

**Article VII.—MAMMALS FROM WESTERN COLOMBIA.**

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The present paper is based on a collection of mammals, numbering about 400 specimens, representing 55 species, made in the Cauca district<sup>1</sup> of western Colombia during November and December, 1910, and the first six months of 1911, by an expedition sent out by this Museum for the purpose of collecting birds and mammals and studying the life zones and environmental conditions of this highly diversified and hitherto little studied portion of South America. Mr. William B. Richardson, formerly employed by the Museum as a collector in Nicaragua, was engaged for a year to begin what was hoped to be a thorough biological survey, so far as bird and mammal life was concerned, of the Andean region of southwestern Colombia. He reached Buenaventura early in November, and worked for several weeks in the humid coast belt, from sea level to about 2000 feet, and later in the Western Andes and the Cauca Valley, chiefly at altitudes of from 5000 to 10,000 feet.

Mr. Frank M. Chapman, Curator of Ornithology, who planned the expedition and has directed its work,<sup>2</sup> joined Mr. Richardson in the field March 27, 1911, accompanied by Mr. Leo E. Miller, and Mr. Louis A. Fuertes as artist, since to gather material and make the necessary field studies for a habitat group to illustrate the bird life of the higher Andes was one of the primary objects of the expedition. Mr. Chapman was thus able to plan the future field work from personal knowledge of the region, and after two months' of reconnaissance work returned to New York with Mr. Fuertes, leaving Messrs. Miller and Richardson in the field.

As already stated, this report on the mammals is based on the collections made prior to the end of July, 1911. The results of the following six months work, numbering about 400 additional specimens of mammals, are in transit to the Museum.<sup>3</sup> These will form the basis of a second paper on the Mammals of the Museum's Colombian Expedition. The report on the

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<sup>1</sup> With the exception of a few species collected along the Rio San Jorge, to the northward in Bolivar Department.

<sup>2</sup> Mr. Chapman had been contemplating an expedition to this region since the late Mr. J. H. Batty, in 1898, brought to this Museum a small collection of birds and mammals gathered by him in the Upper Cauca Valley, but lack of funds has rendered it necessary to defer the enterprise from year to year awaiting favorable conditions.

<sup>3</sup> Since this was written they have reached the Museum, and a preliminary examination of the collection shows that the species represented are in the main additional to those previously received.

birds, by Mr. Chapman, is well advanced in preparation, and will comprise a more detailed account of the field work of the expedition.

The principal localities at which mammals were collected are the following:

*By Richardson.*

**San José**, coast belt, altitude (at which collections were made), 200 feet, Nov. 29–Dec. 13, 1910.

**Los Cisneros**, 600 feet, March 17–21.

**Caldas**, altitude 2000 feet, east of San José, Nov. 18–21.

**San Antonio**, altitude 7000 feet, Jan. 4–March 31, 1911 (on the Cali River, near Cali).

**Las Lomitas**, altitude 5000 feet, Feb. 26–March 13.

*By Miller.*

**Mira Flores**, altitude 6200 feet, April 18–May 1 (Central Andes near Palmira).

**Munchique** (Cerro Munchique), 6000–8325 feet, May 24–June 11.

**Cocal**, 4000–6000 feet, June 10–17.

**Gallera**, 5700 feet, June 28–July 13.

**La Florida**, 7000 feet, July 8–18.

**Crest of Western Andes**, 40 miles west of Popayan, 10,340 feet, July 3–24.

San José, Los Cisneros, and Caldas are in the torrid coast belt; Mira Flores is on the western slope of the Central Andes, near Palmira; Munchique, Cocal, Gallera, La Florida, and "Crest of Western Andes," are all near Popayan, and all are on the western slope, near the crest, except La Florida, which is east of the crest.

The region which includes these localities has heretofore been only superficially examined. A few mammals obtained by Mr. J. H. Batty in 1898 have formed the basis of several species described by Mr. Oldfield Thomas, Mr. E. W. Nelson, and the present writer, and Mr. Thomas has described several species collected in the coast belt (Chocó district) by Mr. M. G. Palmer in 1908.

Other neighboring localities, wholly outside of the area of the present paper, at which mammals have been previously collected, are northern and northwestern Ecuador (Esmeraldas, Quito, etc.) to the southward and westward, and western Cundinamarca and the Bogota district to the eastward and northeastward, from which a few species have been described, but from which districts no very large collections have been received.

Considering the great diversity of environment presented in southwestern Colombia, due to great differences in altitude and precipitation at even contiguous localities, and the merely superficial and sporadic field work hitherto done here, it is not surprising that thorough collecting by modern methods has disclosed a large number of hitherto unrecognized

forms of mammal life, which it has seemed necessary to describe in the present paper. Further material will doubtless show that several others here provisionally referred to previously known species will require new designations. In the present paper the following 18 forms have been characterized as new:

<i>Sylvilagus fulvescens.</i>	<i>Oryzomys palmiræ.</i>
<i>Heteromys lomitensis.</i>	“ <i>pectoralis.</i>
<i>Reithrodontomys milleri.</i>	“ ( <i>Oligoryzomys</i> ) <i>munchiquensis.</i>
<i>Rhipidomys mollissimus.</i>	“ “ <i>fulvirostris.</i>
“ <i>similis.</i>	“ ( <i>Melanomys</i> ) <i>obscurior affinis.</i>
“ <i>cocalensis.</i>	<i>Microxus affinis.</i>
<i>Thomasomys cinereiventer.</i>	<i>Æpeomys fuscatus.</i>
“ <i>popayanus.</i>	<i>Sciurus milleri.</i>
<i>Neacomys pusillus.</i>	<i>Blarina (Cryptotis) squamipes.</i>

#### DIDELPHIIDÆ.

##### 1. *Marmosa phæa* *Thomas.*

One specimen, adult male, without skull, Las Lomitas (alt. 5000 ft.), Feb. 26 (Richardson). Doubtfully referred to this species.

##### 2. *Marmosa murina zeledoni* *Goldman.*

Three immature specimens, without skulls, San José (alt. 200 ft.), Nov. 29 and Dec. 5 (Richardson). Doubtfully referred to this form.

##### 3. *Thylamys caucæ* (*Thomas*).

One specimen, San Antonio (alt. 7000 ft.), subadult male, Jan. 12 (Richardson). This specimen is from very near the type locality of the species.<sup>1</sup>

##### 4. *Metachirus opossum melanurus* *Thomas.*

Two specimens (one a skull only), Cocal (alt. 4000 ft.), July 12 (Miller).

The skin greatly resembles *M. opossum fuscogriseus* Allen but it is darker with the tail wholly black to the tip. *M. griscescens* Allen, from the Upper Cauca Valley, is a quite different animal, but related to the *M. opossum* group, of which further material may show it to be a subspecies.

<sup>1</sup> *Marmosa caucæ* Thomas, Ann. and Mag. Nat. Hist. (7), V, Feb. 1900, p. 221.

5. ***Didelphis paraguayensis andina* Allen.**

Twelve specimens, 4 adult and 8 young, Munchique (alt. 8225 ft.), May 25–June 6 (Miller). All but two are in the black phase.

6. ***Didelphis marsupialis etensis* Allen.**

Three specimens (Richardson): San José (alt. 200 ft.), Dec. 5 and 13, 2 young specimens; Caldas (alt. 2000 ft.), 1 adult female.

7. ***Chironectes minimus* (Zimmermann).**

Two specimens: Juanchito (alt. 3500 ft.), adult male, Aug. 13 (Miller); flat skin, purchased, Palmira (Richardson).

Juanchito specimen: total length, 695; tail, 390; hind foot, 66. Skull, total length, 725; zygomatic breadth, 43.

## BRADYPODIDÆ.

8. ***Bradypus ephippiger* Philippi.**

Two specimens, adult male and female, Rio San Jorge, Dec. 12 and 20, 1911 (Mrs. E. L. Kerr).

## DASYPODIDÆ.

9. ***Dasypus*<sup>1</sup> *novemcinctus* Linnæus.**

One specimen, Munchique (alt. 7000 ft.), June 11 (Miller).

## CERVIDÆ.

10. ***Mazama tschudii* (Wagner).**

Two specimens, adult female and young male in spotted coat, Gallera (alt. 5700 ft.), July 2 (Miller).

These specimens are referred provisionally to this species.

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<sup>1</sup> On the use of *Dasypus* in place of *Tatu*, cf. Thomas, Proc. Zool. Soc. London, 1911, p. 141.

## LEPORIDÆ.

11. *Sylvilagus (Tapeti) fulvescens* sp. nov.

Type, No. 32360, ♀ ad., Belen (alt. 6000 ft.), Western Andes, July 28, 1911; coll. Leo E. Miller.

Much smaller than either *S. andinus* or *surdaster* Thomas, from Ecuador, described respectively from the coast region and the Eastern Andes.

General color above pale fulvous varied slightly with black, the fur being slaty basally, then narrowly banded with black, followed by a broad band of buff, with rather inconspicuous brownish black tips; top of nose with a broad band of pale grayish buff varied with black-tipped hairs, becoming pale rufous on the frontal region; chin, throat, pectoral region and middle of abdomen white, passing into a pale buff tint laterally and on the inside of the hind limbs; prepectoral band very pale buff; the hairs of the whole ventral surface are grayish plumbeous at base; ears pale rufous on both surfaces, as is the nape patch; fore and hind feet yellowish rufous, the soles dusky; the very short tail is dusky above, pale yellowish rufous below.

Total length (type and only specimen), 328; tail, 20; hind foot (c. u.), 81 (s. u. 73); ear (in dry skin), 40. Skull, greatest length, 61.5; zygomatic breadth, 31; mastoid breadth, 24; interorbital breadth, 13; length of nasals (diagonally), 25, greatest breadth, 13.5; palatal length, 23; breadth of palate, 10; palatal foramina,  $10 \times 5$ ; upper tooth-row (at alveolar border), 12; greatest antero-posterior diameter of bulla, 9.4.

The type is a fully adult female, with the sutures of the skull well closed. The frontal region is flat but not concave interorbitally; the postorbital processes are small, narrow and pointed and diverge from the braincase. The general coloration above is a dull pale shade of yellowish.

The geographically nearest known relatives of *S. fulvescens* are *S. surdaster* Thomas from the low coast district of Ecuador (dark-colored with blackish ears and very small bullæ), and *S. andinus* from the Eastern Andes (Mount Cayambé, at an altitude of over 13,000 feet), also dark colored with the ears gray at base and blackish apically. Both considerably exceed the present species in size, and differ strongly from it in coloration.

## AGOUTIDÆ.

12. *Agouti paca virgata* Bangs.

One specimen, nearly adult female, San José (alt. 200 ft.), Dec. 3, 1910 (Richardson).

Total length, 660; tail, 0; hind foot, 130. Skull, occipito-nasal length, 139; zygomatic breadth, 83; nasals, length on mid-line, 47; greatest breadth, 25; frontals, length on mid-line, 59; breadth at posterior border,

58; interorbital breadth, 38; greatest breadth of occiput, 59; length of upper tooththrow at alveolar border, 32.

In coloration and in the form of the skull this specimen agrees with a series from Nicaragua which I refer to *virgata*.

13. **Agouti paca** subsp. indet.

One specimen, La Florida (alt. 7000 ft.), July 18 (Miller).

This is a young male with the milk premolars still in place. In coloration and markings it agrees well with Stolzmann's description of *Cælogenyx taczanowskii*, but, though still young, is a much larger animal, both in external and cranial measurements. *A. taczanowskii* is a mountain form, living, according to the describer, on both slopes of the Andes in Ecuador between 6000 and 10,000 feet. His type is stated to be an apparently adult male. It is certainly much more mature, although much smaller, than the present specimen from La Florida. Until further material is available it is impossible to decide upon the relationship of the two forms.

14. **Dasyprocta variegata variegata** Tschudi.

Two specimens, males, Los Cisneros (alt. 600 ft.), March 19 and 21 (Richardson). One is adult, the other still retains the milk premolars.

Indistinguishable from a specimen from the Rio Oscuro, Cauca Valley, collected some years ago by the late J. H. Batty. They also agree very closely with a number of specimens in a large series of *D. columbiana* Bangs from Bonda, Santa Marta, Colombia. The Bonda series shows a wide range of individual color variation, especially in the amount of ochraceous in the dorsal pelage, and in the white-tipping of the hairs of the lower back. The description of *D. columbiana* was based two immature specimens, and no comparison appears to have been made with *D. variegata*; it seems to be at best a slightly differentiated subspecies of the *variegata* group, and should apparently stand as *D. variegata columbiana*. The basal length (189.4) of the type skull of *columbiana* is obviously an error; probably 189.4 should read 89.4.

OCTODONTIDÆ.

15. **Proechimys semispinosus calidior** Thomas.

Fourteen specimens (Richardson), Nov. 29–Dec. 11, 1911; 10 adults, 4 young one fourth to one half grown. The young specimens have the whole back dark brown, the flanks strongly washed with ferruginous.

Mr. Thomas's description<sup>1</sup> of this subspecies agrees perfectly with these specimens, which were collected in the coast region of Colombia, about 100 miles north of the type locality of *calidior*, in the same character of country.

Measurements of 8 adults: Total length, 370 (340–400); head and body, 218 (210–240); tail, 168 (150–185); hind foot, 53.3 (50–55). Skull (average of several adults), total length, 57; zygomatic breadth, 27.

#### HETEROMYIDÆ.

##### 16. *Heteromys lomitensis* sp. nov.

Type, No. 32240, ♀ ad., Las Lomas, Cauca, Colombia, March 1, 1911; coll. W. B. Richardson. Altitude 5000 feet, west slope of Western Andes.

Upperparts superficially dull black, the hairs without either rufous or fulvous tipping; both spines and hairs grayish white basally, black apically, with a few white-tipped hairs and spines intermixed; ventral surface, inside of limbs, muzzle, lower border of cheeks and cheek-pouches white; fore feet white; hind feet thinly covered with silvery white hairs nearly to ankles; soles naked, black; tail indistinctly bicolor, dark brown above, lighter below, nearly naked; ears dark brown.

Type, total length, 250 mm.; head and body, 120; tail, 130; hind foot (c. u.), 30. Skull, total length, 35; zygomatic breadth, 16; length of nasals, 14; inter-orbital breadth, 9; diastema, 8; upper toothrow, 4.2.

Represented by three adult specimens (two males, one female), all from the type locality, March 1–4, 1911.

This species is nearly related to *Heteromys australis* Thomas, from near sea level at St. Javier, Lower Cachabi River, northwestern Ecuador, from which it differs in darker coloration and smaller size.

#### MURIDÆ.

##### 17. *Mus musculus* *Linnæus*.

Seven specimens (Richardson): San José, 1 specimen, Dec. 7; Caldas, 6 specimens, Nov. 18–20.

##### 18. *Reithrodontomys milleri* sp. nov.

Type, No. 32596, ♂ ad., Munchique (alt. 8325 ft.), Cauca, Colombia, May 28, 1911; coll. Leo E. Miller, for whom the species is named, in recognition of his excellent field work in collecting the mammals which to a large extent form the basis of the present paper.

<sup>1</sup> Ann. and Mag. Nat. Hist. (8), VIII, Aug., 1911, p. 254.

Upperparts yellowish brown, darker mesially, lighter and more fulvous on the sides and passing into the deep orange-buff lateral line which sharply divides the dorsal from the ventral surface; underparts white or grayish white, the hairs basally gray, this color often tinging the surface; ears dull brown; upper surface of all the feet dusky brown, the digits flesh-color or whitish; tail bicolor, dark brown above, grayish brown below, not lighter at the tip.

Type, total length, 185; head and body, 78; tail, 107; hind feet (c. u.), 19. Ten adults (all topotypes): total length, 181 (169–190); head and body, 73.8 (70–78); tail, 107 (98–116); hind foot, 19 (18–20). Skull, total length, 23; zygomatic breadth, 11.5; interorbital breadth, 4; breadth of braincase, 11; mastoid breadth, 10; length of nasals, 8; diastema, 5; upper toothrow, 4.

Type, an adult male. Represented by 17 specimens (Miller), of which 15 are from Munchique (May 24–June 8), and 2 from Cocal, June 17. The adults show a considerable range of individual color variation, the type representing the average coloration. Above the general coloration varies from yellowish brown to rufous brown; below from clear white to grayish white, only one specimen out of the whole series showing a faint tinge of cream buff. Immature specimens are dusky grayish brown above with a slight yellowish tinge tipping the hairs.

Compared with *Reithrodontomys söderströmi* Thomas, from Quito, Ecuador, the present species is fulvous brown instead of “grayish fawn” above, clear white or grayish white instead of “more or less buffy or fawn-colored below,” with a well developed lateral line, the feet and hands more or less dusky above (blackish in young specimens) instead of “white, without darker markings on the metapodials,” and the tail not white-tipped.

### 19. *Rhipidomys mollissimus* sp. nov.

Type, No. 32243, ♀ ad., Mira Flores (alt. 6200 ft.), west slope of Central Andes, near Palmira, Cauca, Colombia, April 30, 1911; coll. Leo E. Miller.

Upperparts yellowish brown inconspicuously grizzled with blackish, the hairs being dark slate basally with a narrow apical or subapical band of fulvous, and a slight tipping of black on the middle of the back; top of head scarcely different from the back; a well marked lateral line of deep buff separating the dorsal and ventral surfaces; underparts yellowish white, the hairs white to the base with the tips washed with pale yellowish; ears dull brown; tail black, unicolor, nearly naked basally, scantily clothed with short black hairs towards the tip, nearly concealing the annulations, and forming a conspicuous tuft at the tip; fore feet externally buffy, toes not conspicuously lighter; hind feet with buffy edges and toes, the median area dull black.

Type, total length, 279; head and body, 123; tail vertebræ, 156; hind foot (c. u.), 27; ear (in skin), 15. Skull, total length, 32; basilar length, 25; zygomatic breadth, 17; length of nasals, 11; interorbital breadth, 5; breadth of braincase, 14; mastoid breadth, 12.6; palatal length, 12; diastema, 7.5; upper toothrow, 5.

Pelage short and fine, exceedingly short and downy on the ventral surface.

The type and only specimen is an adult female; mammae 1–2 = 6.



This species seems to bear some resemblance to *R. fulviventer* Thomas, but is about one fourth larger, has a well-defined lateral line, and is much paler below, where the hairs are not slaty at base as in *R. fulviventer*.

## 20. *Rhipidomys similis* sp. nov.

Type, No. 32458, ♂ ad., Cocal, Cauca, Colombia, June 17, 1911; coll. Leo E. Miller. Altitude, 6000 feet.

Similar in coloration of upperparts to *Thomasomys popayanus*; ventral surface grayish white washed with pale fulvous; ears brown, well covered on both surfaces with blackish hairs; feet with the upper surface dark brown, in the hind feet nearly black, the toes conspicuously white; tail dark brown, covered with black hairs, nearly concealing the annulations on the apical half, with a heavy terminal pencil.

Type, total length, 340; head and body, 165; tail, 185; hind foot, 31. Average of 4 adults (type and three topotypes), total length, 326.5 (320-340); head and body, 142 (128-165); tail, 190 (184-192); hind foot, 30 (29-31). Skull (type), total length, 34; zygomatic breadth, 18.5; nasals, 12; interorbital breadth, 5; breadth of braincase, 15.2; diastema, 8.5; palatal foramina, 6.4; upper molar series, 5.1.

Represented by 6 specimens, two of which have worn teeth and all are adult; four are from an altitude of 6000 feet and two from 4000 feet.

In general appearance externally *R. similis* looks like a pale-bellied diminutive of *Thomasomys popayanus*. It is, however, not only much smaller, but the ventral surface is grayish white with a wash of buff instead of being deep ochraceous buff; the amount of fulvous beneath varies in different specimens from a slight (practically absent in one) to a strong wash of pale buff. It is of course, readily distinguished from *popayanus* by the cranial characters and the well-haired and heavily tufted tail.

## 21. *Rhipidomys cocalensis* sp. nov.

Type, No. 32376, ♀ ad., Cocal, Cauca, Colombia, June 14, 1911; coll. Leo E. Miller. Altitude, 4000 feet.

Upperparts, except the head, uniform bright yellowish rufous, inconspicuously mixed with a few black-tipped hairs; entire ventral surface, inside of limbs, and lower half of cheeks pure white to the base of the hairs; head like the back, except more distinctly lined with black-tipped hairs; ears light brown, naked; tail brown, unicolor, nearly naked for the basal three-fourths; apical fourth well-clothed with short fine hairs, lengthening towards the tip and forming a well-developed apical tuft; fore feet flesh color; hind feet light with the metapodial area shaded with dusky. Soles brownish flesh color.

Type, total length, 360; head and body, 161; tail, 199; hind foot, 28. Skull, total length, 35; zygomatic breadth, 18; nasals, 12; interorbital breadth, 5.3; breadth of braincase, 15; diastema, 8.3; palatal foramina, 7; upper molar series, 5.

Represented by three immature specimens in addition to the type, which is a very old female with greatly worn teeth. Two of the young

specimens are from Cocal and the other from Munchique. A half grown specimen has the upper parts dusky, quite blackish on the median line, and strongly washed with yellow on the sides and with a yellow lateral line. In the other young specimens the back is more or less mixed with black-tipped hairs.

This is a typical *Rhipidomys*, but I fail to recognize it among the described species.

## 22. *Thomasomys cinereiventer* sp. nov.

Type, No. 32436, ♂ ad., crest of Western Andes (altitude, 10,340 feet), 40 miles west of Popayan, Cauca, Colombia, July 14, 1911; coll. Leo E. Miller.

Similar in size and general proportions to *T. kalinowskii* (Thomas),<sup>1</sup> but differing in smaller ears and in coloration. Upper parts very dark brown, the hairs tipped with broccoli brown (Ridgway) instead of "dull yellow" as in *kalinowskii*; underparts ash gray with a barely perceptible wash of ecru drab (Ridgway), the hairs being slaty for their basal two-thirds, and tipped with soiled whitish; tail pale brown, not "black" as in *kalinowskii*, covered with short hairs and not pencilled; ears rather small, brown; upper surface of feet pale brown, much paler than the dorsal surface, the base of the nails with a tuft of silvery white hairs.

Type, total length, 304; head and body, 161; tail, 159; hind foot (c. u.), 36; ear (in dry skin), 14 × 12. Skull, total length, 36.5; zygomatic breadth, 18.5; breadth of braincase, 15; interorbital breadth, 6; length of nasals, 15; palatal foramina, 6; diastema, 10; upper toothrow, 5.5; lower jaw, condyle to tip of incisor, 23; coronoid to angle, 9.8.

The type is an old male, above average size, with slightly worn teeth.

Six topotypes, all old adults, the teeth in all showing appreciable wear, give the following: Total length, 299.3 (273–320); head and body, 137 (126–161); tail, 155 (144–172); hind foot, 35 (34–36); skulls, greatest length, 35.3 (34–37); zygomatic breadth, 18.1 (18–18.5). The average of this series varies but a few millimeters from the measurements given for the alcoholic type of *T. kalinowskii*, which are as follows: [Total length, 295;] head and body, 140; tail, 155; hind foot (s. u.), 32.8; skull, greatest length, 36; zygomatic breadth, 18.5.

A series of 20 specimens (13 males, 7 females) from the type locality, all adult but not of course of equal age, measure as follows: Total length, 281.8 (273–320); head and body, 131.4 (123–161); tail, 150.8 (144–162); hind foot, 34.6 (34–36); skull, greatest breadth, 35.5 (34–37); zygomatic breadth, 18.1 (17.3–18.5).

The young adults are much darker (nearly black) above and much clearer gray (silvery gray) below. The range of individual color variation in fully mature specimens is very slight, nor is there any appreciable sexual difference in size.

Represented by 22 specimens from the type locality (the crest of the Coast Range, west of Popayan, altitude 10,340 feet), collected July 10–28, 1911, and by 8 collected at Cocal (6000 feet), June 14–17. Several of the specimens of each series are not quite mature, but about five sixths in both series are fully adult, and several are old adults with worn teeth.

<sup>1</sup> Ann. and Mag. Nat. Hist. (6), XIV, Nov., 1894, p. 349.

This species bears a striking general resemblance to *T. kalinowskii* from "the Valley of Vitoc, East Central Peru," from which it differs mainly in coloration, and much smaller ears.

23. ***Thomasomys popayanus* sp. nov.**

Type, No. 32371, ♂ ad., crest of Western Andes (alt. 10,340 ft.), 40 miles west of Popayan, Cauca, Colombia, July 17, 1911; coll. Leo E. Miller.

Upperparts yellowish rufous lined with black, a broad median dorsal band darker than the adjoining parts; more orange yellow on the sides; whole ventral surface and inside of limbs deep ochraceous buff from the throat to the base of the tail, the pelage plumbeous at the base; top of head darker than back and slightly grayish; sides of nose suffused with buff; cheeks like the sides; muzzle and chin ochraceous gray; upper surface of feet dark brown, the toes whitish; under surface of hind feet blackish brown; ears dull brown, nearly naked on both surfaces; tail dull grayish brown, unicolor, nearly naked (the very short hairs invisible without a lens), with a slight, barely distinguishable tuft at the end, as in many species of *Oryzomys*.

Type, total length, 374; head and body, 156; tail, 218; hind foot, 35. Skull, total length, 39; zygomatic breadth, 20; length of nasals, 15; interorbital breadth, 5; breadth of braincase, 17; diastema, 9; palatal foramina, 7; upper molar series, 7.

Represented by 14 specimens, all males, and all but one topotypes. The other is from San Antonio (alt. 8000 ft.), collected by Richardson, Jan. 10. All are adult, but three are slightly undersize in comparison with adults with worn teeth. Ten topotypes give the following measurements: Total length, 367 (348–395, only one specimen above 376); head and body, 156 (145–164); tail, 211 (201–218); hind foot (c. u.), 37.6 (35–38). Skull, total length, 38.2 (36.5–40); zygomatic breadth, 19.9 (19–20.5).

In coloration the series is unusually uniform, the chief difference being that the darker median band along the back is in some specimens barely distinguishable while in others (obviously younger specimens) it is strongly developed. The color of the ventral surface varies from buff to ochraceous buff; the grayish buff of the muzzle varies a little in the amount of buffy suffusion.

This species is apparently distinct from any other known species of the genus; it most resembles *T. princeps* (Thomas), from Bogota.

24. ***Neacomys pusillus* sp. nov.**

Type No. 31695, ♂ ad., San José, Cauca, Colombia, Dec. 9, 1910; coll. W. B. Richardson. Altitude, 200 feet, in the humid coast region.

Upperparts orange rufous finely grizzled with black-tipped hairs and spines, the orange tint strongly prevailing except on the lower back where the black-tipped spines predominate; sides lighter and more yellowish, a clear deep orange yellow band separating the dorsal and ventral surfaces and extending from the sides of the

nose to the thighs; top of head much darker than shoulders and back; ventral surface wholly clear white to the base of the hairs, which are somewhat rigid; ears externally dark brown, scantily haired; inner surface with scattered short yellowish hairs; tail wholly dark brown and nearly naked; upper surface of feet with very short yellowish hairs; soles of hind feet naked, pale brown.

Type, total length, 145; head and body, 75; tail, 70; hind foot, 20. Skull, total length, 19; zygomatic breadth, 10; breadth of braincase, 10.3; length of nasals, 7.5; upper molar series, 2.5; diastema, 4.

Represented only by the type, an adult male with slightly worn teeth.

This species is similar in general coloration to *Neacomys spinosus* (Thomas), the type of the genus, from Huambo, in northern Peru, at an altitude of 3700 feet, but apparently less dark and more orange, with the color of the feet much lighter. It differs from it, however, strikingly in size, the skull being 4 mm. shorter in total length, and 3 mm. less in zygomatic breadth, with proportional differences in all external measurements. Geographically the localities are separated by the whole breadth of the Andean system, the present species being from the humid lowlands of the Pacific Coast.

In this connection a reëxamination of the series of 20 specimens collected by Mr. H. H. Keays at Inca Mines in southeastern Peru (lat. 13° 30' south, long. 70° west, altitude 6000 feet) in 1900, and referred by me<sup>1</sup> to *Neacomys spinosus*, has shown that in all probability the Inca Mines series represents a well marked form of *N. spinosus*, characterized especially by its larger size. Excluding from this series several specimens that were without measurements or not fully mature, the remaining 15 specimens give the following measurements: Total length, 189 (184–203); head and body, 86 (76–95); tail, 103 (95–114). The measurements given for two specimens (type and topotype) of *spinosus*, from alcoholic specimens, reduced to millimeters, are [total length, 173.74 (174.99, 176.23)]; head and body, 76.2 (76.2, 76.2); tail, 99.4 (98.79, 100.03).

This large series from Inca Mines shows that the coloration of this group may present a wide range of individual variation, in some of these specimens the dorsal surface being blackish grizzled with rufous, in others orange rufous minutely punctated with black, the majority of the specimens varying between these extremes, irrespective of age or sex, the two specimens showing the greatest difference in coloration having been collected on the same day and at the same places. The ventral surface varies from deep buff to clear white. In some of the white-bellied specimens the whiteness extends to the base of the hairs, while in others the basal portion is more or less slaty gray, as is the case in all of the buff-tinted specimen.

<sup>1</sup> Bull. Amer. Mus. Nat. Hist., XIII, 1900, p. 222, and XIV, 1901, p. 42.

## 25. *Oryzomys palmiræ* sp. nov.

Type, No. 32224, ♀ ad., Mira Flores (alt. 6200 ft.), a few miles east of Palmira, eastern slope of Central Andes, April 30, 1911; coll. Leo E. Miller.

Pelage soft and fine, velvety on the ventral surface. Upperparts yellowish tawny-olive, finely grizzled with blackish on the back; sides, including cheeks, more yellowish; top of head darker and more varied with blackish than the back; ventral surface ashy white, sharply defined against the sides, the hairs dark gray basally broadly tipped with whitish; limbs externally like the sides, internally like the belly; upper surface of feet pale buffy white, without darker median area; ears dark brown, covered with very short hairs on both surfaces; tail gray brown, lighter below.

Type, total length, 215; head and body, 105; tail, 110; hind foot, 26; ear (in dry skin), 13. Another old female from Palmira, within sight of Mira Flores, but at nearly 3000 feet lower elevation, is slightly larger; a series of 8 subadults, partly from Mira Flores and partly from Las Lomitas, the latter at 5000 feet on the Western Andes, but only about 30 miles west of Palmira, are smaller, the difference being apparently due to immaturity. These average, total length, 197 (190–200); head and body, 99 (90–101); tail, 97 (90–100); hind foot, 25 (23.5–27).

Skull (type), total length, 27; zygomatic breadth, 15; interorbital breadth, 5; breadth of braincase, 12; length of nasals, 10; palatal length, 12; palatal foramina, 5; maxillary toothrow, 4.5; diastema, 6.2.

The type is an old female with worn teeth. Represented by 14 specimens, of which 5 are topotypes, 1 is from Palmira, 6 are from Las Lomitas, and 1 each from Cocal and the crest of the Western Andes. These localities include a range in altitude of from 3500 to 10,340 feet, and are distributed in and on both sides of the Cauca Valley. The variation in size and coloration seems to be correlated with age rather than locality, so that the recognition of more than one form in the present material seems undesirable.

*Oryzomys palmiræ* closely resembles in coloration, texture of pelage, and proportions *O. mollipilosus* Allen, from Santa Marta, Colombia, but is about one fourth smaller. The group to which these species belong has a wide distribution in Central and South America.

## 26. *Oryzomys pectoralis* sp. nov.

Type, No. 32561, ♀ ad., crest of Western Andes (alt. 10,340 ft.), 40 miles west of Popayan, Cauca, Colombia, July 10, 1911; coll. Leo E. Miller.

Above yellowish brown, slightly grizzled with black along the median line; sides clear yellow, forming a well-defined lateral line; top and sides of head blackish brown tinged with gray and slightly suffused with buff, much darker than back; ventral surface white, basal half of pelage grayish plumbeous, broadly tipped with white; *pectoral region pure white to the base of the hairs*; sides of nose, chin and sides of throat gray; ears dark brown, naked except on the basal portion externally; feet flesh-color, thinly covered with whitish hairs; soles of hind feet blackish brown; tail pale grayish brown, nearly unicolor.

Type, total length, 317; head and body, 155; tail, 162; hind foot, 36; ear, 17.

Skull, total length, 36; zygomatic breadth, 18.5; interorbital breadth, 5.2; breadth of braincase, 15; length of nasals, 12; diastema, 9; palatal foramina, 5.5; upper toothrow, 5.3. The type is an old female with somewhat worn teeth. There is, however, no sexual difference in size or coloration.

This species is represented by 112 specimens, collected at various localities in the Coast Range, varying in altitude from 4000 to 10,340 feet, as follows:

Cocal, 4000–6000 feet, 5 adults and 5 immature, June 10–17 (Miller).

Gallera, 5700 feet, 2 specimens, immature (Miller).

Munchique, 8225 feet, 45 specimens (26 adult, 19 immature), May 23–June 5 (Miller).

Crest of the Western Andes, west of Popayan, 10,340 feet, 30 specimens (25 adult, 5 immature), July 10–22 (Miller).

Mira Flores, 6200 feet, 6 specimens, April 30–May 1 (Richardson).

San Antonio, 8000 feet, 10 specimens, January 4–12 (Richardson).

Las Lomitas, 5000 feet, 1 specimen, February 26 (Richardson).

Güengü, Cauca Valley, 3500 feet, 1 specimen, May 5 (Miller).

There is a considerable range of individual variation in both size and coloration. In adults with well worn teeth the dorsal surface is less mixed with black-tipped hairs than in young adults which have attained full size as regards external measurements, but which show slight immaturity in the skull; and in old adults the ventral surface is much whiter, through the greater length of the white points to the hairs. The snow white pectoral area, in which the hairs are white to the base, varies considerably in size and form, from a small central spot about 30 mm. long by about 15 mm. broad, to a broad patch 60 mm. or more in length and filling the whole space between the axillæ. Usually there is no trace of a fulvous wash on the underparts but it is present in a few specimens (about 10 per cent.), and varies from the merest trace to deep buff, about three or four specimens in a hundred showing a strong wash of fulvous. It seems to be confined to young adults and not to specimens from any particular locality.

Young specimens, from one-quarter to two-thirds grown, are dusky brown, almost blackish in the younger stages, with a faint trace of yellow tipping the hairs of the dorsal area, while the sides may be strongly washed with yellow, which often forms a well-defined lateral line dividing the dorsal and ventral areas. The white pectoral spot is sharply defined, but the remainder of the ventral surface may be uniform rather dark gray, or gray thinly overlaid with white, formed by the extreme tips of the hairs.

The tail varies from unicolor dark brown or gray brown to indistinctly bicolor either on the basal portion or nearly throughout its length, the upper surface being much darker than the lower, or the light color may be restricted to irregular linear blotches on the lower surface.

The Munchique series contains 20 specimens which the condition of the skull and teeth shows to be fully adult, in only six of which, however,

is there distinct wearing of the teeth; but in several of these six the cusps are entirely obliterated.

The average and extremes of the Munchique series are as follows:

20 specimens: Total length, 314 (300–324); head and body, 148 (140–152); tail, 165 (155–176); hind foot, 36 (34–38). Ten skulls: Total length, 35.5 (34.5–37); zygomatic breadth, 17.9 (17–19).

The average and extremes of the series from the crest of the Western Andes, west of Popayan, including only those that the skulls show to be mature (including 7 with worn teeth) are as follows:

14 specimens: Total length, 312 (300–330); head and body, 148 (136–160); tail, 164 (154–170); hind foot, 35.4 (33.5–37). Twelve skulls: Total length, 34.7 (34–36); zygomatic breadth, 17.7 (17–19). The seven specimens with greatly worn teeth average somewhat larger than the series as a whole, as follows: Total length, 316 (310–330); head and body, 155 (146–166); tail, 162 (154–170); hind foot, 35.6 (33.5–36); skulls, total length, 35.3 (34–36); zygomatic breadth, 18 (17–19).

This species belongs to the *Oryzomys albigularis* (Tomes) group, but it is much larger than any of the forms of this group hitherto described from western South America. The type locality of *O. albigularis* is Pallatanga, in western central Ecuador, on the west slope of the Andean range. According to measurements of three topotypes given by Thomas<sup>1</sup> it is a much smaller species, the dimensions as given being as follows: Total length, 288 (284–290); head and body, 127 (124–129); tail, 161 (157–165); hind foot, 32 (31.5–33). Specimens of *O. pectoralis* of this size are so obviously immature, in coloration as well as in skull characters, that they could not be mistaken for adults, not would they agree well with the description of *O. albigularis* in coloration. *O. meridensis* Thomas is still smaller, while *O. maculiventer* Allen, from Santa Marta, Colombia, is much larger and very differently colored, the upperparts being strongly reddish brown instead of yellowish brown, as in other forms of the *albigularis* group.

## 27. *Oryzomys* (*Oligoryzomys*) *munchiquensis* sp. nov.

Type, No. 32603, ♀ ad., La Florida (alt. 7700 ft.), July 8, 1911; coll. Leo E. Miller.

Upperparts, from the head posteriorly, pale ochraceous strongly grizzled with black; sides paler without a distinct lateral line; head grayish strongly mixed with black; ventral surface whitish washed with a pale shade of buff; ears well clothed, blackish externally, dull ochraceous internally; upper surface of fore and hind feet uniform pale buffy white, metapodial area not darkened; tail pale brown, slightly lighter below, nearly naked.

<sup>1</sup> Proc. Zool. Soc. London, 1882, p. 103.

Type, total length, 195; head and body, 81; hind foot (c. u.), 23. Fourteen specimens (only in part exact topotypes), total length, 186 (173–203); head and body, 75.6 (67–86); tail, 110 (99–118); hind foot, 22 (21–23). Skull, total length, 23; zygomatic breadth, 12; interorbital breadth, 2.8; breadth of braincase, 11; length of nasals, 8; diastema, 4.5; palatal foramina, 3.4; upper molar series, 3.

The type is a fully adult female. Represented by 15 specimens, all adult, as follows: La Florida, 3 specimens, July 8 and 9; Cocal, 1 specimen, June 17; crest of Western Andes near Popayan, 1 specimen, July 13; Munchique, 10 specimens, June 1–9, and July 9. These localities are near each other on the western slope of the Western Andes at altitudes ranging from 6000 to 8325 feet, with one specimen from an altitude of 10,340 feet.

This species is a miniature of *O. stolzmanni* Thomas (northern Peru) with the head blackish varied with gray instead of uniform with the rest of the dorsal surface.

## 28. *Oryzomys (Oligoryzomys) fulvirostris* sp. nov.

Type, No. 32567, ♀ ad., Munchique (alt. 8325 ft.), May 29, 1911; coll. Leo E. Miller.

Upperparts rusty brown profusely lined with black, the hairs being blackish slate for the basal two-thirds, then subapically banded or tipped with yellowish rufous, mixed with hairs wholly black or black-tipped; head less rufous, blackish prevailing in front of the eyes, with a transverse narrow streak of fulvous at the front edge of the whiskers; sides more yellowish than the back, passing insensibly into ochraceous buff on the ventral surface; chin and throat grayish suffused with buff, lighter than the rest of the ventral surface; ears blackish; upper surface of feet flesh color mottled with small blackish scales, conspicuous on the hind feet, not concealed by the sparse light colored bristly hairs; tail grayish brown, nearly naked on the proximal half, increasingly hairy toward the tip with a slight pencil (white in the type, but black in the paratype, and in other specimens received later).

Type, total length, 218; head and body, 188; tail, 130; hind foot, 23.5. Skull, 23; zygomatic breadth, 12; interorbital breadth, 3.2; breadth of braincase, 11; length of nasals, 9; palatal length, 8.2; palatal foramina, 3; maxillary toothrow, 3; diastema, 5.2. Teeth very small; interorbital region rounded on the edges, depressed medially, forming a furrow.

The type is an adult female that had reared young. Represented by three specimens, the type and two adult males, one from Gallera (alt. 5700 ft.), the other (tailless) from the crest of the Western Andes, 40 miles west of Popayan. The paratype is practically indistinguishable from the type in coloration, and varies remarkably little from it in measurements; the total length being 220 instead of 218, the tail 135 instead of 130, and the hind foot 24 instead of 23.5. The tailless specimen had lost its tail before capture, there being no trace of its former presence when the skin was prepared by the collector.

This species is a typical *Oligoryzomys* in size and proportions, readily distinguishable by its deep buff underparts and yellowish nose spots, and especially by the conspicuously squamose upper surface of the hind feet.



Worn teeth in the species of *Oligoryzomys* show an enamel pattern similar to that in *Zygodontomys*, and both this group and *Melanomys* might well take the rank of full genera.

### 29. *Oryzomys* (*Melanomys*) *phæopus* Thomas.

Twenty-nine specimens: Munchique (alt. of camps, 6000–8325 ft.), May 28–June 9, 7 specimens (Miller); La Florida (7700 ft.), 7 specimens (Miller); Las Lomitas (5000 ft.), Feb. 26, 27, 8 specimens (Richardson); Mira Flores (6200 ft.), April 27–30, 4 specimens (Miller); Caldas (2000 ft.), Nov. 21, 1 specimen (Richardson); Junchito (3400 ft.), May 9, 1 specimen (Miller).

Only one specimen of the La Florida series is fully adult; of the Munchique series six are fully adult and measure as follows: Total length, 220 (204–231); head and body, 121 (114–124); tail, 103 (94–112); hind foot, 27.7 (27–28).

The description of *phæopus*<sup>1</sup> was based on a single specimen from Pallatanga, Ecuador. The present series is evidently referable to this species, since it contains specimens that might have served as the basis of the original description although from localities considerably further north.

In *phæopus* the color of the upper surface is "coarsely grizzled fulvous and black," in *obscurior* grizzled rufous (approaching chestnut) and black, the reddish tone strongly prevailing over the black; in *phæopus* the ventral surface is pale ochraceous buff with a strong mixture of gray, in *obscurior* russet without a superficial wash of gray; in *phæopus* the pelage is coarser and longer than in *obscurior*, the difference being strongly marked and noticeable at a glance; *phæopus* is distinctly larger than *obscurior*; in *phæopus* the tail is brown, somewhat lighter below than above, in *obscurior* unicolor and black. They are found at about the same altitudes, but only one of the forms has thus far been collected at the same localities, though in one instance the localities (Cocal and Munchique) are not far apart.

### 30. *Oryzomys* (*Melanomys*) *obscurior* Thomas.

Thirty-six specimens (Miller): Cocal (4000 ft.), June 10–13, 7 specimens, all adult; Gallera (5700 ft.), June 28–July 9, 29 specimens, about one half adult, the others in various stages of immaturity.

The adults of the Gallera series, mostly males, measure: 14 specimens, total length, 209.4 (190–226, with 1 at 234); head and body, 114.6 (107–

<sup>1</sup> Ann. and Mag. Nat. Hist. (6), Vol. XIV, Nov., 1894, p. 355.

118); tail, 94 (84–109); hind foot, 26.5 (26–28). The skulls range in total length from 28 to 30, and in zygomatic breadth from 14.8 to 15.2.

Cocal series, 7 specimens (4 males, 3 females): total length, 214 (202–228); head and body, 117.5 (113–125); tail, 94 (83–110); hind foot, 26 (24.5–27.5). Skulls, total length, 28.5 (28–29); zygomatic breadth, 15.

Judging from the original description of *Oryzomys phaeopus obscurior* Thomas,<sup>1</sup> based on a single specimen with the tail “imperfect at tip,” from Concordia, Medellin, Colombia, the present series is referable to that form. My series averages rather larger than the measurements of the single specimen given by Thomas, but there are several adult specimens in the series as small as Thomas’s type, which was probably a rather young adult. This is indicated by the fact that the younger adults are not only “much darker throughout [than in *phaeopus*], especially on the posterior back, where the fur is practically black, only relieved by a few yellow-tipped hairs,” as in the younger adults of my series; in old adults the lower back is not noticeably darker than the anterior half of the dorsal area. In the specimens with the posterior back not different from the anterior, the teeth show more or less wear and the size is at the maximum.

*O. phaeopus* and *O. ph. obscurior* are here both treated as full species, since well marked differences are shown, in my large series representing both forms, in size and coloration, and especially in the texture of the pelage, as already noted under *phaeopus*.

Immature specimens, up to half or two thirds grown, of the two forms are, however, not positively distinguishable. In both forms such specimens are uniform dull black above with little or no fulvous or rufous tipping to the hairs, and slaty black below with a slight wash of gray, instead of “ochraceous buff” (Ridgway) with a wash of gray in adult *phaeopus*, or “russet” (Ridgway) in adult *obscurior*.

The *Melanomys obscurior* group has a wide range, of which my *M. chrysomelas* of Costa Rica and Nicaragua proves to be only a rather slightly differentiated subspecies.

### 31. *Oryzomys (Melanomys) obscurior affinis* subsp. nov.

Type, No. 31690, ♂ ad., San José (altitude 200 ft.), Cauca, Colombia, Dec. 3, 1910; coll. W. B. Richardson.

Color of upperparts similar to that in *O. (M.) obscurior* but decidedly darker with less rufous tipping the hairs; underparts darker, “walnut brown” instead of “russet” (Ridgway); in size and cranial characters not appreciably different from *obscurior*.

<sup>1</sup> Ann. and Mag. Nat. Hist. (6), Vol. XIV, Nov., 1904, p. 356.

Type, total length, 235; head and body, 145; tail, 90; hind foot, 30; skull, total length, 30.5; zygomatic breadth, 15.8. Ten specimens: total length, 210 (190–235, mostly 210–220); head and body, 120 (110–130, one 145); tail, 86.5 (80–90); hind foot, 27.5 (25–30). Seven skulls: Total length, 29.7 (28.3–31); zygomatic breadth, 15.2 (15–15.8).

The type is an old male with worn teeth, and the largest specimen of the series. Represented by 12 specimens (Richardson): San José (alt. 200 ft.), Nov. 29–Dec. 4, 10 specimens; Los Cisneros (alt. 600 ft.), March 17, 18, 2 specimens.

*O. (M.) obscurior* is a dark form, from the humid tropical coast district, of the *Oryzomys obscurior* group.

### 32. *Æpeomys fuscatus* sp. nov.

Type, No. 32230, ♀ ad., San Antonio (near Cali, alt. 7000 ft.), Cauca, Colombia, Jan. 21, 1911; coll. W. B. Richardson.

Pelage long, thick, soft and velvety. Upperparts blackish, almost clear black over the median dorsal region, with a faint wash of grayish brown over the shoulders and on the sides of the body, almost imperceptible except in favorable lights, when the extreme tips of the hairs are seen to be grayish bistre; underparts dark gray, the pelage being slaty with the extreme tips of the hairs lighter or pale drab-gray; ears brown, thickly clothed with soft black hairs on the basal third externally, the rest nearly naked on both surfaces; feet flesh color, very thinly haired; tail light gray brown, nearly unicolor, naked.

Type, total length, 220; head and body, 110; tail, 110; hind foot, 25; ear (in dry skin), 12. Eleven adults (all topotypes): total length, 203 (190–220); head and body, 108 (100–120); tail, 91.3 (85–110); hind foot, 23 (20–25).

Skull (type), total length, 26.3; zygomatic breadth, 15; interorbital breadth, 5; breadth of braincase, 13; length of nasals, 10.5; palatal length, 11; palatal foramina, 4; maxillary toothrow, 4.2; diastema, 7. Five adult skulls, total length, 26.5 (26–26.8); zygomatic breadth, 14.9 (14.6–15.2).

The type is an old female with the teeth worn; most of the topotypes also have the teeth perceptibly worn; in some of them they are much worn. Represented by 12 specimens, all from the type locality.

This species is evidently related to *Æpeomys vulcani* Thomas, from which it appears to differ in relatively longer tail and somewhat in coloration. *Æ. vulcani* is widely separated from it physiographically, *Æ. fuscatus* being from the west slope of the Western Andes, while the type locality of *vulcani* is Mount Pinchincha at an altitude of 12,000 feet.

### 33. *Microxus affinis* sp. nov.

Type, No. 32235, ♂ ad., San Antonio (near Cali, alt. 8000 ft.), Cauca, Colombia, Jan. 5, 1911; coll. W. B. Richardson.

Upperparts uniform dusky brown, the extreme tips of the hairs yellowish giving the general effect of olivaceous; below dark grayish brown, the extreme tips of the

hairs olivaceous, giving the general effect of dark grayish brown with a faint olive tinge; ears dull brown, nearly naked, rather short and broad; feet grayish brown, the hairs dark with lighter tips; tail brown, not appreciably lighter below, nearly naked, much shorter than head and body.

Type, total length, 160; head and body, 90; tail, 70; hind foot, 20; ear (in dry skin),  $12 \times 10$ . Skull, total length, 25.8; zygomatic breadth, 14; interorbital breadth, 5.2; breadth of braincase, 12; length of nasals, 10; palatal length, 11; palatal foramina, 6 (reaching nearly to middle of  $m^1$ ); maxillary toothrow, 5; diastema, 5.6.

The type and only specimen is a fully adult male, the teeth slightly worn.

This species appears to be closely related to *Microxus bogotensis* (Thomas), of which it may be a subspecies.

## SCIURIDÆ.

### 34. *Sciurus hoffmanni* Peters.

Twenty-six specimens, collected as follows:

San Antonio (7000 ft.), 7 specimens, Jan. 5–Feb. 6 (Richardson).

Mira Flores (6200 ft.), 7 specimens, April 17–28 (Richardson).

Las Lomitas (5000 ft.), 2 specimens, March 12–13 (Richardson).

La Florida (7700 ft.), 1 specimen, July 6 (Miller)

Gallera (5700 ft.), 1 specimen, July 2 (Miller).

Munchique (8325 ft.), 8 specimens, May 26–June 3 (Miller).

#### *Measurements of Specimens from Munchique.*

32500, ♂	length,	432;	tail,	232;	hind foot,	55.
32501, ♂	"	434;	"	210;	"	55.
32502, ♀	"	452;	"	224;	"	59.
32503, ♀	"	430;	"	247;	"	55.
32504, ♂	"	454;	"	235;	"	58.
32505, ♀	"	452;	"	236;	"	57.
32506, ♂	"	434;	"	218;	"	55.
32507, ♂	"	459;	"	224;	"	59.5.

In size, coloration, and cranial characters these specimens, as a series, are indistinguishable from a large series from Costa Rica, the type country of *S. hoffmanni*.

### 35. *Sciurus gerrardi* Gray.

One specimen, Rio San Jorge, Bolivar, Colombia, Dec. 15, 1911 (Mrs. E. L. Kerr).

36. *Sciurus milleri* sp. nov.

Type, No. 32511, ♀ ad., Cocal (altitude 4000 ft.); coll. of Leo F. Miller, for whom the species is named.

In cranial characters similar to *Sciurus hoffmanni*, but much larger and very differently colored.

Premolars  $\frac{1}{2}$ . Top of head, nape, and posteriorly to middle of back, grizzled rufous and blackish, the hairs being black minutely tipped with rusty; posterior half of mid-dorsal region glossy black without rufous tips to the hairs; the black extends to the basal fourth of the tail, which portion is wholly intense black all around; sides of shoulders and upper surface of fore limbs more rufous than the head and fore-back, the hairs being broadly tipped with orange rufous, which is the prevailing color on the fore limbs and scapular region; sides of the body posterior to the shoulders, the thighs and hind limbs externally strongly rufous, the hairs being conspicuously tipped with rufous; sides of head, chin, and throat dull yellowish gray; inside of fore and hind limbs and ventral surface deep orange rufous, with a tendency to a whitish spot on the breast (absent in the cotype); tail wholly deep black for about the basal third, and the black extends apically to the tip of the tail on the ventral surface, with the sides and upper surface intense red; ears rather small, with fine short dusky hairs externally, and also internally for the apical third; soles blackish.

Type, total length, 508; head and body, 240; tail vertebræ, 268; hind foot, 58. Skull, total length, 55; zygomatic breadth, 32.5; interorbital breadth, 18; length of nasals, 16; upper toothrow, 9.5; diastema, 13.5.

A second specimen (topotype) is a little smaller in external measurements, but the skull has the same length, but in other dimensions varies from 1 mm. larger to .5 mm. smaller. In coloration the same tones of color prevail, except that many of the hairs on the lower back are barely perceptibly rufous-tipped instead of clear black and the tail is washed with orange instead of red. It is also a younger specimen.

This species is apparently related to the *S. variabilis-langsdorffi* group of the upper Amazonian region, with none of the forms of which, however, is it apparently closely related.

37. *Sciurus æstuans caucensis* Nelson.

Mira Flores (6200 ft.), 2 specimens, April 29. Near Palmira, Central Andes (6000 ft.), 1 specimen, April 22 (Richardson).

Measurements are available for only two of the specimens, as follows:

32173, ♂, total length, 350; tail, 180; hind foot, 42.

32174, ♀, " " 335; " 175; " " 44.

These specimens are indistinguishable from the hitherto unique type of *caucensis*, from Rio Lima (alt. 5000 ft.).

Mr. Thomas (Ann. and Mag. Nat. Hist. (7), VI, Oct. 1900, p. 366) has suggested that *S. æstuans caucensis* Nelson is probably identical with

*Macroxus medellensis* Gray, "also from the Valley of the Cauca," but a careful comparison of the type of *caucensis* and the other specimens here referred to *caucensis* with Gray's description of *medellensis* (Ann. and Mag. Nat. Hist., Oct. 1872, p. 408) shows that they are not even nearly related.

### 38. *Sciurus (Microsciurus) similis* Nelson.

Four specimens: Cocal, June 11 and 15, 2 specimens; Gallera, June 29, 2 specimens (Miller). Altitude 4000 and 5700 feet, respectively. San Antonio, Jan. 29, 1911, 1 specimen (Richardson). Altitude 7000 feet.

#### Measurements.

32496, ♂, length, 250; tail, 121; hind foot, 31, Gallera.
32497, ♂, " 245; " 121; " " 35, "
32498, ♀, " 265; " 133; " " 34, Cocal.
32499, ♀, " 252; " 122; " " 30, "
32176, ♂, " 280; " 115; " " 25, San Antonio.

These specimens agree perfectly with the type, and previously unique specimen, from near Cali (alt. 6000 ft.).

### 39. *Sciurus (Microsciurus) palmeri* Thomas.

Two specimens, San José (alt. 200 ft.), Nov. 29 and Dec. 9 (Richardson). San José is only a few miles south of the type locality of the species, and at the same altitude in the tropical coast belt.

#### MUSTELIDÆ.

### 40. *Putorius macrurus* (Taczanowski).

Two specimens: Mira Flores (alt. 5200 ft.), adult female, April 1 (Richardson); Munchique (alt. 8325 ft.), adult male, June 1 (Miller). Total length, ♀ 375, ♂ 495; tail, ♀ 150, ♂ 202; hind foot, ♀ 43, ♂ 52. Skull, total length, ♀ 44.5, ♂ 52; zygomatic breadth, ♀ 23.5, ♂ 29.5; mastoid breadth, ♀ 20.5, ♂ 23.

Referred provisionally to this species, with the description and colored plate of which it perfectly agrees. The chin and throat are like the pectoral region — not white as in *P. affinis* (as *affinis* is now commonly accepted).

## PROCYONIDÆ.

41. *Nasua olivacea* Gray.

Two specimens, an adult male and a young male (with milk dentition), Munchique (alt. 6000 ft.), May 29 and June 6 (Miller). Adult male (very old), total length, 606; tail vertebræ, 128; hind foot, 64.5. Skull, total length, 94; zygomatic breadth, 40.5; mastoid breadth, 35; breadth of rostrum in front of canines, 7.5.

42. *Nasua quichua* Thomas.

One specimen, young male (with milk dentition), Popayan, July 23 (Miller).

43. *Bassaricyon medius* Thomas.

Two specimens, adult male and female, Gallera (alt. 5000 ft.), west slope of Western Andes, July 13 (Miller).

Total length, very old ♂, 820, ♀ 740; head and body, ♂ 396, ♀ 350; tail vertebræ, ♂ 434, ♀ 390; hind foot, ♂ 71, ♀ 70; total length of skull, ♂ 80; zygomatic breadth, 50. (Skull of female mislaid.)

44. *Potos flavus caucensis* Allen.

Three specimens, all old, San Antonio (alt. 7000-8000 ft.), west slope of Western Andes (near Cali), Jan. 8 and 9 (Richardson).

These specimens confirm the characters of the subspecies, based on specimens from upper Cauca Valley (alt. 6000 ft.), near Cali.

## FELIDÆ.

45. *Felis jaguarondi* Fischer.

One specimen, a flat-skin without skull or feet, Popayan, July 27 (Miller). Clear dark gray with the middle of the back blackish.

## SORICIDÆ.

46. *Blarina (Cryptotis) squamipes* sp. nov.

Type, 32378, ♂ ad., crest of Western Andes (alt. 10,340 ft.), 40 miles west of Popayan, Cauca, Colombia, July 17, 1911; coll. Leo E. Miller.

Size very large, color very dark. Above, with head turned from the light, intense black, with head toward the light, with a brownish sheen; below similar but with the brownish sheen much stronger over the pectoral region than on the back; nose and chin lighter, more brownish; upper surface of fore and hind feet dark brown, *heavily scaled*, naked except for a few short black bristly hairs on the hind feet; tail blackish, well clothed with short bristly black hairs.

Type, total length, 128; head and body, 86; tail vertebrae, 42; hind foot, 18; skull (imperfect, lacking the occipital portion), tip of premaxillaries to posterior border of right parietal, 20; length of nasals, 97; palatal length, 9.8; length of entire upper toothrow, 10.5; length of the four large molariform teeth, 6; distance between outer border of last molariform teeth, 6.

The type and only specimen is an old male with the cranial sutures obliterated anterior to the braincase, which part is lacking.

*Blarina squamipes* is fully equal in size to *B. magna* Merriam from Oaxaca, Mexico, and hence is one of the two largest known species of the subgenus *Cryptotis*. Besides its large size and exceedingly dark color, it may readily be distinguished by the coarse, heavy scales clothing both fore and hind feet — a feature I have not before seen noted in connection with any species of *Blarina*.

#### PHYLLOSTOMIDÆ.

##### 47. *Artibeus jamaicensis æquatorialis* Andersen.

One specimen, adult male, Cali (alt. 2000 ft.), Dec. 22 (Richardson).

##### 48. *Hemiderma perspicillatum* (Linnæus).

One specimen, San José, Dec. 4 (Richardson).

#### THYROPTERIDÆ.

##### 49. *Thyroptera tricolor* Spix.

Two specimens, San José, Dec. 11 (Richardson).

#### CEBIDÆ.

##### 50. *Alouatta seniculus caucensis* Allen.

Four specimens (Richardson): Las Lomitas (alt. 5000 ft.), adult female and young male, March 4; Palmira (alt. 3500 ft.), April 15, adult male; Güengüe (alt. 3500 ft.), May 5, adult female.



These specimens agree with the type series of this subspecies in small size, narrow nasals, etc., from the Upper Cauca Valley.

51. *Ateles ater* *F. Cuvier.*

Four specimens, 1 adult male, 2 adult females, and a young female a few weeks old, Gallera (alt. 5000 ft.), July 13 (Miller).

32353, ♂, total length, 1150; tail, 600; hind foot, 155.	
32354, ♀, " " 1220; " 630; " " 160.	
32355, ♀, " " 1260; " 750; " " 160.	
32353, ♂, skull, total length, 112; zyg. breadth, 69; breadth of braincase, 57.	
32354, ♀, " " " 112; " " 73; " " " 60.	
32355, ♀, " " " 115; " " 67; " " " 62.	

52. *Aotus lanius* *Dollman.*

One specimen, a hunter's flat skin, without skull, obtained by Mr. F. M. Chapman on the Toche River, Central Andes, Cauca district, in 1911.

53. *Aotus griseimembra* *Elliot.*

Two specimens, adult male and female, Rio Sinu Cereté, Bolivar, Colombia, Nov. 14 and 20 (Mrs. L. E. Kerr).

54. *Seniocebus meticulousus* *Elliot.*<sup>1</sup>

Two specimens, male and female, Rio San Jorge, Bolivar, Colombia, Dec. 11, 1911 (Mrs. E. L. Kerr).

55. *Cebus capucinus nigripectus* *Elliot.*

One specimen, San Antonio (alt. 7000 ft.), adult male, Feb. 21, 1911 (Richardson). Total length, 1020; tail, 510; hind foot, 130. Skull, occipito-nasal length, 97; zygomatic breadth, 69.5; breadth of braincase, 54; length of braincase, 76; length of upper molar series, 22; lower jaw (front base of incisors to posterior border of condyle), 65; angle to top of condyle, 35.5; height at condyle, 37.5; lower molar series, 26.

*C. c. nigripectus* was based on two subadults and one quite young specimen, all females, from Las Pubas, Upper Cauca Valley.

<sup>1</sup> Cf. *antea*, p. 31. The type is No. 32703, male.

