

## NESTING DOCUMENTATION FOR THE WHITE-TAILED PTARMIGAN IN THE SANGRE DE CRISTO MOUNTAINS, NEW MEXICO

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**ABSTRACT.**—The southernmost extent of the range of White-tailed Ptarmigan (*Lagopus leucura*) reaches into north-central New Mexico. Although known to occur in New Mexico since around 1865, their exact distribution and abundance is not well known. This is primarily because the species is an alpine obligate, which has made efforts to survey difficult. Here I describe the first nest of the species found in New Mexico, and discuss the persistence and future prospects for the species at the southern extent of its range.

### INTRODUCTION

The White-tailed Ptarmigan (*Lagopus leucura*) is the southernmost ranging ptarmigan species in North America, and it is the only ptarmigan species endemic to North America. Its present day range extends across the alpine habitats of western Canada and Alaska, south through the central Rocky Mountains to northern New Mexico. There is growing concern for this (Hoffman 2006) and other ptarmigan species such as Japanese Rock Ptarmigan (*L. muta japonica*; H. Nakamura, pers. comm.) as alpine environments shrink gradually, coinciding with upslope advancement of the timber line.

The White-tailed Ptarmigan has been known from New Mexico since 1865 (Coues 1875), but little is known about their abundance or exact distribution at the southern extent of its range. Even so, the species is listed as Endangered in New Mexico (New Mexico Register 2005). In an effort to secure the state's population, 43 individuals were transplanted from Colorado into the Truchas Peaks area of the Sangre de Cristo Mountains in 1981. Hoffman (2006) claimed that the 1981 release efforts were into "suitable habitat outside of natural range." This statement is erroneous as the species was known from the Sangre de Cristo Mountains (Coues 1875) and specifically the Truchas Peaks historically (Bailey 1928). Also, there were sightings in the vicinity as late as 1974, seven years prior to the release (USDA Forest Service 2003). Little, if any, effort was made between 1974 and 1981 to survey for ptarmigan; thus, the 1981 transplant should be considered an augmentation rather than a reintroduction or a release outside of natural range. More recently, photographic evidence of the species' persistence in the area was obtained in 2002 (USDA Forest Service 2003), and

I observed and photographed three adults (at least two of them were males) approximately 10 kilometers east-northeast of the release area on 19 July 2006.

### RESULTS AND DISCUSSION

On 11 August 1993, while backpacking in the Sangre de Cristo Mountains, I discovered a White-tailed Ptarmigan nest that contained hatched egg shells on the summit of Barbara Peak (elevation 3848 m, approximately 35° 59.08' N, 105° 33.47' W, Rio Arriba County). The nest was found approximately 10 meters north of the rock cairn marking the summit. The elevation of the nest was about 3845 m. The nest contained remains of at least 4 hatched eggshells. Two eggs were intact enough that evidence of rotation was observed, indicating successful hatching. All eggs were approximately the same size and shape as those of the Lesser Prairie-Chicken (*Tympanuchus pallidicinctus*) and Greater Prairie-Chicken (*T. cupido pinnatus*), whose nests have been observed extensively by me. The only other species found in the general area whose nest could be mistaken for ptarmigan is the Dusky Grouse (*Dendragapus obscurus*), but they reside below the timber line; I have never observed them at elevations higher than around 3000 meters. The eggs were off-white to olive. They were evenly marked with reddish brown speckles 1-2 mm in diameter, matching photos and descriptions found in Braun and Rogers (1971) and Baicich and Harrison (1997). The nest occurred in a slight depression, and was lined with small pebbles less than 1 cm in diameter. Although White-tailed Ptarmigan typically line their nests with local grasses or other vegetation usually found within 40 cm of the nest (Giesen et al. 1980), no vegetative material was seen in the nest or within several meters of the nest.

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The nest was sheltered from the south/southwest by a large flagstone, with the edge approximately 10 cm higher than the nest cup. No vegetation was seen in the immediate vicinity, although alpine willow (*Salix petrophila*) and shrubby cinquefoil (*Dasiphora fruticosa*), as well as unidentified grasses are common on portions of the surrounding alpine ridge.

On Mt. Evans, Colorado, Braun et al. (1993) reported that the mean hatch date for first nesting attempts was 7 July and that the mean hatching date for second nesting attempts was 25 July. Similarly, Giesen et al. (1980) reported that the median hatching date in Rocky Mountain National Park, Colorado, was 15 July. Braun and Rogers (1971) reported that the latest date for hatching in Colorado was 5 August. Assuming that nesting in New Mexico might be slightly earlier because of the lower latitude, it is likely that this nest had hatched about one month prior to my discovery, although it could easily have been a second nesting attempt, allowing for a much shorter elapsed time before discovery.

Although the White-tailed Ptarmigan existed in small numbers in New Mexico until the late 1970s (Hubbard 1978) and was seen on various occasions in the 1980s and 1990s following the translocation efforts, no nest had been documented previously in the state. Additionally, this report represents the southernmost nesting record for this species and for any ptarmigan, aside from a remnant single breeding pair of the Japanese Rock Ptarmigan at the extreme southern extent of its range (35° 20' N; H. Nakamura, pers. comm.). Populations of several species of grouse worldwide are unstable or disappearing from the southern extremes of their historic range; continual documentation of southern breeding extents is warranted (e.g. Cattadori and Hudson 1999, 2000, Storch 2000, Hoffman 2006).

Photographic evidence of ptarmigans was obtained "on the ridge between Horseshoe Lake and the East Fork of the Santa Barbara" (USDA Forest Service 2003). This is the same ridge where I observed and photographed ptarmigan in 2006, approximately 3.7 km northeast of the 1993 nest. Similar habitat remains on ridges almost continuously from the Truchas Peaks, Chimayosas Peak, and Jacarita Peak. It is possible that the 1993 nest and the sightings of birds through 2006 were later generations of the 1981 transplants, but they also could have been remnants of the original native population. Most likely, ptarmigan transplanted from Colorado in 1981 interbred with persisting native birds. Martin et al. (2000) documented dispersal of White-tailed Ptarmigan in excess of 30 km in Colorado.

Similarly, Giesen and Braun (1993), reported dispersal of juvenile females up to 29 km in Colorado. The apparent success of a transplant effort 25 years earlier and the known dispersal patterns suggest that future augmentation efforts in north-central New Mexico, enhancing connectivity with populations within the state and with southern Colorado, may be worthwhile, and may ensure long-term persistence of the species within the state. If further isolation of populations is occurring as a result of loss of alpine habitat, occasional influxes of new genetic material may be necessary not only in New Mexico but perhaps in other parts of the species' range.

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