Chestnut-collared Longspur

Calcarius ornatus

REGULATORY STATUS

USFWS: Migratory Bird
USFS R2: Sensitive
USFS R4: No special status
Wyoming BLM: No special status
State of Wyoming: Protected Bird

CONSERVATION RANKS

USFWS: Bird of Conservation Concern
WGFD: NSS4 (Bc), Tier II
WYNDD: G5, S3
Wyoming Contribution: HIGH
IUCN: Near Threatened
PIF Continental Concern Score: 14

STATUS AND RANK COMMENTS

Chestnut-collared Longspur (*Calcarius ornatus*) has no additional regulatory status or conservation rank considerations beyond those listed above.

NATURAL HISTORY

Taxonomy:

There are currently no recognized subspecies of Chestnut-collared Longspur [1, 2]. Hybridization with McCown's Longspur (*Rhynchophanes mccownii*) is possible but apparently rare [1].

Description:

Identification of Chestnut-collared Longspur is possible in the field. Adults weigh 17–23 g, range in length from 13–16.5 cm, and have a wingspan of about 26.7 cm [1, 3]. The species is sexually dimorphic. During the breeding season, adult males have a black crown, hind cheek, shoulder patch, breast, and belly; white to buffy yellow cheeks and throat; rufous nape; and brown streaked upperparts. Females have light, sandy-brown streaked upperparts; pale, gray-brown underparts with faint streaking on the breast and belly; brown crown; and a buffy face with darker rear-cheek. Both sexes have small, cone-shaped, grayish bills and white tails with a dark triangle that is visible in-flight [1, 3]. Similar sympatric species in Wyoming include McCown's Longspur and Lapland Longspur (*C. lapponicus*) [4]. Breeding male McCown's Longspurs have a gray nape, gray belly, and rufous wing-bars, and both sexes have an inverted black "T" on the otherwise white tail. Lapland Longspur occurs in Wyoming only in the winter (when Chestnut-collared Longspur is absent from the state) and both sexes have a dark tail with thin white sides [3].

Distribution & Range:
Both the breeding and winter ranges of Chestnut-collared Longspur are restricted to North America. Fragmentation of shortgrass and mixed-grass prairies has resulted in a disjunct distribution overall, and the species has experienced large contractions of both its historic summer and winter ranges [1, 5]. Chestnut-collared Longspur currently breeds in the northern Great Plains of the north-central United States and south-central Canada [1]. Northeastern Wyoming is on the southern edge of the core breeding range, while southeastern Wyoming encompasses one of several smaller, discrete southern breeding areas [1]. Chestnut-collared Longspur migrates through the state in the spring and fall and is a summer resident [4, 6]. Confirmed and suspected breeding has been documented in 5 of the 28 latitude/longitude degree blocks in the state, all in far eastern Wyoming [6]. The species primarily overwinters in western Texas and eastern New Mexico, but annual shifts in winter distribution have been observed [1, 5].

Habitat:
Across its continental range, including Wyoming, Chestnut-collared Longspur typically breeds in large, arid, open tracts of shortgrass and mixed-grass prairie [1]. Grazing by ungulates, mowing, and burning help to maintain the species' preferred vegetation structure (i.e., < 30 cm tall, sparse, scarce ground litter), and Chestnut-collared Longspur is known to be more abundant in grasslands that have recently been exposed to such disturbances [1]. Although Chestnut-collared Longspur will occasionally breed in non-native grasslands, such as planted hay fields and pastures, abundance and productivity can be lower in these agricultural landscapes [1, 5]. The species may also use Black-tailed Prairie Dog (*Cynomys ludovicianus*) colonies [7, 8]. Chestnut-collared Longspur is a ground nesting species; females construct open cup nests out of grass in excavated depressions, often directly adjacent to taller vegetation or features on the landscape (i.e., grass, shrub, livestock dung pile) [1]. In general, nest sites typically have more vegetation cover and ground litter than the surrounding area. Habitat use by Chestnut-collared Longspur is often compared to that of McCown's Longspur; both taxa use grassland with relatively short and sparse vegetation, but the former uses notably taller and heavier vegetation than the latter [1, 9].

Phenology:
In Wyoming, spring arrival of Chestnut-collared Longspur consistently occurs in mid-April [4]. Pair formation and nest building begin once females arrive on the breeding grounds, generally about 1–2 weeks after the first males appear [1]. Egg laying likely begins in early or mid-May, but varies depending on location and annual conditions. Most clutches contain 4 eggs (range 2–6 eggs), which are incubated by the female for approximately 11 days (range 7–15 days). Young are altricial at hatching and remain in the nest until about 11 days old (range 7–15 days). Fledglings are capable of limited flight 1–2 days after leaving the nest, but parents may continue to provide food for up to 2 weeks. Chestnut-collared Longspur can produce 2–3 broods a year in some parts of its distribution and may renest up to 3 times following multiple nest failures in a single breeding season [1]. In Wyoming, fall migration to wintering grounds peaks in late September, with most migrants and summer residents leaving the state by early October [4].

Diet:
Chestnut-collared Longspur consumes larval and adult insects (e.g., grasshoppers, caterpillars), spiders, and the seeds of grasses and forbs during the breeding season. Nestling are fed a wide variety of invertebrate prey, with grasshoppers constituting a large proportion of the diet [1]. The species relies entirely on grains and seeds during the winter [1].

CONSERVATION CONCERNS

Abundance:
Continental: REGIONAL ENDEMIC
Wyoming: UNCOMMON
Robust population estimates for Chestnut-collared Longspur in Wyoming are lacking. The patchy distribution with opportunistic shifts to burned, mowed, or grazed areas make accurate population estimates difficult [5]. Chestnut-collared Longspur has a statewide abundance rank of UNCOMMON, and appears to be uncommon in suitable environments within its Wyoming range [6]. In 2013, Partners in Flight estimated the Wyoming population of Chestnut-collared Longspur to be around 50,000 individuals, or about 1.9% of the global population [10]; however, this abundance estimate is based primarily on Breeding Bird Survey (BBS) data and should be viewed with caution due to the low detection rate of this species in the state. From 1968–2015, annual BBS detections of Chestnut-collared Longspur in Wyoming ranged from 0 to 91 (average = 29), with 7 recorded in 2015 [11]. Annual detections of Chestnut-collared Longspur ranged from 0 to 39 during surveys for the Integrated Monitoring in Bird Conservation Regions (IMBCR) program between 2009–2015 [12]. Estimated mean density from 2010–2015 was 0.58 birds per km^2 (standard deviation 0.55, standard error 0.25) in suitable habitats in Wyoming [12].

Population Trends:
Historic: LARGE DECLINE
Recent: LARGE DECLINE
Long-term, historic declines of Chestnut-collared Longspur in North America are attributed to the fragmentation of native grasslands by agriculture, urbanization and associated infrastructure, and other disturbances [1]. North American BBS trend data suggest that Chestnut-collared Longspur has experienced large population declines in all regions of its continental breeding distribution, including Wyoming, between 1966–2013 and 2003–2013 [13]. Survey-wide BBS trend data indicate that Chestnut-collared Longspur numbers experienced statistically significant annual declines of 4.35% from 1966–2013 and 3.48% from 2003–2013 [13].

Intrinsic Vulnerability:
MODERATE VULNERABILITY
Chestnut-collared Longspur has moderate intrinsic vulnerability in Wyoming because it is restricted to a narrow range of habitat types and has nesting behaviors that may leave the species susceptible to nest loss. The species can tolerate some disturbances to grassland, but Chestnut-collared Longspur may be negatively affected by processes that convert native shortgrass and mixed-grass prairie to other cover types, or that promote especially dense and heavy vegetation. As a species that nests on the ground in relatively exposed environments, Chestnut-collared Longspur is vulnerable to predation and ground disturbance (both natural and anthropogenic) during the breeding season [1].

Extrinsic Stressors:
MODERATELY STRESSED
Prairie grassland habitats in eastern Wyoming are vulnerable to development for energy, infrastructure, and agriculture; invasive plant species such as Cheatgrass (*Bromus tectorum*) and Canada Thistle (*Cirsium arvense*); off-road recreational activities; altered fire and grazing regimes; and drought and climate change [6]. Habitat loss and conversion represent significant threats to Chestnut-collared Longspur across its continental distribution, and have already led to population declines and range contractions [1, 5]. Additionally, the species has shown sensitivity to

reduced habitat patch size and increased density of edges with other habitats [1, 14]. Chestnut-collared Longspur avoids most croplands, is found at lower densities and has reduced fitness in fields and pastures planted with non-native grasses, and is less likely to occur in habitats with a high percent cover of introduced forbs [1, 5, 14]. The species is very tolerant of, and sometimes favors, habitat disturbances that help maintain short and sparse vegetation, especially grazing [1]. Chestnut-collared Longspur responses to natural resource development (i.e., wind, oil, natural gas) are variable across its distribution [1, 15, 16]. The species is vulnerable to direct and indirect effects from various pesticides used to control agricultural pests [1, 5]. However, it is unknown how these potential stressors are affecting Chestnut-collared Longspurs in Wyoming.

KEY ACTIVITIES IN WYOMING

Chestnut-collared Longspur is classified as a Species of Greatest Conservation Need (SGCN) by the Wyoming Game and Fish Department, and as a Level II Priority Bird Species requiring monitoring in the Wyoming Bird Conservation Plan [17]. In 2009, the Wyoming Natural Diversity Database conducted migration and breeding season surveys of upland songbirds on the Laramie Plains National Wildlife Refuges. These surveys detected Chestnut-collared Longspur and provided baseline knowledge on habitat use and abundances for the species in that area [18]. Current statewide activities for monitoring annual detections and population trends for Chestnut-collared Longspur in Wyoming include the BBS program conducted on 108 established routes since 1968 [13], and the multi-agency IMBCR program initiated in 2009 [12]. There are currently no research projects designed specifically for Chestnut-collared Longspur in Wyoming.

ECOLOGICAL INFORMATION NEEDS

In Wyoming, Chestnut-collared Longspur would benefit from research to learn more about nest success and fledging survival. It is unknown how breeding Chestnut-collared Longspurs in the state respond to grassland management practices such as livestock grazing and prescribed fires. Additional research is needed to examine how the species is affected by various forms of industrial development in the state (e.g., wind energy, oil and natural gas, agriculture, urbanization). Pesticide applications, especially in the context of grasshopper outbreaks in Wyoming, have the potential to drastically lower Chestnut-collared Longspur reproductive success and population performance, and should be studied further.

MANAGEMENT IN WYOMING

This section authored solely by WGFD; Zachary J. Walker. Chestnut-collared Longspur is classified as a SGCN in Wyoming due to habitat loss, fragmentation, and susceptibility to anthropogenic disturbances. Declines have been documented, both recent and historic, for Chestnut-collared Longspur, and it is important to monitor species populations. Currently, there are two separate but compatible survey programs in place to monitor populations of many avian species that breed in Wyoming. The first is the long-term BBS started in Wyoming in 1968 with 108 established routes (Sauer et al. 2014). The second is the IMBCR program which was established in 2009 in Wyoming with many state, federal, and nongovernmental organization partners that contribute funding, field personnel, technical assistance, or in-kind services. It is recommended that these survey programs be continued into the future to help monitor Chestnut-collared Longspur. Additional targeted surveys and research may be warranted for Chestnut-collared Longspur to address specific population maintenance questions. It is recommended that nesting areas for Chestnut-collared Longspur be managed to minimize habitat alteration and

fragmentation, while maintaining the species' preferred vegetation structure. Pesticide application should be postponed when possible to avoid impacting breeding populations. Prescribed burns conducted in known breeding habitats for Chestnut-collared Longspur should be conducted in early fall and designed to retain nesting cover.

CONTRIBUTORS

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Figure 1: Adult male (left) and female (right) Chestnut-collared Longspurs in Albany County, Wyoming. (Photos courtesy of Shawn Billerman)

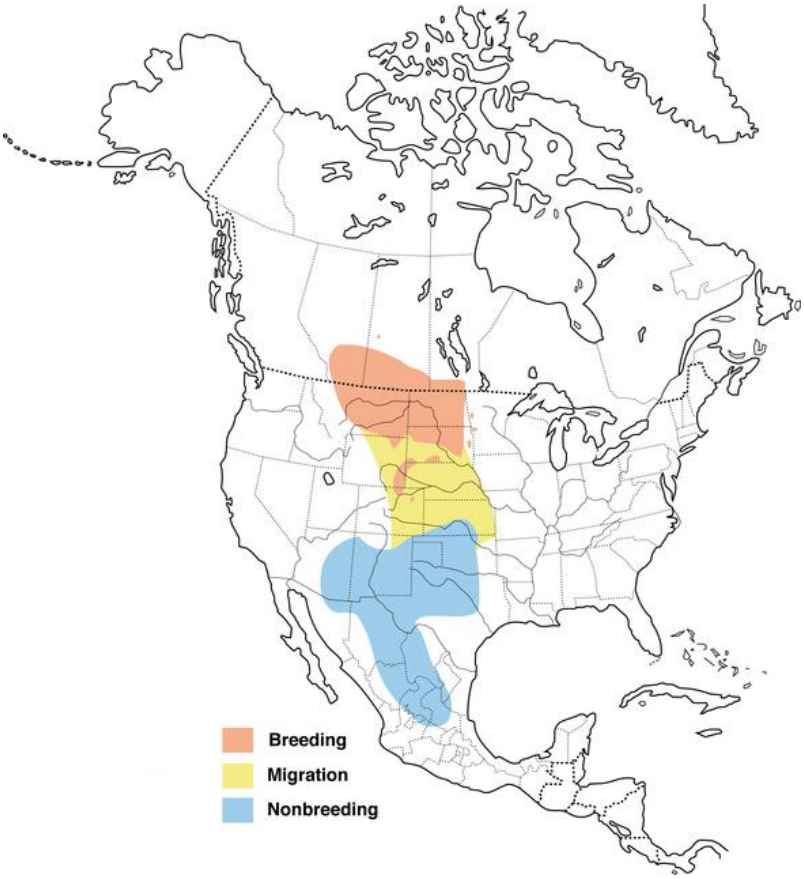

Figure 2: North American range of *Calcarius ornatus*. (Map courtesy of Birds of North America, http://bna.birds.cornell.edu/bna, maintained by the Cornell Lab of Ornithology)

Figure 3: Chestnut-collared Longspur habitat in Thunder Basin National Grassland, Wyoming. (Photo courtesy of Michael T. Wickens)

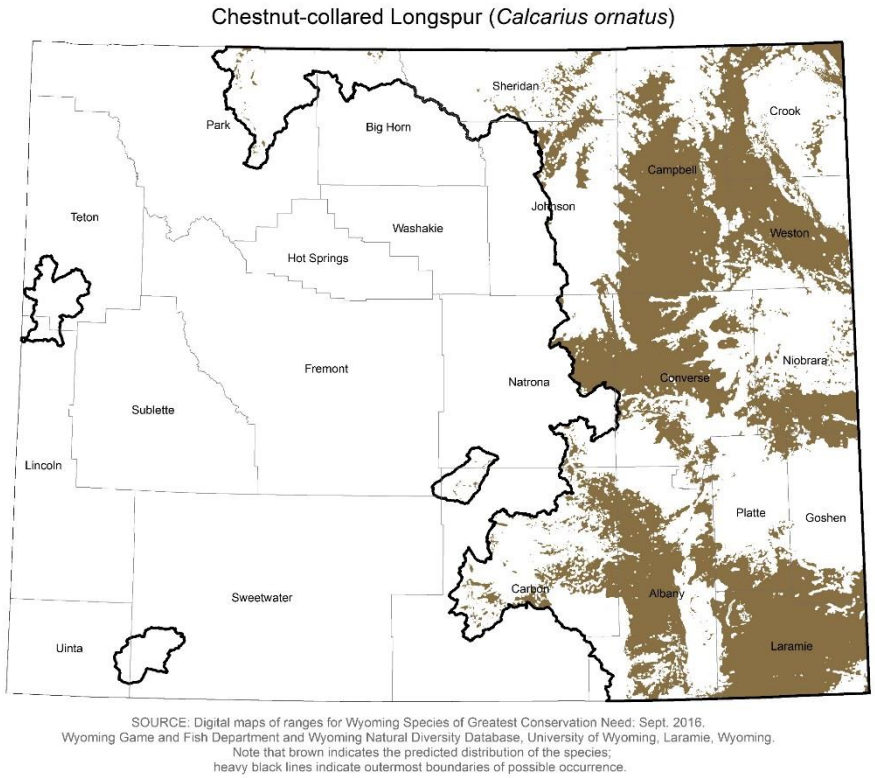

Figure 4: Range and predicted distribution of *Calcarius ornatus* in Wyoming.