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A January Specimen of the Flammulated Owl from Northern New Mexico

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ABSTRACT.—I report the first mid-winter specimen of a Flammulated Owl (*Otus flammeolus*) from within the USA breeding range of the species, an adult male found freshly dead on 2 January 1996 at Santa Fe, New Mexico following the season's first snowstorm. This event, plus an additional specimen found dead in late autumn within the New Mexico breeding range, supports the argument this species appears unable to successfully overwinter in its USA breeding range. Received 17 November 2006. Accepted 8 September 2007.

The Flammulated Owl (*Otus flammeolus*) is a small, insectivorous species typical of montane pine (*Pinus*) forests of western North America. It is generally recognized as strongly migratory, but its migration patterns are poorly

understood (McCallum 1994). Experimental and other evidence suggest this owl cannot withstand low temperatures nor enter torpor (e.g., Banks 1964, Ligon 1968, Winter 1974). There has been disagreement as to whether the species may be able to winter within its USA breeding range, including whether it may take vertebrate prey to do so (Holt 1996, McCallum 1996). In this note, I present the details of a Flammulated Owl found dead in mid-winter within the species' breeding range in northern New Mexico. I also present details of another Flammulated Owl found dead under similar circumstances in late autumn and discuss these events regarding this owl's potential to overwinter within its breeding range north of Mexico. The New Mexico specimens reported here are in the collection of the Museum of Southwestern Biology (MSB) at the University of New Mexico.

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OBSERVATIONS

Following an unusually warm autumn and early winter, the city of Santa Fe and the surrounding mountains of northern New Mexico received the season's first snowstorm on the afternoon and evening of 1 January 1996; the storm sharply reduced temperatures and blanketed the region under heavy snow. On the morning of 2 January, the groundskeeper of a local inn discovered a small owl, freshly dead, near the building's entrance. J. L. Herring of the New Mexico Department of Game and Fish retrieved the owl that day and placed it in a freezer. The owl was delivered to me on 2 February, whereupon I recognized it as a Flammulated Owl. The owl was again frozen until 19 October 1996 when it was prepared as a study skin by D. C. Schmitt.

The specimen (MSB 23307) is an adult male. It had no body fat or any body cavity fat, suggesting that it was not in condition to migrate; the mass when prepared was 35.8 g, considerably below the 53.9 g mean reported for adult males (McCallum 1994). No molt was evident. The stomach was filled with insect parts. These stomach contents were preserved and identified by S. L. Brantley as being parts of earwigs (*Forficula auricularis*), ground beetles (Carabidae), and darkling beetles (Tenebrionidae), indicating the owl probably had been recently foraging on the ground, likely in moist litter. The testes measured 5×3 mm, unusually large for the non-breeding season (R. W. Dickerman, pers. comm.). No skull hemorrhaging or other trauma was evident, suggesting the owl died not from injury but from cold. The specimen is grayish (not reddish) and heavily (not faintly) marked, typical of the local breeding birds of the Great Basin and Southern Rocky Mountains, i.e., *O. f. frontalis* Hekstra (Marshall 1997).

DISCUSSION

There are few winter Flammulated Owl specimens for the United States and none from within the owl's breeding distribution (Collins et al. 1986, McCallum 1994); the few winter observations from breeding habitat were questioned by McCallum (1994, 1996). The three mid-winter specimens previously reported were from outside the breeding range

or were at elevations lower than breeding habitat: 2 January in Louisiana (Glasgow et al. 1950), 18 January in California (Stephens 1902), and 16 February in Arizona (Simpson and Werner 1958). The dead owl was found at 2,015 m, well within the species' breeding elevation range, and the inn ($35^{\circ} 38' 24''$ N, $106^{\circ} 00' 55''$ W) is only 5.7 km southwest of the Santa Fe Indian School where Jensen (1923) reported Flammulated Owls breeding over a period of several years. The eastern portions of Santa Fe extend into the Sangre de Cristo Mountains where the species breeds commonly.

I suspect this owl, whether a local breeder or a migrant from elsewhere, remained in or near breeding habitat until it encountered sudden cold and heavy snow cover. November and December 1995 were exceptionally warm in northern New Mexico—average temperatures for those months in north-central New Mexico were, respectively, 10.9 and 11.2% above the previous 100-year (1895–1994) monthly averages (National Climatic Data Center 2006). The major snowstorm on 1 January 1996 abruptly ended those mild conditions. The owl appears to have survived into January by ground foraging for insects, but this diet apparently was insufficient to maintain normal weight and the bird quickly succumbed to the sudden onset of markedly cold temperatures.

Flammulated Owls typically migrate from New Mexico by mid-October (e.g., DeLong 2006). Recently, however, additional specimens of late-lingering Flammulated Owls have been obtained, including the first certain November records for the state. One of these, an adult female (MSB 25294) found freshly dead by P. S. West at Bitter Lake National Wildlife Refuge, Chaves County on 20 November 2005, was far from suitable habitat and was presumably a late migrant; it had no fat, a mass of 41.9 g, and its nearly empty stomach contained parts of only two individual ground beetles (*Cymindis* spp.); the specimen is grayish but not heavily barred, complicating subspecies identification. The other owl, an adult female (MSB 24543) salvaged by M. L. Watson at the village of Cochiti Lake, Sandoval County on 28 November 2004, was found freshly dead at the base of a ponderosa pine (*Pinus ponderosa*) following

the first major snowfall of that season; the specimen, grayish and heavily barred as in the local subspecies, had little fat but was not emaciated. However, mass was not recorded and stomach contents were not saved. Cochiti Lake village, at an elevation of 1,735 m in the foothills of the Jemez Mountains, is immediately adjacent to breeding range of the species. Finding of the Cochiti and Santa Fe owls closely following onset of severe winter weather supports the contention this species appears unable to successfully overwinter within its breeding habitat in North America north of Mexico, at least under the present climatic regime.

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