity to inhabit cropland may make the species susceptible to reduced reproduction and survival. This management objective should be achievable by conserving rangeland and by promoting and implementing management practices that effectively minimize loss of nests to agricultural machinery and reduce exposure of the species to pesticides. However, if population declines are due, in part, to presently-undocumented threats on the wintering grounds, this management objective may not be possible to achieve even if the suite of conservation measures described below are implemented throughout the Canadian range.

6. BROAD STRATEGIES AND CONSERVATION MEASURES

6.1. Actions Already Completed or Currently Underway

Since the initial COSEWIC status report in 2006, several agencies have monitored some populations and continue to conserve and manage native prairie for use by McCown's Longspur and other native grassland birds. Although McCown's Longspur breeding ecology, foraging behaviour, diet, physiology, habitat associations, and microhabitat characteristics have been studied (DuBois 1935,1937; Mickey 1943; Kantrud and Kologiski 1982, Greer and Anderson 1989; With and Webb 1993; With 1994; Lynn et al. 2003), there is little information on the species' dispersal, patch size, site fidelity, survivorship, and threats (COSEWIC 2006; With 2010).

Monitoring and Surveys

1. Canadian Wildlife Service has begun to collect McCown's Longspur observation data and integrate it into a spatial database. Observations have been compiled from various agencies and researchers across Saskatchewan and Alberta. The data compiled will assist in the development of an improved distribution map for the species and will be used to develop and test predictive models of occurrence across the species' range.
2. Breeding populations continue to be monitored by the North American BBS (Sauer et al. 2011) and the Grassland Bird Monitoring program (Dale et al. 2005) while wintering populations are monitored by the Christmas Bird Count.

Conservation Planning

3. A multi-species action plan for southwestern Saskatchewan will consider the needs of McCown's Longspur.

Research

4. In Canada most research on the species has consisted of localized studies conducted prior to the 1980s and has focused on habitat selection, diet, and reproductive success in native grasslands (Felske 1971; Maher 1973,1974, 1979). More recent data on habitat use comes from studies investigating the effects of various grazing or agricultural systems on the local grassland bird population (Prescott et al. 1993, Prescott and Wagner 1996, McMaster and Davis 1998, Martin and Forsyth 2003, Dale and Bélair unpubl. data).
5. Research currently underway in Canada involves the effects of cattle grazing and natural gas development on the species.

6.2. Broad Strategies

To achieve the objective of this management plan, four broad strategies are recommended:

1. Adopt land management practices that are beneficial to McCown's Longspur by working collaboratively with land managers and land-users to conserve and protect rangeland through effective stewardship programs.
2. Undertake research projects to address knowledge gaps.
3. Continue to monitor populations to further assess population abundance and distribution.
4. Conduct outreach and communication programs to inform target audiences such as land managers on McCown's Longspur habitat requirements and management strategies.

6.3. Conservation Measures

Table 2. Conservation Measures and Implementation Schedule.

Conservation Measure	Priority	Threats or concerns addressed	Timeline
Habitat assessment, management, conservation & protection			
1. Develop and promote best management practices.	H	Conversion of native habitat to cropland and forage production Alterations to natural grazing practices and fire regimes Conversion of native habitat to industrial development Nest predation pressure Tillage and seeding operations Application of pesticides	2014-2019
2. Identify key habitats and locations of important breeding sites.	H	Knowledge gap that must be addressed in order to reduce threats	2014-2019
3. Ensure McCown's Longspur habitat needs are considered in any new or updated management plans for public grassland areas.	M	Conversion of native habitat to cropland and forage production Alterations to natural grazing practices and fire regimes Tillage and seeding operations Conversion of native habitat to industrial development Application of pesticides Nest predation pressure	2014-2019
4. Ensure that any proposed developments that are subject to the environmental assessment process consider the needs of McCown's Longspur.	M	Conversion of native habitat to cropland and forage production Alterations to natural grazing and fire regimes Conversion of native habitat to industrial development	2014-2019
5. Develop conservation agreements with private landowners that focus on conservation of rangeland at key sites.	M	Conversion of native habitat to cropland and forage production Alterations to natural grazing and fire regimes	2014-2019

Conservation Measure	Priority	Threats or concerns addressed	Timeline
Research			
6. Address key knowledge gaps on threats that human activities have on McCown's Longspur's breeding and wintering grounds.	M	Knowledge gaps: All threats	2014-2019
7. Determine demographic parameters and vital rates, return rates and source-sink dynamics in cropland and grassland habitats and in sites exposed to energy development.	L	Knowledge gaps	2014-2019
Monitoring and Assessment			
8. Continue monitoring the population annually through surveys by BBS, Grassland Bird Monitoring program, Christmas Bird Counts and others.	H	Activity needed to measure progress (see section 7)	2014-2019
Outreach and Communication			
9. Inform target audiences such as land managers about McCown's Longspur requirements and suitable management practices.	M	Conversion of native habitat to cropland and forage production Alterations to natural grazing and fire regimes Tillage and seeding operations Conversion of native habitat to industrial development Application of pesticides Nest predation pressure	2014-2019
10. Raise awareness and promote benefits of rangeland conservation to landowners and the public.	M	Conversion of native habitat to cropland and forage production Alterations to natural grazing practices and fire regimes	2014-2019

7. MEASURING PROGRESS

Success in implementing this management plan will be measured against the following performance indicator:

- By 2019, the recent (since 1996) population and distribution of McCown's Longspur in Canada is maintained or improved.

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APPENDIX A: MCCOWN'S LONGSPUR CONSERVATION STATUS

State /Province	Status*
United States:	
Arizona	S2N - imperilled non-breeding population
California	SNRN - not-ranked non-breeding population
Colorado	S2B - imperilled breeding population
Kansas	S3N - vulnerable non-breeding population
Minnesota	SXB - presumed extinct breeding population
Montana	S3B - vulnerable breeding population
Nebraska	S3 - vulnerable
New Mexico	S3N - vulnerable non-breeding population
North Dakota	S2 - imperilled
Oklahoma	S2N - imperilled non-breeding population
South Dakota	SUB - unrankable breeding population
Texas	S4 - apparently secure
Wyoming	S2 - imperilled
Canada	
Alberta	S3S4 - vulnerable/apparently secure
Saskatchewan	S3S4B – vulnerable but apparently secure breeding population

*NatureServe ranking: S = subnational (state/provincial/territorial); N = Non-breeding, B = Breeding, U = unrankable, NR = not ranked, X = presumed extinct, 1 = imperiled, 2 = imperilled, 3 = vulnerable; 4 = apparently secure, and 5 = secure. Two rankings side by side (e.g., S1S2) indicates a range of uncertainty about the status (NatureServe 2012).

APPENDIX B: EFFECTS ON THE ENVIRONMENT AND OTHER SPECIES

A strategic environmental assessment (SEA) is conducted on all SARA recovery planning documents, in accordance with the *Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals*. The purpose of a SEA is to incorporate environmental considerations into the development of public policies, plans, and program proposals to support environmentally sound decision-making and to evaluate whether the outcomes of a recovery planning document could affect any component of the environment or achievement of any of the [Federal Sustainable Development Strategy](#)'s² (FSDS) goals and targets.

Recovery planning is intended to benefit species at risk and biodiversity in general. However, it is recognized that management plans may also inadvertently lead to environmental effects beyond the intended benefits. The planning process based on national guidelines directly incorporates consideration of all environmental effects, with a particular focus on possible impacts upon non-target species or habitats. The results of the SEA are incorporated directly into the plan itself, but are also summarized below in this statement.

Rangeland conservation, a key aspect of this management plan, does not negatively impact other wildlife. In fact, it will positively benefit many federally listed species at risk such as Sprague's Pipit (*Anthus spragueii*), Burrowing Owl (*Athene cunicularia*), Short-eared Owl (*Asio flammeus*), Ferruginous Hawk (*Buteo regalis*), Greater Sage-Grouse (*Centrocercus urophasianus*), Long-billed Curlew (*Numenius americanus*), Mountain Plover (*Charadrius montanus*) and Swift Fox (*Vulpes velox*). Since McCown's Longspurs require relatively short and sparse vegetation, some species that breed in tall, dense, vegetation may not benefit from specific management practices aimed at enhancing McCown's Longspur habitat. For example, control of woody vegetation in McCown's Longspur nesting habitat may reduce nesting and foraging habitat for some species such as the Loggerhead Shrike (*Lanius ludovicianus*).

The development and promotion of agricultural best management practices, another important aspect of this management plan, will be beneficial not only to McCown's Longspur but to other species that use similar habitat, including those that use cropland.

² www.ec.gc.ca/dd-sd/default.asp?lang=En&n=F93CD795-1