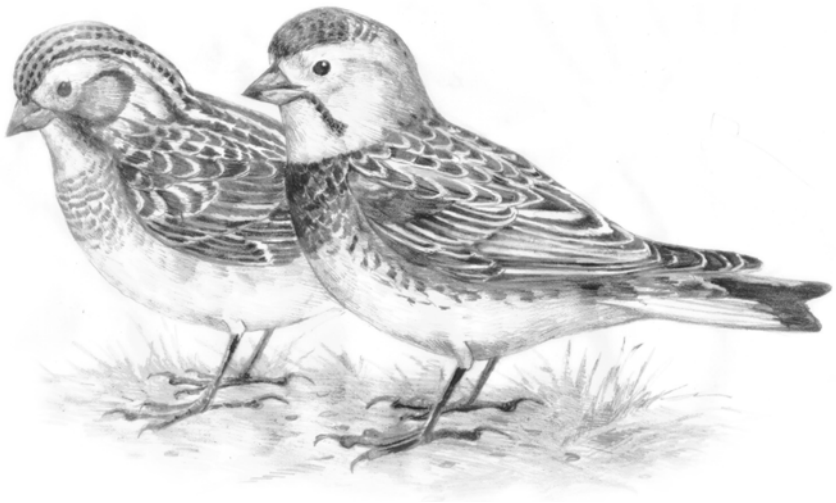
COSEWIC
Assessment and Status Report

on the

McCown's Longspur
Calcarius mccownii

in Canada



SPECIAL CONCERN
2006

COSEWIC
COMMITTEE ON THE STATUS OF
ENDANGERED WILDLIFE
IN CANADA

COSEPAC
COMITÉ SUR LA SITUATION
DES ESPÈCES EN PÉRIL
AU CANADA

COSEWIC status reports are working documents used in assigning the status of wildlife species suspected of being at risk. This report may be cited as follows:

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Production note:

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COSEWIC
Assessment Summary

Assessment Summary – April 2006

Common name
McCown's Longspur

Scientific name
Calcarius mccownii

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.

Occurrence
Alberta, Saskatchewan

Status history
Designated Special Concern in April 2006. Assessment based on a new status report.

COSEWIC
Executive Summary

McCown's Longspur
Calcarius mccownii

Species information

The McCown's Longspur (*Calcarius mccownii*) is a sparrow-sized bird with a thick bill and a distinctive inverted black "T" pattern on its white tail. No subspecies are recognized.

Distribution

McCown's Longspurs have a limited breeding range in the arid grassland regions of North America from southeastern Alberta and southwestern Saskatchewan, south through Montana and Wyoming to northcentral Colorado. Disjunct breeding populations also occur in southwestern North Dakota, northcentral South Dakota, and western Nebraska. The breeding range has contracted substantially since 1900 and the McCown's Longspur is extirpated from Minnesota. It winters in the southwestern United States and northwestern Mexico.

Habitat

Typical breeding habitat is arid, sparsely vegetated native grassland with patches of bare ground as provided by shortgrass prairie or heavily grazed mixed-grass prairie. Breeding habitat for McCown's Longspurs has declined over the last century because of conversion of native grasslands to agriculture and other uses, as well as fire suppression. More recently McCown's Longspurs have been found in cultivated fields such as wheat fields and fallow fields that have patches of bare ground.

Biology

McCown's Longspurs are migratory and males arrive in Alberta and Saskatchewan in late March or early April. Pairs form when the females arrive approximately two weeks later. The nest is constructed in a shallow depression in the ground and typical clutch size is three to four eggs. The chicks hatch after 12 days and are fed by both parents for 10 days in the nest and another three weeks after fledging. Nest predation varies from 30-75% of nests depending on the site, and is heavier on nestlings than on eggs. Flocks form in August and most McCown's Longspurs have left Canada on

southern migration by the end of September. McCown's Longspurs are seed-eaters during the winter and on migration, and switch to a seed and invertebrate (especially grasshopper) diet during the breeding season.

Population sizes and trends

The Canadian population of McCown's Longspurs is estimated at approximately 375,000 breeding birds (range: 100,000 - 1 million). Long-term trend analyses based on Breeding Bird Survey (BBS) data indicate an overall decline of 98% in McCown's Longspur numbers in Canada since 1968. This decline appears to have slowed over the last decade, however, with BBS and Grassland Bird Monitoring surveys showing neutral trends between 1996 and 2004.

Limiting factors and threats

McCown's Longspurs have a restricted breeding range that has contracted substantially over the past century. Although the rate of habitat loss has slowed in the past decade, native grassland continues to be lost or altered by cultivation, residential acreages, urban encroachment, and resource extraction. Recently, McCown's Longspurs (20-40% of birds) have been found on agricultural lands where their productivity is likely poor and they risk exposure to pesticides.

Special significance of the species

First collected in 1851 by Captain John P. McCown, the McCown's Longspur is endemic to the North American grasslands and coevolved with the grazing ungulates of this region.

Existing protection

McCown's Longspur is listed as imperiled (S2) in North Dakota, Colorado, Wyoming and Montana, vulnerable (S3) in Nebraska and apparently secure (S4) in Alberta and Saskatchewan. The status of McCown's Longspur in South Dakota is unknown. It is protected from hunting and collecting under the Migratory Birds Convention Act of 1994.

COSEWIC HISTORY

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) was created in 1977 as a result of a recommendation at the Federal-Provincial Wildlife Conference held in 1976. It arose from the need for a single, official, scientifically sound, national listing of wildlife species at risk. In 1978, COSEWIC designated its first species and produced its first list of Canadian species at risk. Species designated at meetings of the full committee are added to the list. On June 5th 2003, the *Species at Risk Act* (SARA) was proclaimed. SARA establishes COSEWIC as an advisory body ensuring that species will continue to be assessed under a rigorous and independent scientific process.

COSEWIC MANDATE

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses the national status of wild species, subspecies, varieties, or other designatable units that are considered to be at risk in Canada. Designations are made on native species for the following taxonomic groups: mammals, birds, reptiles, amphibians, fishes, arthropods, molluscs, vascular plants, mosses, and lichens.

COSEWIC MEMBERSHIP

COSEWIC comprises members from each provincial and territorial government wildlife agency, four federal entities (Canadian Wildlife Service, Parks Canada Agency, Department of Fisheries and Oceans, and the Federal Biodiversity Information Partnership, chaired by the Canadian Museum of Nature), three non-government science members and the co-chairs of the species specialist subcommittees and the Aboriginal Traditional Knowledge subcommittee. The Committee meets to consider status reports on candidate species.

DEFINITIONS (2006)

Wildlife Species	A species, subspecies, variety, or geographically or genetically distinct population of animal, plant or other organism, other than a bacterium or virus, that is wild by nature and it is either native to Canada or has extended its range into Canada without human intervention and has been present in Canada for at least 50 years.
Extinct (X)	A wildlife species that no longer exists.
Extirpated (XT)	A wildlife species no longer existing in the wild in Canada, but occurring elsewhere.
Endangered (E)	A wildlife species facing imminent extirpation or extinction.
Threatened (T)	A wildlife species likely to become endangered if limiting factors are not reversed.
Special Concern (SC)*	A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
Not at Risk (NAR)**	A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.
Data Deficient (DD)***	A category that applies when the available information is insufficient (a) to resolve a species' eligibility for assessment or (b) to permit an assessment of the species' risk of extinction.

* Formerly described as "Vulnerable" from 1990 to 1999, or "Rare" prior to 1990.

** Formerly described as "Not In Any Category", or "No Designation Required."

*** Formerly described as "Indeterminate" from 1994 to 1999 or "ISIBD" (insufficient scientific information on which to base a designation) prior to 1994. Definition of the (DD) category revised in 2006.

Environment Canada / Environnement Canada
Canadian Wildlife Service / Service canadien de la faune
Canada

The Canadian Wildlife Service, Environment Canada, provides full administrative and financial support to the COSEWIC Secretariat.

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2006

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SPECIES INFORMATION

Name and classification

Order:	Passeriformes
Family:	Emberizidae
Genus:	*Calcarius*
Species:	*mccownii*
English common name:	McCown's Longspur
French common name:	Bruant de McCown

McCown's Longspur is classified as one of four species in the genus *Calcarius* (American Ornithologists' Union (AOU) 1998, Banks *et al*. 2003). Historically, the species was classified in the monotypic genus *Rhynchophanes* based on its morphological distinctions from the other *Calcarius* species (Rising 1996), but it was later placed in *Calcarius* after a Chestnut-collared Longspur (*C. ornatus*) X McCown's Longspur hybrid was described (Sibley and Pettingill 1955, With 1994a). Recent molecular evidence, however, suggests that *Calcarius mccownii* exists outside the *Calcarius* clade (Carson and Spicer 2003, Klicka *et al*. 2003) and so the species may be reclassified in the near future (Banks *et al*. 2003). No subspecies or geographic variants are recognized (With 1994a).

Description

McCown's Longspur is a chunky, sparrow-sized bird (length: 14-16 cm) with a thick bill and distinctive inverted black "T" pattern on a white tail (With 1994a, Rising 1996). Like other members of *Calcarius* it has an elongated hallux claw; hence, the common name "longspur" (With 1994a). Adult mass varies between 24 and 29 g. McCown's differs from the other *Calcarius* species in having a larger and thicker bill, shorter tail, and shorter hallux (Rising 1996).

Breeding males are gray with brownish-gray wings and a chestnut patch on the median wing coverts. They also have a black crown, malar stripe, and breast patch (Rising 1996). In winter, the black areas on the head are concealed by buff tips and the black breast patch is fainter and partially concealed by buff tips (Rising 1996). Females are grayish brown with brown streaking on the crown, back, and rump, lighter underparts, and faint chestnut in median wing coverts (With 1994a). Breeding and winter plumages differ only in the extent of streaking on the back (Rising 1996).

DISTRIBUTION

Global range

McCown's Longspurs breed from southeastern Alberta and southwestern Saskatchewan, south through Montana, central and eastern Wyoming, and northcentral Colorado (With 1994a, Smith 1996, Dechant *et al*. 1999; Figure 1). There are also

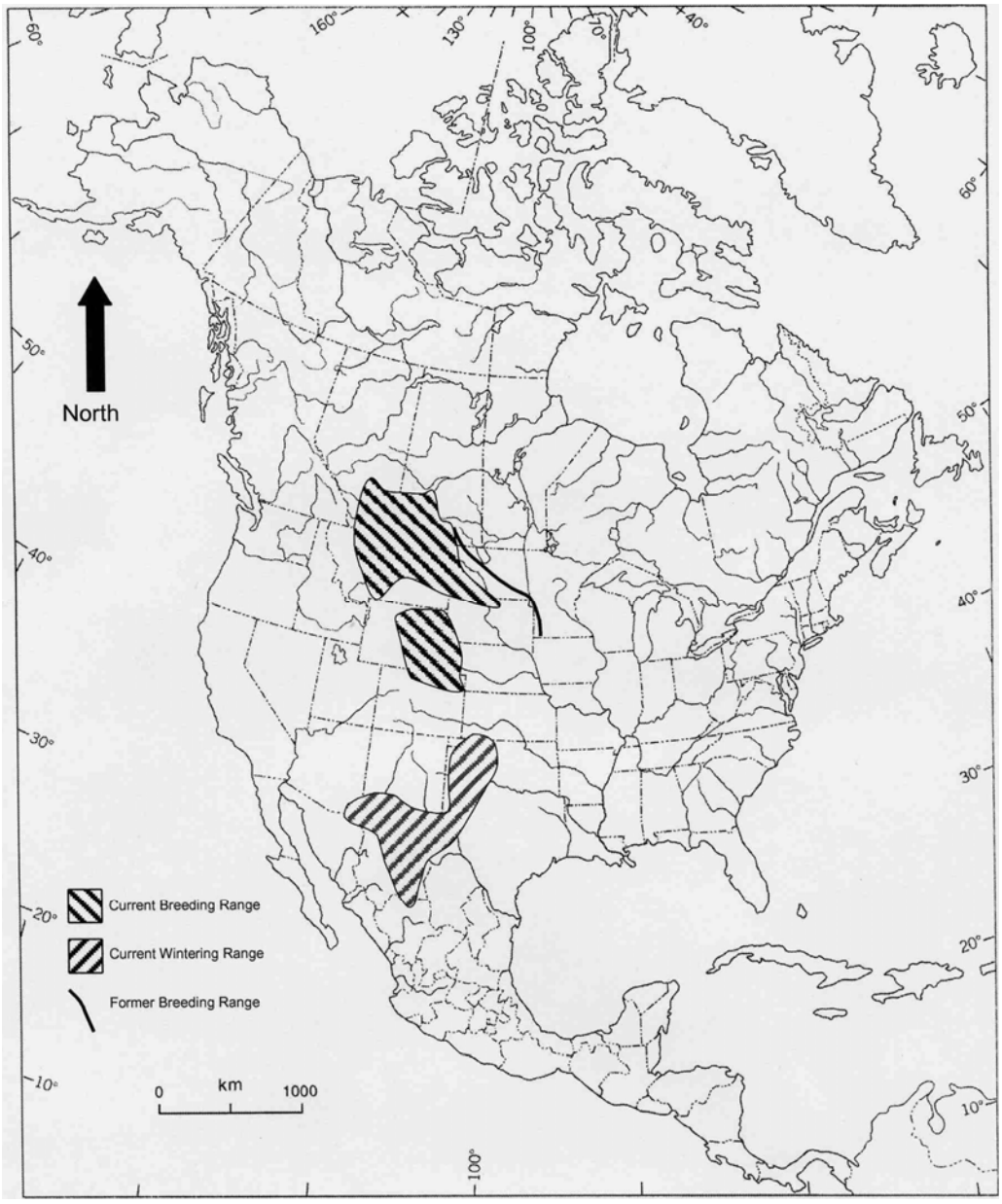

Figure 1. Breeding and wintering range of the McCown's Longspur (based on Peterson and Chalif 1973, Semenchuk 1992, With 1994a, Smith 1996, AOU 1998, Saskatchewan Wetland Conservation Corporation 2002, National Audubon Society 2003, Sauer *et al*. 2004).

breeding populations in western Nebraska, southwestern North Dakota, and northcentral South Dakota (Dechant *et al*. 1999). Breeding populations tend to be disjunct throughout the range (Kantrud and Kologski 1982). The wintering range in the southwestern United States and northwestern Mexico includes western Oklahoma, western Kansas, western Texas, southeastern Arizona, southern New Mexico, northern Sonora, Chihuahua, and northern Durango. Occasional winter records include California, Utah, Nevada, and southeastern Colorado (With 1994a).

The breeding range has contracted substantially during the 20th century and McCown's Longspurs are extirpated from western Minnesota (last record in 1900). Although Taverner (1927 in With 1994a) listed McCown's Longspurs as formerly breeding in Manitoba, it is unlikely that this is the case (Carey 2003, K. de Smet, pers. comm.).

Canadian range

Canada encompasses an estimated 34% of the McCown's Longspur's North American breeding range (P. Blancher, pers. comm.). In Alberta, breeding records extend as far north as Hanna and Youngstown and as far west as Drumheller, Vulcan, and Lethbridge. The majority of breeding records, however, are in southeastern Alberta, south of the Red Deer River and east of Brooks (Semenchuk 1992, Alberta Conservation Association and Alberta Environment 2004; Figure 2). The breeding range in southern Alberta is restricted to the Grassland Natural Region. McCown's Longspurs are absent from Writing-on-Stone Provincial Park and the high elevations of Cypress Hills Interprovincial Park. In Saskatchewan, McCown's Longspurs are restricted to the Prairie Ecozone. Breeding records extend from the southwestern corner of the province north to Saskatoon and east to Regina (Smith 1996, Saskatchewan Conservation Data Centre 2004; Figure 2); however, the majority are in southwestern Saskatchewan (south of the South Saskatchwan River and west of Regina; Smith 1996, Saskatchewan Conservation Data Centre 2004; Figure 2). The species is uncommon at the edge of its breeding range on the southern edge of the Parkland (Smith 1996). Thus, possible breeding records near Saskatoon should probably be considered outliers (S. Davis, pers. comm.).

The extent of occurrence (EO) for the McCown's Longspur based on digitized range maps is approximately 212,000 km^2 (P. Blancher, pers. comm.). The area of occupancy (AO) is 67,000 km^2 and is based on the area of remaining native grassland. This estimate is likely an overestimate of the AO for this species, however, because not all native grassland is suitable habitat for McCown's Longspur (see below).

HABITAT

Breeding habitat requirements

McCown's Longspurs breed in open, arid grasslands with dry, sandy soil (Stewart 1975, Wershler *et al*. 1991), little litter accumulation (Felske 1971), and sparse low vegetation (With 1994a), such as that provided by shortgrass prairie or heavily grazed mixed-grass prairie (Dechant *et al*. 1999). Nesting areas are dominated by blue grama grass (*Bouteloua gracilis*) and buffalo grass (*Buchloe dactyoides*), which grow to a maximum height of 0.5 m (Brown 1985) and are often interspersed with cactus (e.g., O*puntia* sp.) and bare ground (With 1994a).

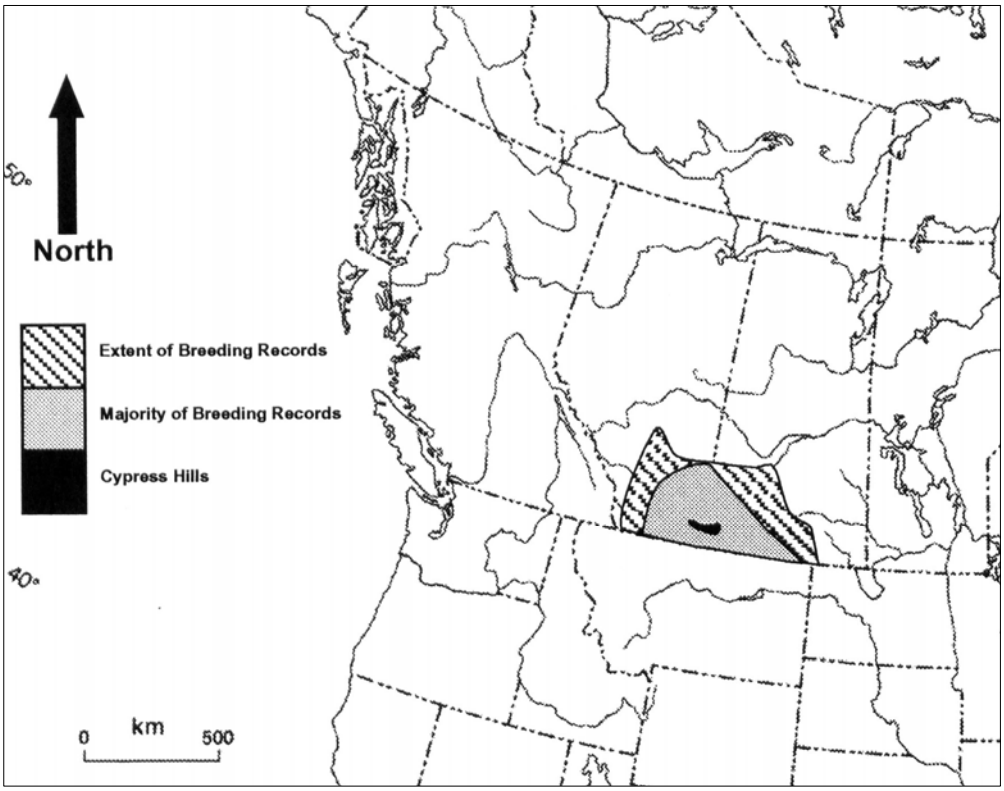

Figure 2. Breeding range of the McCown's Longspur in Canada (based on Semenchuk 1992, With 1994a, Smith 1996, AOU 1998, Saskatchewan Wetland Conservation Corporation 2002, National Audubon Society 2003, Sauer *et al*. 2004). Longspurs are uncommon on the edge of their breeding range (diagonal stripes) and are absent from the high elevations of Cypress Hills (black).

Responses to grazing management

McCown's Longspurs in southern Alberta are detected in higher numbers on native grasslands that are grazed on a continuous basis (April through October) than those managed with complementary or rotational grazing (Prescott and Wagner 1996). This is likely related to range quality, as the latter grazing regimes result in higher, denser vegetation than is preferred by this species. Heavily grazed pasture may best approximate the historical shortgrass prairie in which this species evolved (With 1994a) and may explain why several studies have recorded McCown's Longspurs on moderately to heavily grazed grasslands but not ungrazed sites (Maher 1973, Kantrud and Kologiski 1982, Wershler *et al*. 1991, Sutter 1997).

Attraction to cultivated fields

Even within grassed landscapes, McCown's Longspurs are often detected on cultivated lands (McMaster and Davis 1998, Dale *et al*. 2005) such as conventionally tilled wheat fields (Martin and Forsyth 2003) and fallow fields (Dale *et al*. 2005). Survey data suggest that this attraction to agricultural land is not only a response to habitat

saturation (S. Davis, pers. comm.), but may also be because the structural similarities between cultivated lands and native grasslands make differentiation between the two habitats difficult for birds settling in spring (e.g., Lloyd and Martin 2005). This is of concern because breeding success may be poorer in cultivated fields than in native habitats and there is a greater chance of direct exposure to agricultural pesticides (Martin and Forsyth 2003). Thus, cultivated fields may be an "ecological trap" for McCown's Longspurs (Best 1986, Martin and Forsyth 2003). It also appears to be a relatively recent phenomenon, as historically McCown's Longspurs avoided cultivation (DuBois 1937, Mickey 1943).

Wintering habitat

On their winter range, McCown's Longspurs are most abundant on lightly grazed shortgrass pastures dominated by *Bouteloua-Buchloe*. In Mexico, their winter habitat includes plateaus and deserts (Peterson and Chalif 1973, With 1994a).

Microhabitat requirements

McCown's Longspurs build their nests on barren south or southwestern facing hillsides (Felske 1971) with nests oriented northward (With and Webb 1993). Nests are built in a depression in the ground and are often placed near some sort of vegetation, such as a clump of grass or a shrub (With 1994b).

Annual variation in precipitation may affect general habitat suitability. Prescott and Wagner (1996) suggested that the decline in numbers of McCown's Longspurs detected over the duration of their study could, in part, be due to above average precipitation that resulted in increased vegetation growth. Conversely, drought conditions in the early 2000s were correlated with an upsurge in numbers of McCown's Longspurs detected at Suffield National Wildlife Area in Alberta (B. Dale, pers. comm.).

Habitat trends

Grasslands have been heavily impacted by agriculture. By 1991, approximately 75% of the original native prairie in Canada had been converted to agricultural or other land uses (Statistics Canada 1992, Samson and Knopf 1994). Since then, habitat loss has continued at an estimated rate of 1%/year (Statistics Canada 1997), although it is not clear what proportion of this habitat is suitable for McCown's Longspurs. The recent observations of McCown's Longspurs in cultivated fields (McMaster and Davies 1998; Martin and Forsyth 2003) suggests, however, that they may be partially responding to habitat loss and land use changes because historically they avoided cultivated land (DuBois 1937, Mickey 1943).

Fire suppression may have also reduced the quality of habitat for McCown's Longspurs. Historically, native shortgrass prairie was subjected to frequent wildfires, along with periodic intense grazing by indigenous herbivores such as bison (*Bison bison*; Knopf 1994). Both types of disturbance resulted in habitat with patches of bare

ground, a factor associated with higher numbers of McCown's Longspurs (Martin and Forsyth 2003). Fire suppression has been suggested as one possible reason for declines in the distribution and abundance of McCown's Longspurs (Oberholser 1974).

Habitat protection/ownership

In Alberta, approximately 40,000 km^2 of native grassland remains and 23,606 km^2 is under Crown ownership. Although most of this land is not considered protected, the Crown has been somewhat successful in preventing permanent loss of native grassland habitat. Crown land represents only 24% of the Alberta Grassland Natural Region but has 56% of the total remaining native grasslands. The majority of the Crown lands are used for grazing leases or community pastures. Approximately 2% of the native grasslands are officially protected. Some of the larger protected lands that have McCown's Longspurs include the Suffield National Wildlife Area (458.7 km^2), the Onefour Heritage Rangeland Natural Area (92 km^2), and the Twin River Heritage Rangeland Natural Area (150 km^2, Alberta Sustainable Resource Development 2000).

In Saskatchewan, just over 32% of the remaining grassland is protected in conservation areas including national and provincial parks, Nature Conservancy land, migratory bird sanctuaries and wildlife refuges, Ramsar sites, ecological reserves, land under the Wildlife Habitat Protection Act and PFRA community pastures. The total land protected is 22,636 km^2 or 9.4% of the Saskatchewan Prairie Ecozone (Gauthier *et al*. 2002). The most important lands to protect for McCown's Longspurs are those in the southwestern corner of the province, south of the South Saskatchewan River and west of Regina.

In addition, 4,415.5 km^2 of private land has been enrolled in the Permanent Cover Program (PCP) in Alberta, Saskatchewan, and Manitoba (McMaster and Davis 1998). The potential exists to modify some of these PCP sites to create suitable breeding habitat for McCown's Longspurs.

BIOLOGY

Life cycle, reproduction, and diet

McCown's Longspurs breed annually from late April through July (With 1994a). Males arrive on the breeding grounds in small flocks as early as late March and establish territories. Territory size ranges from 0.6 -1.4 ha (With 1994a) and pairs often nest near one another (Felske 1971). Socially monogamous pairs form once the females have arrived approximately two weeks later and nesting commences in late April or early May. An open cup nest is constructed by the female by digging a shallow depression in the ground. Typically, the nest is constructed of coarse grass stems and blades and is lined with soft materials such as feathers or hair (With 1994a).

Clutch size is typically three to four eggs (With 1994a). The female alone incubates the clutch for 12 days (With 1994a). Both the female and male brood the

young throughout the night until they are well-feathered by Day 6. Parents will also brood during inclement weather and shelter the young from the sun. Both the male and female McCown's Longspur feed the young and studies on the congeneric Chestnut-collared Longspur suggest that biparental care is essential for successful reproduction (Lynn and Wingfield 2003). Grasshoppers comprise 60 - 90% of the nestling diet (Felske 1971, Maher 1973, With 1994a). Moth and butterfly larvae and beetles may also be included. Young leave the nest at about Day 10 when they have attained 70 - 80% of their adult mass and are dependent on their parents for another three weeks post-fledging. McCown's Longspurs will initiate a second brood following a successful nesting attempt and will renest following nest failure. Individuals may remain on the breeding grounds as late as early November, but breeding is generally completed by late July or early August.

McCown's Longspurs attain adult plumage by one year of age and are thus presumed to begin breeding at this age (With 1994a). However, this has not been confirmed because first year birds do not return to their natal territories.

Adult diet during the breeding season is comprised of 60 - 90% seeds of various grasses and forbs and the remainder includes arthropods, especially grasshoppers (With 1994a).

Predation and survival

Predation on eggs and nestlings is the primary cause of reproductive failure for McCown's Longspurs (Greer and Anderson 1989). Predation rates vary from 30 - 75% of nests (With 1994a) and are highest at the nestling stage (Maher 1973). Nests initiated in the second half of the breeding season (Felske 1971) and those located in more heavily grazed pastures or near shrubs (With 1994b) suffer higher predation rates than do other nests.

Reproductive success (no. fledglings/no. eggs) varies from 32 - 46%, resulting in an average of 1.1 - 2.0 offspring fledged per nesting attempt. Females make an average of 1.3 - 2.5 nesting attempts (second broods and renesting attempts combined) per breeding season. No information exists on post-fledging survival so it is difficult to determine annual productivity from these data (With 1994a).

There is no indication that space or food availability in the breeding season limits productivity (Greer and Anderson 1989). Greer and Anderson (1989) suggested that high nest predation rates prevent McCown's Longspur populations from reaching carrying capacity and, as such, they are not affected by density-dependent factors, such as food. No data exist on adult survivorship (With 1994a).

Other known and suspected causes of mortality include clutch and brood reductions due to inclement weather (With 1994a, 1994b), exposure to agricultural pesticides (McEwen and Ells 1975), and predation on the wintering grounds (Sovada *et al*. 2001).

Migration, dispersal, and site fidelity

McCown's Longspurs undergo an annual migration from the breeding grounds in southern Alberta and Saskatchewan and the northwestern Great Plains to the wintering grounds in the southwestern United States and northwestern Mexico.

Flocks begin forming on the breeding grounds in early August. Southern migration flocks include both immature birds and adults and are much larger than the flocks observed during the spring migration. Migration dates are variable and McCown's Longspurs have been recorded departing the breeding grounds from early August to late November (With 1994a). The earliest arrival dates on the wintering grounds are in late September.

On the wintering grounds McCown's Longspurs are most abundant on lightly grazed grasslands (Grzybowski 1982) and often occur in mixed flocks with Horned Larks (*Eremophila alpestris*) and other *Calcarius* species. Departures from the wintering grounds vary from late February to late April.

There are few data on site fidelity. Individuals apparently disperse from their natal breeding grounds because birds banded as nestlings have not been resighted in the same area in subsequent years (With 1994a). Little information exists on breeding site fidelity. With (1994a) found that two of two males banded as adults returned to the same pasture where they were initially captured, but neither of two banded adult females returned. McCown's Longspurs are known to abandon their nesting sites during years of high precipitation (Alsop 2001) and occupy a given breeding area unpredictably from year-to-year (With 1994a). No data exist on wintering site fidelity.

Interspecific interactions

McCown's Longspurs migrate and form winter flocks most often with Horned Larks. They also flock with other *Calcarius* species and Sprague's Pipits (*Anthus spragueii*; With 1994a, Rising 1996).

Known and suspected nest predators of McCown's Longspurs include thirteen-lined ground squirrels (*Spermophilus tridecemlineatus*), Richardson's ground squirrels (*S. richardsonii*), black-tailed prairie dogs (*Cynomys ludovicianus*), badgers (*Taxidea taxus*), striped skunks (*Mephitis mephitis*), long-tailed weasels (*Mustela frenata*), coyotes (*Canis latrans*), red foxes (*Vulpes vulpes*), swift foxes (*V. velox*), deer mice (*Peromyscus maniculatus*), meadow voles (*Microtus pennsylvanicus*), western plains garter snakes (*Thamnophis radix*), red-sided garter snakes (*T. sirtalis*), and bull snakes (*Pituophis melanoleucos*; With 1994a, Sutter 1997). Nests are rarely parasitized by Brown-headed Cowbirds (*Molothrus ater;* With 1994a).

Adaptability

There is limited and conflicting evidence about the impact of human disturbance on McCown's Longspurs. Two studies reported that some adults deserted their nests

apparently in response to human disturbance (Strong 1971 cited in With 1994a, Felske 1971). In contrast, two other studies found no evidence of nest desertion in response to disturbance (Dubois 1937, With 1994a).

POPULATION SIZES AND TRENDS

Search effort and uncertainty

Data on McCown's Longspur population sizes and trends are collected by three main survey methods. Below is a description of each method and its limitations in monitoring McCown's Longspur populations.

Breeding Bird Surveys (BBS)

The Breeding Bird Survey is an annual survey conducted in mid-June throughout Canada and the United States. Volunteers travel along randomly selected roadside routes and record all birds heard or seen at listening stations located along the route (Sauer *et al*. 2003). One limitation of the BBS for monitoring McCown's Longspurs is that some of the most important routes for this species are surveyed irregularly. For instance, the three routes reporting the highest densities of McCown's Longspurs in Saskatchewan (Swift Current, Tuberose, and Tyner) have not been surveyed since 1995, 1973, and 1971, respectively (Sauer *et al*. 2003). Additionally, because of their limited distribution McCown's Longspurs are detected on few BBS routes (Sauer *et al*. 2003, Dale *et al*. 2005).

Grassland Bird Monitoring (GBM)

The Grassland Bird Monitoring program was developed to improve coverage of endemic grassland species and/or species "at risk". GBM surveys use an intensified BBS methodology with increased monitoring coverage in the 19 degree blocks where grassland birds and remaining grassland habitats are concentrated. The BBS route selection criterion of nearest secondary or better road is modified to accept the nearest passable road. Otherwise, route selection and bird data collection adhere to the BBS methodology (Dale *et al*. 2005).

Preliminary analyses suggest that GBM surveys are more effective than BBS in detecting grassland species (Dale *et al*. 2005). However, because the GBM program was begun in 1996, there are few data years available for analysis.

Christmas Bird Counts (CBC)

The Christmas Bird Count is an annual survey conducted in Canada, the U.S. and Latin America (Sauer *et al*. 1996). Volunteers count all the species found within a 24 km diameter circle on a pre-selected, single day between 14 December and 5 January (Sauer *et al*. 1996). One of the limitations of this method is that variation in

weather conditions and the number and skill of observers across years introduce significant variability. CBC data from the southern U.S. and northern Mexico provide an estimate of the global population of this species as they winter in these areas.

Additional sampling concerns

McCown's Longspurs exhibit erratic population fluctuations and unpredictable occupation throughout much of their Canadian breeding range (With 1994a), possibly because they are at the edge of this range (Curnett *et al*. 1996). These erratic fluctuations make it difficult to effectively determine McCown's Longspur population trends, especially over relatively short time periods. High variation in the data, coupled with small sample sizes, can result in low statistical power (Dale *et al*. 2005) and increase the chance of a false negative (Type II Error).

Abundance

Extrapolating from BBS data, the North American population of McCown's Longspurs is estimated at approximately 1,100,000 breeding birds and the Canadian population at approximately 375,000 birds or 34% of the North American population (P. Blancher, pers. comm.). The accuracy of these population estimates is considered poor, however, and the true population of McCown's Longspurs in Canada is likely between 100,000 and 1,000,000 individuals (P. Blancher, pers. comm.).

Fluctuations and trends

Breeding Bird Surveys

Based on long-term BBS data from Bird Conservation Region 11, which includes all of the species' range in Canada, there was an annual rate of decline of -12.9%/ year ($n=33$, $0.05<p<0.15$) between 1968 and 2002 (CWS 2005, Figure 3). At this rate, the population will have decreased by approximately 98% since the late 1960s. This trend does appear, however, to have slowed over the last decade, with an annual rate of decline of -0.2%/year ($p>0.10$) between 1996 and 2004. Based on this rate of decline, the population will have decreased by approximately 1.5% during this recent period.

Grassland Bird Monitoring

Based on GBM surveys, which are conducted in the core of the range where habitat is relatively intact, McCown's Longspur populations in Canada showed an annual rate of decline of -0.40%/year (95% CI: -20.0, 23.9) between 1996 and 2004 (B. Dale, pers. comm.). Based on this rate of decline, the population will have decreased by approximately 3% during this period.

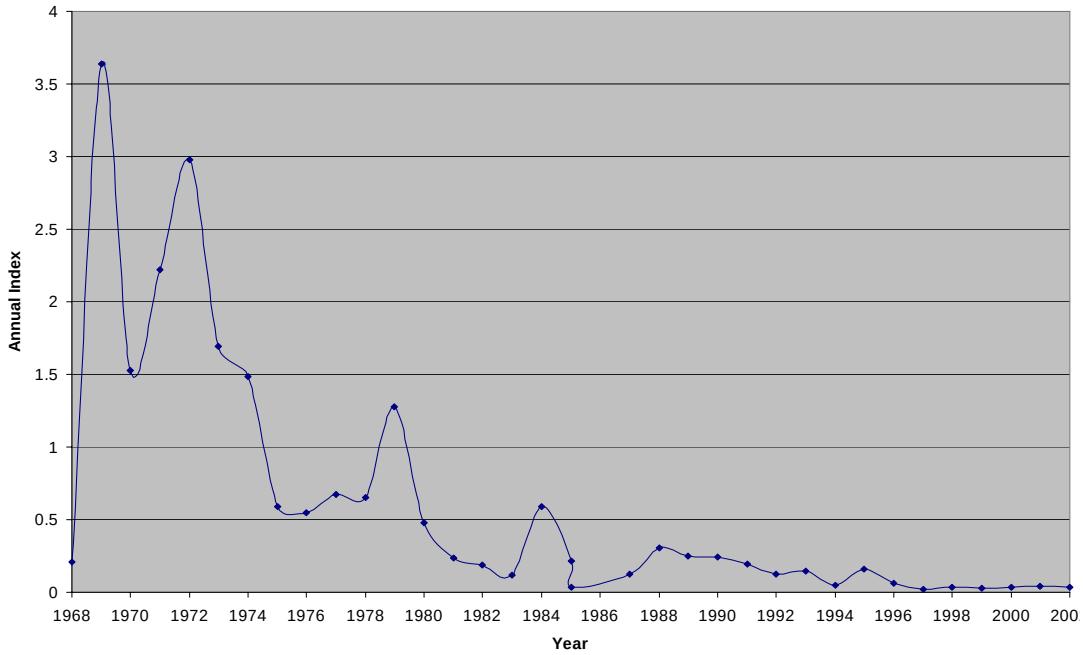

Figure 3. Annual indices of abundance for McCown's Longspurs detected on Canadian BBS routes from 1968-2002 (CWS 2005).

Christmas Bird Count

CBC data, based on surveys conducted on the wintering grounds in the U.S., showed a decline of -2.5.%/year (Credible Intervals: -12, 8.9) between 1966 and 2004 in the global population of McCown's Longspurs (D. Niven, pers. comm.).

Summary

Overall, analyses based on long-term (i.e., 1968-2002) survey data show a strong decline in McCown's Longspur numbers in Canada. This trend appears, however, to have slowed and analyses based on surveys conducted between 1996 and 2004 suggest that the population has been stable over the last decade.

Rescue effect

BBS data from the 1990s in the U.S. suggest a population of approximately 700,000 birds (Rich *et al*. 2004). This population showed a non-significant increase of 1.2%/year between 1966 and 2003 (n=41, p=0.60, 95% CI: -3.4, +5.8; Sauer *et al*. 2003). Therefore, McCown's Longspurs breeding in the United States could possibly act as a source population of immigrants to Canada.

LIMITING FACTORS AND THREATS

Habitat loss and alteration

McCown's Longspurs have a restricted breeding range that has contracted over the past century because of habitat loss and alteration. An estimated 75% of the original native grassland on the Canadian prairies has been lost as a result of human activities (Statistics Canada 1992, Knopf 1994). Only 43% and 21% of native grasslands remain in Alberta and Saskatchewan, respectively, and much of these grasslands are afforded no protection. Although the rate of loss has slowed in the past decade (Statistics Canada 1997), unprotected grasslands continue to be lost to cultivation, residential acreages and urban encroachment, and resource extraction.

Pesticides

Agricultural pesticides may also threaten McCown's Longspurs if they are using cultivated fields. One of the few studies to examine the effects of direct pesticide exposure on grassland birds found that both nestling and adult McCown's Longspurs were susceptible to poisoning from toxaphene, a chemical on the market in the U.S. until the early 1980s that, amongst other things, was used to control grasshoppers in rangeland (McEwen and Ells 1975, P. Mineau, pers. comm.). Congeneric Chestnut-collared Longspurs also had significantly reduced hatching success when exposed to pyrethroid insecticides used for grasshopper control (Johnson *et al*. 1993). The results of a recent modelling study also showed that the decline of several grassland bird species was associated with the use of agricultural chemicals (Mineau *et al*. 2005). Although the study did not include McCown's Longspur, it is reasonable to assume that if this species is using cultivated fields, it too, is susceptible to the negative effects of these chemicals (P. Mineau, pers. comm.).

Attraction to cultivated lands

Recent surveys of breeding birds in Alberta and Saskatchewan have detected a large (20 - 40% of birds) percentage of McCown's Longspurs in cultivated fields, even within grassed landscapes (McMaster and Davis 1998, Martin and Forsyth 2003, Dale *et al*. 2005). Evidence from work on Chestnut-sided Longspurs suggests that productivity on agricultural lands is generally poorer than in native habitats (Martin and Forsyth 2003), so having such a large number of McCown's Longspurs in cultivated fields is a concern.

SPECIAL SIGNIFICANCE OF THE SPECIES

First collected in 1851 by Captain John P. McCown, the McCown's Longspur is endemic to the North American grasslands and coevolved with the grazing ungulates of this region.

EXISTING PROTECTION OR OTHER STATUS DESIGNATIONS

McCown's Longspur is protected from hunting or collecting under the Migratory Birds Convention Act of 1994. The Alberta Natural Heritage Information Centre has recently upgraded the ranking of McCown's Longspur to S3 (may be rare and local throughout its range, or in a restricted range, may be abundant in some locations, D. Vujnovic, pers. comm.) The Saskatchewan Conservation Data Centre ranks it as S4 (common, generally widespread and abundant but may be rare in parts of its range; apparently secure but may be of long-term concern). It is ranked by NatureServe (2006) as S4 in Alberta and Saskatchewan, S3 in Nebraska, S2 in North Dakota, Colorado, Wyoming and Montana and SU in South Dakota. The Partners in Flight Research Working Group lists McCown's Longspur as a priority species (Donovan *et al*. 2002). General status ranks for Canada suggest that the species is secure in Alberta and Saskatchewan (Canadian Endangered Species Conservation Council 2001).

TECHNICAL SUMMARY

Calcarius mccownii
McCown's Longspur — Bruant de McCown
Saskatchewan, Alberta

Extent and Area Information	
• *Extent of occurrence (EO)(*km^2*)* - based on digitized range maps	212,000 km^2
• *Specify trend in EO*	historic decrease, probably now stable
• *Are there extreme fluctuations in EO?*	no
• *Area of occupancy (AO) (*km^2*)* - based on estimates of remaining native grassland	67,000 km^2 (maximum)
• *Specify trend in AO*	likely declining with declines in native grassland
• *Are there extreme fluctuations in AO?*	no
• *Number of known or inferred current locations*	n.a.
• *Specify trend in #*	n.a.
• *Are there extreme fluctuations in number of locations?*	n.a.
• *Habitat trend*	native grassland habitat lost at annual rate of approximately 1%.
Population Information	
• *Generation time (average age of parents in the population)*	likely 2-3 years
• *Number of mature individuals in Canadian population*	375,000 (range: 100,000 - 1,000,000)
• *Total Canadian population trend:*	decline over long term
• *% decline over the last/next 10 years or 3 generations.* - decline of 98% between 1968 and 2002 based on BBS data - decline of 1.5 to 3% between 1996 and 2004 based on BBS and GBM data, respectively	stable in last decade
• *Are there extreme fluctuations in number of mature individuals?*	no
• *Is the total population severely fragmented?*	no
• *Specify trend in number of populations*	n.a.
• *Are there extreme fluctuations in number of populations?*	n.a.
• List populations with number of mature individuals in each:	n.a.
Threats (actual or imminent threats to populations or habitats)	
- Loss and degradation of grassland habitat - Increased risk of exposure to agricultural pesticides due to use of cultivated fields and seed diet - Use of cultivated fields	
Rescue Effect (immigration from an outside source)	
• *Status of outside population(s)?* **USA:** - increase of +1.2%/year between 1966 and 2003	
• *Is immigration known or possible?*	yes
• *Would immigrants be adapted to survive in Canada?*	yes
• *Is there sufficient habitat for immigrants in Canada?*	yes
• *Is rescue from outside populations likely?*	yes
Quantitative Analysis	None
Current Status COSEWIC: Special Concern (2006)	

Status and Reasons for Designation

Status: Special Concern	**Alpha-numeric code**: Not applicable

Reasons 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.

Applicability of Criteria

Criterion A: (Declining Total Population): Does not meet criterion - population has been stable over the last 10 years.

Criterion B: (Small Distribution, and Decline or Fluctuation): Does not meet criterion - EO > 20,000 km^2 and AO > 2,000 km^2.

Criterion C: (Small Total Population Size and Decline): Does not meet criterion - total population size > than 10,000.

Criterion D: (Very Small Population or Restricted Distribution): Does not meet criterion - population size > than 1,000 and AO > than 20 km^2.

Criterion E: (Quantitative Analysis): None.

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