

White-tailed Ptarmigan (*Lagopus leucura*)

NMPIF level: Biodiversity Conservation Concern, Level 1 (BC1)

NMPIF assessment score: 13

National PIF status: No special status

New Mexico BCRs: 16

Primary breeding habitat(s): Alpine/Tundra

Other habitats used: Spruce-Fir Forest (esp. winter)

Summary of Concern

White-tailed Ptarmigan is an alpine species of western North America that reaches the extreme southern limit of its distribution in the high mountains of northern New Mexico. The state population may be vulnerable to local disturbance in some areas, and to long-term habitat and demographic changes associated with increasing temperatures.

Associated Species

Mountain Bluebird (SC2), American Pipit, White-crowned Sparrow

Distribution

White-tailed Ptarmigan occurs in alpine habitats from south-central Alaska and northwest Canada south through the Cascade Mountains in Washington and northern Rocky Mountains. Its distribution continues farther south on a more irregular and local basis through the southern Rocky Mountain ranges of Colorado and northern New Mexico (Braun et al. 1993).

In New Mexico, this species is only found above timberline in the Sangre de Cristo Mountains, as far south as Santa Fe Baldy (Parmeter et al. 2002).

Ecology and Habitat Requirements

White-tailed Ptarmigans reside in alpine areas at or above timberline. They may be associated with rocky areas, krummholz, moist vegetation near snowfields and streams, and willow-dominated communities. Summer habitat in Colorado is described as *Trifolium* cushion fellfields, *Carex* meadows, *Carex-Geum* rock meadows, and vegetation near receding snowfields (Braun 1969, 1971). White-tailed Ptarmigans move between winter and breeding areas at different elevations. Year-round they consume a variety of plant materials including buds, stems and leaves (Braun et al. 1993).

In Colorado, higher-elevation breeding sites are occupied from late April – mid-May. Nests are placed on the ground in snow-free areas, often under or beside rocks or in alpine meadow, willow, or low conifer habitat. One brood per season is raised. Total clutch loss to predators is a relatively frequent occurrence (Braun et al. 1993). White-tailed Ptarmigan have a high capacity for recruitment from outside of local populations, allowing them to persist in small breeding populations with highly variable conditions for breeding and over-winter survival (Martin et al. 2000). In Colorado, median hatch dates for this species advanced significantly from 1975 to 1999, in response to increases in April and May temperatures (Wang et al. 2002).

Conservation Status

Species Assessment

DISTRIBUTION	3
THREATS	4
GLOBAL POPULATION SIZE	3
LOCAL POPULATION TREND	2
IMPORTANCE OF NEW MEXICO TO BREEDING	1
COMBINED SCORE	13

White-tailed Ptarmigan is a Biodiversity Conservation Concern, Level 1 species for New Mexico, with a total assessment score of 13. From NMPIF, it receives a high vulnerability score of 4 for threats to breeding in the state. The species is listed as endangered in the state of New Mexico.

Population Size

PIF estimates a species population of 2 million. Size of the New Mexico population is unknown, but small.

Population Trend

No BBS data are available for this species. It receives a local population trend score of 2 from NMPIF, indicating a stable or moderately increasing numbers in the state.

Threats

White-tailed Ptarmigan is considered vulnerable in the state due to the relatively small size and restricted habitat area of its population. Ski area development has likely eliminated some habitat for this species. Grazing above timberline and recreational land use may cause disturbance to breeding activities in some areas. Over the long term, the greatest threat may be shrinkage or elimination of alpine/tundra habitat in New Mexico due to global climate change. In addition, empirical and modeling studies carried out in Colorado predict that future warming will trigger declines in ptarmigan population abundance (Wang et al. 2002).

Management Issues and Recommendations

Little or no active management is required for this species. Above-timberline habitat should be protected from disturbance.

NMPIF Recommendations

- Where needed, reroute snow catchment fences and ski trails away from potential breeding habitat.
- Employ grazing management when or where needed, including reduction or delay of alpine grazing until after July.

Species Conservation Objectives

NMPIF Objectives

- Maintain the current population in the Sangre de Cristo Mountains.

Sources of Information:

Braun, C. E. 1969. Population dynamics, habitat, and movements of White-tailed Ptarmigan in Colorado. Ph.D. Diss., Colorado State Univ., Fort Collins, CO.

Braun, C. E. 1971. Habitat requirements of Colorado White-tailed Ptarmigan. Proc. West. Assoc. State Game Fish Comm. 51:284–292.

Braun, C. E., K. Martin, and L. A. Robb. 1993. White-tailed Ptarmigan (*Lagopus leucurus*). In The Birds of North America, No. 68 (A. Poole and F. Gill, Eds.). Philadelphia, PA: The Academy of Natural Sciences; Washington, D.C.: The American Ornithologists' Union.

Martin, K., P. B. Stacey, and C. E. Braun. 2000. Recruitment, dispersal, and demographic rescue in spatially-structured White-tailed Ptarmigan populations. Condor 102:503-516.

Parmeter, J., B. Neville, and D. Emkalns. 2002. New Mexico bird finding guide. New Mexico Ornithological Society, Albuquerque, NM.

Wang, G. M., N. T. Hobbs, K. M. Giessen, H. Galbraith, D. S. Ojima, and C. E. Braun. 2002. Relationships between climate and population dynamics of White-tailed Ptarmigan *Lagopus leucurus* in Rocky Mountain National Park, Colorado, USA. Climate Research 23:81–87.