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*** START OF THE PROJECT GUTENBERG EBOOK THE SUBSPECIES OF THE MOUNTAIN CHICKADEE ***

Transcriber's Notes

All of the text presented here is a copy of the original article's text with the following exceptions:

1. Typographical Corrections

- A. Page 509 - Medicine Bow Mts., [10 200 => 10,200](#)
- B. Table 1. Added missing period in column 1 [U. S. N. M. no. => U. S. N. M. no.](#)
- C. Vol. 17 number [16 => 15](#) of the "UNIVERSITY OF CALIFORNIA PUBLICATIONS" listing

2. Placement of UNIVERSITY OF CALIFORNIA PUBLICATIONS Listing

The original publication had this list beginning inside the front cover and continuing on the back cover (inside and out). Here it was moved to the end of the book for readability. Inconsistancies in the formatting of the list (i.e., periods, commas, etc.) were left as presented in the original (with the exception noted above).

[Cover]

UNIVERSITY OF CALIFORNIA PUBLICATIONS

IN

ZOOLOGY

Vol. 17, No. 17, pp. 505-515, 3 figures in text

May 4, 1918

THE SUBSPECIES OF THE MOUNTAIN CHICKADEE

BY

JOSEPH GRINNELL

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May 4, 1918

THE SUBSPECIES OF THE MOUNTAIN CHICKADEE

BY

JOSEPH GRINNELL

(Contribution From the Museum of Vertebrate Zoology of the University of
California)

Fieldwork was carried on by the California Museum of Vertebrate Zoology during 1917 in the Inyo region of eastern California. In going over the collection of birds obtained, the attention of the writer was arrested by certain peculiarities evident in the Mountain Chickadees. Comparison with series from the Sierras showed the Inyo birds to be paler colored and longer tailed; and in order to appraise these differences in taxonomic terms it became necessary to assemble material representative of the entire range of the species, in so far as possible. The results of the study thus undertaken are presented herewith.

The material involved in the inquiry has amounted to 464 skins of the Mountain Chickadee, derived from the following sources other than the Museum of Vertebrate Zoology: United States National Museum, through Dr. Charles W. Richmond; United States Biological Survey, through Mr. Edward W. Nelson; and the private collections of Messrs. Edward R. Warren, Joseph and John W. Mailliard, G. Frean Morcom, Harry S. Swarth, and J. Grinnell.

As of general interest, and in the nature of an introduction to the systematic analysis to follow, it may be stated that *Penthestes gambeli* including its subspecies is throughout its range non-migratory, save as a few individuals in pairs or small companies occasionally descend in fall or early winter to lower levels closely adjacent to their mountain habitats. The range of the species roughly extends from and includes the Rocky Mountains to or nearly to the Pacific Coast, and from Alberta and British Columbia south nearly to the Mexican line--somewhat south of it in northern Lower California. Within this general area the Mountain Chickadee is by no means uniformly distributed. Especially towards the south is its range very "spotty," the representations on detached mountain tops being wholly isolated. Two

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main areas of relatively continuous distribution are, however, perceivable--the Rocky Mountain area, and the Sierra Nevada area.

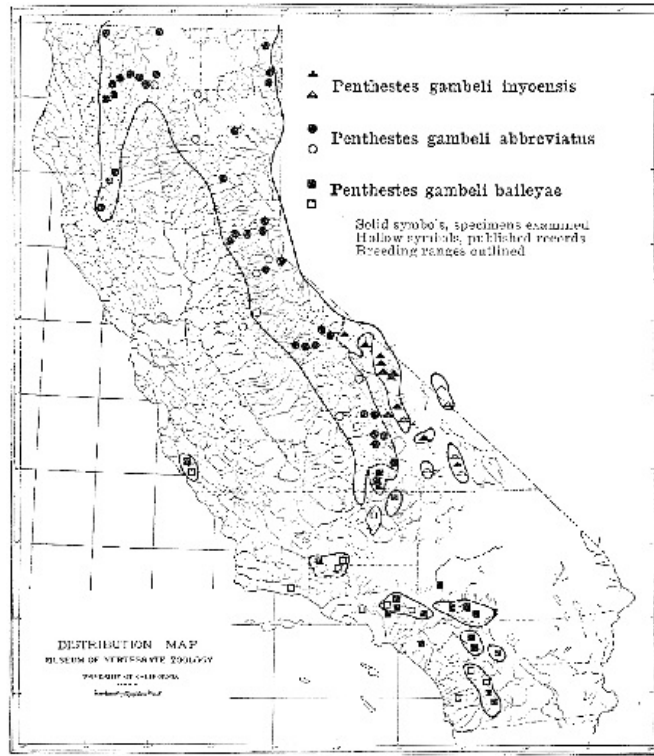


Fig. 1. Map showing distribution of the races of the Mountain Chickadee in California.
[Click on map to view larger version.](#)

Close scrutiny of the series of specimens at hand well representing the entire Rocky Mountain area reveals no variation in phylogenetic characters from the northernmost to the southernmost stations. All show in apparently equal degree the long tail and cinnamon tinge of sides and back, these features together constituting the grounds for separate subspecific recognition of a Rocky Mountain form. On the other hand, the Sierra Nevada center, with its own recognizable race, of relatively short tail, proves to have two outlying divergent forms. These three forms are alike in their lack of any cinnamon tinge, this being replaced in two of them by a buffy tinge and in one form by leaden gray. The tail in one of the outlying forms is long, in the other short. The habitats concerned are, respectively, the desert mountains of the Inyo region of eastern California, and the coastal mountains of southern California. This differentiation within the Pacific district, particularly within the state of California, will be better understood in its geographic bearing by reference to the accompanying map (fig. 1).

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The behavior of the tail of *Penthestes gambeli*--long in the Rocky Mountain district, short in the Pacific district (see figs. 2, 3)--is paralleled in the *Penthestes atricapillus* group of chickadees across the North American continent in about the latitude of the state of Washington. In the northern Rocky Mountains occurs the race *P. a. septentrionalis*, with long tail; in the Pacific Coast strip of Washington and Oregon occurs the race *P. a. occidentalis*, with, among other characters, relatively short tail. Other parallels are to be found in the genera *Psaltriparus*, *Thryomanes* and *Pipilo*.

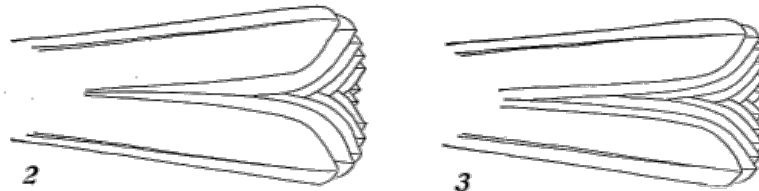


Fig. 2. Tail of *Penthestes gambeli gambeli* (no. 27784, Mus. Vert. Zool.; ♂, full-grown juv.; Sierra Ancha, Gila Co., Arizona; June 26, 1917). × 1.00.

Fig. 3. Tail of *Penthestes gambeli abbreviatus* (no. 24059, Mus. Vert. Zool.; ♂, full-grown juv.; Yolla Bolly Mt., Tehama Co., California; August 5, 1913). × 1.00.

It is improbable that the fact of subspecific differentiation in *Penthestes gambeli* has been altogether overlooked previous to the present time. A premonition of the geographic variation now formally pointed out is to be found in the early writings of Baird (1858, p. 394), who remarked that "a specimen, apparently of this species [*Parus montanus*], from Medicine Bow creek [Wyoming], (5643,) though marked female, is larger than those from California, as shown by the measurements." Also, some of the differences in proportions in the subspecies now recognized are shown in the table of measurements given by Ridgway (1904, p. 409).

For a detailed description of the Mountain Chickadee as a *species*, the reader is referred to Ridgway (1904, p. 408).

Penthestes gambeli gambeli (Ridgway)

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Rocky Mountain Chickadee

Parus montanus Gambel (1843, p. 259); and of authors, part. This name preoccupied (see Ridgway, 1904, p. 409).

Parus gambeli Ridgway in American Ornithologists' Union Committee (1886, p. 335); and of authors, part. Substitute name.

Parus gambeli thayeri Birtwell (1901, p. 166). Based on adventitiously colored specimen from Albuquerque, New Mexico. Type in United States National Museum.

Penthestes gambeli, of authors, part.

Type locality.--Santa Fé, New Mexico.

Diagnosis.--Among the four subspecies of *Penthestes gambeli* here recognized, color alone is sufficient for distinguishing *P. gambeli gambeli*. The flanks, sides of body and back in this form are pervaded with a distinct tinge of cinnamon--more exactly, the "pinkish buff" of Ridgway (1912, pl. 29). In addition, this race shows the greatest length of tail, and slenderest bill.

Measurements.--Average of 14 males: Wing, 70.5 mm.; tail, 70.2; exposed culmen, 8.6; depth of bill at base, 3.8. For extremes, see accompanying table.

Note.--In this paper the length of wing is the usual chord of the folded wing as dried at the side of the body in the conventional study skin. The tail length, however, is measured from the *base* of the uropygium to the tip of the longest pair of rectrices. It is found that in preparing specimens there is a practically uniform place for cutting off from the body the uropygium with attached feathers, and this is exactly where the tail bends back at an angle to the body in the fresh bird. The lateral rectrices are rooted evenly with the base of the dried uropygium so that the measurement of tail length thus taken becomes the distance from the extreme proximal ends of the most lateral pair of rectrices to the tips of the central pair--somewhat greater than the length of tail as given by Ridgway (1901, p. xv), the latter being the measurement from the base of the central pair of tail feathers to the tips of same. My reason for adopting this different procedure here is that more accuracy seems possible thereby, at least in the kind of material here dealt with. There is less musing of the specimen also.

Neither depth of bill nor culmen is a practical index to degree of slenderness of bill. No ordinary method of measurement will suffice to indicate the facts as they are perceived by the eye.

As will be seen by the dates in the tables, as a rule only unworn specimens have been selected for measurement.

Range.--The Rocky Mountain region of North America, from eastern British Columbia and western Alberta south to western Texas, New Mexico and Arizona. *Specimens examined*, 72, from the following localities:

Alberta: Smoky Valley, 50 miles north of Jasper House, 1; Henry House, 1; 15 miles west of Henry House, 1.

British Columbia: South fork of Moose River, 1.

Montana: Gallatin County: Jefferson River, 1; Madison River, 2; Hillsdale, 2; Mystic Lake, 1; Dry Creek, 1.

Idaho: Sawtooth Lake, 1.

Wyoming: Mammoth Hot Springs, 3; Jackey's Creek, 4 miles southwest of Dubois, 1; Teton Pass, 7200 ft., 2; Salt River Mts., head of Dry Creek, 9200 ft., 1; Medicine Bow Mts., [10,200](#) ft., 1; Medicine Bow Creek, 1.

Utah: Filmore, 1.

Colorado: Loveland, 1; Middle Park, 1; Sangre de Christo Pass, 1; Fort Garland, 1; Platte Canyon, 1; Pueblo, 2; Estes Park, 1; Boulder, 2; Gold Hill, 1; Golden, 7300 ft., 1; Colorado Springs, 5; Querida, Custer County, 1; Salida, Chaffee County, 1; Crested Butte, Gunnison County, 1; Stamford, 1.

Texas: Guadalupe Mts., 6800 ft., 1; Davis Mts., 1.

New Mexico: Fort Massachusetts, 1; Fort Wingate, 1; Albuquerque, 1; Taos Mts., 8800 ft., 1; Manzano Mts., 4; Magdalena Mts., 7000 ft., 1; Cieneguilla, 1; Mt. Capitan, 1; Pecos Baldy, 1; Bear Spring Mts., 1; Shiprock, 1; Corona, 1; Twining, 12,500 ft., 1; Fulton, 1; San Mateo Mts., 9500 ft., 1.

Arizona: Fort Whipple, 1; Mt. Graham, 1; San Francisco Mt., 2; Bright Angel Spring, Kaibab Plateau, 1; Canyon Spring, 1; Santa Catalina Mts., 2; Sierra Ancha, 6500 ft., 1.

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Penthestes gambeli inyoensis, new subspecies

Inyo Mountain Chickadee

Parus gambeli, of authors, part.

Penthestes gambeli, of authors, part.

Type locality.--Panamint Mountains (northern part), 3 miles east of Jackass Spring, 6200 feet altitude, Inyo County, California. *Type*, male adult, no. 28782, Mus. Vert. Zool.; October 7, 1917; collected by J. Grinnell, orig. no. 4588.

Diagnosis.--The palest colored race of the four; sides, flanks and back, in unworn plumage, pervaded with pale buff--the "cartridge buff" of Ridgway (1912, pl. 30). Wear or fading, or both, removes most of this buff tone, so that the resulting effect, in spring and summer birds, is of an ashy tone of coloration, distinctly lighter than in any of the other three subspecies, in same stage. It seems probable that there is a paler tone to the underlying plumage parts and that this becomes revealed by loss of the superficial pigment-bearing portions through the gradual progress of feather abrasion. *Inyoensis* shows nearly as long a tail as does *gambeli*. Its bill is somewhat smaller.

Measurements.--Average of 10 males: Wing, 71.1 mm.; tail, 69.3; exposed culmen, 8.1; depth of bill at base, 3.7. For extremes, see accompanying table. [510]

Range.--The higher mountains of eastern California lying east and southeast of Owens Valley, from the vicinity of the Mono Craters and the White Mountains, in Mono County, south to the Panamint Mountains, in Inyo County. *Specimens examined*, 50, from the following localities, all in California:

Mono County: Mono Mills, 1; near Benton, 2; near Big Prospector Meadow, 10,000-10,500 ft., White Mts., 15; Cottonwood Creek, 9200 ft., White Mts., 1. Inyo County: Silver Canyon, 7000-8000 ft., White Mts., 8; Roberts Ranch, 8300 ft., White Mts., 1; head of Black Canyon, 8000 ft., White Mts., 2; Independence, 3900 ft., 1 (vagrant); Mazourka Canyon, 8000-10,000 ft., Inyo Mts., 3; near Jackass Spring, 6000-6200 ft., Panamint Mts., 14; Hanaupah Canyon, 7500-9000 ft., Panamint Mts., 2.

***Penthestes gambeli abbreviatus*, new subspecies**

Short-tailed Mountain Chickadee

Parus montanus, of authors, part.

Parus gambeli, of authors, part.

Penthestes gambeli, of authors, part.

Type locality.--Horse Creek, Siskiyou Mountains (near Seiad Valley P. O.), Siskiyou County, California. *Type*, male, no. 119 (orig. no., in coll. J. Grinnell); December 12, 1901; collected by Malcolm P. Anderson.

Diagnosis.--Tone of color on sides, flanks and back the same as in *inyoensis*, though not quite so pale, namely, in fresh plumage, cartridge buff. Tail (see figs. 2, 3) much shorter than in either *gambeli* or *inyoensis*; and bill averaging smaller than in any of the other three races.

Measurements.--Average of 14 males: Wing, 69.7 mm.; tail, 65.0; exposed culmen, 7.9; depth of bill at base, 3.8. For extremes, see accompanying table.

Range.--The higher mountains of central and northern California, southern Oregon (probably this subspecies), and northwestern Nevada. Occurs west in northern California through the Siskiyou and Salmon mountains and to South Yolla Bolly Mountain and Mount Sanhedrin; and south in the Sierra Nevada to the vicinity of Mount Whitney. *Specimens examined*, 182, from the following localities:

California: Modoc County: Sugar Hill, 4; Warner Mts., 27. Siskiyou County: Mt. Shasta, 3; Jackson Lake, 5900 ft., 5; South Fork Salmon River, 5000 ft., 1; head of Rush Creek, 6400 ft., 2; Kangaroo Creek, 3; Castle Lake, 5400 ft., 1; Horse Creek, Siskiyou Mts., 11; Beswick, 1. Trinity County: head of Bear Creek, 6400 ft., 4; head of Grizzly Creek, 6000 ft., 6. Tehama County: near South Yolla Bolly Mt., 4. Mendocino County: near Castle Peak, 1; near Sanhedrin Mt., 4. Lassen County: Eagle Lake, 6. Plumas County: Meadow Valley, 1. Nevada County: Independence Lake, 3. Placer County: Summit, 1; Cisco, 6000 ft., 18; Blue Canyon, 4700-5000 ft., 12; Dutch Flat, 1. Eldorado County: Tahoe Valley, 2; Kyburz Station, 1. Mariposa County: vicinity of Yosemite Valley, 13. Mono County: Warren Fork of Leevining Creek, 9200 ft., 1; Williams Butte, 7500 ft., 1. Fresno County: Bullfrog Lake, 10,600 ft., 6. Inyo County (not typical): near Kearsarge Pass at 8500 ft., 1; Little Onion Valley, 7500 ft., near Kearsarge Pass, 1; Cottonwood Lakes, 11,000 ft., 7. Tulare County (not typical): Whitney Creek, 11,000 ft., 3; Whitney Meadows, 9800 ft., 14; Olancho Peak, 10,000 ft., 1. [511]

Nevada: Pine Forest Mts., Humboldt County, 13.

***Penthestes gambeli baileyae* (Grinnell)**

Bailey Mountain Chickadee

Parus montanus, of authors, part.

Parus gambeli, of authors, part.

Parus gambeli baileyae Grinnell (1908, p. 29).

Penthestes gambeli baileyae, American Ornithologists' Union Committee (1910, p. 351), part (?); and of authors.

| | | | | | | | |
|-----------------------|---|----------------|-----------------------------------|------|------|------|-----|
| 160697 | ♂ | Nov. 24, 1892 | Boulder, Colo. | 71.7 | 71.2 | 8.8 | 4.0 |
| 109948 | ♂ | Oct. 8, 1886 | Pueblo, Colo. | 72.0 | 72.4 | 8.4 | 3.9 |
| 109949 | ♂ | Oct. 5, 1886 | Pueblo, Colo. | 70.9 | 70.3 | 8.5 | 4.0 |
| 176650 | ♂ | Sept. 23, 1888 | Madison E., Gallatin Co., Mont. | 68.0 | 67.8 | 8.9 | 4.1 |
| 124151 | ♂ | Sept. 15, 1888 | Jefferson E., Gallatin Co., Mont. | 69.7 | 67.7 | 10.0 | 3.6 |
| 188823 | ♂ | Oct. 15, 1902 | Mammoth Hot Springs, Wyo. | 68.1 | 67.0 | 9.0 | 3.6 |
| 62546 | ♂ | Nov. 17, 1872 | Filmore, Utah | 69.8 | 68.3 | 8.3 | 3.5 |
| 136638 ^[1] | ♂ | Sept. 27, 1890 | Sawtooth Lake, Idaho | 68.1 | 69.7 | 8.8 | 3.8 |
| 228227 ^[1] | ♂ | Sept. 14, 1910 | Teton Pass, Wyo. | 71.2 | 70.4 | 8.3 | 3.6 |
| 193086 ^[1] | ♂ | Nov. 6, 1903 | Manzano Mts., N. Mex. | 71.4 | 70.6 | 7.8 | 4.0 |
| 184653 ^[1] | ♂ | Oct. 22, 1902 | Corona, N. Mex. | 69.0 | 71.0 | 9.0 | 4.1 |
| 192942 ^[1] | ♂ | Oct. 10, 1903 | Twining, N. Mex. | 72.0 | 71.4 | 8.5 | 4.0 |
| 136637 ^[1] | ♂ | Sept. 18, 1889 | San Francisco Mt., Ariz. | 71.3 | 70.3 | 7.8 | 3.8 |
| 205661 ^[1] | ♂ | Sept. 10, 1909 | Kaibab Plateau, Ariz. | 73.5 | 74.3 | 8.3 | 4.0 |

[1] Biol. Surv. Coll.

| Mus. Vert. | <i>Penthestes gambeli inyoensis</i> | | | | | | |
|------------|-------------------------------------|----------------|---------------------------------|------|------|----------------|---------------|
| Zool. no. | Sex | Date | Locality | Wing | Tail | Exposed culmen | Depth of bill |
| 28751 | ♂ | July 24, 1917 | White Mts., Mono Co., Calif. | 73.0 | 72.4 | 7.9 | 3.7 |
| 28760 | ♂ | July 29, 1917 | White Mts., Mono Co., Calif. | 71.0 | 67.0 | 8.0 | 3.6 |
| 28766 | ♂ | July 31, 1917 | White Mts., Mono Co., Calif. | 72.4 | 67.5 | 8.8 | 3.5 |
| 28767 | ♂ | Aug. 18, 1917 | White Mts., Inyo Co., Calif. | 69.4 | 68.1 | 8.0 | 3.7 |
| 28770 | ♂ | Sept. 29, 1917 | Panamint Mts., Inyo Co., Calif. | 68.8 | 69.8 | 8.1 | 3.7 |
| 28771 | ♂ | Oct. 2, 1917 | Panamint Mts., Inyo Co., Calif. | 71.4 | 70.2 | 7.4 | 4.0 |
| 28773 | ♂ | Oct. 2, 1917 | Panamint Mts., Inyo Co., Calif. | 72.7 | 71.0 | 8.4 | 3.8 |
| 28774 | ♂ | Oct. 2, 1917 | Panamint Mts., Inyo Co., Calif. | 69.0 | 66.0 | 8.1 | 3.7 |
| 28781 | ♂ | Oct. 5, 1917 | Panamint Mts., Inyo Co., Calif. | 71.0 | 70.0 | 8.3 | 3.7 |
| 28782 | ♂ ^[2] | Oct. 7, 1917 | Panamint Mts., Inyo Co., Calif. | 72.0 | 71.5 | 8.4 | 3.5 |

[2] Type.

| <i>Penthestes gambeli abbreviatus</i> | | | | | | | |
|---------------------------------------|------------------|---------------|----------------------------------|------|------|----------------|---------------|
| No. | Sex | Date | Locality | Wing | Tail | Exposed culmen | Depth of bill |
| 114 ^[3] | ♂ | Dec. 9, 1901 | Horse Cr., Siskiyou Mts., Calif. | 68.4 | 63.8 | 7.3 | 3.9 |
| 117 ^[3] | ♂ | Dec. 12, 1901 | Horse Cr., Siskiyou Mts., Calif. | 69.0 | 64.7 | 7.9 | 3.7 |
| 119 ^[3] | ♂ ^[4] | Dec. 12, 1901 | Horse Cr., Siskiyou Mts., Calif. | 70.0 | 65.0 | 7.8 | 3.6 |
| 129 ^[3] | ♂ | Dec. 14, 1901 | Horse Cr., Siskiyou Mts., Calif. | 68.4 | 63.0 | 8.0 | 3.6 |
| 164 ^[3] | ♂ | Dec. 29, 1901 | Horse Cr., Siskiyou Mts., Calif. | 69.0 | 64.2 | 7.2 | 3.9 |
| 178 ^[3] | ♂ | Jan. 4, 1902 | Horse Cr., Siskiyou Mts., Calif. | 66.8 | 63.0 | 7.2 | 3.7 |
| 244 ^[3] | ♂ | Feb. 16, 1902 | Horse Cr., Siskiyou Mts., Calif. | 70.8 | 65.0 | 7.3 | 3.6 |
| 23307 | ♂ | Oct. 21, 1912 | Blue Cañon, Placer Co., Calif. | 71.8 | 69.5 | 8.2 | 3.9 |
| 23302 | ♂ | Oct. 19, 1912 | Blue Cañon, Placer Co., Calif. | 71.2 | 64.3 | 8.8 | 4.1 |
| 23298 | ♂ | Oct. 14, 1912 | Blue Cañon, Placer Co., Calif. | 71.6 | 65.7 | 7.8 | 3.5 |
| 25263 | ♂ | Dec. 26, 1914 | Yosemite Park, Calif. | 69.8 | 65.9 | 8.4 | 3.8 |
| 25800 | ♂ | June 11, 1915 | Yosemite Park, Calif. | 72.8 | 67.7 | 8.7 | 4.0 |
| 26117 | ♂ | Oct. 22, 1915 | Yosemite Park, Calif. | 69.0 | 65.0 | 8.8 | 4.0 |
| 26342 | ♂ | Nov. 27, 1915 | Yosemite Park, Calif. | 67.1 | 63.6 | 8.3 | 3.9 |

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[3] Collector's original number, in Grinnell coll.; rest of numbers, Mus. Vert. Zool.

[4] Type.

Penthestes gambeli baileyae

| No. | Sex | Date | Locality | Wing | Tail | Exposed culmen | Depth of bill |
|----------------------|------------------|----------------|--------------------------------------|------|------|-------------------|------------------|
| 182 ^[5] | ♂ | Nov. 29, 1895 | Mt. Wilson, Los Angeles Co., Calif. | 67.0 | 63.0 | 8.9 | 4.3 |
| 725 ^[5] | ♂ | Nov. 1, 1897 | Mt. Wilson, Los Angeles Co., Calif. | 70.1 | 66.9 | 9.0 | 4.4 |
| 963 ^[5] | ♂ | Oct. 31, 1898 | Mt. Wilson, Los Angeles Co., Calif. | 67.0 | 63.3 | 8.2 | 4.0 |
| 636 ^[6] | ♂ | Feb. 1, 1896 | Mt. Wilson, Los Angeles Co., Calif. | 70.3 | 65.5 | 8.3 | 4.1 |
| 637 ^[6] | ♂ | Feb. 1, 1896 | Mt. Wilson, Los Angeles Co., Calif. | 68.6 | 65.8 | 8.2 | 4.0 |
| 1832 ^[6] | ♂ | Dec. 12, 1896 | Mt. Wilson, Los Angeles Co., Calif. | 72.3 | 65.7 | 7.7 | 4.0 |
| 1834 ^[6] | ♂ | Dec. 12, 1896 | Mt. Wilson, Los Angeles Co., Calif. | 65.4 | 63.7 | 8.0 | 3.9 |
| 1836 ^[6] | ♂ | Dec. 12, 1896 | Mt. Wilson, Los Angeles Co., Calif. | 67.7 | 63.0 | ... | 4.0 |
| 5516 ^[6] | ♂ ^[9] | Nov. 27, 1903 | Mt. Wilson, Los Angeles Co., Calif. | 72.1 | 66.6 | 8.6 | 3.9 |
| 6073 ^[6] | ♂ | Sept. 21, 1904 | Pasadena, Los Angeles Co., Calif. | 69.7 | 66.0 | 9.0 | 4.3 |
| 7458 ^[6] | ♂ | Dec. 23, 1905 | Pasadena, Los Angeles Co., Calif. | 70.0 | 66.7 | 7.8 | 3.6 |
| 9958 ^[7] | ♂ | Oct. 31, 1897 | Mt. Wilson, Los Angeles Co., Calif. | 70.3 | 67.2 | 8.6 | 4.3 |
| 3364 ^[7] | ♂ | Sept. 18, 1908 | Santa Ana Mts., Orange Co., Calif. | 70.8 | 66.0 | 9.5 | 4.0 |
| x3325 ^[8] | ♂ | July 4, 1905 | Hd. of Big Cr., Monterey Co., Calif. | 70.5 | 66.0 | 9.0 | 4.2 |

[5] Coll. H. S. Swarth.

[6] Coll. J. Grinnell.

[7] Mus. Vert. Zool.

[8] Coll. J. & J. W. Mailliard.

[9] Type.

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Transmitted March 3, 1918.

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[Publ_1

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