

ELEVATIONAL AND WINTER RECORDS OF BIRDS ON TWO MEXICAN MOUNTAINS

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Registros altitudinales y de invierno de aves sobre dos montañas mexicanas.

Key words: Altitudinal limit, wintering birds, cold tolerance.

Knowledge of altitudinal limits in birds is poor. Temperature is usually negatively correlated with elevation, and low temperatures limit the distributions of many bird species, especially in winter (Root 1988a, 1988b, 1989). Knowledge of such limits is particularly important when interpolating bird distributions from isolated records, such as in gap analysis.

Parker *et al.* (1996) presented altitudinal limits for (almost) all Neotropical birds and Howell & Webb (1995) summarized altitudinal information for Mexican birds. Nevertheless, Howell & Webb (1995) stated: "Approximate elevations... should be taken only as guidelines" (p. 77) and "We hope that the information ... will form a baseline for future observations" (p. xiii). In this spirit, I list a number of species that I have recorded above the altitudinal limit given in one or both of these works (Table 1). Most observations were made during quarterly 5-day trips from March 1997 to September 1998 to 1-km² study areas, one between 3800 and 4000 m a.s.l. in the Nevado de Toluca, state of Mexico (19°07.5'N, 99°04'W) and the other

around the Sierra San Pedro Mártir astronomical observatory (31°02.3'N, 115°28'W). These study areas were surveyed for 30 full days encompassing all seasons of the year. A few other elevational records from Mexico have appeared in Gómez de Silva *et al.* (1999).

Winter records. The mean temperature in these study areas during the winter months are less than 5°C (Nevado de Toluca; García 1987) and less than 1.5°C (Sierra San Pedro Mártir; Alvarez & Maisterrena 1977). Therefore, it is interesting to note the winter species composition and richness of these areas.

Fifteen species were recorded at the Nevado de Toluca study area from 14 to 18 January 1998 (mean January temperature approximately 4°C; García 1987). These are: Strickland's Woodpecker (*Picoides stricklandi*), Northern Flicker (*Colaptes auratus*), White-breasted (*Sitta carolinensis*) and Pygmy (*S. pygmaea*) nuthatches, Brown Creeper (*Certhia americana*), Mexican Chickadee (*Poecile sclateri*), Brown-throated Wren (*Troglodytes aedon, brunneicollis* group), Ruby-crowned Kinglet (*Regulus*

TABLE 1. Species of birds recorded above the altitudinal limit given in Howell & Webb (1995) and/or Parker *et al.* (1996). Present records, except those with footnotes, are from 1-km² study areas in the Nevado de Toluca, state of Mexico and around the Sierra San Pedro Mártir astronomical observatory. Species with < 6 records (rare) are labelled with an asterisk or, if < 3 records (vagrants), two asterisks..

	This study	Parker <i>et al.</i>	Howell & Webb
STATE OF MEXICO			
Black-crowned Night-Heron <i>Nycticorax nycticorax</i>	2670 ¹	4400	2200 (breeding)/2500
Turkey Vulture <i>Cathartes aura</i> **	4300	2500	3500
Sharp-shinned Hawk <i>Accipiter striatus</i> *	3950	3100	3000
Cooper's Hawk <i>Accipiter cooperi</i> **	3950	3000+	3000
Red-tailed Hawk <i>Buteo jamaicensis</i>	4300	3500+	3000
American Kestrel <i>Falco sparverius</i>	4000	4400	3000
Merlin <i>Falco columbarius</i> *	3950	-	2500
Mountain Pygmy-Owl <i>Glaucidium gnoma</i>	4000	4000	3500
Great Horned Owl <i>Bubo virginianus</i>	3900	4400	3000
Whip-poor-will <i>Caprimulgus vociferus (arizonae group)</i> *	3900	3100	3000
Black Swift <i>Cypseloides niger</i> *	4000	-	3000
White-throated Swift <i>Aeronautes saxatalis</i>	3900	2800	2500
Vaux's Swift <i>Chaetura vauxi</i> **	3900	2800	3000
Green Violet-ear <i>Colibri thalassinus</i> *	3950	3000	3000
White-eared Hummingbird <i>Hylocharis leucotis</i> *	3950	3100+	3500
Broad-billed Hummingbird <i>Cyananthus latirostris</i> **	3950	2100+	2500
Blue-throated Hummingbird <i>Lampornis clemenciae</i>	3950	3400	3000
Magnificent Hummingbird <i>Eugenes fulgens</i> **	3950	3300	3000
Broad-tailed Hummingbird <i>Selasphorus platycercus</i>	4100	3750	3500
Greater Pewee <i>Contopus pertinax</i> *	3950	3400	3500
Hammond's Flycatcher <i>Empidonax hammondi</i>	3900	-	3500
White-throated Flycatcher <i>Empidonax albigularis</i>	3000 ²	2600	3000
Cordilleran Flycatcher <i>Empidonax occidentalis</i> **	3900	3000	3500
Violet-green Swallow <i>Tachycineta thalassina</i>	4300	3200	3000
Steller's Jay <i>Cyanocitta stelleri</i>	4000	3600	3500
Northern Raven <i>Corvus corax</i>	4300	4200	3500+
Bushtit <i>Psaltiriparus minimus</i> **	3800	3600	3500
Mexican Chickadee <i>Poecile sclateri</i>	4000	3900	3500
White-breasted Nuthatch <i>Sitta carolinensis</i>	3950	3600	3500
Pygmy Nuthatch <i>Sitta pygmaea</i>	4000	3900	3500

TABLE 1. Continued.

	This study	Parker <i>et al.</i>	Howell & Webb
Brown Creeper <i>Certhia americana</i>	4000	4000	3500
Brown-throated Wren <i>Troglodytes aedon</i> (<i>brunneicollis</i> group)	4000	4600	3000
Ruby-crowned Kinglet <i>Regulus calendula</i>	3950	1300	3500
Western Bluebird <i>Sialia mexicana</i>	4300	4000	3500
Russet Nightingale-Thrush <i>Catharus occidentalis</i>	3950	3700	3500
Hermit Thrush <i>Catharus guttatus</i>	3900	-	3500
American Robin <i>Turdus migratorius</i>	4000	4000	3500
American Pipit <i>Anthus rubescens</i>	4200	-	3000
Hutton's Vireo <i>Vireo huttoni</i> **	3950	3400	3500
Cassin's or Plumbeous Vireo <i>Vireo cassini/plumbeus</i> **	3950	2400/3100	3000
Warbling Vireo <i>Vireo gilvus</i> **	3950	2500	3000
Orange-crowned Warbler <i>Vermivora celata</i> *	3950	1500	3000
Audubon's Warbler <i>Dendroica coronata auduboni</i>	4000	3500	3500
Townsend's Warbler <i>Dendroica townsendi</i>	4000	-	3000
Hermit Warbler <i>Dendroica occidentalis</i> **	3950	-	3500
Red Warbler <i>Ergaticus ruber</i>	3900	3200	3500
Olive Warbler <i>Peucedramus taeniatus</i>	4000	3100	3500
Spotted Towhee <i>Pipilo maculatus</i>	4000	3500	3300
Cinamon-bellied Flower-piercer <i>Diglossa baritula</i> *	3950	3350	3500
Striped Sparrow <i>Oriturus superciliosus</i>	4300	3300	3500
Lincoln's Sparrow <i>Melospiza lincolni</i> *	3900	-	3000
Yellow-eyed Junco <i>Junco phaeonotus</i>	4300	4300	3500
Eastern Meadowlark <i>Sturnella magna</i>	4100	3500	2500
Abeille's Oriole <i>Icterus abeillei</i> **	3900	2800	3000
Scott's Oriole <i>Icterus parisorum</i> *	4000	2600	3000
Red Crossbill <i>Loxia curvirostre</i>	4000	4100	3500
Pine Siskin <i>Carduelis pinus</i>	4000	4000	3500
Evening Grosbeak <i>Coccothraustes vespertinus</i>	3950	3500	3000
BAJA CALIFORNIA			
Poorwill <i>Phalaenoptilus nuttalli</i> *	2700	2200	2500
White-throated Swift <i>Aeronautes saxatalis</i>	2800	2800	2000 (Baja California)
Anna's Hummingbird <i>Calypte anna</i>	2800	1800	2500

TABLE 1. Continued.

	This study	Parker <i>et al.</i>	Howell & Webb
Western Scrub Jay <i>Aphelocoma californica</i>	2650	3300	2100 (Baja California)
Bushtit <i>Psaltriparus minimus</i> **	2650	3600	2500 (Baja California)
Northern House Wren <i>Troglodytes aedon</i> (<i>aedon</i> group)	2800	4600	2500 (Baja California)
Wrentit <i>Chamaea fasciata</i> *	2700	2600	2500
Cassin's Vireo <i>Vireo cassinii</i>	2650	2400	2400 (north Baja California)

¹Paseo Colón, Toluca (March, July).

²Three km east of Parres, D.F.

calendula), Western Bluebird (*Sialia mexicana*), American Robin (*Turdus migratorius*), Audubon's Warbler (*Dendroica coronata auduboni*), Olive Warbler (*Peucedramus taeniatus*), Spotted Towhee (*Pipilo maculatus*), Striped Sparrow (*Oriturus superciliosus*) and Yellow-eyed Junco (*Junco phaeonotus*).

Only six species were recorded regularly above 2600 m a.s.l. in the Sierra San Pedro Mártir from 5 to 11 December 1997 (mean December temperature 2.3°C; Alvarez & Maisterrena 1977). Interestingly, all are insectivores that roost in holes. These species are: Hairy Woodpecker (*Picoides villosus*), Northern Flicker, White-breasted and Pygmy nuthatches, Mountain Chickadee (*Poecile gambelli*), and Canyon Wren (*Catherpes mexicanus*).

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