

## Grasshopper Sparrow

*Ammodramus savannarum*

### **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, S4

Wyoming Contribution: MEDIUM

IUCN: Least Concern

PIF Continental Concern Score: 12

### **STATUS AND RANK COMMENTS**

Grasshopper Sparrow (*Ammodramus savannarum*) has no additional regulatory status or conservation rank considerations beyond those listed above.

### **NATURAL HISTORY**

#### **Taxonomy:**

There are eleven or twelve recognized subspecies of Grasshopper Sparrow. Of the four subspecies that breed in North America, only *A. s. perpallidus* is found in Wyoming<sup>1, 2</sup>.

#### **Description:**

Identification of Grasshopper Sparrow is possible in the field. The species is similar in size and shape to most sparrows, about 11 cm long. Males, females, and juveniles are identical in appearance. The species has a small, flat head with a pale stripe through the darkish crown, combined with an unstreaked breast and orange-yellow lores and faint whitish eye-ring. Savannah Sparrow (*Passerculus sandwichensis*) is similar in both appearance and habitat use. However, the Savannah Sparrow has a streaked breast. Other sparrows in the genus *Ammodramus* may be found in Wyoming during migration, but the Grasshopper Sparrow is the only species with an unmarked, plain breast. Other sparrow genera in Wyoming are larger, and lack the flat head of the Grasshopper Sparrow<sup>3</sup>.

#### **Distribution & Range:**

Grasshopper Sparrow is distributed across North America during the breeding season. Generally, the species is found east of the continental divide, but also in basins west of the divide. Wyoming is at the western edge of most of the continental distribution of the species. Grasshopper Sparrow has been observed in 24 of Wyoming's 28 latitude/longitude degree blocks, with confirmed or suspected breeding documented in 15 degree blocks<sup>4</sup>. The species migrates out of Wyoming for the winter to the southern United States, Mexico, and Central America. Despite major population

declines, breeding and winter ranges have remained widespread, and no range contractions have been documented<sup>1, 5</sup>.

**Habitat:**

Grasshopper Sparrow uses a broad array of open grassland habitat types. Habitat is characterized by a patch size of at least 8 ha and vegetation averaging 30cm in height with at least 50% grass cover. Additional characteristics include patches of bare ground among clumped vegetation, and sparse shrub cover<sup>5</sup>. Herbaceous vegetation provides nest material and concealment<sup>5</sup>. In Wyoming, the species breeds in any suitable habitat<sup>5</sup>. Quality habitat can be found in the shortgrass prairies found in the eastern portion of the state, including Thunder Basin National Grassland<sup>6</sup>. Habitat use during migration and winter is similar to the breeding season<sup>1, 5</sup>.

**Phenology:**

Grasshopper Sparrow arrives in Wyoming in early to mid-May<sup>7</sup>. Pair formation, nest construction, and egg laying occur a short time after females arrive on the breeding grounds, generally 2–3 days after males. Incubation lasts 11–13 days, and fledging occurs when young are 6–9 days old. Fledglings likely become independent at about 2 weeks after leaving the nest<sup>1</sup>. Fall migration in Wyoming begins in August, and most birds are gone by September<sup>7</sup>.

**Diet:**

On the breeding grounds, Grasshopper Sparrow primarily feeds upon grasshoppers (order Orthoptera), as well as seeds and other insects. In winter, the species primarily eats seeds, mostly from grasses and sedges<sup>1</sup>.

**CONSERVATION CONCERNS**

**Abundance:**

**Continental:** WIDESPREAD

**Wyoming:** COMMON

Using North American Breeding Bird Survey (BBS) data, the Partners in Flight Science Committee estimated the global population of Grasshopper Sparrow to be 31 million birds<sup>8</sup>. Approximately 2.6% of the global population, or around 800,000 birds, is estimated to breed in Wyoming<sup>9</sup>; however, this state estimate is likely high and should be viewed with caution. The statewide rank of COMMON is based on the relatively large area of the state known to be occupied in any given season, and the large coverage of suitable habitat within that area. Within suitable habitat in the occupied area, Grasshopper Sparrow also appears to be common and is usually encountered during surveys that could be expected to indicate its presence<sup>10</sup>. From 1968–2015, annual Wyoming BBS detections of Grasshopper Sparrow ranged from 0 to 406 (average = 89), with 107 recorded in 2015<sup>11</sup>. Annual detections of Grasshopper Sparrow ranged from 71 to 238 during surveys for the Integrated Monitoring in Bird Conservation Regions (IMBCR) program between 2009–2015<sup>12</sup>. Estimated mean density across this same time period was 2.87 birds per km<sup>2</sup> (standard deviation 1.48, standard error 0.56) in suitable habitats in Wyoming<sup>12</sup>.

**Population Trends:**

**Historic:** LARGE DECLINE

**Recent:** MODERATE DECLINE

Survey-wide trend data from the North American BBS indicate that Grasshopper Sparrow numbers experienced statistically significant annual decreases of 2.83% from 1966–2013 and

1.93% from 2003–2013<sup>13</sup>. Wyoming BBS trend data indicate that Grasshopper Sparrow increased by 0.87% annually from 1968–2013 and declined by 0.77% annually from 2003–2013; however, neither state estimate was statistically significant<sup>13</sup>.

**Intrinsic Vulnerability:**

**MODERATE VULNERABILITY**

Grasshopper Sparrow has a somewhat restricted habitat preference which makes the species moderately vulnerable. In Wyoming, Grasshopper Sparrow is generally restricted to native shortgrass prairie<sup>5</sup>. Across the species' range, the minimum habitat patch size the species requires varies from 8 ha to over 100 ha. Patch size requirements vary with habitat and geographic location. Additionally, smaller patches have lower abundance and breeding success than larger patches<sup>5, 14</sup>. The species is subject to Brown-headed Cowbird (*Molothrus ater*) parasitism, which can reduce breeding success<sup>1</sup>.

**Extrinsic Stressors:**

**MODERATELY STRESSED**

Due to human impacts to habitat of Grasshopper Sparrow in Wyoming, the species is moderately threatened. Conversion of native prairie habitat to agricultural or other habitat types is an ongoing threat to Grasshopper Sparrow<sup>5</sup>. Habitat fragmentation from natural resource, agricultural, and urban development is also an ongoing threat to the species<sup>5</sup>. Breeding success and productivity are lower in areas with high proportions of edge habitat, as well as in grazed or mowed areas<sup>15-17</sup>. Grasshopper Sparrow males perform a low aerial display during courtship<sup>1</sup>, so wind power development in nesting areas may be problematic<sup>18</sup>.

**KEY ACTIVITIES IN WYOMING**

Grasshopper Sparrow is listed as a Species of Greatest Conservation Need (SGCN) in Wyoming by the Wyoming Game and Fish Department (WGFD), and as a Level II Priority Bird Species requiring monitoring in the Wyoming Bird Conservation Plan<sup>18</sup>. Current statewide activities for monitoring annual detections and population trends for Grasshopper Sparrow in Wyoming include the BBS program conducted on 108 established routes since 1968, and the multi-partner IMBCR program initiated in 2009. Trend data are available on the U.S. Geological Survey BBS website<sup>13</sup>, and occupancy, density, population estimates, and decision support tools are available through the Rocky Mountain Avian Data Center<sup>12</sup>. BBS surveys are conducted annually in Wyoming, and detect Grasshopper Sparrow in sufficient numbers to provide population estimates and trends for the state<sup>13, 19</sup>. The IMBCR program detects Grasshopper Sparrow in Wyoming, and surveys have occurred annually since 2009<sup>12</sup>. Additionally, WGFD initiated a targeted grassland SGCN monitoring program in 2015 for Mountain Plover, Upland Sandpiper, Long-billed Curlew, and Burrowing Owl<sup>20</sup>. While Grasshopper Sparrow is not a target species, all individuals detected are recorded and documented in the WGFD species database.

**ECOLOGICAL INFORMATION NEEDS**

Demographics of Grasshopper Sparrow specific to Wyoming are poorly understood. Specific habitat requirements in Wyoming, especially patch size requirements, are unknown. The extent natural resource development impacts the species in Wyoming are unknown. Effects of land management practices are largely unknown<sup>5</sup>. The effects of climate change on Grasshopper Sparrow is unknown.

## **MANAGEMENT IN WYOMING**

*This section authored solely by WGFD; Andrea C. Orabona.* The Grasshopper Sparrow is classified as a SGCN in Wyoming. Although populations are stable in the state, the species is vulnerable to severe habitat impacts that can occur from increased industrialization, habitat degradation, and conversion of grasslands<sup>18</sup>. Two separate but compatible survey programs are in place to monitor Brewer's Sparrow populations. The first is the long-term BBS started in Wyoming in 1968 with 108 established routes<sup>13</sup>. Species must be detected on at least 14 routes for data analyses to be significant for tracking population status and trend over time. The IMBCR program 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. Data analyses produce density, occupancy, and population estimates at various scales and provide decision support tools for managers<sup>12</sup>. Best management practices to benefit Grasshopper Sparrows include continued monitoring, as well as maintaining large tracts of intact grassland habitats with dense grass of heights up to 46 cm, heavy forb cover, thick litter depth, 1–2% bare ground overall, minimal (5% or less) shrub cover, and singing perches<sup>18,21</sup>. While high intensity livestock grazing can be detrimental to Grasshopper Sparrow, low to moderate rotational grazing, light fall burning, delayed spring mowing, and minimal insecticide use can be used as habitat management tools<sup>18</sup>.

## **CONTRIBUTORS**

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Figure 1: Singing Grasshopper Sparrow in Morgan County, Colorado. (Photo courtesy of Bill Schmoker)

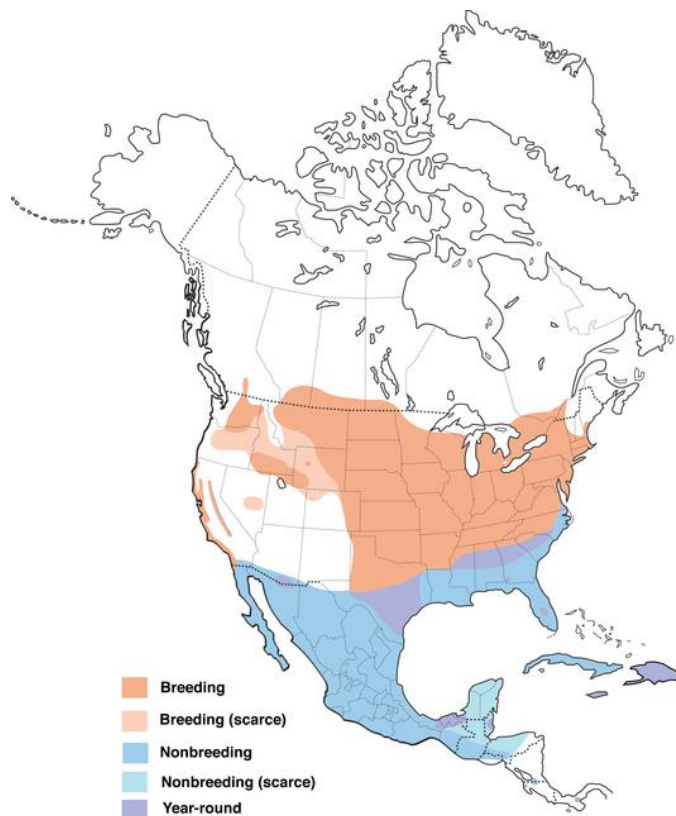
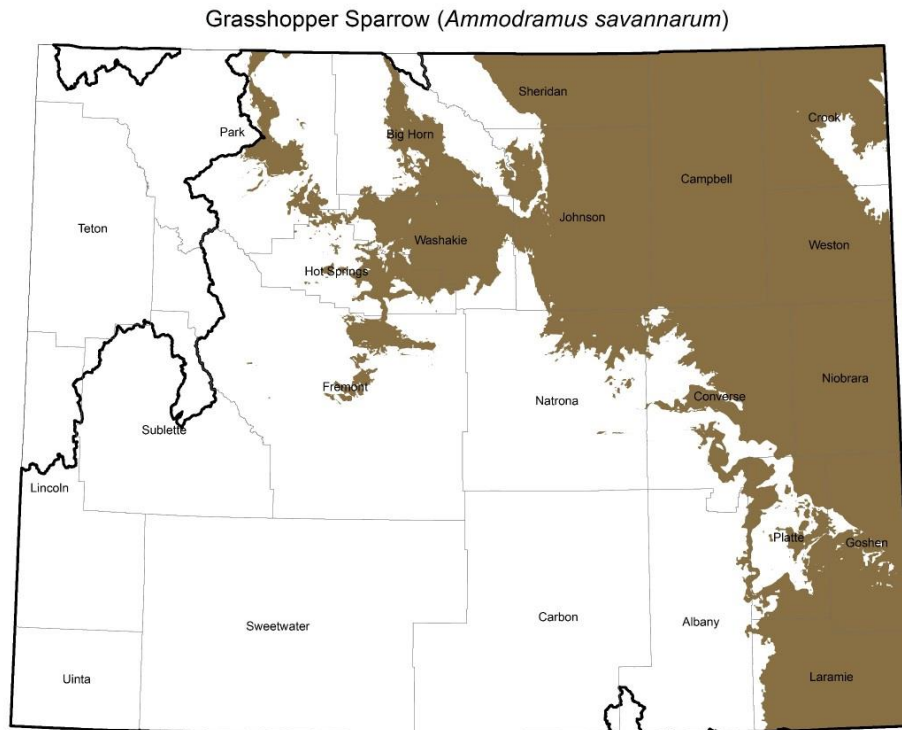


Figure 2: North American range of *Ammodramus savannarum*. (Map courtesy of Birds of North America, <http://bna.birds.cornell.edu/bna>, maintained by the Cornell Lab of Ornithology)



Figure 3: Grasshopper Sparrow habitat in Thunder Basin National Grassland. (Photo courtesy of Michael T. Wickens)



SOURCE: Digital maps of ranges for Wyoming Species of Greatest Conservation Need, Sept. 2016.  
Wyoming Game and Fish Department and Wyoming Natural Diversity Database, University of Wyoming, Laramie, Wyoming.  
Note that brown indicates the predicted distribution of the species;  
heavy black lines indicate outermost boundaries of possible occurrence.

Figure 4: Range and predicted distribution of *Ammodramus savannarum* in Wyoming.





Figure 5: Grasshopper Sparrow Nest, Chestertown, Maryland. (Photo courtesy of Archer F. Larned)