

**Article V.—FURTHER NOTES ON MAMMALS COLLECTED IN MEXICO BY DR. AUDLEY C. BULLER, WITH DESCRIPTIONS OF NEW SPECIES.**

By J. A. ALLEN.

A collection of mammals recently purchased by the Museum, gathered in various parts of southern Mexico by the late Dr. Audley C. Buller, contains several species apparently as yet undescribed, and others of special interest. In preparing a report on this collection it seemed desirable to give a list of all the mammals collected for this Museum in Mexico by Dr. Buller,<sup>1</sup> and received from him at various times from 1889 to 1895. These number altogether over 300 specimens, and represent 55 species, of which 16 have been determined as new to science. In presenting this final catalogue occasion is taken to revise the nomenclature used in the original papers, where changes have since become necessary.

The collection here especially under notice was made chiefly at Mineral San Sebastian, and in the Valle de Bandera, Jalisco.

1. **Ateles vellerosus** *Gray.* (Bull. III, 176.)
2. **Antrozous pallidus** (*Le Conte*). (Bull. III, 176.)
3. **Corynorhinus townsendii** (*Cooper*). (Bull. III, 176.)
4. **Adelonycteris fuscus** (*Beauv.*). (Bull. II, 165 ; III, 176.)

---

<sup>1</sup> The earlier collections made by Dr. Buller have been treated in this Bulletin in various papers, as follows:

1. Notes on a Collection of Mammals from Southern Mexico, with descriptions of new species of the genera *Sciurus*, *Tamias*, and *Sigmodon*. Bull. Am. Mus. Nat. Hist., Vol. II, 1889, pp. 165-181. Published Oct. 21, 1889.

2. Notes on Collections of Mammals made in Central and Southern Mexico, by Dr. Audley C. Buller, with descriptions of new species of the genera *Vespertilio*, *Sciurus*, and *Lepus*. *Ibid.*, Vol. III, No. 2, 1890-91, pp. 175-194. Published Dec. 10, 1890.

3. Description of a new species of Opossum from the Isthmus of Tehuantepec, Mexico. *Ibid.*, Vol. V, 1893, pp. 235, 236. Published Sept. 22, 1893.

4. Remarks on specimens of *Chilonycteris rubiginosa* from Western Mexico, and on the color phases of *Pteronotus davyi* Gray. *Ibid.*, Vol. VI, 1894, pp. 247, 248. Published Aug. 3, 1894.

5. *Atalapha cinerea* (*Beauv.*). (Bull. II, 165 ; III, 177.)
6. *Vespertilio lucifugus* *Le Conte.* (Bull. III, 177.)
7. *Vespertilio nitidus* *H. Allen.* (Bull. III, 177.)
8. *Vespertilio velifer* *J. A. Allen.* (Bull. III, 177.)
9. *Vespertilio melanorhinus* *Merriam.* (Bull. III, 178.)
10. *Saccopteryx plicata* (*Peters.*). (Bull. III, 178.)
11. *Nyctinomus brasiliensis* *I. Geoffr.* (Bull. III, 178.)
12. *Chilonycteris rubiginosa* *Wagner.* (Bull. VI, 247.)
13. *Pteronotus davyi* *Gray.* (Bull. VI, 248.)
14. *Macrotus bulleri* *H. Allen.* (Bull. II, 166 ; III, 179 ; VI, 248.)
15. *Macrotus mexicanus* *De Saussure.* (Bull. III, 179.)

16. *Glossophaga soricina* (*Pall.*).—Two skins with skulls, and three specimens in spirits, Valle de Bandera, Terro Tepic, Jalisco, Mexico, Feb. 23, 1893.

In one of the alcoholics the tail is wholly enclosed within the interfemoral membrane ; in another the point is noticeable as a slight protuberance on the upper surface of the membrane, while in the third it projects 3 mm. above the surface.

17. *Artibeus intermedius* *Allen.*—Three specimens, Las Penas, Jalisco.

In the two adult males and one female (in spirits) the fore arm measures respectively 66, 65 and 63, and the third metacarpal respectively 64, 62 and 62, with all other measurements in proportion. The fore arm is thus one-fifth longer (10 mm.) than in a series of old adults of *A. perspicillata* from Jamaica, which are above the average for Cuba and eastern Mexico localities. The head stripes, as well as the size, are as in Costa Rica specimens (*cf. antea*, p. 33).

18. *Sturnira lilium* (*E. Geoffr.*). (Bull. III, 181.)
19. *Felis onca* *Linn.* (Bull. III, 176.)
20. *Felis tigrina* *Erxl.* (Bull. III, 176.)
21. *Felis pardalis* *Linn.* (Bull. III, 176.)
22. *Felis yaguarundi* *Desm.* (Bull. III, 176.)
23. *Urocyon cinereo-argenteus fraterculus* *Elliot.* (Bull. III, 176.)
24. *Procyon lotor hernandezi* (*Wagler*). (Bull. III, 176.)
25. *Putorius frenatus* (*Licht.*). (Bull. II, 165.)
26. *Sciurus aureogaster* *F. Cuv.* (Bull. III, 181.)
27. *Sciurus leucops* (*Gray*). (Bull. III, 182.)
28. *Sciurus cervicalis* *Allen.* (*Sciurus aureogaster leucops*, Bull. II, 166 ; *Sciurus cervicalis*, III, 183.)
29. *Sciurus nayaritensis* *Allen.* (*Sciurus alstoni*, Bull. II, 167 ; *Sciurus nayaritensis*, II, vii ; III, 185.)
30. *Tamias bulleri* *Allen.* (Bull. II, 173 ; III, 92, 186.)
31. *Spermophilus annulatus* *Aud. & Bach.* (Bull. II, 172 ; III, 186.)
32. *Spermophilus grammurus macrourus* (*Bennett*). (Bull. II, 170 ; III, 185.)
33. *Spermophilus spilosoma* *Bennett.* (Bull. II, 172 ; III, 185.)
34. *Mus rattus* *Linn.* (Bull. II, 179 ; III, 186.)
35. *Mus alexandrinus* *E. Geoffr.* (Bull. III, 186.)
36. *Mus musculus* *Linn.* (Bull. III, 186.)

37. *Peromyscus mexicanus* (*De Sauss.*). (Bull. II, 179.)

38. *Peromyscus aztecus* (*De Sauss.*). (Bull. II, 179; III, 187.)

39. *Peromyscus spicilegus*, sp. nov.

Texture of pelage and coloration very much as in *Peromyscus floridanus*, but size smaller, tail longer, and ears much smaller. Above yellowish brown, finely mixed with dusky tipped hairs, most numerous along the middle of the back, forming a slightly darker median area; sides more yellowish, passing gradually into a strong ochraceous lateral line, which is sharply defined against the white of the ventral surface; below white, the hairs broadly plumbeous at base. The bright fulvous of the sides extends over the outer surface of the fore limbs to the wrists, leaving the feet white; the color of the thighs extends over the outer surface of the hind limbs to the tarsus, which is dusky, leaving only the feet white. Ears dusky, nearly naked; tail distinctly bicolor, nearly naked, brown above, whitish below.

Total length (of type), 188; tail vertebræ, 92; hind foot, 21; ear (from notch), 15. Four adults measure as follows: Total length, 190 (181-200), tail vertebræ, 92 (86-98); hind foot, 20.5 (20-21); ear 15. (Measurements all from skins.)

*Skull.*—Total length, 28; basal length, 22; least interorbital breadth, 5; greatest width of brain-case, 13; length of nasals, 10.

*Type*, No.  $\frac{3333}{8888}$ , ♂ ad., Mineral San Sebastian, Mascota, Jalisco, Mexico, Dec. 27, 1893; Dr. Audley C. Buller.

Of the four specimens (same locality, Dec. 26-Jan. 2), three are adult, and the fourth is an old adult<sup>1</sup>, differing from the others by being much more strongly fulvous, this color prevailing throughout the dorsal surface, which is inconspicuously darkened along the median line.

The pelage is very soft and thick, and both in texture and coloration closely resembles that of adults of *Peromyscus floridanus*. In size and proportions it resembles *P. yucatanicus* Allen & Chapman (*antea*, p. 5), from which it differs in important cranial characters. The interorbital region is not depressed, as in that species, and it lacks the well-defined supraorbital bead; the maxillary branch of the zygoma is narrower, as is also the anteorbital foramen; the post palatal opening is broadly U-shaped anteriorly,

<sup>1</sup> There are also three additional adult skulls.

and then slightly converging, instead of narrow, with parallel sides ; and the postpalatal spine present in *P. yucatanicus* is lacking. The skull as a whole is also shorter, with a broader brain-case.

#### 40. *Peromyscus banderanus*, sp. nov.

Above rather pale yellowish brown, the middle of the back much varied with black-tipped hairs ; a narrow fulvous lateral line ; beneath white, the fur plumbeous at base. Fore limbs externally white, from shoulder to end of toes ; hind limbs externally grayish, feet white to above the tarsal joint. Ears small, dull brownish, naked ; tail long, nearly bicolor, brown above, much lighter below, naked.

Total length, 226 ; tail vertebræ, 112 ; hind foot, 24 ; ear, 15 (measurements from the skin). An old male in alcohol measures as follows : Total length, 238 ; tail, 132 ; hind foot, 28 ; ear, 14.

*Skull*.—Total length, 31 ; basal length, 25 ; least interorbital breadth, 5 ; breadth of brain-case, 13.5 ; length of nasals, 11.5. A strongly developed supraorbital ridge ; postpalatal opening deeply convex anteriorly, with parallel sides ; audital bullæ small.

*Type*, No. 8887, ♀ ad., Terro Tepic, Valle de Banderas, Jalisco, Mexico, Feb. 23, 1893 ; Dr. Audley C. Buller.

This species is based on a skin and skull and three specimens in alcohol, from Valle de Banderas. It differs notably in size and proportions from *Peromyscus mexicanus* (De Saussure) and *P. melanophrys* (Coues). The former<sup>1</sup> is described as dark brownish mouse gray, with a silvery tint, not shown in the present species ; the tail is about equal to the head and body, while in the present species it is much longer. *P. mexicanus* also came from the mountains of Vera Cruz, on the eastern slope of the Cordillera, while the present species is from the low west coast region. Comparison with the type of *P. melanophrys* shows that the two species are not at all closely related.

41. *Peromyscus*, sp. indet. (*Hesperomys leucopus sonoriensis*, Bull. II, 180.)

42. *Rhipidomys sumichrasti* (*De Sauss.*). (Bull. III, 187.)

<sup>1</sup> *Hesperomys mexicanus* DE SAUSSURE, Rev. et Mag. de Zool., 2<sup>e</sup> Sér., XII, Mars, 1860, p. 103, pl. ix, fig. 1, 1a. "Habite les mêmes régions que les précédents" = "Mexique" = Vera Cruz.

43. *Oryzomys mexicanus*, sp. nov.

*Oryzomys couesi* ALLEN, Bull. Am. Mus. Nat. Hist. III, No. 1, Dec. 1890, p. 187; also *ibid.* III, p. 224 (in text), and p. 291 (in text). Not of Alston, nor of Thomas.

Size and proportions of *O. palustris*, but very different in coloration from any member of the *O. palustris* group.

Above strongly fulvous brown, lined with black-tipped hairs, darker mesially, paler on the sides, brighter on the rump; below white, with a grayish tinge; feet thinly covered on the upper surface with silvery gray hairs; ears dark brown, very thinly covered externally with very short hairs, and internally with longer yellowish brown hairs; tail practically naked, a little darker above than below.

Total length (measurements all from dry skin), 279; tail, 142; hind foot, 30; ear, 13.

*Skull.*—Supraorbital ridges rather heavier than in the *O. palustris* group; nasals longer and narrower; posterior nares narrower, and postpalatal border V-shaped instead of nearly squarely truncate; anterior palatine foramina broad, less produced anteriorly, and hence short. Skull as a whole rather narrower than in *O. palustris*.

Total length, 30.5; basal length, ? (basal portion of skull defective; also right zygoma wanting); least interorbital breadth, 5; width of brain-case, 12; length of nasals, 11.5; upper tooth row, 5; diastema, 7.7.

*Type*, and only specimen, No.  $\frac{2650}{1188}$ , ♂ ad., Hda San Marcos, Tonila, Jalisco, Mexico, Dec. 30, 1889; Dr. Audley C. Buller.

In preparing my former mention of this specimen (*l. c.*) I recognized its distinctness from *O. palustris*, and rather than describe it as new referred it provisionally to *O. couesi* Alston. Mr. Thomas has since shown (*Ann. & Mag. Nat. Hist.* (6), XI, May, 1893, p. 403) the composite nature of *O. couesi* Alston, and restricted it to include only one of the three specimens referred to it by Alston. He has also more clearly stated its characters. On reëxamination of the subject it becomes evident that the form here recognized as *O. mexicanus* has no close relationship to the *O. couesi* group, but is, on the other hand, rather closely related to the *O. palustris* group. It differs, however, strikingly in coloration from all of the known forms of *O. palustris*, and especially from *O. palustris texensis*, its nearest relative geographi-

cally, in the strong yellowish brown instead of pale grayish coloration above.

It hence resembles my *O. aquaticus*, from Brownsville, Texas, in the coloration of the upper parts, but it is clear white instead of deep buff below. The two agree essentially in the form of the posterior nares. Taking into account its geographical relations, *O. mexicanus* must be considered as a specifically distinct member of the *O. palustris* group, with perhaps its nearest ally in *O. aquaticus*.

#### 44. *Oryzomys bulleri*, sp. nov.

Above pale chestnut brown, darkened by an intermixture of blackish hairs over the middle region of the back, paler and more ochraceous on the sides; below buffy white, the color of the lower parts gradually passing into that of the upper; upper surface of feet soiled whitish; ears brown, thinly clothed with hairs of the same color as the surrounding pelage; tail brownish above, lighter below, naked, longer than head and body.

Total length (of type, ♂ ad., from skin), 242; tail, 127; hind foot, 27; ear, 11. Another specimen (skin overstuffed), ♂ ad., measures: Length, 281; tail, 127; hind foot, 27; ear, 11.

*Skull*.—Maxillary plate of zygoma rather narrow; nasals narrowed posteriorly, terminating on a line with the intermaxillaries; anterior palatine foramina extend to about the first third of the first molar; facial portion of skull rather narrow. Skull in general that of a typical *Oryzomys*. Total length, 27.8; basal length, 23; zygomatic breadth, 15; least interorbital breadth, 4.5; width of brain-case, 12.5; length of nasals, 10.2; length of palate, 11; upper tooth row, 4.6.

*Type*, No. 8888, ♂ ad., Valle de Banderas, Terro Tepic, Jalisco, Mexico, Feb. 23, 1893; Dr. Audley C. Buller, after whom the species is named.

In size and proportions *O. bulleri* resembles most closely *O. couesi* (Alston, as restricted by Thomas), but is darker brown; it has also the facial portion of the skull much narrower, with much narrower nasals and slenderer nose. It is much smaller than *O. fulgens* Thomas, and differs from the latter in the character of the pelage, in color, and in various cranial details. It agrees better in size with Mr. Thomas's *O. melanotis*, from the neighboring locality of Mineral San Sebastian, but the latter has very much larger ears, and the cranial differences show that the two species are not closely related.

The species is based on two specimens, both adult males, from Valle de Banderas, Jalisco. The second specimen is a little paler than the type, and, as the skins are made up, appears a little the larger; but this apparent difference in size is not borne out by the skulls.

**45. *Sigmodon fulviventor* Allen.** (Bull. II, 180.)—This specimen remains unique, so far as the Museum collection is concerned.

**46. *Sigmodon toltecus* (De Sauss.)** (Bull. III, 186—only the Tehuantepec specimen.)

**47. *Sigmodon mascotensis*, sp. nov.**

*Adult.*—Above pale cinnamon brown, darker along the median line and lighter on the sides, varied with dusky hairs; top and sides of the nose rusty brown. Ventral surface with the hairs broadly tipped with white. Fore and hind limbs externally like the adjoining portions of the body; feet dull yellowish gray. Ears yellowish gray-brown, well covered with short hairs internally, nearly naked externally; tail dark brown above, lighter on sides and below, very nearly naked.

*Young.*—Two young in first pelage are yellowish tawny brown above, soiled buffy gray below.

Total length (of type, ♀ ad., from skin), 272; tail vertebræ, 117; hind foot, 32; ear (from notch), 17. Another specimen, ♂ ad., measures: Total length, 273; tail vertebræ, 128; hind foot, 33.5; ear (from notch), 18. Ratio of tail to total length, 47.6.

*Skull* (of type).—Total length, 34.5; basal length, 30.4; zygomatic breadth, 19.5; interorbital breadth, 4.8; width of brain-case, 13.3; length of nasals, 13.5; palatal length, 16; anterior palatal foramina, 8; upper tooth row, 6.

*Type*, No.  $\frac{3371}{3358}$ , ♀ ad., Mineral San Sebastian, Mascota, State of Jalisco, Mexico, June 7, 1893; Dr. A. C. Buller.

This species is based primarily on two adults (♂ and ♀), from Mascota, taken June 7, 1893, by Dr. Buller. They differ from *S. colimæ* in much browner coloration and apparently rather longer tail. The two young examples, presumed to be the same as the adults here described, are from El Valle de Banderas, about 20 miles north of Mascota. Both the adults and the young differ

from any other form of the genus known to me in the cinnamon brown coloration of the upper parts, which is stronger and especially pronounced in the young examples, in which the color is a strong yellowish tawny brown. It differs from *S. toltecus* markedly in coloration, and in the greater length of the tail. There appear to be no strongly pronounced cranial differences between this and other forms of the genus. While there is much variation in the details of the cranial structure, it is hard to find any that are sufficiently constant to prove useful in diagnosis.

#### 48. *Sigmodon colimæ*, sp. nov.

*Sigmodon hispidus berlandieri* ALLEN, Bull. Am. Mus. Nat. Hist. III, No. 1, Dec. 1890, p. 186 (in part—the Colima specimens only).

Above gray tinged with very pale buff and conspicuously lined with black; beneath with the tips of the hairs clear white; sides of the nose buff; feet soiled whitish gray; ears pale brown, nearly naked externally, well covered with very short hairs on the inner surface; tail dark brown above, much lighter below, the annulations distinctly visible through the thin covering of very short hairs, which form a slight pencil at tip.

*Measurements* (of type, from skin).—Total length, 235; tail vertebræ, 105; hind foot, 32; ear (from notch), 15. The series of four specimens measures as follows: Total length, 245 (233–275); tail vertebræ, 109 (105–120); percentage of tail to total length, 45.3.

*Skull* (of type, ♂ ad.).—Total length, 35.5; basal length, 31; least inter-orbital breadth, 5; width of brain-case, 13; zygomatic breadth, 20? (right zygoma broken); length of nasals, 13.5; palatine length, 15.8; anterior palatal foramina, 7.6; length of upper tooth row, 6.2.

*Type*, No.  $\frac{2444}{118}$ , ♂ ad., Plains of Colima, State of Colima, Mexico, Jan. 11, 1890; Dr. A. C. Buller.

*Sigmodon colimæ* is based on 4 specimens (mostly young adults) taken on the Plains of Colima, Jan. 5–10, 1890, by Dr. Buller. They are very uniform in coloration, and are apparently all males, though one is sexed by the collector as a female. They are characterized by a peculiar shade of pale buffy gray, unlike that presented by specimens from other localities. I am unable to recognize any distinctive cranial features.

*S. colimæ* differs from *S. toltecus* in coloration through absence of the strong fulvous suffusion so characteristic of the latter. It

differs similarly from *S. mascotenis*, except that in the latter the suffusion is more of a pale cinnamon than fulvous.

**49. *Neotoma ferruginea* Tomes.** (Bull. III, 186.)

**50. *Hodomys alleni* Merriam.**—Represented by 6 specimens, skins and skulls, and 3 specimens in alcohol, all old adults, collected at El Valle de Banderas, Terro Tepic, State of Jalisco, Mexico, Feb. 14–23, 1893. To this species I also provisionally refer 2 specimens, young adults, from Mineral San Sebastian, State of Jalisco, Mexico, Dec. 24 and 26, 1893. These may represent a smaller species, about the size of *H. ventulus* Merriam, but from which they differ in the tail being unicolor instead of bicolor.

**51. *Heteromys hispidus*, sp. nov.**

Pelage somewhat soft, hispid rather than spiny. Above reddish brown, finely and sparsely varied with black-tipped bristles; sides lighter (in some examples) in consequence of the whitish basal portion of the pelage showing through; beneath and feet white, or soiled yellowish white; colors of the ventral area sharply defined against that of the upper parts, but with a narrow lateral line of bright reddish fulvous. Ears brownish, slightly rimmed with white; tail very thinly haired, the annulations distinctly visible, pale brown above, much lighter below. Soles 6-tuberculate, hairy to the posterior tubercle. Mammæ 6—2 pectoral and 4 inguinal.

Total length (of type), 190; tail vertebræ, 116; hind foot, 26; ear from notch, 11 (measured from skins).

An adult male and an adult female in alcohol measure respectively, as follows: Total length, 230, 220; tail vertebræ, 115, 123; hind foot, 28, 27; ear from notch, 13.5, 13.5.

*Skull* (of type).—Total length, 30; basal length, 24; greatest (mastoid) breadth, 13.5; least interorbital breadth, 7; length of nasals, 12; length of palate, 12; length of diastema, 7; length of crown surface of tooth row, 5.

*Type*, No. 88888, ♀ ad., Compostella (Rcho. El Colomo), Terro Tepic, Jalisco, Mexico, Feb. 11, 1893; Dr. Audley C. Buller.

This species is based on three skins and two additional skulls, and four specimens in alcohol, collected at Compostella, Terro Tepic, Jalisco, Feb. 8–18, 1893. Its reddish brown color, hispid rather than spiny pelage, and small size, are sufficient to distinguish *Heteromys hispidus* from any hitherto described species,

except perhaps *H. desmarestianus* Gray, from Coban, Guatemala, which is described as "chestnut-brown," but as having the soles naked (*apud* Thomas), and the tail shorter than the head and body (Alston), instead of very much longer, as in the present species.

The species of this genus thus far described may be tabulated under the divisions recognized by Mr. Oldfield Thomas,<sup>1</sup> as follows :

*Soles hairy, 5-tuberculate.*

1. *Heteromys irroratus* Gray, P. Z. S., 1868, p. 205. State of Oaxaca, Mexico.
2. *Heteromys albolimbatus* Gray, *ibid.*, p. 205. La Parada, Mexico.
3. *Heteromys alleni* Coues, Bull. Mus. Comp. Zool., VIII, No. 9, 1881, p. 187. Rio Verde, San Luis Potosi, Mexico.
4. *Heteromys bulleri* Thomas, Ann. and Mag. Nat. Hist. (6), XI, April, 1893, p. 330. La Laguna, Sierra de Juanacatlan, Jalisco, Mexico.

*Soles hairy, 6-tuberculate.*

5. *Heteromys salvini* Thomas, Ann. and Mag. Nat. Hist. (6), XI, April, 1893, p. 331. Dueñas, Guatemala.
6. *Heteromys salvini nigrescens* Thomas, *ibid.* (6), XII, Sept., 1893, p. 234. Costa Rica.
7. *Heteromys gaumeri* Allen & Chapman, *anted.*, p. 9. Chichen-Itza, Yucatan.
8. *Heteromys hispidus* Allen, *anted.*, p. 56. Rcho. El Colomo, Compostella, Terro Tepic, Jalisco, Mexico.

*Soles naked, 6-tuberculate.*

9. *Heteromys anomalus* (Thompson). Island of Trinidad, B. W. I.
10. *Heteromys desmarestianus* Gray, P. Z. S., 1868, p. 204. Coban, Guatemala.
11. *Heteromys melanoleucus* Gray, *ibid.*, p. 204. "Hondurus" = Venezuela, *apud* Alston.
12. *Heteromys longicaudatus* Gray, *ibid.*, p. 204. "Mexico."
13. *Heteromys adspersus* Peters, Monatsb. Ak. Berlin, 1874, p. 357. Panama.

- 
14. *Heteromys bicolor* (Gray). *Perognathus bicolor* Gray, P. Z. S., 1868, p. 202; *Heteromys bicolor* Alston, Ann. and Mag. Nat. Hist. (5), VI, Aug., 1880, p. 118. "Honduras" = Venezuela, *apud* Alston.

This last is possibly generically separable from *Heteromys*.

---

<sup>1</sup> Ann. and Mag. Nat. Hist. (6), XI, April, 1893, p. 329.

- 52. **Lepus sylvaticus aztecus** *Allen.* (Bull. III, 188.)
- 53. **Lepus insolitus** *Allen.* (Bull. III, 189.)
- 54. **Tatusia novemcincta** (*Linn.*). (Bull. III, 190.)
- 55. **Marmosa canescens** (*Allen.*). (*Didelphis (Micoreus) canescens*, Bull. V, 235.)