

“COLUMBIAN” SHARP-TAILED GROUSE

Tympanuchus phasianellus columbianus

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Species Information

Taxonomy

The Columbian Sharp-tailed Grouse is one of six subspecies of Sharp-tailed Grouse, a species found only in North America. Three subspecies occur in British Columbia: *Tympanuchus phasianellus columbianus*, *T. phasianellus caurus*, and *T. phasianellus jamesi*.

Description

Medium-sized grouse (length 41–48 cm; weight 596–1031 g); both sexes have similar plumage; overall cryptically coloured; white breast with several V-shaped brown markings; head, neck, and back are heavily barred dark brown, black, and buff; wedge-shaped tail; two middle tail feathers extend past other tail features. During display, males can be identified by pink air sacs on either side of neck and by linearly marked central rectrices (Tirhi 1995, Connelly et al. 1998).

Distribution

Global

Sharp-tailed Grouse range from north-central Alaska and the Yukon east to central-western Quebec, south through the western North American interior to eastern Oregon, northern Utah, Colorado, Minnesota, and northern Michigan. The Columbian Sharp-tailed Grouse occurs in parts of the intermountain or Great Basin region of western North America from southcentral British Columbia

south to Colorado. In Idaho, Montana, Utah, and Wyoming, it inhabits <10% of its historic range; in Colorado and Washington from 10 to 50% of its original range; in British Columbia the estimate is from approximately 80% (Tirhi 1995).

British Columbia

In British Columbia, the Columbian subspecies is found from near Vanderhoof south to Merritt, east to the Cariboo Mountains, and west to the Coast Ranges.

Forest region and districts

Northern Interior: Vanderhoof

Southern Interior: 100 Mile House, Arrow

Boundary, Cascades, Central Cariboo, Chilcotin, Kamloops, Okanagan Shuswap, Quesnel, Rocky Mountain

Ecoprovinces and ecosections

CEI: BUB, CAB, CCR, CHP, FRB, NAU, QUL

SBI: BAU, NEL

SIM: EKT, UCV

SOI: GUU, NIB, NOB, NOH, NTU, OKR, PAR, SHB, SOB, SOH, STU, THB, TRU

Biogeoclimatic units

BG: xh1, xh2, xh3, xw, xw1, xw2

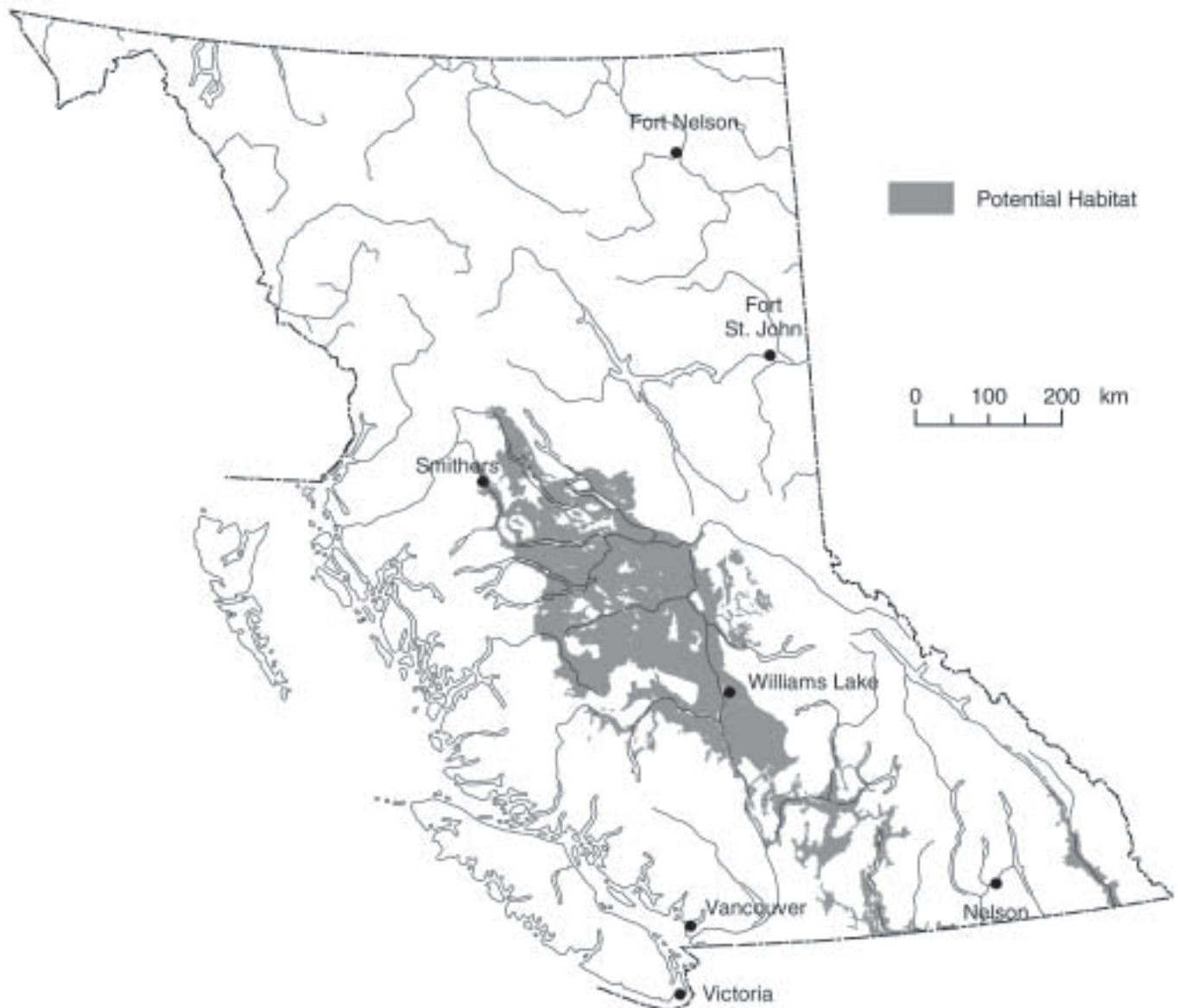
IDF: dk1, dk2, dk3, dk4, dm1, dm2, mw1, mw2, mw2a, un, xh1, xh1a, xh2, xh2a, xh2b, xm, xw, xw2

PP: dh1, dh2, xh1, xh1a, xh2, xh2a

SBS: dk, dw2, dw3, mh

SBPS: xc

Sharp-tailed Grouse - subspecies *columbianus* (*Tympanuchus phasianellus columbianus*)



Note: This map represents a broad view of the distribution of potential habitat used by this species. The map is based on several ecosystem classifications (Ecoregion, Biogeoclimatic and Broad Ecosystem Inventory) as well as current knowledge of the species' habitat preferences. This species may or may not occur in all areas indicated. More detailed maps are available for this species from the Ministry of Sustainable Resource Management.

Broad ecosystem units

Breeding		Nesting		Season Summer		Fall		Winter	
Unit	Structural stage	Unit	Structural stage	Unit	Structural stage	Unit	Structural stage	Unit	Structural stage
BS	all	AC	2,3	AC	2,3	AC	all	BS	all
DF	2,3	BS	all	BS	all	BS	all	CF	all
DL	2,3	CF	all	CF	all	CF	all	CR	all
LP	2,3	DL	2,3	DL	2,3	CR	all	DL	2,3,4
PP	2,3	DP	2,3	DP	2,3	DL	2,3,4	DP	all
		PP	2-7	PP	2,3	LP	2,3,4	FE	all
						PP		ME	all
								MR	all
								PP	all
								SC	all
								SH	all
								SS	all
								SW	all

Elevation (breeding)

275–1190 m

Life History

Diet and foraging behaviour

Sharp-tailed Grouse feed on a variety of plants and insects depending upon the season. The general pattern of food intake appears to be similar between Sharp-tailed Grouse occupying grasslands or clearcuts. In spring, Sharp-tailed Grouse eat forbs, grasses, and insects. Insects are more important in the summer and fall when they are more available. Chicks also feed primarily on insects and other invertebrates.

In early fall, Sharp-tailed Grouse of southern British Columbia eat mainly greens of several leafy plant species with grass leaves making up a lesser part of the diet. As fall progresses, berries become more important although green leaves are available and eaten until freeze up. Insects, chiefly grasshoppers, are a minor food item in fall. Sharp-tailed Grouse begin to eat leaves and twigs of deciduous trees with the approach of winter.

In winter, they feed primarily on buds and catkins of deciduous trees and shrubs. Of lesser importance are fruits and berries. Although Sharp-tailed Grouse are often found in open grassland habitats during winter, grass seeds appear to be a minor component of the diet during that season. Cultivated grains can supply quality winter food but little is grown in the range of Columbian Sharp-tailed Grouse in British Columbia.

For grassland populations, the most important forage species are snowberry (*Symphoricarpus alba*), rose (*Rosa species*), and dandelion (*Taraxacum officinale*). Important browse species include water birch (*Betula occidentalis*), trembling aspen (*Populus tremuloides*), saskatoon (*Amelanchier alnifolia*), and choke cherry (*Prunus virginiana*). Seeds from any source appear to be unimportant in the fall diet of grassland Sharp-tailed Grouse in British Columbia.

For populations utilizing clearcuts, the most important shrub species are kinnikinnick (*Arctostaphylos uva-ursi*), common juniper (*Juniper communis*), and prickly rose (*Rosa acicularis*). The most commonly eaten browse species is scrub birch (*Betula glandulosa*) and to a lesser extent, water birch and aspen.

Reproduction

Breeding males congregate at specific areas to display and attract females. Nearly all breeding occurs at these sites, known as leks. When a choice is available, females select males positioned near the centre of the lek. Calls from the leks may be heard for a distance of up to 1.5 km (Ritcey 1995).

Females lay a first clutch at 11 months of age and produce annually with a mean clutch size of 12.8. A high percentage of eggs are fertile and nearly all females nest. Re-nesting is common if the nest is destroyed leading to a second or sometimes third nesting attempt. There is one brood per year. Because of their high reproductive rate and variability in survival of young, sharp-tailed grouse populations show pronounced year-to-year fluctuations in fall numbers.

Site fidelity

Leks are traditional and may be used for many years if habitat remains unchanged and disturbance by humans is not too great. Males may tolerate most disturbances but females avoid disturbed leks (Baydack and Hein 1987).

Home range

Despite the ability for long flight, they may have relatively limited home ranges where year-round requirements are met within a small area. For example, in Montana males had a home range of 1.7 km² while females were 3.6 km² (Cope 1992); in Idaho during the summer both sexes used a 1.87 km² range (Marks and Marks 1987) and in British Columbia year round home ranges were 4.9 km² (Van Rossum 1992). Nests have been located within 100 m of lek and >3 km from lek sites but most are within 1.6 km of lek (Marks and Marks 1987; Meints 1991; Giesen and Connelly 1993).

Dispersal and movements

Sharp-tailed Grouse are considered non-migratory although they are well adapted to undertake long flights to obtain seasonal foods within their home range. Banded Sharp-tailed Grouse in South Dakota

travelled up to 148 km; juveniles travelled farther than adults and females travelled farther than males (Robel et al. 1972).

Habitat

Structural stage

See *Broad ecosystem units* table above.

Important habitats and habitat features

Breeding

Openness is an important requirement of a dancing ground (lek) because it enable the detection of predators and in attracting grouse to the lek by seeing and/or hearing displaying males. Leks are often located on ridge tops or elevated ground but not necessarily the highest ground available. Seclusion is an important attribute of successful leks.

Nesting

Adequate cover to conceal nests is crucial. Extensive areas of nesting habitat are necessary to prevent nest predators concentrating their searches. Residual grass cover with a minimum height of 25 cm is recommended for nesting habitat for grassland populations (Meints et al. 1992). Jury (pers. comm.) found four of five nests of radio-marked Sharp-tailed Grouse in clumps of residual bluebunch wheatgrass (*Pseudoroegneria spicata*) while a fifth was in a dense stand of Kentucky blue grass (*Poa pratensis*). Rough fescue (*Festuca campestris*) is also often dominant at many sites in British Columbia (D. Fraser, pers. comm.) There is conflicting information on characteristics of nesting habitat for “Columbian” Sharp-tailed Grouse in the U.S. Cope (1992) found nests located in native grass cover and only one nest found within 50 m of shrub cover while Tihri (1995) cited several studies in other states where shrub cover was the preferred nesting habitat.

Summer (brood)

Areas with an abundance of ground dwelling insects are vital for chicks. A high percentage of ground cover was a characteristic of brood rearing areas in Montana (Cope 1992). Tihri (1995) cited studies

that found shrub habitats to be preferred for raising broods in some areas while grass/forb habitats were used elsewhere. Few data are available on preferred brood habitats in British Columbia.

Fall

Berries are important both for grassland and clearcut populations. Disturbed areas such as roadsides and landings with abundant greens such as clovers, dandelion, and yarrow are heavily used. Lodgepole pine stands with developed or developing canopies have heavier crops of kinnikinnick than new clearcuts, especially in dry situations. Also in the first snowfalls of winter, locating berries and moving about in the understorey of those stands is facilitated by snow interception of the canopy.

Winter

Riparian areas rich in deciduous shrub and tree species provide berries, palatable catkins, and twigs for important winter feeding habitat. Shrub fens and shrub carrs with low growing scrub birch provide wintering habitats for clearcut populations (Ritcey 1990). Snow roosting by Sharp-tailed Grouse is a common strategy to conserve energy in winter (Evans and Moen 1975). Leupin and Murphy (2000a) found Sharp-tailed Grouse to roost in upland rose patches in the absence of snow. Snow roosting areas were all found near deciduous/ riparian and shrub cover. Gratson (1988) found roosting in Wisconsin to be in open sedge-meadows and shrub-marshes where there is little alternate prey to attract predators.

Conservation and Management

Status

The Columbian Sharp-tailed Grouse is on the provincial *Blue List* in British Columbia. Its status in Canada has not been determined (COSEWIC 2002).

Summary of ABI status in BC and adjacent jurisdictions (NatureServe Explorer 2002)

BC	ID	MT	OR	Canada	Global
S2S3	S3	S1	S1	N2N3	G4T3

Trends

Population trends

Concern over Sharp-tailed Grouse populations was noted as early as 1905. By the mid-20th century, populations had declined to extinction through much of the Columbian subspecies range in the southern part of the province (Munro and McTaggart-Cowan 1947). In 2001, it was estimated that there were approximately 10 000 breeding birds in British Columbia based on extrapolations of male counts at dancing grounds and allowance for annual variability and error. The largest populations occur in the central Interior where the population is estimated to be between 4000 and 8200. In the southern Interior, the population is estimated to be between 600 and 1200.

A review of lek counts in the climax grasslands of the Thompson Okanagan Plateau (WLAP Region 3) from 1986 through 1999 documented a decline in population and number of leks (Leupin and Murphy 2000b). Populations declined by close to 50% from 1990 numbers when populations were at their most recent peak. Of 23 known leks (1986–1988) period, only 43% remained active in 1998. However, it is uncertain whether recently discovered leks in the grasslands are replacements for those abandoned in the past decade.

Lek counts in seral grasslands of Cariboo Basin and Chilcotin Plateau (WLAP Regions 3 and 5) from 1993 through 2000 showed a decline of similar proportions. Counts at seven leks fell from an average of 18 birds/lek in 1993 to 10 birds/lek in 2000 (i.e., 44% decline in numbers). This decline was not unexpected as forest regrowth has invaded open sites even during this relatively short time. However, of eight leks known in 1993 and revisited in 2000, all remained active. New leks are being found each year in clearcuts indicating at least some

compensation for the downward trend in numbers observed on leks of the older clearcuts. Overall the limited evidence suggests a decline in numbers of birds in clearcuts since 1993 but it is unlikely that the decline is as severe as that recorded in the climax grasslands.

Habitat trends

Urban and agricultural development and forest encroachment into climax grasslands continue to reduce or degrade the amount of available habitat for the grassland populations. In the northern part of the Columbian Sharp-tailed Grouse range, clearcut logging has increased habitat, although planting and mechanical site preparation techniques may reduce the overall benefit.

Threats

Population threats

Disturbance at leks may cause females to avoid them rendering the leks reproductively inactive (Baydack and Hein 1987). Illegal hunting may threaten isolated populations whose numbers are already depressed by habitat alteration and fragmentation. Predation may keep populations depressed where predator populations are high or birds are predisposed to predation due to poor habitat conditions.

Habitat threats

The main threats include subdivision of ranchlands, heavy livestock grazing, water management, and fire suppression. Some silvicultural and agricultural practices may also act to depress populations.

Subdividing ranches into hobby farms is a growing trend that has already displaced Sharp-tailed Grouse from some of their best grassland habitats.

Subdivision means more disturbance by higher numbers of humans and pets. It also brings with it grazing that tends to be heavier than on well-managed rangelands.

Livestock grazing occurs over most of the range of the Columbian Sharp-tailed Grouse. The impact of livestock is most apparent in the grassland habitats where rotational grazing systems often leave little

residual grass for nesting Sharp-tailed Grouse on fall and early spring grazed ranges or pastures. Long-term grazing has reduced shrub and tree components of riparian habitats and continues to do so. Those components are vital to the survival of Sharp-tailed Grouse in grassland habitats.

Water storage and diversion may damage riparian vegetation. Damage from fluctuating water levels is most evident at impoundments but storage and diversion of water results in less water downstream for maintaining riparian vegetation. Drainage of wetlands can severely reduce the size of areas supporting scrub birch, water birch, and willow.

Several common silvicultural practices have the potential to reduce populations over the long term:

1. Planting xeric, treeless sites can reduce openness and contributes little to fibre production from the forest.
2. Deep trenching to improve seedling survival may impede movement of chicks, making it difficult for them to forage and increasing their vulnerability to predation in the first few days after leaving the nest.
3. Plantations are often thinned and weeded after establishment removing deciduous species such as willow, aspen, and birch that are winter food sources.
4. Use of insecticides reduces the amount of insects available to chicks during critical early stages of development.

Legal Protection and Habitat Conservation

The Columbian Sharp-tailed Grouse, its nests, and its eggs are protected from direct persecution by the provincial *Wildlife Act*.

This subspecies is hunted over part of its range in British Columbia (Parts of MWLAP Region 5 and management unit 3-31) but season closures are in effect in all grassland habitats of these regions.

Approximately 7000 ha of suitable habitat are within wildlife management areas (WMAs) including Junction, Chilanko Marsh, Dewdrop-Rosseau Creek, and Tranquille WMAs.

A number of protected areas include habitat for Columbian Sharp-tailed Grouse totalling about 32 000 ha. However, some of those overlap WMAs so the total area of habitat protected is probably less than 35 000 ha. Except for their importance as ecological benchmarks, ecological reserves contribute little to the protection of Columbian Sharp-tailed Grouse.

Range use plans under the results based code may address the needs of this species provided management objectives and measures as follows are incorporated into the plans.

Identified Wildlife Provisions

Wildlife habitat area

Goal

Maintain known lek sites in native grassland habitats. The priority for establishing WHAs should be in grassland habitats where populations are most at risk. At this time it is not considered necessary to establish WHAs for populations occurring in clearcuts.

Feature

Establish WHAs at known lek sites in native grasslands.

Size

Typically 700 ha but will vary depending on site-specific factors.

Design

Ideally, the WHA should be at least a 1.5 km radius around the lek but the shape will vary according to site-specific considerations, including nearness of wintering, nesting, and rearing habitats. When present, riparian areas should be included as well as other important habitat features (i.e., deciduous copses, shrub patches and tall grass areas).

General wildlife measure

Goals

1. Minimize disturbance during critical times.
2. Maintain winter food supply.
3. Maintain secure nesting and rearing habitat.
4. Minimize forest encroachment.

Measures

Access

- Permanently deactivate or rehabilitate roads after use. Close roads that pass within 100 m of an active lek during April and May. Consult MWLAP for site-specific times.
- Prohibit access to leks between 1 April and 31 May when females attend the leks for breeding.

Pesticides

- Do not use pesticides.

Range

- Maintain residual grass cover to a minimum height of >25–30 cm in 50% of grass stands. Graze to an average of no greater than 30% use.
- Do not graze during the nesting or early rearing season (i.e., 1 April to 31 May).
- Maintain deciduous shrub and tree components in riparian areas. A maximum removal from livestock grazing of 10% of annual growth of woody vegetation <2 m is recommended.
- Do not hay or mow until after August 15. Maintain residual grass cover to a minimum of 20 cm. Retain shrub cover in meadows surrounding the harvested area.
- Do not place livestock attractants within WHA.
- Do not construct fences or place livestock oilers within 400 m of lek. Fences may be constructed within 400 m if not within line of sight of lek.
- Do not herd large numbers of livestock through the WHA between 15 April to 30 June.

Additional Management Considerations

Water licence applications that would flood, drain, or divert water from known wintering areas for Columbian Sharp-tailed Grouse should not be permitted. Draining of sedge meadow complexes should be prevented.

Protect water supply to water birch and scrub birch stands where Sharp-tailed Grouse winter. Discourage channelling of creeks.

For populations occurring in clearcuts or sedge meadow complexes, consider the following recommendations:

- Maintain natural openings and continued supply of early seral habitat. Consult MWLAP when harvesting near known sites.
- Avoid deep trenching (>20 cm) and other mechanical site preparation that result in deep depressions and loss of deciduous species. Where necessary, patch scarification methods are preferred over disc trenching.
- Retain aspen, birch, and willow when thinning and weeding.
- Maintain deciduous species in riparian areas adjacent to known populations.
- Do not use insecticides in clearcuts used by nesting or rearing Sharp-tailed Grouse.
- Control forest encroachment. Prescribed burning may be used to stimulate shrub production and to prevent forest encroachment.
- Maintain aspen, birch, willow, and deciduous species.
- Minimize haying of scrub birch/sedge meadow complexes.

Information Needs

1. Research on cutblock/sedge meadow complex populations including DNA analysis.
2. Use of prescribed fire in maintaining suitable habitat.
3. Adaptive management to determine which grazing regimes are most appropriate for managing grassland populations of the Columbian Sharp-tailed Grouse.

Cross References

Burrowing Owl, Long-billed Curlew, “Sagebrush” Brewer’s Sparrow

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