

Article XI.—REVIEW OF THE GENUS *MICROSCIURUS*.

BY J. A. ALLEN.

The collection of tree squirrels in the American Museum of Natural History has been increased in the last few years by the addition of several hundred specimens from Colombia, Ecuador, and Peru. These added to previous collections in the Museum from Central and South America furnish a considerable basis for a preliminary survey of the tropical American Sciuridæ. They alone would, of course, be very inadequate for such an investigation. It was my privilege, however, to spend several weeks last year in a study of the South American squirrels in the British Museum, rich in types and other historic material, and to have with me a large selection of specimens from the American Museum for direct comparison with those in the British Museum.

In addition to these resources I have been able to borrow for examination much pertinent material from the United States National Museum, the Biological Survey, the Field Museum of Chicago, the Museum of Comparative Zoölogy at Cambridge, the Carnegie Museum of Pittsburgh, and the Academy of Natural Sciences of Philadelphia. To the authorities of these several institutions I tender my heartiest thanks for prompt and cordial responses to my requests for assistance, without which the present studies could not have been undertaken. I am especially indebted to Mr. Oldfield Thomas, curator of Mammals at the British Museum, for placing freely at my service the treasures under his charge, and for valued help in my work.

The present paper deals with the Pigmy Tree Squirrels (genus *Microsciurus*). It is my purpose to prepare, as rapidly as may prove practicable, similar reviews of other groups of the Central and South American Sciuridæ, this being the first of a proposed series.

Genus *Microsciurus* Allen.

Microsciurus (subgenus of *Sciurus*) ALLEN, Bull. Amer. Mus. Nat. Hist., VII, p. 332, Nov. 8, 1895. Type, *Sciurus (Microsciurus) alfari* sp. nov.

Microsciurus (subgenus) NELSON, Proc. Washington Acad. Sci., I, p. 32, pl. i, fig. 6, pl. ii, fig. 2, May 9, 1899. Type skull figured.

Microsciurus (genus) GOLDMAN, Smithsonian. Misc. Coll., LVI, No. 36, p. 4, Feb. 12, 1912.—MILLER, Bull. 79, U. S. Nat. Mus., p. 338, 1912.

Smallest of American tree squirrels; ears short, rounded, well-haired, sometimes

tufted, and sometimes with postauricular patches of whitish or buffy hairs. Tail short, usually narrow, about four fifths of the length of head and body. Mammæ 6.

Premolars $\frac{2}{1}$. Skull short and broad, with a very short, broad rostrum and high-arched braincase, the dorsal outline of the skull very convex; nasals very short, about one fourth of the total length of the skull, much less than the interorbital breadth; malar broad, vertically expanded; palate extending slightly beyond the last upper molars; upper molariform teeth nearly square, the length and breadth of the crowns about equal, implanted transversely to the axis of the toothrow; outer border of the crowns without median accessory cusps. Instead of the four cusps on the outer margin of the crown present in typical *Sciurus*, there are only two in *Microsciurus*.

The *Microsciuri*, or pigmy tree squirrels, form a closely circumscribed group, characterized externally by small size, short, narrow tails (about as in *Tamias* and *Eutamias*), and dull coloration, usually without distinctive patterns. These features, with a premolar formula of $\frac{2}{1}$, serve readily to distinguish them from their nearest allies, the guerlinguets (subgenus, or genus, *Guerlinguetus*), which always greatly exceed them in size, have a relatively much longer tail, a premolar formula of $\frac{1}{1}$, and a longer, narrower, and less convex skull.

The geographical range of *Microsciurus* is primarily the Andean region of South America, with an extension northward through Panama to Costa Rica, and eastward to the Guianas. The altitudinal range extends from sea-level to about 8000 feet. The range of none of the forms is as yet well-known, several of them being thus far represented in museums by only the type specimens. Doubtless other species remain to be discovered, since little is known of the distribution of the group in Brazil, Peru, or Ecuador. Almost nothing has thus far been recorded of their habits. Their scarcity in collections would seem to indicate that they are not easy to discover in the heavy tropical forests that constitute their haunts.

Following is a list of the species and subspecies, with their type localities and statement of the number of specimens of each examined in the preparation of the present paper.

Microsciurus alfari alfari Allen. Volcano Turrialba, near Jiménez, Costa Rica. Specimens examined, 6, including the type.

Microsciurus alfari venustulus Goldman. Gatun, Canal Zone, Panama. Specimens examined, 4, including the type and a topotype.

Microsciurus alfari browni Bangs. Bogaba, Chiriqui, Panama; altitude 600 feet. Specimens examined, 3, topotypes.

Microsciurus boquetensis Nelson. Boquete, Chiriqui, Panama; altitude 6000 feet. Specimens examined, 2, type and topotype.

Microsciurus similis similis Nelson. Cali, Western Andes, Colombia; altitude 6000 feet. Specimens examined, 12, including the type.

Microsciurus similis fuscus Thomas. Juntas, Rio San Juan, Chocó district, Colombia; altitude 400 feet. Specimens examined, 5, including the type and two topotypes.

Microsciurus pusillus (Desmarest). Cayenne. Specimens examined, none.

Microsciurus otinus Thomas. Medellin, Colombia. Specimens examined, 3, including the type and a topotype.

Microsciurus chrysuros (Pucheran). Santa Fé de Bogotá, Colombia. Specimens examined, none.

Microsciurus isthmius isthmius Nelson. Rio Truandó, Isthmus of Darien, Colombia. Specimens examined, 10, including the type and a topotype.

Microsciurus isthmius vivatus Goldman. Near Cana, eastern Panama; altitude 3500 feet. Specimens examined, 3, the type and 2 topotypes.

Microsciurus mimulus Thomas. Cachavi, Esmeraldas, Ecuador; altitude 560 feet. Specimens examined, 14, including the type and 2 topotypes.

Microsciurus palmeri Thomas. Sipí, Chocó district, Colombia; altitude 150 feet. Specimens examined, 12, including the type and 7 paratypes (one of them a topotype).

Microsciurus simonsi Thomas, Porvenir, Bolivar Province, Ecuador; altitude 5000 feet. Specimens examined, 1, the type.

Microsciurus peruanus Allen. Guayabamba, Peru; altitude 4000 feet. Specimens examined, 1, the type.

Microsciurus napi Thomas. Mouth of Rio Coco, upper Rio Napo, Ecuador. Specimens examined, 1, the type.

Microsciurus kuhlíi (Gray). "Brazil (Castelnau)." Specimens examined, none.

Microsciurus brevirostris sp. nov. Chanchamayo, central Peru; altitude 5000-5300 feet. Specimens examined, 5, including the type.

Microsciurus florenciæ sp. nov. Florencia, Caquetá district, Colombia; altitude 1000 feet. Specimens examined, 4, including the type.

Of the 19 species and subspecies here recognized (15 species and 4 additional subspecies), the types of 15 of them and topotypes of another (*browni*) have been examined; of the other three forms (*pusillus*, *chrysuros*, *kuhlíi*) no specimens have been seen. Three other species are thus far known only from the type specimens, while four are represented by from 10 to 12 specimens each. The total number of specimens examined in the present connection is 86; they include all (except the type of *browni*) known to exist in American museums and in the British Museum, as follows: British Museum, 36; American Museum of Natural History, 30; U. S. National Museum, 7; Biological Survey collection, 10; Museum of Comparative Zoölogy, 3.

The uniformity in size and proportions, so far as shown by the available measurements (see table of measurements on p. 165), throughout the group is striking, the range of individual variation in any considerable series of specimens exceeding the average difference between the smallest and largest species and subspecies in both external and cranial measurements. *Microsciurus palmeri*, *M. rubrirostris*, and *M. florenciæ* average slightly larger than most of the others and have a relatively longer tail; of many of the forms, however, the number of available specimens (from 1, or even none in several cases, to 3 or 4) is too few to establish standards of size.

M. mimulus and *M. palmeri* are the only forms that can be said to have a distinct color pattern (aside from the white or buff markings on the ears of some of the species), *mimulus* having a black dorsal band and *palmeri* a black crown, traces of which latter also occur in *isthmius*. In general the upperparts are dark brown suffused with yellowish, rufous, olivaceous, or grayish tones, due to narrow annulations of these tints at the tips of the hairs, which are otherwise dark brown. The ventral surface varies from gray or dull brown, slightly washed with pale yellowish in some of the forms, to deep ochraceous or rufous in others, so deep as almost or wholly to conceal the dark basal portion of the hairs.

In *M. otinus* the ears are tipped with white; in *M. peruanus*, *M. napi*, *M. florenciæ*, and *M. kuhlii* the backs of the ears are white and there are large postauricular white patches. *M. rubrirostris* has a similar patch of buff. In *M. alfari venustus* two out of four of the known specimens have an inconspicuous buffy spot at the base of the ears. In all the other forms special ear-markings are absent.

The small premolar (p^3) is rarely absent, being often a functional tooth with an enlarged crown.

The length of the tail vertebræ in all but three of the species is 80% of the length of the head and body; in the other three (*M. palmeri*, *M. rubrirostris*, *M. florenciæ*), 94 %.

Key to the Species and Subspecies.

- a. No white or buff spot on ears; no postauricular buff or white patches.
 - b. Annulations at tips of hairs on upperparts narrow.
 - c. Above yellowish rufescent; head clearer rufous; eyerings orange; below washed with fulvous. (Central Costa Rica.)
Microsciurus alfari alfari (p. 149)
 - cc. Paler throughout, especially on the head; below soiled whitish with a fulvous wash. (Canal Zone, Panama).
Microsciurus alfari browni (p. 151)
 - d. Above similar to *M. a. alfari* but paler; eyerings obsolete; below orange rufous. (Western and Central Andes, Colombia.)
Microsciurus similis similis (p. 153)
 - dd. Similar to *M. s. similis* but darker and slightly smaller. (Coast region, Chocó district, Colombia.)
Microsciurus similis fuscus (p. 154)
 - e. Above similar to *M. a. alfari* but paler; pelage longer and fuller; below ochraceous rufous. (Chiriqui, Panama).
Microsciurus boquetensis (p. 151)
 - ee. Above darker, with yellow eyerings; below fulvous. (Bolívar Province, Ecuador.).....***Microsciurus simonsi*** (p. 161)

bb. Annulations at tips of hairs on upperparts broad.

c. Yellowish annulations at tips of hairs very broad; ventral surface fulvous; a blackish dorsal stripe. (Coast region of northwestern Ecuador and southwestern Colombia.)

Microsciurus mimulus (p. 158)

cc. Above more rufescent; ventral surface deep rufous; crown black; no dorsal stripe. (Chocó district, Colombia.)

Microsciurus palmeri (p. 160)

d. Above darker, fulvous rings at tips of hairs rather narrower; below deep rufous; no crown patch nor dorsal stripe. (Coast-region of northwestern Colombia.)

Microsciurus isthmius isthmius (p. 157)

dd. Above paler and more olivaceous; ventral surface much paler, orange buff instead of deep rufous. (Pirri Mountains, Panama.)

Microsciurus isthmius vivatus (p. 158)

aa. Ears tipped with white, or with white or buff postauricular patches.

b. Ears tipped with white; no postauricular patches; tail edged with whitish. (Medellin, Colombia.).....***Microsciurus otinus*** (p. 156)

bb. Ears not tipped with white; inconspicuous postauricular patches of whitish or buff.

c. Postauricular patches small, whitish (Cayenne, British Guiana).

Microsciurus pusillus¹ (p. 154)

cc. Postauricular patches small, buffy, inconstant. (Canal Zone, Panama.)

Microsciurus alfari venustulus (p. 150)

d. Postauricular patches large, conspicuous, white or buff.

e. Size large, tail long.

f. Above yellowish rufous; below orange ochraceous; back of ears and postauricular patches buff; tail edged with yellowish. (Chanchamayo, central Peru.)

Microsciurus rubrirostris (p. 163)

ff. Above darker and less rufescent; below whitish gray; tail edged with white. (Caquetá district, Colombia.)

Microsciurus florenciæ (p. 164)

ee. Size smaller, tail shorter.

g. Above dusky olivaceous; below yellowish rufous; large white postauricular patches; tail edged with whitish. (Northwestern Peru.).....***Microsciurus peruanus*** (p. 161)

gg. Above rusty fulvous; ventral surface pale fulvous; tail edged with fulvous. (Upper Rio Napo.)***Microsciurus napi*** (p. 163)

Microsciurus chrysuros and *M. kuhlii* are too imperfectly known to be included in the key.

***Microsciurus alfari alfari* Allen.**

Sciurus (Microsciurus) alfari ALLEN, Bull. Amer. Mus. Nat. Hist., VII, p. 333, Nov. 8, 1895.

¹ If *M. pusillus* proves not to have white postauricular patches (see below, p. 155) it should stand in this key near the *M. similis* group, from which it differs in paler and yellower coloration.

Sciurus alfari NELSON, Proc. Washington Acad. Sci., I, p. 105, pl. i, fig. 6, pl. ii, fig. 2, May 9, 1899. Type skull figured.

Microsciurus alfari MILLER, Bull. 79, U. S. Nat. Mus., p. 338, 1912.

Type locality.—Volcan de Turrialba, near Jiménez, Costa Rica.

Geographic distribution.—Known only from central Costa Rica.

Description.—Prevailing color of upperparts yellowish rufescent; head rufous, deepest on the front and sides; distinct eyering orange; underparts washed with fulvous; ears small, rounded, clothed with short hairs, uniform in color with the surrounding pelage; tail hairs ringed black and rufous, tipped with yellowish.

Total length (type from dry skin), 250; head and body, 145; tail vertebrae, 105; hind foot (with claws), 36.5 (without claws, 34). Skull, occipitonasal length, 36; zygomatic breadth, 22; breadth of braincase, 19; interorbital breadth, 13; length of nasals, 10.

Specimens examined, 6:—Costa Rica: Jiménez, 3, type and two topotypes (one of the latter is not now available, Am. Mus.); Pucado de Teraba, 1; Carillo (altitude 1000 ft.), 2 (Brit. Mus.). Two of the British Museum specimens are labelled "*Sciurus chrysurus* Puch.," probably before *M. alfari* was recognized.

Remarks.—*M. alfari alfari* resembles *M. similis* in the coloration of the upperparts, but the ventral surface is much paler, fulvous instead of rufous, and the general size is apparently less. It differs from the *M. isthmius* group in the rufescent instead of yellowish tone of the upperparts, and in the paler color of the ventral surface.

***Microsciurus alfari venustulus* Goldman.**

Microsciurus alfari venustulus GOLDMAN, Smithson. Misc. Coll., LVI, No. 36, p. 4, Feb. 19, 1912.—MILLER, Bull. 79, U. S. Nat. Mus., p. 338, 1912.

Type locality.—Gatun, Canal Zone, Panama.

Geographic distribution.—Known only from the Canal Zone, Panama.

Description.—Similar to *M. alfari alfari*, from which it differs in paler coloration, being less rufescent above and less strongly washed below with fulvous. It has also a partly concealed yellowish white postauricular patch in two out of the four known specimens, a feature evidently subject to individual variation.

Total length (type, collector's measurements), 250; head and body, 148; tail vertebrae, 102; hind foot, 40. Skull, occipitonasal length, 37; zygomatic breadth, 23.2 breadth of braincase, 17.6; interorbital breadth, 14; length of nasals, 10.5.

Specimens examined, 4.—Panama: Gatun, 2 (type and a topotype); Cana, 1; Porto Bello, 1 (Biol. Surv.).

Remarks.—*M. a. venustulus* is closely related to *M. a. alfari*, but seems entitled to recognition as a subspecies of the *alfari* group. The Cana specimen has the ventral surface as strongly washed with yellowish rufous as any of the known specimens of *alfari*, but the others are paler both above and below. The fulvous postauricular patch is present in the type, an adult female, and in the Porto Bello specimen, but absent in the immature female topotype and in the adult male from Cana. Its presence or absence is therefore not correlated with either sex or age. The type lacks the small premolar, present in the other three specimens.

***Microsciurus alfari browni* Bangs.**

Sciurus (Microsciurus) browni BANGS, Bull. Mus. Comp. Zool., XXXIX, p. 24, April, 1902.

Microsciurus browni MILLER, Bull. 79, U. S. Nat. Mus., p. 338, 1912.

Type locality.—Bogabo, Chiriqui, Panama; altitude 600 feet.

Geographic distribution.—Known only from the type locality.

Description.—Texture of pelage and coloration of upperparts nearly as in *M. a. alfari*, but coloration paler, especially on the front and sides of the head (including eyerings) and sides of the neck; underparts much paler—soiled whitish with a slight buffy wash, most pronounced on the chest.

Total length (type, collector's measurements), 260; head and body, 140; tail vertebrae, 120; hind foot, 38. Skull, occipitonasal length, 36; zygomatic breadth, 21.2; interorbital breadth, 12.4; length of nasals, 11.

Specimens examined.—Three topotypes (Mus. Comp. Zool.).

Remarks.—Agrees with *M. a. venustulus* in size and in the coloration of the upperparts, but has the ventral surface much paler. It is obviously a lowland form of the *alfari* group, with no very close relationship to the *isthmius* group.

***Microsciurus boquetensis* Nelson.**

Sciurus (Microsciurus) boquetensis NELSON, Proc. Biol. Soc. Washington, XVI, p. 121, Sept. 30, 1903.

Microsciurus boquetensis MILLER, Bull. 79, U. S. Nat. Mus., p. 338, 1912.

? *Sciurus rufoniger* ALSTON, Proc. Zool. Soc. London, 1878, p. 669. Veragua, Panama. Not *S. rufoniger* Gray, 1842, nor of Allen, 1877.

Type locality.—Boquete, Chiriqui, Panama; altitude 6000 feet.

Geographic distribution.—Known only from the type locality.

Description.—Pelage full, soft and fine; color of upperparts nearly as in *M. a. alfari*; underparts heavily washed with ochraceous rufous, nearly as in *M. isthmius*.

Total length (type, collector's measurements), 257 (topotype, 268); head and body, 141 (topotype, 166); tail vertebræ, 116 (topotype, 102); hind foot, 37 (topotype, 26 = 36?). Skull (type, imperfect), occipitonasal length, ?; palatal length, 15.5; zygomatic breadth, ?; breadth of braincase, ?; interorbital breadth, 14; length of nasals, ?; upper molar series, 7.

Specimens examined.—The type (Brit. Mus.), and a topotype (U. S. Nat. Mus.).

Remarks.—A strongly differentiated mountain form of the *alfari* group, with the soft fine pelage and strongly colored ventral surface of the *similis* group, in correlation with the altitude of its haunts. It seems entitled to rank as a species until its intergradation with other forms has been shown.

Reference is necessary in this connection to *Sciurus rufoniger* Pucheran (*l. c.*), described in 1845 from a specimen supposed to have come from Santa Fé de Bogotá, Colombia, under a preoccupied name (not *Sciurus rufoniger* Gray, 1842): I used the name erroneously in 1877 (Mon. N. Amer. Roden., pp. 757, 758) for *Sciurus hoffmanni*, and Alston in 1878 (P. Z. S., 1878, p. 669) employed it for specimens of *Microsciurus* from Panama. Alston says: "On examining the type of Pucheran's *S. rufo-niger* in the Paris Museum, . . . I soon recognized in it a small Squirrel of which I had seen several specimens from Panama, and which I began to fear would require a new name. These examples prove to agree further with *S. deppei* in having two upper premolars, but differ in being more than one third smaller, in the colour of the lower parts (which are only paler than the upper, save on the breast), and in the tail being nearly uniform in colour with the back (the hairs having only very minute white or yellow tips). Specimens in the British Museum are labelled *M. tephrogaster minor* [Gray, MS.]; but I cannot doubt the distinctness of the form. The type of *S. rufoniger* has the middle of the back nearly black; while that of *M. chrysosurus* [*sic*] appears to be a variety, merely differing in the tail being more rufous."

The locality of Alston's specimens is given as Veragua, Panama, and they are doubtless referable to some form of *Microsciurus*. His description of *S. rufoniger*, based on these specimens, is as follows: "Average length about 5.50 inches; of tail vertebræ 3.75 inches. Two upper premolars. Upper parts dark olive, the hairs very minutely tipped with fulvous; breast bright rufous, rest of lower parts like the upper, but paler; tail nearly uniform with the back, the hairs reddish fulvous, barred with black and minutely tipped with pale yellow."

Alston's description of his *S. rufoniger*, his accompanying comment, and the locality agree closely with *M. boquetensis*, but the name, though much earlier than *boquetensis*, is of course untenable in this connection.

The *S. rufoniger* of Pucheran is quite a different question. According to Alston the type specimen has two premolars, and is similar in size to his Veragua specimens of *S. rufoniger*. The original description says: "Taille du Guerlinguet [= *Sciurus aestuans*]," and it is thus larger than *S. chrysuros*, which is "intermédiaire par sa taille entre le Guerlinguet et l'Ecureuil nain [*Microsciurus pusillus*]." That it is not the same as his *S. chrysuros*, described on the following page, is evident, as it has a well-marked black dorsal line from between the shoulders to the base of the tail, and the underparts are yellowish gray, with the breast yellow and tail hairs tipped with white. The presence of a black dorsal band is confirmed by Alston, who says the type of *S. rufoniger* "has the middle of the back nearly black." The coloration thus points to a form like *M. mimulus*, which it cannot be if the source of the specimen is rightly stated. There may be such a form in the Bogotá region, but its occurrence there remains to be confirmed. The presence of two upper premolars excludes it from *Guerlinguetus*.

***Microsciurus similis similis* Nelson.**

Sciurus (Microsciurus) similis NELSON, Bull. Amer. Mus. Nat. Hist., XII, p. 78, April 14, 1899.—ALLEN, *ibid.*, XXXI, p. 92, April 19, 1912.

Type locality.—Near Cali, Western Andes, Colombia; altitude 6000 feet.

Geographic distribution.—Colombia: Western and Central Andes at altitudes of 4000 to 7200 feet.

Description.—General color above yellowish rufescent, nearly as in *M. alfari alfari*; underparts orange rufous; no distinct eyerings nor ear-markings.

Total length (5 adults, Western Andes, collector's measurements), 250 (240–265); head and body, 127 (124–132); tail vertebræ, 121 (110–133); hind foot (without claws), 33 (30–35).

Skull (4 adults), occipitonasal length, 35.4 (35–36); zygomatic breadth, 20.5 (20–21); interorbital breadth, 13.1 (13–13.5); breadth of braincase, 17.7 (17–18.5); length of nasals, 10.2 (10–11).

Specimens examined, 12.—Colombia: Western Andes (Cali, 1, type); San Antonio, 1; Cocal, 2; Gallera, 2; Central Andes (Salencio, 2), all Am. Mus.; near Cali, 4, Brit. Mus.

Remarks.—*M. similis similis* closely resembles *M. a. alfari* in general features, from which it differs in smaller ears, absence of bright-colored eyerings and of the strong rufous coloration of the head, and the more pro-

nounced orange rufous of the ventral surface. The two forms are also rather widely separated geographically.

This is one of the few species represented in the present material by a fairly large series of specimens. The 12 specimens examined present a rather restricted range of individual variation, varying chiefly in tone of coloration, which is more rufescent in some specimens than in others, both above and below. The type proves to be rather redder than the average of the series. The pelage is full, short, and soft, as compared with that of the *mimulus* and *isthmus* groups, and much more rufescent above.

***Microsciurus similis fuscus* Thomas.**

Sciurus (Microsciurus) similis fuscus THOMAS, Ann. and Mag. Nat. Hist. (8), VI, p. 503, Nov. 1910.

?*Microsciurus similis fuscus* LÖNNBERG, Arkiv. för Zool., VIII, No. 16, p. 26, July 12, 1913. Near Gualea, Ecuador.

Type locality.—Juntas, Rio San Juan, Chocó district, Colombia; altitude 400 feet.

Geographic distribution.—Known only from the Chocó district, Colombia.

Description.—Like *M. s. similis*, but somewhat smaller, coloration darker and less olivaceous.

Total length (type, collector's measurements), 234; head and body, 126; tail vertebræ, 108; hind foot (without claws), 33.

Skull (no measurements available).

Specimens examined, 5.—Colombia: Juntas, Chocó district, type and topotype (Br. Mus.); Juntas, 1, topotype; Baudo (near Juntas), 2. (Am. Mus.).

Remarks.—A slightly differentiated coast form of *similis*. One of the Baudo specimens lacks the minute first premolar (p^3) on both sides.

Lönnberg (*l. c.*) has recorded specimens from near Gualea (altitude 3000 feet), Ecuador, but it seems unlikely that they can represent this form.

***Microsciurus pusillus* (Desmarest).**

Le petit guerlinguet BUFFON, Hist. nat., Suppl., VII, p. 263, pl. lxvi, 1789. Cayenne.

Sciurus [*pusillus*] DESMAREST (ex Geoffroy MS.), Nouv. Dict. d'Hist. nat. (nouv. éd.), X, p. 109, 1817. Based on Buffon, as above.

Macrozous pusillus GRAY, Ann. and Mag. Nat. Hist. (3), XX, p. 433, Dec. 1867. Guiana.

Sciurus pusillus ALSTON, Proc. Zool. Soc. London, 1878, p. 670, pl. xli (part).—ALLEN, Bull. U. S. Geol. Survey (Hayden), IV, No. 4, pp. 887, 905, Dec. 11, 1878 (part).

Type locality.—Cayenne.

Geographic distribution.—Cayenne (Buffon); Guiana (Gray).

Description.—"Fur soft, dark olive, yellow-grey-washed; head redder; hairs blackish from the base, with yellow-grey tips; cheeks, chin, throat, chest, and belly yellowish grey; hairs dark lead-coloured, with yellow-grey tips; ear-tufts none or very small; tail slender, cylindrical, black slightly varied with yellow; the hairs of the base yellow, with a basal and subterminal black band and a yellow tip, those of the tip black, with a yellowish base.

"A very small species: body and head $4\frac{1}{2}$ inches long. The front of the shoulders and thighs yellower than the rest of the body.

"*Hab.* Tropical America: B. M. Cayenne (Buffon)." — Gray, *l. c.*

Alston (*l. c.*) figures the species as having small white postauricular patches but does not mention them in his description. In his remarks on *M. kuhlii* he says: "The type of *M. kuhlii* . . . merely differs [from *pusillus*] in having a white spot at the root of each ear, and in the extreme tips of the hairs of the tail being white instead of fulvous," implying the absence of both these features in his specimens of *M. pusillus*. It may be that the white patches were added on the basis of the *kuhlii* specimen.

Skull (no measurements available).

Specimens examined.—None.

Remarks.—*M. pusillus* was the first recorded species of the genus, having been described and figured by Buffon in 1798, under the name *le petit guerlinguet*, from a specimen sent from Guiana by Sonnini de Manoncourt. His description is based on an old male "quatre pouces trois lignes depuis l'extremité du nez jusqu'à l'origine de la queue, qui n'ayant que trois pouces trois lignes de long." This specimen appears to have been named in manuscript (doubtless on a museum label) by Geoffroy, which name was first published by Desmarest in 1817, with a redescription of the specimen.

It was afterward redescribed by Gray (1867) and again described and figured by Alston (1878) from specimens from Guiana in the British Museum,¹ the latter stating that the species had "two upper premolars." He synonymized with it *Macrozox kuhlii* Gray, which is, however, a very different species, having the tail edged with white and a white spot at the base of the ears. No postauricular patches are indicated in Buffon's figure (*l. c.*) of *pusillus*, nor mentioned in his detailed description of the species, where the ears are described as follows: "les oreilles sont garnies de poils fauves en dedans, au lieu que celles du grand guerlinguet sont nues."

This species appears to be not represented in any American Museum. Nothing apparently is known of its distribution outside of the Guianas.

¹ I must have seen these specimens, but I find no mention of them in my notes, as I had not then planned to review the group as a whole.

Microsciurus otinus Thomas.

Sciurus (Microsciurus) otinus THOMAS, Ann. and Mag. Nat. Hist. (7), VII, p. 193, Feb. 1901.

Type locality.—Medellin, Colombia.

Geographic distribution.—Recorded only from Medellin and Valdivia, at altitudes of about 3000 to 4000 feet.

Description.—Upperparts pale gray with the hair-tips pale fulvous; underparts washed with pale chestnut rufous, strongest over the pectoral region; orbital ring obsolete; ears externally tipped with white, not tufted, and no basal auricular patch; tail sparsely fringed with whitish; upper surface of feet grayish punctated with pale fulvous.

Total length (type), 242; head and body, 130; tail vertebræ, 112; hind foot, with claws, 36 (without claws, 33). Skull, tip of nasals to front of interparietal, 33.3; zygomatic breadth, 22.7; interorbital breadth, 13.3; length of nasals, 10.

Specimens examined, 3.—Colombia: Medellin, 2, type and a topotype; Valdivia, 1 (Brit. Mus.).

Remarks.—Similar in general coloration to *M. isthmius* Nelson but paler both above and below, with white-tipped ears and a whitish tail-fringe. There are no flesh measurements, but the skins and skulls indicate no diagnostic difference in size from its congeners. The peculiar marking of the ears distinguishes it sharply from its nearest geographical allies, as does also its white-edged tail.

Microsciurus chrysuros (Pucheran).

Sciurus chrysuros PUCHERAN, Rev. Zool., 1845, p. 337.

Sciurus (Microsciurus) chrysuros ALLEN, Bull. Amer. Mus. Nat. Hist., IX, p. 116 (footnote), April 26, 1897.

Type locality.—Santa Fé de Bogotá, Colombia.

Geographic distribution.—Known only from the type locality.

Description.—"Dos, tete, flancs, membre présentant la teinte générale des Guerlinguet, mais plus foncée; queue ronde, offrant à sa base la coloration du dessus du corps, roux doré dans le reste de son étendue. La gorge est jaunâtre, le reste des parties antérieures offre, mais d'une manière très-effacée, la couleur de la queue. Dans cette espèce, intermédiaire par sa taille entre le Guerlinguet et l'Écureuil nain [*Microsciurus pusillus*], les oreilles sont si petites, qu'elles ne s'élèvent que de quelques lignes au-dessus du poil du reste de la tête.

"Habite la Colombie (Santa-Fé de Bogotá)." — Pucheran, *l. c.*

No measurements available.

Specimens examined.—None.

Remarks.—The description of this species is too vague to satisfactorily define it, as neither coloration nor size is very explicitly indicated, and the number of premolars is not stated. Thomas (Ann. and Mag. Nat. Hist. (7), VII, p. 194, Feb. 1901) refers to it as allied to his *M. otinus*, from which it “may be distinguished by its golden or ferruginous tail.” I have seen no specimens of *Microsciurus* from the Bogotá region, the alleged type locality.

***Microsciurus isthmius isthmius* Nelson.**

Sciurus (Microsciurus) isthmius NELSON, Bull. Amer. Mus. Nat. Hist., XII, p. 77, April 14, 1899.

Type locality.—Truandó River, Isthmus of Darien, Colombia.

Geographic distribution.—Coast region of Colombia from the Truandó River south to the Rio San Juan, Chocó district.

“Entire upperparts, including feet, uniform grizzled dark yellowish brown; ears yellowish brown, much paler than crown; sides of nose and chin dingy brown with suffusion of dull rufous; under side of neck and breast dingy ferruginous, shading posteriorly into dark reddish brown lightly washed with rufous; tail above grizzled rusty brown and black, hairs indistinctly tipped with pale yellowish; tail below similar but median area more rusty rufous; hairs on back black with broad subterminal rings of yellowish brown.

“Measurements of type, from dried skin. Length of [head and] body, 150; tail, imperfect; hind foot, 37.” — Nelson, *l. c.*

Three specimens from the Chocó district (Noanama, 1, Juntas de Tamaná, 2), total length, 243 (230–250); head and body, 137 (120–140); tail vertebræ, 110 (110–110); hind foot, 36 (35–38).

Skull (type, imperfect), total length, ?; zygomatic breadth, 23; breadth of braincase, 15; interorbital breadth, 13; length of nasals, 10.5. Three skulls from Baudo, occipitonasal length, 35.3 (33–38); zygomatic breadth, 21.9 (21–22.8); interorbital breadth, 13.3 (13–14); breadth of braincase, 17.8 (17–19); length of nasals, 10.2 (10–10.5). The largest of the three is a female, the others males. One of the males lacks the small premolar.

Specimens examined, 10.—Colombia: Rio Truandó, the type and a topotype (Nat. Mus.); Baudo, 3; Bagado, 1; Juntas de Tamaná, 2; Noanama, 1; Nóvita, 1 (Am. Mus.).

Remarks.—*M. isthmius* was described from two specimens, both with imperfect skins and skulls. It was compared by the describer with *M. alfari*, but it is more nearly related to the *M. mimulus* group, particularly to *M. palmeri*. I refer to it 8 specimens from the Chocó district, about

150 miles south of the Rio Truandó, where *M. isthmus* occurs with *M. palmeri* and *M. similis fuscus*.

M. isthmus is decidedly smaller than *palmeri* (hind foot about 4 mm. shorter, skull about 2 mm. shorter, and narrower), and much less rufescent. Two of these specimens have (like the type and topotype) a slight intermixture of black hairs in the crown, suggestive of the black cap of *palmeri*. As both forms occur together in the Chocó district, they are here treated as specifically separable.

***Microsciurus isthmus vivatus* Goldman.**

Microsciurus isthmus vivatus GOLDMAN, Smithsonian. Misc. Coll., LX, No. 2, p. 4, Sept. 20, 1912.

Type locality.—Near Cana, in the Pirri range of mountains, eastern Panama; altitude 3500 feet.

Geographic distribution.—Known only from the type locality.

Description.—Similar to *M. isthmus isthmus*, but upperparts paler and more olivaceous, and underparts orange buff instead of deep ferruginous. The difference in coloration between these two forms is nearly parallel to that between *M. mimulus* and *M. palmeri*.

Total length (collector's measurements), 260; head and body, 147; tail vertebræ, 113; hind foot (with claws), 38. Average of two adult topotypes, 239 (236–243); head and body, 129 (126–133); tail vertebræ, 110 (110–110); hind foot, 36 (35–37). Skull (type), occipitonasal length, 38.2; zygomatic breadth, 22.5; interorbital breadth, 13.4; breadth of braincase, 18; length of nasals, 10.7.

Specimens examined, 3, the type and two topotypes (Biol. Surv.).

Remarks.—As rightly said by the author (*l. c.*): "The occurrence of these widely differing pigmy squirrels [*M. alfari venustulus* and *M. i. vivatus*] in close proximity on the slopes of the Pirri range of mountains seems to show that the forms typified by *alfari* and *isthmus* belong to two distinct groups."

***Microsciurus mimulus* Thomas.**

Sciurus (Microsciurus) mimulus THOMAS, Ann. and Mag. Nat. Hist. (7), II, p. 266, Sept. 1898.

? *Sciurus rufoniger* PUCHERAN, Rev. zool., 1845, p. 336. Santa Fé de Bogotá, Colombia. Not *S. rufoniger* Gray, 1842, nor of Allen, 1877, nor of Alston, 1878. (See above, p. 152.)

Funambulus pucheranii FITZINGER, Math. Nat. Cl. K. Acad. Wiss. Wien, LV, p. 487, 1867 = *Sciurus rufoniger* Pucheran, renamed.

Type locality.—Cachavi, Esmeraldas, Ecuador; altitude about 665 feet.

Description.—“General colour deep brown, profusely grizzled with yellowish fulvous and with a marked black dorsal stripe. Crown and nape indistinctly blackish. Ears finely edged with fulvous; no whitish postauricular patch. Shoulders grizzled fulvous, with a tinge of rufous. Dorsal line shining black and strongly marked on the middle of the back, fading away anteriorly and posteriorly. Throat and chest rich fulvous, passing on the belly into blackish grizzled olivaceous grey. Limbs like back, the tips of the digits fulvous; inner sides of hips also more fulvous than the belly. Tail-hairs ringed with fulvous and black; their tips dull yellowish [in some specimens whitish].”

“Dimensions of the type (an adult female, measured in the flesh by the collector): [Total length, 239]; head and body 130 mm.; tail 109; hind foot without claws, 33; ear, 16.

“Skull: greatest length 38; basilar length 29; greatest breadth 23; nasals 10.6×5 ; interorbital breadth 13.5; interparietal 4×9 ; palate length from henselion 15.8; diastema (to p^4) 9.5; length of upper tooth-row (excluding p^3) 5.6.” — Thomas, *l. c.*

Specimens examined, 15.—Ecuador: Cachavi, 3, type and 2 topotypes (Br. Mus.); Ventano, 1 (Br. Mus.); Carondelet, 3 (Br. Mus., 1, Nat. Mus. 2); San Javier, 2 (Br. Mus., 1, Nat. Mus., 1); Lita, 1 (Br. Mus.).

Colombia: Barbacoas, 5 (Am. Mus.).

Remarks.—Seven specimens in the British Museum, all from north-western Ecuador, collected at altitudes ranging from 60 to 500 feet, are fairly uniform in coloration and measure as follows: Total length, 246 (239–255); head and body, 136 (130–146); tail vertebræ, 109 (107–113); hind foot (without claws), 33 (31–34); ear, 14 (12–16). Three of them are from Cachavi (Rosenberg), the type locality; 1 from Ventano, 1 from Carondelet, 1 from San Javier (all collected by Fleming), and 1 from Lita. In addition to these are 3 borrowed from the U. S. National Museum (coll. Fleming), two of which are from Carondelet and one from San Javier. These are typical, the black dorsal stripe extending from the base of the tail to the top of the head, about as far as to the eyes. They may all be considered as typical of true *mimulus*; all were collected not far from the type locality.

Another series of 5 specimens from Barbacoas, Colombia (Am. Mus.), are not all typical. One of the five has a black dorsal band and is in all respects typical. Another has the dorsal band faintly indicated, while the whole top of the head is dusky. Another has the top of the head blackish and an indistinct dorsal band extending backward from it as far as the middle of the back. The other two have the whole top of the head blackish but no darkening of the median line of the back. The ventral surface is very

nearly as in typical *mimulus*. Barbacoas is only about 50 to 60 miles north of the type locality of *mimulus* yet the approach in coloration of the upperparts toward *palmeri* is unmistakable. But there is considerable difference in size between *mimulus* and *palmeri*, and in the color of the ventral surface, which is less heavily washed with a lighter shade of rufous in *mimulus* than in *palmeri*. The general color of the upperparts and the blackish head are the same in both series, except that the black on the head is more intense in typical examples of *palmeri*. What the phase is that inhabits the coast region between Barbacoas and the Chocó country is as yet unknown, but it seems not unlikely that in this coast strip complete intergradation may be found to occur between *mimulus* and *palmeri*.

***Microsciurus palmeri* Thomas.**

Sciurus (*Microsciurus*) *palmeri* THOMAS, Ann. and Mag. Nat. Hist. (8), IV, p. 234, Sept. 1909.

Type locality.—Sipi, Rio Sipi, tributary of Rio San Juan, Chocó district, Colombia; altitude 150 feet.

Description.—Upperparts as in *mimulus*, a little darker in some specimens, except that there is a black cap and no black median line, underparts ochraceous rufous, deepest on the chest; not chest region orange and the ventral area dark grizzled olivaceous gray with a slight wash and a median line of pale orange, as in *mimulus*. Size larger than in *mimulus*.

Total length (type and paratypes, collector's measurements, 270 (258–284); head and body, 149 (142–153); tail, 120 (116–130); hind foot (without claws), 37.5 (36–39); ear, 14.3 (13.5–15). (The few American Museum specimens with fully developed black caps and trustworthy measurements fall within these limits.) Skull (type), occipitonasal length, 40.3; zygomatic breadth, 24; interorbital breadth (not given); length of nasals (not given). Two other specimens (Nóvita, 1; San José, 1), occipitonasal length, 39.3, 39.2; zygomatic breadth, 22, —; interorbital breadth, 12.5, 13; breadth of braincase, 19, 19; length of nasals, 10.5, 11.2.

Specimens examined, 12.—Colombia (Chocó district): Sipi, 2 (type and topotype); Nóvita, 4 (2 Br. Mus., 2 Am. Mus.); Cajon, 2 (Br. Mus.); Boca de Guinco, 1 (Br. Mus.); San Joaquín, 1 (Br. Mus.); San José, 1 (Am. Mus.); Buenavista Noriña, 1 (Am. Mus.).

Remarks.—Of 8 specimens (type and paratypes) in the British Museum, four (2 males, 2 females) have the black cap intensely black and sharply defined; two others (males) have the hairs of the cap minutely tipped with rufous, veiling the cap; the other (male) has the head uniform with the

back, with no indication of a darker crown. A single specimen (male) in the U. S. National Museum is similar to the last. These specimens are all from localities near N6vita in the Choc6 district at altitudes of 100 to 200 feet.

Of 4 specimens in the American Museum (3 males, 1 female), all have the black cap, but it is less intense and less sharply defined in the female. Two are from N6vita, 1 from San Jos6, and 1 from Buenavista Nori6a, all these localities except the last being below 200 feet altitude.

***Microsciurus simonsi* Thomas.**

Sciurus (Microsciurus) simonsi THOMAS, Ann. and Mag. Nat. Hist. (7), VI, p. 294, Sept. 1900.

Type locality.—Porvenir, near Zaparal, Bolivar province, Ecuador; altitude, 1500 m. (5000 feet).

Geographic distribution.—Known only from the type locality.

Description.—"General colour above grizzled olivaceous, about as in *S. alfari*, though slightly darker. Under surface also very much as in that species, the hairs tipped with buffy, not ferruginous. Sides of nose yellowish. Eyes with marked yellowish rings round them. Ears well-haired without lighter spots behind them, dark rusty red. Feet grizzled yellowish. Tail fairly long-haired, the hairs ringed black and reddish basally, with black subterminal and dull yellow terminal rings."

"Head and body, 138 mm.; tail 112, hind foot, s. u. 35, c. u. 38; ear 16.

"Skull, greatest length, 38.8; . . . greatest breadth 23.5 . . ."—Thomas (l. c.).

Specimens examined, 1, the type.

Remarks.—About equals *M. mimulus palmeri* in size, but the skull is shorter and much broader than in *palmeri* and the braincase much more highly arched.

***Microsciurus peruanus* Allen.**

Sciurus (Microsciurus) peruanus ALLEN, Bull. Amer. Mus. Nat. Hist., IX, p. 115, April 26, 1897.

Type locality.—Guayabamba, northwestern Peru; altitude 4000 feet.

Geographic distribution.—Known only from the type locality.

Description.—Upperparts dusky olivaceous, the hairs on the body tipped minutely with olivaceous and on the head and shoulders with yellowish rufous; underparts washed with yellowish rufous, heavily on the chest and upper abdomen, paler on throat and lower abdomen; back of ears pure

white, and a fluffy postauricular white patch; an indistinct yellowish eye-ring; upper surface of feet dusky minutely punctated with yellowish; tail hairs above at base reddish brown, subapically broadly banded with black and tipped with whitish, below blackish, tipped with whitish. Nasals squarely truncate posteriorly.

Total length (type, measured from skin), 240; head and body, 130; tail vertebrae, 110; hind foot, 38. Skull, occipitonasal length, 36; zygomatic breadth, 21.3; interorbital breadth, 13; breadth of braincase, 18; length of nasals, 9.

Specimens examined, 1, the type.

Remarks.— Easily recognized by its conspicuous white postauricular patches and the dark coloration of the upperparts, the hairs of upperparts of body narrowly tipped with olivaceous.

***Microsciurus kuhlii* (Gray).**

Macroxus kuhlii GRAY, Ann. and Mag. Nat. Hist. (3), XX, p. 433, Dec. 1867.

[Sciurus] kuhlii (Gray) NELSON, Proc. Washington Acad. Sci., I, p. 32, May 9, 1899 (in text). Referred to *Microsciurus*.

Type locality.— "Brazil (Castelnau)." Probably upper tributaries of the Amazon.

Geographic distribution.— Distribution unknown. Collected by Castelnau, who crossed Brazil twice on his well-known Expedition to South America during the years 1843 to 1847,— from Rio de Janeiro to Lima and from Lima to Para, via Cuzco and the rivers Urubamba, Ucayali, and Amazon, thus traversing the range of *Microsciurus* on the upper tributaries of the Amazon, where a species of this genus (*M. peruanus*) occurs with white postauricular patches and a white-fringed tail. It seems therefore probable that the type of *M. kuhlii* came from some point on the Ucayali River above or near the mouth of the Rio Napo, or possibly in the Andes west of Cuzco.

Description.— "Fur soft, nearly uniform olive, slightly washed with yellowish: chin and underside rather paler and yellower; a white spot above the base of each ear; tail blackish, whitish-washed; hairs yellow, with a broad subterminal band and white tip.

"*Hab.* Brazil (Castelnau), B. M." — Gray, l. c.

Specimens examined, none.¹

Remarks.— It is possible that the name *kuhlii* should replace my name

¹ So far as I remember, I did not examine the type of Gray's *Macroxus kuhlii*, in the British Museum; at least, I find no mention of it in my notes, and probably overlooked it. Mr. Thomas has kindly informed me (*in litt.*) that the premolar formula is $\frac{2}{1}$.

peruanus; the two supposed species are certainly closely related, judging from Gray's description of *kuhlii* and Alston's later reference (Proc. Zool. Soc. London, 1878, p. 670, June 18, 1878) to it. Both are similar in general coloration, and both have white postauricular patches and the tail fringed with white.

The type locality of *kuhlii*, however, is not known, but was probably in the Andean region of Peru somewhere between Lima and Cuzco, while the type locality of *peruanus* is in northwestern Peru. Pending an opportunity for direct comparison of the types of the two species both are here provisionally retained.

***Microsciurus napi* Thomas.**

Sciurus (Microsciurus) napi THOMAS, Ann. and Mag. Nat. Hist. (7), VI, p. 295, Sept. 1900.

Type locality.—Mouth of Rio Coco, upper Rio Napo, on the Ecuador-Colombia boundary.

Geographic distribution.—Known only from the type locality.

Description.—Upperparts faintly washed with rusty fulvous, much more pronounced than in *M. peruanus*; underparts faintly washed with fulvous; tail edged with fulvous, not whitish-edged as in *peruanus*; posterior surface of ears and postauricular patches white as in *peruanus*.

Head and body (type, measured from dry skin), 157; tail (imperfect); hind foot (without claws), 34. Skull (imperfect), zygomatic breadth, 21; interorbital breadth, 13; length of nasals, 9.

Specimens examined, 1, the type, a slightly immature female.

Remarks.—Nearly related to *M. peruanus*, of which it may be only a subspecies, as described. The type locality, however, is remote from that of *peruanus*, at a much lower elevation, and in a very different faunal area. Further material is necessary before its relationship can be satisfactorily determined. The describer compared it with specimens incorrectly identified as *peruanus*.

***Microsciurus rubrirostris* sp. nov.**

Type, No. 9, 7, 5, 4, British Museum, ♂ ad., Chanchamayo, central Peru; altitude 2000 m., Dec., 1907; coll. C. O. Schuke.

Upperparts dark brown, the tips of the hairs yellowish rufous; front of head to nose bright rufous; feet, shoulders, and edge of thighs strongly washed with yellowish rufous; chin and throat yellow deepening on chest and rest of ventral surface to orange ochraceous; back of ears and postauricular patch buff; tail blackish fringed with pale yellowish, the hairs rufous at base, subapically broadly banded with black and tipped with pale yellowish.

Total length (type, collector's measurements), 278; head and body, 145; tail vertebrae, 133; hind foot without claws, 35, with claws, 38; ear, 13. Skull, total length, 37; zygomatic breadth, 23; interorbital breadth, 13.4; breadth of braincase, 19; length of nasals, 10.

Another specimen in the U. S. National Museum, a topotype from the same collector (Schuke), measures as follows: Total length, 310; head and body, 160; tail vertebrae, 150; hind foot without claws, 35; ear, 15. Three other specimens in the British Museum, all topotypes, are without measurements. Number of specimens examined, 5.

This is a large species, much larger than *M. peruanus*, from which it differs in its strongly yellowish rufous coloration above, rufous instead of fulvous coloration below, deep buff instead of white postauricular patches, and in having a relatively much longer tail.

***Microsciurus florenciæ* sp. nov.**

Type, No. 33695 (skin), No. 34370 (skull), ♂ ad., Florencia (altitude 1000 feet), Caquetá district, Colombia, Jan. 27, 1912; coll. Leo E. Miller.

Upperparts with the tips of the hairs rufous, giving a dark reddish brown general effect; sides of nose buffy; underparts grayish brown, faintly washed with tawny; upper surface of feet and the limbs like the body; postauricular patches large, white narrowly edged apically with pale buff; tail blackish edged with pale yellowish white, the hairs rufous at base, broadly ringed with black and tipped with whitish.

Total length (type, collector's measurements), 270; head and body, 150; tail vertebrae, 120; hind foot (with claws), 40. A male topotype, 250, 130, 120, 40. A female from Murelia (a nearby locality, alt. 600 ft.), 250, 130, 120, 40. Average of 3 specimens, 273, 143, 130, 40.

Skull (type), occipitonasal length, 40; zygomatic breadth, 23.7; interorbital breadth, 14; breadth of braincase, 18.8; length of nasals, 10. Two other skulls are slightly smaller and also younger. Rostrum broad and the posterior border of nasals squarely truncate in all the three skulls, instead of emarginate or V-shaped as in *M. rubrirostris*, and almost without exception in all other known species of the genus.

Microsciurus florenciæ is represented by four specimens, two from Florencia and two from Murelia. The collector's skull labels were unfortunately lost, but in all probability the skull selected for the type skull belongs with the skin with which it is here associated. The color of the ventral surface in the four specimens varies from whitish gray faintly tinged with tawny on the middle of the belly to a whitish tawny brown, entirely unlike that of any other species except *M. alfari browni* from Chiriquí, Panama. The upperparts are similarly colored in all of the four specimens. One of the skulls lacks the minute upper premolar.

Measurements of Species and Subspecies of *Microsciurus*.

	External Measurements					Cranial Measurements					
	Numb. of specimens	Total length	Head and body	Tail	Hind foot	Numb. of specimens	Greatest length	Zygom. breadth	Interorb. breadth	Breadth of braincase	Length of nasals
<i>M. alfari alfari</i>	Type	250	145	105	36.5	Type	36	22	13	19	10
<i>M. alfari venustus</i>	"	250	148	102	40	"	37	23.2	14	17.6	10.5
<i>M. alfari browni</i>	"	260	140	120	38	"	36	21.2	12.4	—	11
<i>M. boquetensis</i>	"	257	141	116	37	"	—	—	14	—	—
<i>M. similis similis</i>	5	250	127	121	33	4	35.4	20.5	13.4	17.7	10
<i>M. similis fuscus</i>	Type	234	126	108	35	None	—	—	—	—	—
<i>M. simonsi</i>	"	250	138	112	38	Type	38.8	23.5	—	—	—
<i>M. pusillus</i>	None	—	—	—	—	None	—	—	—	—	—
<i>M. otinus</i>	Type	242	130	112	36	Type	—	22.7	13.3	—	10
<i>M. chrysuros</i>	None	—	—	—	—	None	—	—	—	—	—
<i>M. isthmus isthmus</i>	Type	—	150	—	37	Type	—	22	14.3	18	10
" " "	3	243	137	110	36	3	35.3	21.9	13.3	17.8	10.2
<i>M. isthmus vivatus</i>	Type	260	147	113	38	Type	38.2	22.5	13.4	18	10.7
" " "	2 top.	239	129	110	36	—	—	—	—	—	—
<i>M. mimulus</i>	Type	239	130	109	36	Type	38	23	13.5	—	10.6
" " "	7	246	136	109	36	—	—	—	—	—	—
<i>M. palmeri</i>	8	270	149	120	40	Type	40.3	24	—	—	—
<i>M. peruanus</i>	Type	240	130	110	38	"	35	21.3	13	18	9
<i>M. napi</i>	"	—	157	—	37	"	—	21	13	—	9
<i>M. kuhlii</i>	None	—	—	—	—	None	—	—	—	—	—
<i>M. rubrirostris</i>	Type	278	145	133	38	Type	37	22	13.3	18.5	10
" " "	1	310	160	150	40	1 top.	37	23	13.4	19	10
<i>M. florenciae</i>	Type	270	150	120	40	Type	40	23.7	14	19	10
" " "	3	273	143	130	40	3	38	22.8	13.8	18.8	10

