

DESCRIPTIONS OF SIX NEW AMERICAN RABBITS.

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The collection of rabbits in the United States National Museum contains the following hitherto undescribed forms, all from parts of America north of Panama. I publish this paper here by permission of the Secretary of the Smithsonian Institution.

Subgenus **MACROTOLAGUS** Mearns.

Lepus asellus sp. nov.

Type adult ♀ (skin and skull), No. $\frac{20.895}{36.000}$ United States National Museum, collected at the city of San Luis Potosi, Mexico, October 22, 1891, by P. L. Jouy. Original number, 270.

General Characters.—In size and color most like *Lepus merriami* Mearns, but tail shorter and ears much longer, the latter fully equalling those of the largest *L. texianus*. Nape scarcely darker than back. Skull slightly heavier than in *Lepus merriami*, the nasals broader, and the audital bullæ larger.

Color.—Back an irregular grizzle of black and white, darker along median line. Sides and rump slightly paler than back. Tail entirely clear black above, grayish white beneath. The black caudal area is continued forward over rump, gradually becoming narrower, and finally disappearing about 80 mm. from base of tail. Nape like back, only more finely grizzled. A small dusky area immediately behind base of ear. Ears broccoli brown, paler behind, rimmed with buff. The buff rim is continuous except where interrupted by the black tip. It is paler along outer margin (near base of which it becomes nearly white), and darker along inner margin, where the hairs are noticeably lengthened. Tip of ear black, the dark area about 40 mm. long and at base 25 mm. in width. It lies mostly on the outer half of the ear. Posterior base of ear blackish for about 20 mm. Crown of head like back, but more closely grizzled. Cheeks like sides. An indistinct, narrow, pale area surrounding eye. Chin, upper part of throat and whole of belly white, very faintly tinged with bluish gray. Neck ruff well developed, buff sprinkled with a few blackish hairs.

Legs light smoke gray tinged with bluish gray on inner side of thighs and with broccoli brown on front feet and forearms. Hind feet whitish above. On the front legs the white of the belly extends in a narrow line to wrist; on the hind legs to feet.

Skull and Teeth.—The skull of *Lepus asellus* is about the size of that of *L. merriami* or the small races of *L. texianus*. It is conspicuously smaller than that of *Lepus allini* or *L. texianus texianus*. In form it differs from the skull of *L. merriami* in its broader, deeper rostrum, broader nasals, wider interpterygoid fossa, longer, slightly narrower basioccipital, and slightly larger audital bullæ.

Measurements.—External measurements of type (from fresh specimen by collector): Total length, 558; tail vertebræ, 62; hind foot, 120; ear from crown, 175.

Cranial measurements of type: greatest length, 100; basal length, 84; basilar length, 78; lenselion¹ to posterior edge of bony palate (median), 37; least (lateral) length of bony palate, 7; posterior edge of bony palate to hamular, 21; length of incisive foramen, 26; width of incisive foramina, 10.4; zygomatic breadth, 44; inter-orbital breadth (inclusive of supraorbital processes), 30; greatest breadth of braincase, 32.4; breadth of rostrum at base of zygomatica, 27; greatest (diagonal) length of nasals, 43; greatest breadth across both nasals, 22; least breadth across both nasals, 15.4; depth of brain case at anterior end of basioccipital, 30; diastema, 28.4; maxillary molar series (alveoli), 16.8; mandible, 74; diastema, 23; mandibular molar series (alveoli), 17.

Specimens Examined.—I have seen only the type of this species.

General Remarks.—*Lepus asellus* is readily distinguishable from *L. merriami* by its somewhat smaller size, relatively as well as actually much longer ears, and gray nape. From the Mexican *Lepus callotis*, two specimens of which Mr. Jouy collected at Guadalajara, Jalisco, it is instantly recognizable by its black-tipped ears and gray (not whitish) sides.

Although four names have been based on Mexican jackrabbits, it is easily shown that all refer to animals with white-tipped ears, not in the least like *Lepus asellus*. Presumably the first of these is *Lepus callotis* Wagler (*Nat. Syst. der Amphibien mit vorangehender Classif. der Säugeth. und Vögel*, p. 23, 1830). The

¹ Post-incisive homologue of gnathion.

description of the animal is very brief, but positive reference is made to the white outer surface of the ears.² Another name published in 1830 is the *Lepus mexicanus* of Lichtenstein (*Abhandl. K. Akad. Wissensch. Berlin* (1827), p. 101, 1830). This is based on a Mexican specimen collected by Deppe, but, as in the case of Wagler's *L. callotis*, no definite type locality is mentioned. The author, referring to Hernandez, "*Citli sive Lepus*," remarks that the description of this animal is so brief that it has been hitherto overlooked, but that it nevertheless refers to a well-marked species characterized by the extreme length and breadth of the ears. "Had he but added," Lichtenstein continues, "that these ears are dark colored on their anterior half, and on the posterior, less conspicuous part wholly white, the two colors sharply divided at the middle line, he would have sooner directed attention to an animal that first reached Europe in a shipment from Mr. Deppe, and which is deposited in our museum under the name *Lepus mexicanus*."³ This description leaves no doubt that Lichtenstein had in hand a member of the white-eared *callotis* group. Three years later the same animal or a closely related form was described as *Lepus nigricaudatus* by Bennett (*Proc. Zool. Soc. London*, I, p. 41, 1833). Concerning the ears of this species the account reads: "These are in front mixed black and yellow, giving a grizzled appearance; on the hinder part they are entirely ochraceous for about two-thirds of the length of the ear, the terminal third, as well as the tip and the hinder fringe, being white. . . ." This is one of the species "obtained by the [Zoölogical] Society from that part of California which adjoins Mexico." Whatever it may be, it is evident that it is not the animal that I have called *Lepus asellus*. The last of the names which need to be considered here is the *Lepus flavigularis* of Wagler (Schreber's *Säugethiere*, Supplementband, Abth. iv, p. 106, 1844). It is based on a specimen from no certain locality. While there is some doubt as to the

² ". . . auribus longissimis extus albis . . ."

³ Hätte er noch hinzugefügt, dass diese Ohren in ihrer vordern Hälfte dunkel gefärbt, in der hinteren (weniger zum Vorschein kommenden) völlig weiss sind und dass beide Farben in einer geraden Mittellinie sich unmittelbar und scharf begränzen, so würde er die Aufmerksamkeit früher auf ein Thier gelenkt haben, das in Herrn Deppe's Sendungen zum erstenmal nach Europa gekommen und in unserm Museum unter dem Namen *Lepus mexicanus* aufgestellt ist.

identity of *Lepus flavigularis* with *L. callotis* there can be no question as to its distinctness from *L. asellus*, since the ears are said to be wholly yellowish on the outer side.⁴

Subgenus **MICROLAGUS** Trouessart.

Lepus bachmani ubericolor subsp. nov.

Type adult ♂ (skin and skull), No. $\frac{19}{3} \frac{96}{5} \frac{64}{3} \frac{4}{71}$ United States National Museum, collected at Beaverton, Oregon, February 25, 1890, by A. W. Anthony.

General Characters.—Darker and redder than *Lepus bachmani bachmani*⁵ from California.

Color.—General color throughout (except as otherwise described) a fine grizzle of reddish brown⁶ and black, the black slightly more conspicuous on back, the brown paling a little on sides, especially at flanks and shoulders. Nape patch small and inconspicuous, dull cinnamon in color. Ears blackish, heavily sprinkled with broccoli brown externally and frosted with whitish internally, and at base. Near edge of inner surface of ear there is a strong sprinkling of wood brown. Belly, chin and upper part of throat dull cream buff. Chest and lower throat light wood brown. Legs like sides. Dorsum of manus and pes dull white *heavily sprinkled with brown*. Tail dull brown throughout, sprinkled with color of back above, and with dull white beneath; the extreme base inconspicuously clear, dull white.

Skull and Teeth.—The skull and teeth exactly resemble those of *Lepus bachmani bachmani*, except that they appear to be slightly larger throughout, and the audital bullæ may be relatively somewhat smaller.

Measurements.—External measurements of type (from dry specimen, a well-prepared skin): Total length, 280; tail vertebræ, 15; hind foot, 75; ear from crown, 55.

Cranial measurements of type: Greatest length, 67; basal length, 57; basilar length, 52; henselion to posterior edge of palate (me-

⁴ "Auch an den Ohren hat das Gelbe die Oberhand; die ganze Aussenseite ist gelb behaart, ohne den grossen weissen Fleck, der den *L. callotis* var. 1 auszeichnet; nur die Spitze und der innere Rand sind mit einem weissen, der äussere mit einem ochergelben Haarsaume eingefasst" (p. 107, footnote).

⁵ *Lepus bachmani* Waterhouse, *Proc. Zool. Soc. London*, p. 103 (not *L. bachmani* of Baird, 1857, and authors from 1857 to 1898) = *Lepus trowbridgei* Baird, 1857.

⁶ The exact shade is intermediate between the wood brown and russet of Ridgway (*Nomencl. of Colors*, pl. III, figs. 16 and 19).

dian), 25.4; posterior edge of bony palate to hamular, 14; length of incisive foramen, 16; width of incisive foramina, 7; zygomatic breadth, 32; interorbital breadth (exclusive of supraorbital processes), 11.6; greatest breadth of brain case, 25.6; breadth of rostrum at base of zygomata, 18.8; greatest (diagonal) length of nasals, 18.4; greatest breadth across both nasals, 12.6; least breadth across both nasals, 8.6; depth of brain case at anterior end of basioccipital, 21.4; diastema, 18; maxillary molar series (alveoli), 13; mandible, 48.6; diastema, 14; mandibular molar series (alveoli), 13.

Specimens Examined.—Two, both from the type locality.

General Remarks.—*Lepus bachmani ubericolor* is a typical 'northwest-coast form,' differing from the Californian phase of the species in richer, more abundant pigmentation.

Subgenus **SYLVILAGUS** Gray.

In the absence of positive knowledge of the relationships of the cottontails, I have treated the four forms here described as subspecies of *Lepus floridanus*.

Lepus floridanus yucatanicus subsp. nov.

1877. *Lepus aquaticus* Allen, Monogr. N. A. Rodentia, p. 365, (part). Not of Bachman, 1837.

1890. *Lepus sylvaticus aztecus* Allen, Bull. Am. Mus. Nat. Hist., iii, p. 191, December 10, 1890. Not of Allen, *ibid.*, p. 188.

Type adult ♀ (skin and skull), No. $\frac{11.441}{37.77\frac{1}{2}}$ United States National Museum, collected at Merida, Yucatan, February 22, 1865, by A. Schott. Original number, 207.

General Characters.—Closely related to *Lepus floridanus aztecus* (Allen), from Tehuantepec, but larger and darker. Skull with disproportionately large audital bullæ.

Color.—Back a uniform coarse grizzle of black and light buff, the latter slightly predominating. On the sides and rump the buff becomes paler and the black less conspicuous, producing a very slightly paler grizzle. Under fur on back bluish gray, becoming distinctly brownish at tip. On the rump the basal color of the under fur is paler and the terminal half of the hairs (10 mm.) becomes bright cinnamon rufous, imparting to the fur of the region a distinct reddish cast. Tail (imperfect in the type, but complete in other specimens) white beneath, dull, grizzled, reddish brown above. Nape patch clear bright cinnamon rufous. Ears gray, on

the outer surface blackening on the terminal fourth and along anterior edge. Extreme anterior margin fringed with pale buff. This border is continuous through whole periphery of ear, but is broadest and composed of the longest hairs through lower anterior half. Inner surface of ear thickly sprinkled with fine whitish hairs. Crown of head slightly darker than back. Cheeks paler than sides, but strongly shaded with black. A conspicuous whitish area surrounding eye and broadening posteriorly to a width of about 10 mm. Chin and upper part of throat dull white. Chest and lower throat ochraceous buff, darkened by a sparse sprinkling of black tipped hairs. The hairs of this buff area are slightly lengthened to form an inconspicuous ruff. Legs cinnamon rufous, the gray of the sides extending over most of outer side of thigh, but scarcely reaching below shoulder. White of belly extending down inner side of hind leg and covering dorsum of pes. On front leg it extends as a narrow band on inner side to carpus. Belly dull white, strongly tinged with buff on chest.

Skull and Teeth.—The skulls of *Lepus floridanus yucatanicus* average slightly larger than those of *L. floridanus aztecus*, and the zygomatic arches are relatively deeper and heavier. Otherwise I can see no tangible differences in general form. Audital bullæ considerably larger and more inflated than in *L. floridanus aztecus*.

Measurements.—External measurements of type: Total length, 430 mm. (estimated, skin stretched); hind foot, 198; ear from crown, 71. Average of five specimens, including the type: Total length, 412 (400–430); tail vertebræ, 33.5 (33–34); hind foot, 92 (85–98); ear from crown, 73.5 (68–75). These measurements are taken from badly prepared skins, and are only approximately reliable.

Cranial measurements of type: Greatest length, 82 mm.; basal length, 64; basilar length, 62; hensenion to posterior edge of bony palate (median), 33; least (lateral) length of bony palate, 7.8; posterior edge of bony palate to hamular, 17; length of incisive foramen, 21; width of incisive foramina, 9.4; zygomatic breadth, 39; interorbital breadth (inclusive of supraorbital processes), 20; greatest breadth of brain case, 29; breadth of rostrum at base of zygomata, 22.6; greatest (diagonal) length of nasals, 37; greatest breadth across both nasals, 16; least breadth across both nasals

10; depth of brain case at anterior end of basioccipital, 26; diastema, 23.6; maxillary molar series (alveoli), 14; mandible, 62; diastema, 19; mandibular molar series (alveoli), 14.6.

Specimens Examined.—Six, all from the type locality.

General Remarks.—*Lepus floridanus yucatanicus* and *L. floridanus aztecus* resemble each other rather closely, but differ in easily recognizable characters. *Lepus floridanus aztecus* is the smaller animal of the two, with blacker back, more buffy sides and clearer gray cheeks. The cranial differences between the two forms are well marked. It is highly probable that these red rumped animals are specifically distinct from *Lepus floridanus*.

Lepus floridanus subcinctus subsp. nov.

Type adult ♀ (skin and skull), No. $\frac{20}{35} \cdot \frac{42.5}{66.5}$ United States National Museum, collected at Hacienda El Molino, near Negrete, Michoacan, Mexico, June 15, 1892, by P. L. Jouy. Original number, 415.

General Characters.—Most like *Lepus floridanus chapmani* Allen, from Corpus Christi, Texas, but slightly larger, the ears longer, and color of under parts duller. Color of sides strongly encroaching on dull white of belly and almost dividing it immediately in front of hind legs. Skull slightly larger than that of *L. floridanus chapmani*, but not appreciably different in form.

Color.—Back a uniform grizzle of black and buffy white, the latter slightly predominating. On the sides and rump the white becomes clearer and the black less conspicuous, thus producing a paler grizzle slightly contrasted with that of back. Under fur on back light, bluish gray with scarcely noticeable brownish tips. On rump the basal color is slightly paler and the tips of the hairs for about 5 mm. are pinkish buff. Tail, snowy white beneath, hair brown grizzled with whitish above. Nape patch light cinnamon. Ears uniform gray faintly tinged with buff on inner surface, and narrowly rimmed with blackish along external anterior border near tip. Lower half of anterior border fringed with lengthened white hairs. Crown of head like back, but slightly yellower. Cheeks like sides of body, and distinctly shaded with black below and behind eye. A whitish eye ring. Chin and upper part of throat dull white, strongly darkened by the bluish gray bases of the hairs. Chest and lower throat cream buff, darkened by a sparse

sprinkling of black-tipped hairs as well as by the gray under fur; the hairs of the buff area lengthened to form an inconspicuous ruff. This buff area extends backward to include front legs and form a narrow but distinct line of demarkation between color of sides and that of belly. Legs ochraceous buff tinged with cinnamon on outer side and suffused with white on inner side and on upper side of feet. Hind leg paler than front leg. Belly *dull white*, the white area much narrower than in the ordinary forms of the species, and nearly interrupted by an incomplete, dull buff girdle immediately in front of the hind legs.

Skull and Teeth.—Except for its greater size, the skull of *Lepus floridanus subcinctus* does not differ appreciably from that of *L. floridanus chapmani*.

Measurements.—External measurements of type (from fresh specimen by collector): Total length, 434; tail vertebræ, 47; hind foot, 86; ear from crown, 76.⁷ Average of three specimens including the type:⁸ Total length, 423 (400–435); tail vertebræ, 43 (42–47); hind foot, 87 (86–88); ear from crown, 74 (71–76).

Cranial measurements of type: Greatest length, 76; basal length, 62; basilar length, 58; henselion to posterior edge of bony palate, 28; least (lateral) length of bony palate, 6; posterior edge of bony palate to hamular, 18; length of incisive foramen, 18; width of incisive foramina, 7.8; zygomatic breadth, 35; inter-orbital breadth (inclusive of supraorbital processes), 19; greatest breadth of brain case, 18; breadth of rostrum at base of zygomata, 20.4; greatest (diagonal) length of nasal, 34.8; greatest breadth across both nasals, 16; least breadth across both nasals, 9; depth of brain case at anterior end of basioccipital, 24; diastema, 20.4; maxillary molar series (alveoli), 14; mandible, 58; diastema, 17; mandibular molar series (alveoli), 12.

Specimens Examined.—Three, all from the type locality.

General Remarks.—*Lepus floridanus subcinctus*, though closely related to *L. floridanus chapmani*, is readily distinguishable by its longer ears. In color the two forms are essentially alike, but the Mexican animal is slightly more dull, especially on the belly. On

⁷ In the dry specimen the ear has shrunk to 70 mm.

⁸ Four topotypes of *Lepus floridanus chapmani*, measured in flesh by collector (ear excepted), average: Total length, 393 (390–400); tail vertebræ, 38.2 (37–40); hind foot, 79 (76–83); ear from crown, 55 (52–57).

the other hand it has more gray in the rump, which is distinctly aler than the tail, while in *L. floridanus chapmani* rump and tail are of essentially the same color.

Lepus floridanus canielunus subsp. nov.

Type adult ♂ (skin and skull), No. 63,137, United States National Museum, collected at Fort Clark, Texas, December 27, 1892, by Edgar A. Mearns. Original number, 2,172.

General Characters.—Like *Lepus floridanus chapmani* Allen, but slightly paler throughout; sides, rump and upper surface of tail conspicuously paler, and white of belly pure and not encroached upon by color of sides.

Color.—The color is so much like that of *Lepus floridanus subcinctus* that no detailed description is necessary. The pale band on the hairs of the back is very slightly lighter, but the black tips are considerably less abundant. This is true throughout the dorsal and lateral surfaces. Head and ears distinctly paler than in *subcinctus*. Rump and tail conspicuously paler, the difference produced partly by a reduction in the number of black-tipped hairs, but more especially by lightening the brown terminal band of the under fur to ecru drab. Throat ruff, slightly paler than in *subcinctus*. White of belly clear and pure throughout, not in the least encroached upon by the color of the sides, as in the case of *L. floridanus subcinctus* and *L. floridanus chapmani*. Color of sides fading abruptly into that of belly without intervention of buff lateral line.

Skull and Teeth.—The skull of *Lepus floridanus canielunus* is slightly smaller than that of *L. floridanus subcinctus*, but it differs in no way in form. It is indistinguishable from the skull of *L. floridanus chapmani*.

Measurements.—External measurements of type (from fresh specimen by collector): Total length, 395; tail vertebræ, 52; hind foot, 87; ear from crown, 72. Average of ten specimens from type locality: Total length, 382 (365–400); tail vertebræ, 57.8 (50–67); hind foot, 85.4 (80–90); ear from crown, 68.9 (64–72).

Cranial measurements of type (measurements in parenthesis are those of a topotype of *L. floridanus chapmani*, No. 2,982, American Museum of Natural History): Greatest length, 66 (64.6);

basal length, 54 (54); basilar length, 50 (50); hensenion to posterior edge of bony palate (median), 25 (25.4); least (lateral) length of bony palate, 5.8 (6.4); posterior edge of bony palate to hamular, 15.4 (—); length of incisive foramen, 16.4 (16); width of incisive foramina, 6.8 (7); zygomatic breadth, 33 (33); inter-orbital breadth (inclusive of supraorbital processes), 16.4 (17); greatest breadth of brain case, 27 (27); breadth of rostrum at anterior base of zygomata, 7.6 (9); greatest (diagonal) length of nasals, 29.2 (29); greatest breadth across both nasals, 14 (15); least breadth across both nasals, 8.4 (8.4); depth of brain case at anterior end of basioccipital, 22.8 (22.6); diastema, 18 (18); maxillary molar series (alveoli), 12.4 (12.4); mandible, 49 (49); mandibular molar series (alveoli), 13.6 (12.6).

Specimens Examined.—Twelve, all from the type locality.

General Remarks.—*Lepus floridanus caniculus* agrees with *L. floridanus chapmani* in its small size, but differs in much paler color—therefore in exactly the opposite direction from the dark *L. floridanus alacer* Bangs. Its most striking peculiarity, as compared with its nearest allies, is its very pale rump and tail.

Lepus floridanus sanctidiegi subsp. nov.

Type adult ♀ (skin and skull), No. 60,668 United States National Museum, collected at monument No 258 (Pacific Ocean), Mexican boundary line, San Diego County, California, July 10, 1894, by Edgar A. Mearns.

General Characters.—Like *Lepus floridanus auduboni* Baird, but color paler throughout and belly pure white. Ears probably longer than in true *auduboni*.

Color.—Back a uniform grizzle of black and light cream buff, the latter slightly predominating. On the sides the buff becomes even paler, while the amount of black is noticeably reduced. On the rump the buff fades abruptly to whitish gray, producing a small but well-defined pale rump patch. Under fur on back light bluish gray, changing to dull wood brown at tip. Long hairs of back bluish gray at base, darkening to nearly black close below broad subterminal cream buff band, and black at tip. Tail dark brown above, the hairs inconspicuously paler tipped; snowy white beneath. Nape patch clear ochraceous buff, slightly more tawny than the figure given by Ridgway (*Nomencl. of Colors*, pl. v,

fig. 10). The nape patch is very large, extending back as far as the point reached by the tips of the ears, and even suffusing the fur for a short distance beyond. It also extends on each side of the neck to angle of jaw. Ears gray internally and externally, blackening at tip outside, and margined with whitish. Lower half of ear distinctly paler than crown of head, and wholly without dusky shading. Crown of head about like back, but more finely grizzled. Cheeks slightly browner than sides of body, not darker posteriorly than anteriorly. A dull whitish eye ring, nearly interrupted above and below. Chin and upper part of throat white, faintly tinged with plumbeous. Chest and lower throat cream buff. Legs ochraceous buff, the white of belly extending to back of hind feet, and to wrists. Dorsal surface of front feet cream buff. Back of thighs suffused with cream buff. Belly pure white, faintly tinged with plumbeous.

Skull and Teeth.—Having no skulls of *Lepus floridanus auduboni* at hand, I am unable to compare that of the present race with its nearest relative. As compared with that of *L. floridanus holzneri* (Mearns) the skull as a whole is slightly smaller, the brain case is relatively broader and shorter and the audital bullæ are perceptibly larger.

Measurements.—External measurements of type (from fresh specimen by collector): Total length, 385; tail vertebrae, 63; hind foot, 85; ear from crown, 78.

Cranial measurements of type: Greatest length, 69; basal length, 56; basilar length, 52; henselion to posterior edge of bony palate, 26; least (lateral) length of bony palate, 5.4; posterior edge of bony palate to hamular, 16.4; length of incisive foramen, 18; width of incisive foramina, 6; zygomatic breadth, 33; inter-orbital breadth (inclusive of supraorbital processes), 19; greatest breadth of brain case, 25; breadth of rostrum at anterior base of zygomata, 16; greatest (diagonal) length of nasals, 29; greatest breadth across both nasals, 13.6; least breadth across both nasals, 8.4; depth of brain case at anterior end of basioccipital, 23; diastema, 18.4; maxillary molar series (alveoli), 12.8; mandible, 50; diastema, 15; mandibular molar series (alveoli), 13.6.

Specimens Examined.—Twenty-five, all from the extreme southern part of San Diego County, California, and adjacent Lower California.