

## **Columbian Sharp-tailed Grouse** *Tympanuchus phasianellus columbianus*

### **REGULATORY STATUS**

USFWS: Listing Denied  
USFS R2: Sensitive  
USFS R4: Sensitive  
Wyoming BLM: Sensitive  
State of Wyoming: Game Bird (see regulations)

### **CONSERVATION RANKS**

USFWS: No special status  
WGFD: NSS4 (Cb), Tier II  
WYNDD: G4T3, S1  
Wyoming Contribution: HIGH  
IUCN: Not evaluated  
PIF Continental Concern Score: Not ranked

### **STATUS AND RANK COMMENTS**

Two petitions to list Columbian Sharp-tailed Grouse (*Tympanuchus phasianellus columbianus*) under the Endangered Species Act have been filed with the U.S. Fish and Wildlife Service in the recent past. The Service most recently determined the subspecies was not warranted for listing in 2006<sup>1</sup>.

### **NATURAL HISTORY**

#### **Taxonomy:**

There are currently seven recognized subspecies (1 extinct) of Columbian Sharp-tailed Grouse in North America<sup>1</sup>. Recent genetic studies have found that Sharp-tailed Grouse in south-central Wyoming and northwest Colorado are genetically different from both the Columbian form farther west and the Plains (*T. p. jamesi*) form in the Great Plains; south-central Wyoming birds were most similar to the Plains form<sup>2</sup>. Until taxonomy is assessed more completely, Sharp-tailed Grouse occurring west of the Continental Divide in Wyoming are considered Columbian Sharp-tailed Grouse. Hybridization between Columbian Sharp-tailed Grouse and Greater Sage-Grouse (*Centrocercus urophasianus*) can occur when leks are in close proximity, as occurs in south-central Wyoming.

#### **Description:**

Columbian Sharp-tailed Grouse is a medium-sized grouse (41–47 cm total length; 596–1,031 g body mass)<sup>3</sup>. Males are slightly larger than females, but otherwise both sexes are similar with round bodies, short legs, short crests, and elongated central rectrices. Plumage is mostly drab gray-brown, with darker brown (approaching black) barring on head, neck, back, and wings. Breast, belly, and undertail coverts are white, and primaries have conspicuous white spots. Both males and females have a yellow-orange, crescent-shaped comb over each eye. Males expose and inflate pale violet air sacs on each side of neck during mating displays. Males also have

linear marks on the central rectrices, whereas females have barred central rectrices<sup>3</sup>. The distinctive pointed tail, V-shaped marks on the upper belly feathers, and white spots on the upper surface of the wing feathers separate Sharp-tailed Grouse from Greater Sage-Grouse and Dusky Grouse (*Dendragapus obscurus*). Columbian Sharp-tailed Grouse is the smallest and darkest of all 7 subspecies of *T. phasianellus*, with more pronounced spotting on the throat and narrower underside markings<sup>1</sup>.

**Distribution & Range:**

Various historical accounts indicate that Columbian Sharp-tailed Grouse was once much more abundant throughout its range where suitable habitats occurred<sup>1</sup>. Past declines in the subspecies' abundance and distribution have isolated various extant populations. However, at large geographic scales (e.g., states, ecoregions), the overall range of Columbian Sharp-tailed Grouse appears to have changed little since the mid-1900s<sup>1</sup>. Past reports suggested the range for Columbian Sharp-tailed Grouse may have declined by up to 90% in Wyoming<sup>1</sup> but recent updates to the sub-species distribution map more thoroughly considered historic observations and habitats, and ultimately removed the Red Desert and most of the Upper Green River Basin from previously delineated historic habitat. Columbian Sharp-tailed Grouse is endemic to Big Sagebrush (*Artemisia tridentata*), shrub-steppe, mountain shrub, and riparian shrub plant communities in western Wyoming and other western states. Columbian Sharp-tailed Grouse occupies two locations in Wyoming. One small population occupies the southeastern corner of Grand Teton National Park, in a portion of the subspecies' former range from which it was extirpated in the 1940s. Presumably, this population (one small lek) is the result of range expansion from a population in Teton Valley, Idaho. The second population is much larger and occupies the Little Snake River drainage in south-central Wyoming. As of 2016, there are over 30 leks in this small but robust sub-population, which is a northward extension of a much larger population that inhabits northwest Colorado.

**Habitat:**

Columbian Sharp-tailed Grouse inhabits mountain-foothills shrub communities of serviceberry (*Amelanchier* spp.), snowberry (*Symphoricarpos* spp.), Chokecherry (*Prunus virginiana*), and Gambel Oak (*Quercus gambelii*); sagebrush-grassland; and willow (*Salix* spp.)-riparian habitats<sup>4</sup>. In Wyoming, it prefers mountain-foothills shrub and sagebrush-snowberry habitats in the transitional zone between sagebrush-grass and forested habitats<sup>5</sup>. Leks are the hub of breeding activity and are typically located in relatively flat areas with low and sparse vegetation, such as knolls, ridgetops, or benches that allow good visibility<sup>6</sup>. Nests are located within 2 km (1.2 mi) of the lek in relatively tall and dense residual vegetation from the previous year<sup>4</sup>. Brood-rearing areas contain a mosaic of dense shrubs and grasses with rich forb and insect foods, usually in mountain-foothills shrub or sagebrush-snowberry habitats<sup>7</sup>. These areas must be structured so chicks can easily move through the vegetation. During winter, Columbian Sharp-tailed Grouse relies on riparian areas and other sites within 6.4 km (4 mi) of the breeding complex with deciduous trees and shrubs for feeding, roosting, and escape cover<sup>4</sup>. Columbian Sharp-tailed Grouse also uses dense agronomic grasslands and old hay meadows, and populations have responded positively to the Conservation Reserve Program that set aside former agricultural lands in Colorado and Idaho<sup>4</sup>.

**Phenology:**

Columbian Sharp-tailed Grouse is a year round resident in Wyoming with interchange between both Colorado and Idaho. Males display in the spring (April–May) to attract females to

communal dancing grounds called leks. Established leks may be used for many years, although their precise locations may shift over time. After breeding, females build nests under shrubs or grasses, typically within 2.0 km of the lek where they were bred and within good brood rearing habitat<sup>4</sup>. Hens incubate eggs for 21–24 days. Re-nesting often occurs if the first nest is abandoned or depredated<sup>4</sup>. Clutch size typically ranges from 10–12<sup>4</sup>. After hatching, chicks remain with their mothers in broods for 6–8 weeks. Columbian Sharp-tailed Grouse remains in shrub-steppe habitats until the onset of snow, when it forms small flocks and moves to either riparian or mountain shrub communities where vegetation remains exposed. Columbian Sharp-tailed Grouse is believed to have a life span of up to three years<sup>4</sup>.

**Diet:**

Adult Columbian Sharp-tailed Grouse mainly eat plant materials, changing from forbs, grasses, fruits and seeds in summer to the buds and fruits of deciduous trees and shrubs in winter<sup>4</sup>. Insects are a minor component of adult Columbian Sharp-tailed Grouse diet; however, chicks feed almost exclusively on insects during their first 2–3 weeks of life<sup>4</sup>.

**CONSERVATION CONCERNS**

**Abundance:**

**Continental:** WIDESPREAD BUT PATCHY

**Wyoming:** RARE

In 2015, a total of 710 Columbian Sharp-tailed Grouse were counted on 25 leks across Wyoming. 704 (both males and females) of these grouse were located in the Little Snake River area of occurrence across 24 counted leks, while only 6 grouse (males only) were counted in the Jackson portion of the population. Although rare at a statewide scale and within Jackson Hole, the subspecies is considered common within the Little Snake River area of occurrence.

**Population Trends:**

**Historic:** LARGE DECLINE

**Recent:** INCREASE

Past reports suggested the range for Columbian Sharp-tailed Grouse may have declined by up to 90% in Wyoming<sup>1</sup>, but recent assessments more thoroughly considered historic observations and habitats, and ultimately removed the Red Desert and most of the Upper Green River Basin from previously delineated historic habitat. Populations of Columbian Sharp-tailed Grouse in Wyoming are monitored only through raw lek counts. This technique has limitations based on number of leks counted each year and weather. Despite this uncertainty, indications are that populations in south-central Wyoming are increasing. The highest number of grouse counted on leks in this area prior to 2015 was 354 in 2005. The population in the Jackson area is small but stable. Since 2010 male counts on the lek have ranged from 4–10 with an average of 6.

**Intrinsic Vulnerability:**

**LOW VULNERABILITY**

There are few intrinsic stressors to Columbian Sharp-tailed Grouse in Wyoming. One potential stressor may be the overlap in habitat with Greater Sage-Grouse in the Little Snake River center of occurrence<sup>5</sup>. Currently 9 Columbian Sharp-tailed Grouse leks fall with the South Rawlins Greater Sage-Grouse core area. The potential for competition for nesting and brood rearing habitat between the two species is high. There is also potential for hybridization, with many Columbian Sharp-tailed Grouse leks located close to Greater Sage-Grouse leks.

**Extrinsic Stressors:**

**MODERATELY STRESSED**

Threats to Columbian Sharp-tailed Grouse populations in Wyoming and range wide are primarily from degradation, fragmentation, and loss of habitat. Given the potential for more industrial development in Wyoming, increased loss and fragmentation of Columbian Sharp-tailed Grouse habitat is likely <sup>4</sup>. While Sharp-tailed Grouse appear to adapt to human disturbance better than other species of prairie grouse <sup>4</sup>, very few studies have assessed the impact of industrial development on Columbian Sharp-tailed Grouse <sup>4</sup>. The few such studies in existence have mainly involved reclaimed coal mines, and thus are not relevant to the occupied areas within Wyoming. A majority of impacts will be from oil and natural gas development within the Little Snake River area. As energy developments, including wind energy, increase within this area it will be important to closely monitor Columbian Sharp-tailed Grouse populations. Effects from prescribed and wildfire vary with site conditions and are not well understood <sup>4</sup>. The effects of livestock grazing are complex and often contentious, but managing grazing to maintain long-term stability of Columbian Sharp-tailed Grouse habitat as well as viable ranching operations is a realistic goal <sup>4</sup>.

**KEY ACTIVITIES IN WYOMING**

In 2015, the Wyoming Game and Fish Department, Bureau of Land Management (BLM) and the University of Wyoming modeled the relative probability of lek occurrence within the known distribution of Columbian Sharp-tailed Grouse in the state to assist in locating previously undocumented leks. That work located 6 previously undocumented Columbian Sharp-tailed Grouse leks in south-central Wyoming <sup>8</sup>. This research is part of a new focus on the Little Snake River population, and new projects involving radio-tagging and genetics have recently been proposed and partially funded by the BLM.

**ECOLOGICAL INFORMATION NEEDS**

Knowledge of Columbian Sharp-tailed Grouse distribution and seasonal habitat use in Wyoming is limited. There is a strong need to determine the response of Columbian Sharp-tailed Grouse to human activities, including energy development. There is also a need to determine the genetic status of the birds in the Little Snake River area and adjacent northwestern Colorado to more confidently distinguish them from, or group them with, the Plains or Columbian sub-species as they are currently understood.

**MANAGEMENT IN WYOMING**

*This section authored solely by WGFD; Tony Mong.* Current management activities focused on Columbian Sharp-tailed Grouse involve collecting better population demographic data and genetic identity of the Little Snake River population. Information on demographics of the Wyoming populations is currently non-existent, which has led to a lack of management specifically for this subspecies. As energy development increases in occupied areas it will be necessary to have solid baseline data to understand the impacts. In addition, there has been much discussion regarding hunting the Little Snake River population. Although a very limited season is possible, understanding the demographics of the population will allow for more confident establishment of any future harvest regulations. As previously mentioned, recent genetic research suggests Sharp-tailed Grouse in northwestern Colorado and south-central Wyoming may be somewhat unique from populations farther to the west and east. This genetic situation needs to be

better understood in order to determine future management activities and proper conservation status.

### **CONTRIBUTORS**

Tony Mong, WGFD

Tom Christiansen, WGFD

Gary P. Beauvais, WYNDD

### **REFERENCES**

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- [8] Smith, K. T., Beck, J. L., Mong, T. W., and Blomquist, F. C. (2016) Identification of Columbian Sharp-tailed Grouse lek sites in south central Wyoming, *Western North American Naturalist* 76, 135-141.



Figure 1: Adult male Columbian Sharp-tailed Grouse in Carbon County, Wyoming. (Photo courtesy of Gary Sundberg)

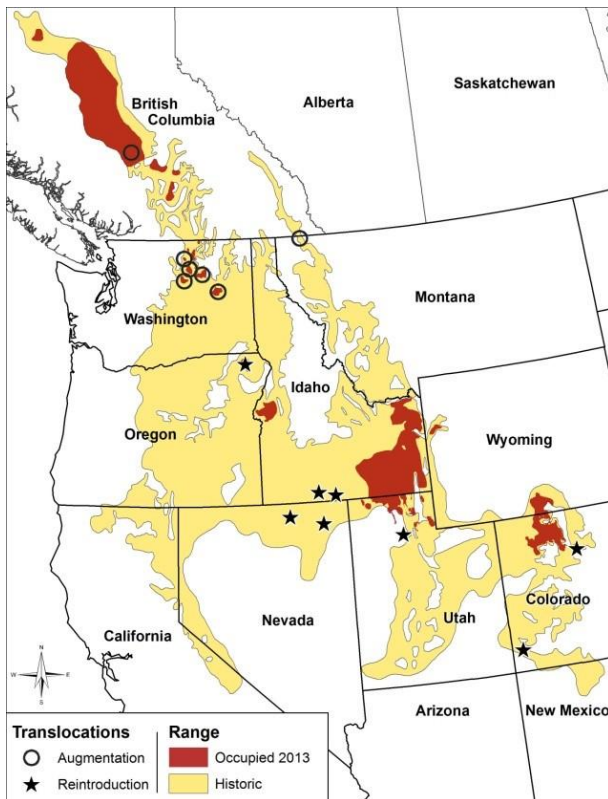


Figure 2: Historic and current distribution (includes translocation sites) of *Tympanuchus phasianellus columbianus* in western North America. (Map updated and modified from: Stinson, D. W., and Schroeder, M. A. (2012) Washington state recovery plan for the Columbian Sharp-tailed Grouse. Washington Department of Fish and Wildlife, Olympia, USA.)

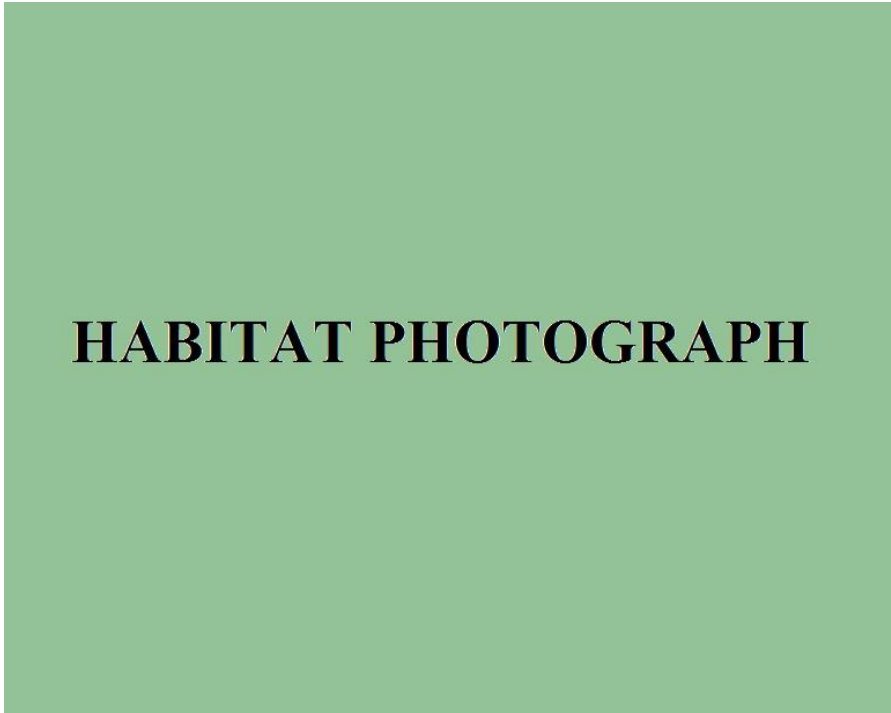


Figure 3: Photo not available.

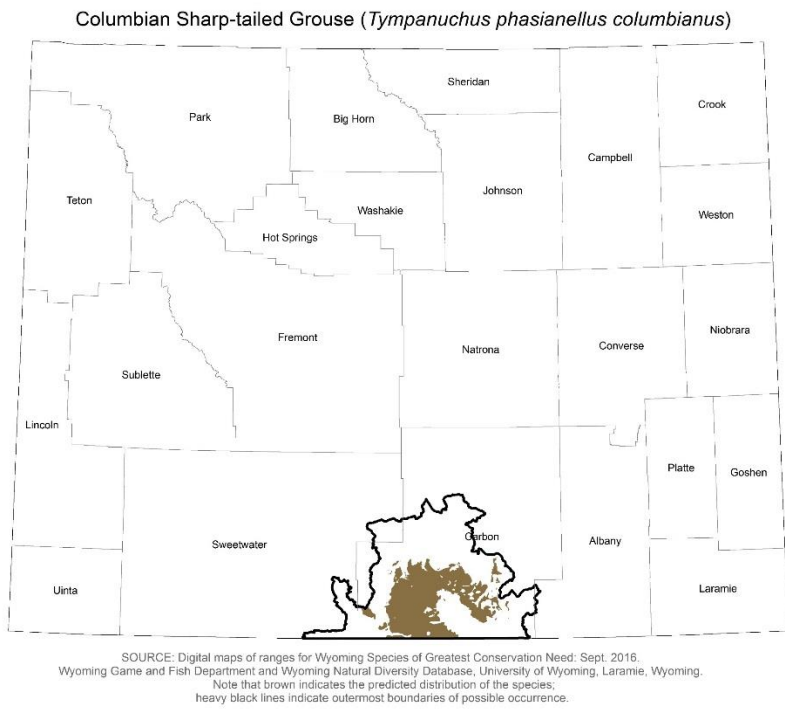


Figure 4: Range and predicted distribution of *Tympanuchus phasianellus columbianus* in Wyoming.



Figure 5: Male Columbian Sharp-tailed Grouse displaying on a lek in Carbon County, Wyoming. (Photo courtesy of Jacob Hennig)