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PRELIMINARY REPORT ON ECUADOREAN MAMMALS.

NO. 4

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This is the fourth paper of a series based upon mammals collected in Ecuador.¹ Field parties have collected mammals in Ecuador for part of each year, beginning with 1920, and the Museum has sent out four separate expeditions in this time. The accumulation of specimens resulting from this systematic and persistent field work brings to light, from time to time, undescribed species which are written up in these preliminary reports pending an extended description of the entire mammalian fauna of Ecuador.

Phyllotis fuscus, new species

TYPE.—No. 62050, Amer. Mus. Nat. Hist.; ♀ ad.; Contrayerbas, Provincia del Azuay, 11,000 feet, Western Andes; June 27, 1922; collector, G. H. H. Tate. The type is a skin and skull, in good condition, the molars showing a fair degree of wear.

GENERAL CHARACTERS.—Somewhat similar in superficial characters to *haggardi* but noticeably darker in general coloration; skull with rostrum much longer than in *haggardi* and molar pattern with wider external and internal reëntrant angles.

DESCRIPTION.²—General color above, clay-color to tawny-olive, heavily washed with fuscous and clove-brown, the hairs slate colored at base; color brightest on rump and at anterior base of ears; ears sparsely haired, clove-brown; hands and feet whitish; tail clove-brown above, soiled whitish below, line of demarcation well defined.

Color below whitish, the hairs slate colored at base and showing through to give darker tone to underparts.

Pelage long, soft and silky; ears of moderate size; tail about two-fifths of total length, thinly haired.

Skull noticeably larger than that of *haggardi*; rostrum long and slender; incisive foramina long; molar pattern with obtuse reëntrant angles persisting until an advanced stage of wear.

MEASUREMENTS.—Taken in the flesh: total length, 198 mm.; tail vertebræ, 85; hind foot, 27. Skull, greatest length, 29.5 (*haggardi*, No. 46825, greatest length, 26.5); length of nasals, 12.6 (10.7); zygomatic breadth, 15 (14.3); interorbital breadth, 4.2 (4.3); breadth of braincase, 13.1 (12.8); length of molar toothrow, 4.2 (3.8); length of incisive foramina, 6.7 (5.9).

¹The three preceding papers are as follows: 'Preliminary Report on Ecuadorean Mammals. No. 1,' American Museum Novitates, No. 20, November 3, 1921; 'Preliminary Report on Ecuadorean Mammals. No. 2,' American Museum Novitates, No. 32, March 4, 1922; 'Preliminary Report on Ecuadorean Mammals. No. 3,' American Museum Novitates, No. 55, January 31, 1923.

²Color nomenclature follows Ridgway's 'Color Standards and Nomenclature,' 1912.

A series of nine *Phyllotis* was taken at Contrayerbas and the entire series is consistently dark in color when compared with *haggardi*. A considerable number of specimens of *haggardi*, some of them topotypes, is in the Museum collection and, while an occasional individual in this lot appears to resemble *fuscus* in coloration, it is not difficult to distinguish between the two species superficially. *P. fuscus* requires comparison with no other of the Ecuadorean *Phyllotis* (*P. andium*, *P. elegantulus*, *P. melanius*, and *P. fruticicolus*) from each of which it differs in some noticeable character of color, size or proportion of parts. The long slender rostrum and the greater length and size of the skull of *fuscus* at once serve to confirm the apparent external difference between *fuscus* and *haggardi*.¹

***Thomasomys silvestris*, new species**

TYPE.—No. 66288, Amer. Mus. Nat. Hist.; ♂ ad.; Las Maquinas, on Santo Domingo trail, west of Corazon, Western Andes, Ecuador; altitude 7,000 feet; September 23, 1923; collector H. E. Anthony. The type is a skin and skull, both in good condition.

GENERAL CHARACTERS.—A long-tailed species, of dark, rich coloration; skull with slender rostrum.

DESCRIPTION.—Color above, dark, the hairs slate-colored for most of their length and tipped with raw umber or mummy-brown; upperparts practically uniform in tone and transition along flanks into the lighter color of underparts very gradual; ears of medium size, clove-brown in color, sparsely haired; hands drab above; feet clove-brown above; tail long, exceeding by about fifty per cent the length of head and body, almost naked, annulations close together, color clove-brown above, slightly lighter below, almost unicolor. Hairs of underparts dark at base, tipped with drab-to hair-brown. Pelage everywhere long, soft and lax.

Skull with slender rostrum and well rounded braincase; anterior margin of zygomatic plate a straight line, not semi-convex as in most *Thomasomys*; palatal foramina short and open; molar teeth proportionally small; postpalatal notch wide and parallel-sided; auditory bullæ of moderate size.

MEASUREMENTS.—Taken in the flesh: total length, 261 mm.; tail vertebrae, 151; hind foot, 30. Skull, greatest length, 29.3; length of nasals, 11.4; zygomatic breadth, 15.5; breadth of braincase, 13.5; interorbital breadth, 5; length of palatal foramina, 5.5; length of upper molar toothrow, 5.

Thomasomys silvestris belongs to that section of the genus which is characterized by extremely soft, lax fur and dark, rich coloration, and of which *cinereus* and *rhoadsi* are good examples. From all described

¹Mr. Oldfield Thomas kindly compared two specimens of the Contrayerbas series with the *Phyllotis* in the British Museum collections but was inclined to consider them referable to *haggardi* because of the occasional occurrence of darker colored specimens in their series of *haggardi*. I am able, with the full series of nine specimens from Contrayerbas, to demonstrate to my own satisfaction that the sporadic occurrence of dark specimens of *haggardi* is not analogous to the consistent appearance of the dark pattern of *fuscus*, which is always dark, but the discovery of the marked difference in skull characters between *fuscus* and *haggardi* makes the case a much stronger one.

species of this section of the genus, it is readily separated by the following assemblage of characters: dark general coloration; slaty underparts; long, slender tail, longer than combined length of head and body; slender rostrum, unusually straight anterior margin of zygomatic plate, and wide, parallel-sided postpalatal notch.

Geographically, *silvestris* is a very close neighbor of *rhoadsi* and later collecting may show an over-lapping of ranges. *Thomasomys rhoadsi*, however, can never be confused with *silvestris*, for it is a larger, more robust species, with short tail, large molars and heavier rostrum. *Thomasomys cinereus ischyryus* Osgood appears to be more nearly related to *silvestris*, being long-tailed and long-nosed, but it is larger and much yellower below.

A series of thirty-seven skins and skulls of *silvestris* was taken, at the type locality of Las Maquinas, on the western slope of Mt. Corazon at the upper limit of forest, and near Sinche, on the headwaters of the Rio Chimbo. These localities are in the heavy forest of the western slope of the Western Andes and in a region of heavy rainfall. It was a surprise to take a new *Thomasomys* so close to localities where we had been catching *rhoadsi*. Specimens of *silvestris* in the flesh are so distinct from *rhoadsi* that it was an easy matter to note the distinction in the field. Apparently this new species of *Thomasomys* is exclusively a forest-dwelling form and does not come out into the thickets of the paramo region, since it appears to be replaced here by the larger *rhoadsi*.

The amount of variation shown by this large series is considerable but, nevertheless, I have found no approach toward intergradation with any other *Thomasomys*. The color varies from the brownish cast of pelage shown by the type to a much darker, more sooty pelage, while some individuals have distinct white spots, small in size and generally located about the head or forepart of the body. A white pencil on the tail occurs occasionally. The length of the hind foot runs from 28 to 30 millimeters.

***Sigmodon inopinatus*, new species**

TYPE.—No. 66310, Amer. Mus. Nat. Hist.; ♀ ad.; Urbina, slopes of Chimborazo, Ecuador; altitude 11,400 feet; October 26, 1923; collector, G. H. H. Tate. The type is a skin and skull both in good condition.

GENERAL CHARACTERS.—A good sized species, rather light colored in comparison with most other Ecuadorean *Sigmodon*; skull proportionally broad but with extreme interorbital constrictions.

DESCRIPTION.—Color above, an impression of clay-color grizzled with black, the clay-color predominating; pelage slate-colored for basal half or two-thirds; most of

pelage composed of hairs about 14–15 mm. long but with a sprinkling of white-tipped hairs along back and sides fully 20 mm. in length; hands and feet grizzled gray; tail comparatively short, above hair-brown, below whitish; orbital ring well defined, clay-color.

Color below, gray, with dark at base of pelage showing through.

Skull quite broad in proportion to its length, the zygomata flaring; interorbital constriction very pronounced; supraorbital beading well developed and carried back across parietal, then curving down to the external auditory meatus; incisive foramina not quite reaching to plane of first molar teeth; palate, inside molar tooth-row, wide; toothrows nearly parallel; audital bullæ rather small, not greatly inflated.

MEASUREMENTS.—Taken in the flesh: total length, 259 mm.; tail vertebrae, 99; hind foot, 31. Greatest length of skull, 35.6 (36.8)¹; length of nasals, 12.8 (13.4); zygomatic breadth, 21.5 (20.8); interorbital breadth, 4.5 (5.5); breadth of braincase, 14.7 (14.4); length of incisive foramina, 7.3 (6.7); outside breadth of palate across m^1 , 8.1 (6.7); outside breadth across m^3 , 8.7 (8.1); deviation of toothrows from parallelism, .6 (1.4); length of upper molar series, 6.8 (6.8); greatest transverse breadth of bulla, 5.6 (6.4).

A series of eleven specimens of this *Sigmodon* was taken near Urbina in the tufts of coarse grass which covered the paramo. The series is quite constant in color pattern and a noticeable feature is the sprinkling of long, white-tipped hairs seen on every specimen. The type specimen is an old female, one of the largest of the series, and contained four embryos.

Sigmodon inopinatus needs detailed comparison with none of the other Ecuadorean *Sigmodon* since the skull characters it exhibits are well-marked and quite obvious. The extreme interorbital constriction, the proportion of breadth to length, the subparallel toothrows, and the small bullæ are all found only in *inopinatus*. The color of the pelage also serves to separate the new species from its congeners in Ecuador, but these differences in color are far less fundamental than the differences in skull structure.

In all of the field work previously done in Ecuador, *Sigmodon* has been taken only in the tropical or subtropical zones and has been, in consequence, considered to be one of the most characteristic lower zone mammals. The appearance of this cotton-rat at an elevation of 11,400 feet on the bleak cold slopes of Chimborazo is the most surprising feature of the season's collecting. Snow frequently falls at Urbina and frosty nights are common. While the grass grows in abundance on the paramo and the food conditions are doubtless favorable to rodents living the life of *Sigmodon*, the greatest contrast exists otherwise between the environment on Chimborazo and what we have been led to consider the typical environment of *Sigmodon*.

¹Measurements in parentheses are of *Sigmodon chonensis*, No. 66321, Manglar Alto, Ecuador.

Artibeus fraterculus, new species

TYPE.—No. 47248, Amer. Mus. Nat. Hist.; ♀ ad.; Portovelo, Provincia del Oro, Ecuador; altitude, 2000 ft.; July 12, 1920; collector, H. E. Anthony. The type is a skin and skull in good condition.

GENERAL CHARACTERS.—Resembling *jamaicensis* but noticeably smaller.

DESCRIPTION.—Fur of upperparts everywhere fuscous at tip, basally drab on rump, ivory-yellow at base on neck and shoulders; ears and membranes clove-brown to fuscous black; color below, buffy brown.

This species is dichromatic and a much brighter phase is Prout's brown above, the hairs warm buff at the base, the color of underparts buckthorn brown.

Fur rather soft and velvety in texture; ears, nose-leaf, furring on membranes, normal for the genus; tibia short, much shorter than in *jamaicensis* or *j. æquatorialis*; forearm short.

Skull smaller than in the subspecies of *jamaicensis*; molar teeth proportionally robust but much lighter than in *j. æquatorialis*; molars $\frac{2}{3}$

MEASUREMENTS.—Taken in the flesh: length of head and body, 96 mm.; hindfoot, 15.5; length of forearm (from dried skin), 57; average of 18 specimens, 55.5 (52.5–58.7); length of tibia, 22.

Greatest length of skull, 27; average of 13 adult skulls, 26.7 (26–27.2); zygomatic breadth, 16.3; average 16.3 (15.8–17.2); length of upper toothrow, c-m², 9.6; breadth of palate across m¹, 11.7.

The series of *fraterculus* comprises eighteen skins and skulls, in addition to alcoholic specimens, collected at Portovelo, Rio Casanga, Santa Rosa (Provincia del Oro) and Duran. Of this series of skins, eight are in the bright phase and ten are colored like the type.

When the first specimens of this series were taken they were believed to represent *jamaicensis æquatorialis* for the reason that the type locality of *æquatorialis*, Zaruma, is only about three miles from Portovelo. With the accession of additional specimens of *fraterculus*, as well as a small series of a much larger *Artibeus* which may be taken to represent *æquatorialis*, the distribution of the species of *Artibeus* (having molars $\frac{2}{3}$) appears to become more involved, as far as southern Ecuador is concerned. The bat here described is unquestionably one of the aggregation of forms treated by Anderson in his monograph of the genus¹ as the *jamaicensis* group. However, *jamaicensis jamaicensis* has not been taken as far south as Ecuador and *fraterculus* is much smaller than specimens of this race from the West Indies; a fairly large subspecies of *jamaicensis* (*æquatorialis*) is already known from southern Ecuador; and to describe the Portovelo-Duran series as a subspecies of *jamaicensis* when there are lacking intergrades on the one side with *æquatorialis*, on the other with *j. jamaicensis*, does not appear, at this time, to be a satisfactory solution. The number of specimens of *Artibeus* in the collections from Ecuador is sufficiently

¹1908, Proc. Zool. Soc., p. 247.

large, and the field parties have covered such an extensive area in gathering these collections, that the argument against the existence of such intergrades, at least in southern Ecuador, must be given due consideration. The subspecies of *jamaicensis* to which *fraterculus* bears most resemblance is *parvipes*, known only from Cuba. Like *parvipes*, the Portovelo *Artibeus* has a short tibia, short forearm, and small skull, but differs in having slightly heavier molar dentition, brownish instead of black membranes, and a much lighter colored pelage.

In discussing the southward spread of *j. jamaicensis*, Anderson, *loc. cit.*, p. 272, gives the impression that he expects *jamaicensis* to intergrade into *æquatorialis* somewhere between Panama and southern Colombia; in other words, the expected tendency is for *jamaicensis* to increase in size as it passes toward Ecuador. *A. fraterculus* is so obviously smaller than true *jamaicensis* that the distinction may be noted upon immediate superficial inspection. Whether the resemblance that *fraterculus* bears to the races of the *jamaicensis* group implies a subspecific relationship, or, whether the appearance of a smaller $\frac{2}{3}$ molar *Artibeus* in Ecuador very similar to *j. parvipes* of Cuba is merely a case of parallel development, is a question that can be answered only when more material from the intermediate region, western Colombia, is secured.

A. fraterculus has been taken only in the arid, or semi-arid, coastal zone of southern Ecuador and the pigmentation of membranes and pelage rather indicates a range outside the humid, rainfall areas. *Artibeus* from nearby localities in the precipitation zones are the much darker and larger *j. æquatorialis*.