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American Bats of the Genus *Vampyressa*, with the Description of a New Species

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Vampyressa was described as a subgenus of *Vampyrops* by Thomas in 1900, with *Phyllostoma pusillum* Wagner as the type species, and was raised to generic standing by Miller in 1907. Since then five other species have been described: by Miller, one; by Thomas, four. Six forms are recognized in the present paper.

Until now, no attempt has been made to evaluate the specific cranial and dental characters of the actual genotype. In the past, specimens of *Vampyressa* have been referred to *Phyllostoma*, *Chiroderma*, *Stenoderma*, and *Vampyrops*. Few specimens have been available, and the amount of individual variation is not well known. At the present time one species is well represented. It shows remarkably little variation with geographical origin, sex, or age.

An examination of the holotype of *Vampyressa pusilla* clarifies its relationship to other members of the genus. There are, however, a number of questions relating to the type species that cannot now be fully answered with the material available.

All measurements are given in millimeters. The names of colors that are capitalized in the descriptions are from Ridgway (1912).

The abbreviations that represent the names of museums from which specimens have been recorded are:

A.M.N.H., the American Museum of Natural History

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FIG. 1. Type skin of *Vampyressa p. pusilla*, subadult male, Z.S.M. No. 184312.

B.M., British Museum (Natural History)
 C.N.H.M., Chicago Natural History Museum
 N.M., Naturhistorisches Museum, Vienna
 R.M., Rijksmuseum van Natuurlijke Historie, Leiden
 U.K., University of Kansas
 U.S.N.M., United States National Museum
 Z.S.M., Zoologische Sammlung des Bayerischen Staates, Munich

Acknowledgments are due to Dr. Theodor Haltenorth, Zoologische Sammlung des Bayerischen Staates, Munich, for the loan of the holotype of *Vampyressa pusilla*; to Dr. Kurt Bauer, Naturhistorisches Museum, Vienna, for the extracts from Johann Natterer's field notes; to Father A. M. Husson, Rijksmuseum van Natuurlijke Historie, Leiden, for the photographs and measurements of the skull figured by Peters; to Dr. G. B. Corbet, British Museum (Natural History), for the photographs of skulls of two type specimens, and the loan of specimens; to Dr. Georg H. W. Stein, Institut für Spezielle Zoologie und Zoologisches Museum des Humboldt, Berlin, for assistance in locating the holotype of *Vampyressa pusilla*; to Dr. E. Raymond Hall, University of Kansas, for the loan of specimens; to Dr. Charles O. Handley, Jr., United States National Museum, Washington, for the loan of specimens and the measurements of recorded specimens; to Mr. Philip Herschkovitz, Chicago Natural History Museum, Chicago, for the loan of specimens. Photographs of the other skulls in this paper were made by Mr. Robert E. Logan, Chief Photographer, the American Museum of Natural History.

GENUS *VAMPYRESSA* THOMAS

Vampyrops (*Vampyressa*) THOMAS, 1900, Ann. Mag. Nat. Hist., ser. 7, vol. 5, p. 270.
Vampyressa, MILLER, 1907, Bull. U. S. Natl. Mus., no. 57, p. 156.

TYPE SPECIES: *Phyllostoma pusillum* Wagner.

RANGE: Tropical America at relatively low elevations, from eastern Costa Rica and western Colombia south to southern Peru and east to southeastern Brazil; not recorded from the Guianas, or central or northern Brazil.

DENTAL FORMULA: Incisors, $\frac{2}{3}$; canines, $\frac{1}{1}$; premolars, $\frac{2}{2}$; molars, $\frac{2}{2}$ or $\frac{2}{3}$ = 28 or 30.

CHARACTERS: Size medium, forearm, 30–37.5; two pairs of narrow, whitish, facial stripes present; no trace of an external tail; interfemoral membrane narrow; noseleaf well developed, with a pointed tip and well-defined median rib.

General color grayish or reddish brown. Skull short and broad, rostrum shorter than braincase; palate extending well beyond the last molars posteriorly. Inner upper incisors more than twice the size of outer

TABLE 1
MEASUREMENTS (IN MILLIMETERS) OF *Vampyressa*

Species, Museum and Number	Locality	Sex and Age	Forearm	Skull, Greatest Length	Condylobasal Length	Basal Length	Zygomatic Breadth	Interorbital Breadth	Mastoid Breadth	Width Across M ² -M ²	Mandibular Tooth Row, C-M ₂	Maxillary Tooth Row, C-M ²
<i>V. p. pusilla</i>												
Z.S.M. No. 184312 ^a <i>V. p. venilla</i>	Brazil Sapeteba	♂ subad	31.5	18.5 ^b	—	—	10.7 ^b	—	—	8.1	6.4	6.3
	Peru San Lorenzo	♀ ad	30.5	17.0	16.0	—	10.3	5.0	8.4	—	—	5.6
<i>V. p. thylene</i>												
U.S.N.M. No. 309864 U.S.N.M. No. 309866 U.S.N.M. No. 173852 ^a	Panama Tacarcuna	♀ ad	31.0	17.9	16.3	14.4	10.5	4.5	9.3	7.5	6.0	5.8
	Tacarcuna	♀ ad	31.0	18.1	16.2	14.3	10.8	4.5	9.0	5.7	6.4	6.2
	Cabima	♀ subad	31.5	18.0	16.2	14.0	10.0	4.4	9.2	—	—	5.6
	Costa Rica Cañas Gordas	♂ ad	33.0	18+	—	—	10.7	4.8	—	7.9	6.4	—
A.M.N.H. No. 141996 A.M.N.H. No. 141997	Cañas Gordas	♂ ad	31.0	18.3	16.7	15	10.6	4.5	9.0	8.0	6.6	6.2
	Colombia Caracolicito	♀ ad	31.5	18.2	16.6	14.4	10.8	4.6	9.4	—	—	5.4
B.M. No. 9.7.7.7	Jimenez	♀ subad	32.2	18.4	—	—	10.5	4.6	9.4	—	6.5	6.1

TABLE 1—(Continued)

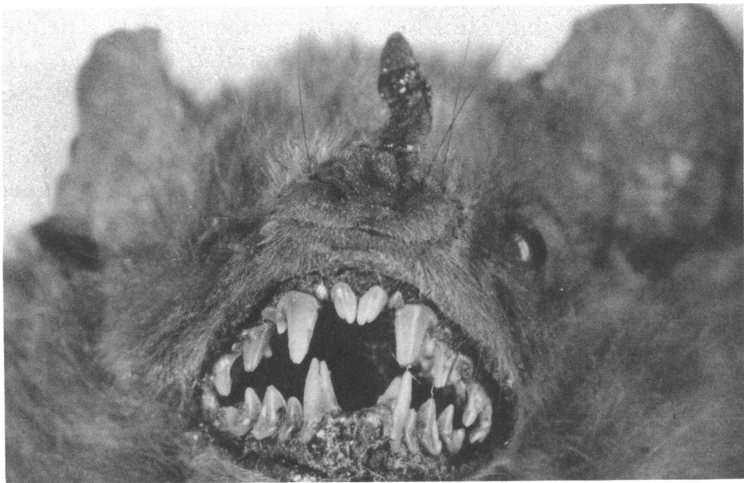
Species, Museum and Number	Locality	Sex and Age	Forearm	Skull, Greatest Length	Condylbasal Length	Basal Length	Zygomatic Breadth	Interorbital Breadth	Mastoid Breadth	Width Across M ² -M ²	Mandibular Tooth Row, C-M ₂	Maxillary Tooth Row, C-M ₂
A.M.N.H. No. 142152	Macarena Mts.	♂ ad	33.0	—	—	—	11.0	4.5	—	7.5	6.3	5.8
B.M. No. 9.7.17.8	Sipí	♀ subad	32.0	18.4	16.7	14.5	10.5	4.6	9.3	7.4	—	6.0
	Ecuador											
A.M.N.H. No. 71675	Boca Curaray	♀ ad	30.0	18.0	—	—	10.6	4.5	—	7.7	6.2	5.8
A.M.N.H. No. 71680	Boca Curaray	♂ ad	30.3	18.4	—	—	10.7	5.0	—	7.7	6.4	6.1
B.M. No. 97.11.7.77 ^a	Chimbo	♂ ad	32.0	19.0	—	15.3	11.0	—	9.5	—	—	6.1
	Peru											
C.M. No. 68458	Marcapata	♂ ad	31.8	18.4	—	—	11.0	4.8	9.3	7.6	6.3	6.0
C.M. No. 78689	Marcapata	♀ ad	32.0	18.0	16.6	14.6	11.4	4.6	8.7	7.7	6.3	5.9
C.M. No. 78690	Marcapata	♂ ad	31.8	18.3	16.6	14.5	10.0	4.8	9.0	7.5	6.2	5.9
A.M.N.H. No. 67991	Rio Suno	♀ ad	—	18.3	—	—	10.7	4.8	—	7.9	6.3	6.0
A.M.N.H. No. 67986	San José	♀ ad	—	18.5	16.4	14.8	11.0	5.0	9.1	—	—	6.0
A.M.N.H. No. 67987	San José	♀ ad	—	18.2	—	—	10.8	4.5	—	7.9	6.2	5.8
A.M.N.H. No. 67988	San José	♂ ad	—	18.2	—	—	10.5	4.7	8.7	7.6	6.3	6.1
A.M.N.H. No. 67994	San José	♀ ad	—	17.9	16.3	14.4	10.2	4.5	8.8	7.4	6.2	5.8
A.M.N.H. No. 67995	San José	♂ ad	—	18.4	16.6	—	10.2	4.5	9.0	7.5	6.2	5.9
A.M.N.H. No. 67996	San José	♂ ad	—	17.8	15.7	14.1	10.1	4.5	8.9	7.7	6.2	5.7

TABLE 1—(Continued)

Species, Museum and Number	Locality	Sex and Age	Forearm	Skull, Greatest Length	Condylobasal Length	Basal Length	Zygomatic Breadth	Interorbital Breadth	Mastoid Breadth	Width Across M ² -M ²	Mandibular Tooth Row, C-M ₂	Maxillary Tooth Row, C-M ₂
A.M.N.H. No. 31501 <i>V. nattereri</i>	Venezuela Las Guignas	♀ subad	33.0	18.3	16.5	14.4	10.6	4.5	9.3	8.0	6.2	5.9
R.M. No. 17256 ^a <i>V. nymphaea</i>	Brazil Ipanema	♀ ad	35.0	20.1	18.3	—	12.1	5.2	10.1	8.6	7.0	6.7
B.M. No. 9.7.17.40 ^a B.M. No. 15.10.5.4	Colombia Novita Andagoya	♂ ad ♂ ad	36.0 —	21.0 21.1	— 18.5	16.5 16.4	12.2 12.2	— 4.7	10.5 10.1	— 9.0	— 8.0	7.5 7.4
U.K. No. 52455 U.S.N.M. No. 309888 <i>V. melissa</i>	Panama Barro Colorado Tacarcuna	♀ subad ♀ ad	36.0 37.7	20.5 21.2	17.9 18.8	15.9 16.5	11.7 12.4	4.7 4.6	10.3 10.2	8.5 9.0	7.5 7.8	7.0 7.1
B.M. No. 26.5.3.4 ^a	Peru Puca Tambo	♀ ad	37.5	21.5	20.0	—	13.3	5.4	10.2	—	—	7.1

^a Type.

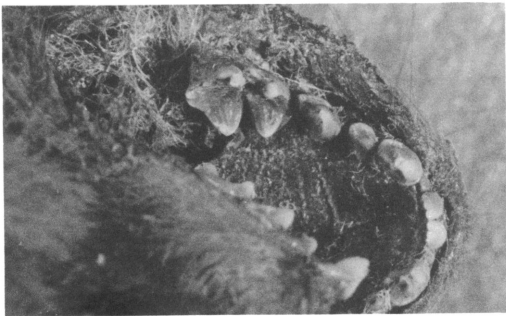
^b In dry skin.



A



B



C

FIG. 2. Dentition of *V. p. pusilla*, subadult male, Z.S.M. No. 184312, type. A. Front view of upper incisors and canines. B. Lateral view of cheek teeth. C. Ventral view of maxillary tooth row. All slightly more than $\times 5$.

incisors; crowns of inner incisors usually obliquely set, separated at base by a wide space, converging distally and more or less in contact at the tip, the cutting edges strongly bifid; outer upper incisors low but well developed, filling space between inner incisors and canines; lower incisors small, subequal, in a straight line, filling space between lower canines; first upper premolar much smaller than second, both acutely pointed and each with distinct cutting edges; first upper molar broader than long; second upper molar more or less triangular in outline; first lower premolar much smaller than second and with a low, pointed tip; second lower premolar with a high, acutely pointed tip; first lower molar not very different from last premolar; last lower molar more or less quadrangular in outline and with the surface deeply sculptured.

Vampyressa is represented by four species and six named forms. A small grayish form, *V. pusilla thyone*, has facial markings not sharply defined and is not uncommon at low elevations in eastern Central America and western South America. *Vampyressa nymphaea* is a large species, which occupies much the same general area as *V. p. thyone* and has prominent white facial stripes. A large species, described below, is found in southeastern Brazil, and is as large as *V. nymphaea* but has dentition resembling that of *V. p. thyone*. A small form, the type species *V. p. pusilla*, occurs in the same general area of southeastern Brazil as *V. nattereri* and has dental characters resembling those of the small *V. p. venilla*, known only from northern Peru. *Vampyressa melissa* is the largest and most aberrant type and is known only from the high mountain regions of central Peru.

KEY TO SPECIES OF *Vampyressa*

1. M_3 present *V. melissa*
- M_3 absent 2
2. Length of forearm, more than 34 3
- Length of forearm, less than 34 4
3. Length of maxillary tooth row, less than 7.0 *V. nattereri*
- Length of maxillary tooth row, more than 7.0 *V. nymphaea*
4. Inner upper incisors separated by a space *V. p. thyone*
- Inner upper incisors not separated by a space 5
5. Length of maxillary tooth row, more than 6 *V. p. pusilla*
- Length of maxillary tooth row, less than 6 *V. p. venilla*

Vampyressa pusilla pusilla (Wagner)

Figures 1, 2

Phyllostoma pusillum WAGNER, 1843, Arch. f. Naturgesch., vol. 1, p. 366.

Phyllostoma pusillum, TSCHUDI, 1844, Fauna-Peruana, vol. 1, p. 63.

Phyllostoma pusillum, WAGNER, 1850, Abhandl. Bayerischen Akad. Wiss., vol. 5, p. 173, pl. 2, fig. 1.

Phyllostoma pusillum, SCHREBER, 1855, Die Säugethiere, suppl. vol. 5, p. 634, pl. 43.
Chiroderma pusillum, PETERS, 1866, Monatsber. K. Preussischen Akad. Wiss. Berlin, p. 395.

Chiroderma pusillum, DOBSON, 1878, Catalogue of the Chiroptera in the . . . British Museum, p. 535.

Stenoderma (Chiroderma) pusillum, PELZELN, 1883, Brasilische Säugethiere, p. 34.

Vampyrops (Vampyressa) pusillus, THOMAS, 1900, Ann. Mag. Nat. Hist., ser. 7, vol. 5, p. 270.

Chiroderma pusillum, PETERS, 1906, [posthumous "Plates of Chiroptera"], Berlin, Museum Zoologicum Berolinense, pl. 12A, figs. 10–15.

Vampyressa pusilla, MILLER, 1907, Bull. U. S. Natl. Mus. No. 57, p. 156.

Vampyressa pusilla, THOMAS, 1909, Ann. Mag. Nat. Hist., ser. 8, vol. 4, p. 230.

TYPE LOCALITY: Sapitiba (Sapeteba), district of Rio de Janeiro, Brazil.

RANGE: Southeastern Brazil.

GENERAL CHARACTERS: Length of forearm, 31.5; pelage grayish brown; facial stripes distinct but not extensive; ears broadly rounded at tip. Similar in color and dental characters to *V. p. venilla* Thomas but larger.

DESCRIPTION OF TYPE: Body color brownish gray, somewhat darker on back (according to Natterer); a narrow white facial stripe extending from corner of mouth to base of ear and another from noseleaf to inner margin of ear. Upper incisors close together, filling space between canines; inner pair with inner edges parallel, the inner edges in contact and not separated terminally; first and second upper premolars longer than broad; first upper molar broader than long, with a narrow, pointed, internal lobe; posterior upper molar triangular in section, with the anterior border convex and the posterior border concave.

SPECIMEN EXAMINED: Brazil: Sapeteba, one (type, Z.S.M.).

MEASUREMENTS OF TYPE: Forearm, 31.5; tibia, 11.5; in third finger, metacarpal, 29.0, first phalanx, 13, second phalanx, 15.5, terminal phalanx, 9.3; in fourth finger, metacarpal, 27.7, first phalanx, 11.2, and second phalanx, 10.2; in fifth finger, metacarpal, 30.0, first phalanx, 8.8; hind foot, 9.2. Greatest length of skull, measured in the skin from front of upper incisors to back of head, 18.5; breadth across M^2-M^2 , 8.1; breadth across base of canines, 4.3; mandibular tooth row, $C-M_2$, 6.4; maxillary tooth row, $C-M^2$, 6.3.

REMARKS: The type of *Phyllostoma pusillum* Wagner (Z.S.M. No. 184312) is a well-prepared specimen, with wings spread. The fur is now Sayal Brown on the back, slightly paler below, and does not appear to be seriously faded, but the white facial stripes are rather indistinct. The skull is in the skin, and the epiphyseal sutures of the wing bones are open, which indicates a subadult stage of development. The original label bears the following inscription in Johann Natterer's handwriting: "N 19

Sapitiba d. April 6, 1818 Mas Alt." Another label, also in Natterer's handwriting, reads: "N 19 *Phyllostoma pusillum* Natt. ♂ adult." The word "adult" has been crossed out in pencil, and "juv." has been substituted. A red label of more recent date indicates that this is the type. Natterer used the Latin word *mas* for male and the German word *alt* (old) for adult. In the field Natterer did not number his specimens individually but gave group numbers according to the species. Wagner's original description of *P. pusillum* was brief, but he published a more detailed account in 1850 (p. 173), and included an illustration of the species (pl. 2, fig. 1). This figure, except for left-right transposition in the lithograph, follows exactly a detailed pencil drawing by Johann Natterer now in the collection of the Naturhistorisches Museum, Vienna. The drawing is captioned "foemina No 19 Ypanema d 18th Juny 1819." The figure shows an adult female with the epiphyseal sutures of the wing bones closed. Wagner's description was therefore based on a subadult male from Sapiteba, but his figure shows an adult female from Ipanema. Natterer made detailed sketches of the ears of the Sapiteba specimen which indicate that they were broader and more rounded at the tip than the pointed ears shown in the figure of the Ipanema specimen.

Pelzeln's (1883, p. 35) record of five specimens of *P. pusillum* from Sapiteba and Ipanema stems from a special species card catalogue of Johann Natterer's Brazilian collection in Josef Natterer's handwriting. This card is headed:

N. 19 Vespertito Phyllostoma (*pusillum* Natt.) superciliatum Pr. Neuw

	adult	juvenis
Tr[ansport]	m. f.	m. f.
1	2 -	- -
3	1 1	- -
12	1 -	- - Ypanema

1 m N3 an Temminck gegeben

From the condition of the handwriting on the heading of this card, it seems that Johann Natterer added the "*pusillum* Natt." after *Phyllostoma* at a later date. That this numbering was a first provisional species designation is made clear by the fact that at a later date some records were deleted and transferred to other cards. Transport 1 on species card No. 19, *Phyllostoma pusillum*, indicates that the two adult males listed were from the collection made by Natterer at Sapiteba in 1818. This fact is confirmed in Natterer's notes. One of these is the type; the other has been lost or destroyed. Transport 3 refers to a male and female taken at Ipanema in 1819; the male was sent to Temminck, and the female is the specimen figured by Wagner (1850, pl. 2, fig. 1). Transport 12 refers to a



FIG. 3. Cranium of *V. p. venilla*, adult female, B.M. No. 24.3.1.73, type. A. Dorsal view. B. Ventral view. Both $\times 5$.

single male taken at Ipanema in 1835; there is no further record or reference to this specimen.

A letter from Josef Natterer to Wagner dated August 2, 1843, in the files of the Naturhistorisches Museum, Vienna, mentions "1 male from Sapitiba 6 April," together with 100 other bats sent to Munich. Wagner (1850, p. 174) states that only one specimen [of *P. pusillum*] was received from Natterer's brother. With the exception of the type and possibly one at Leiden, none of Natterer's original specimens of *P. pusillum* can be found in any of the principal European museums. Two specimens in the Rijksmuseum van Natuurlijkje Historie in Leiden listed a and b by

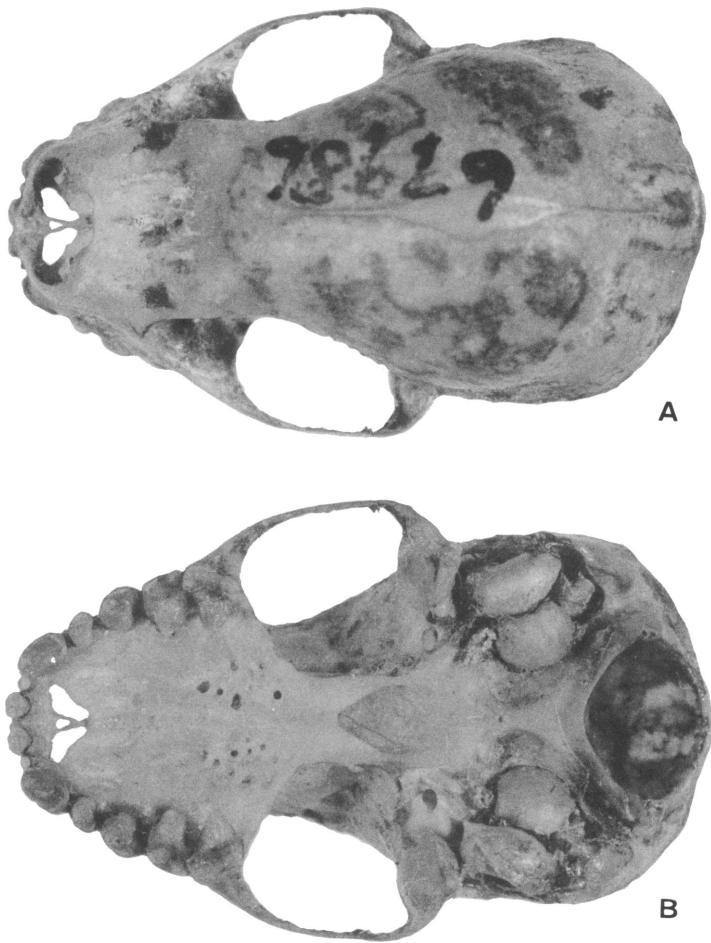


FIG. 4. Cranium of *V. p. thyone*, adult female, A.M.N.H. No. 67986. A. Dorsal view. B. Ventral view. Both $\times 5$.

Jentink (1888, p. 209) as *Chiroderma pusillum* Wagner from Roraima, British Guiana, have been identified by Husson as *Artibeus cinereus* (Gervais).

Vampyressa pusilla venilla Thomas

Figures 3, 5A, 13A

Vampyressa venilla THOMAS, 1924, Ann. Mag. Nat. Hist., ser. 9, vol. 13, p. 533.

TYPE LOCALITY: San Lorenzo, Peru; altitude 500 feet.

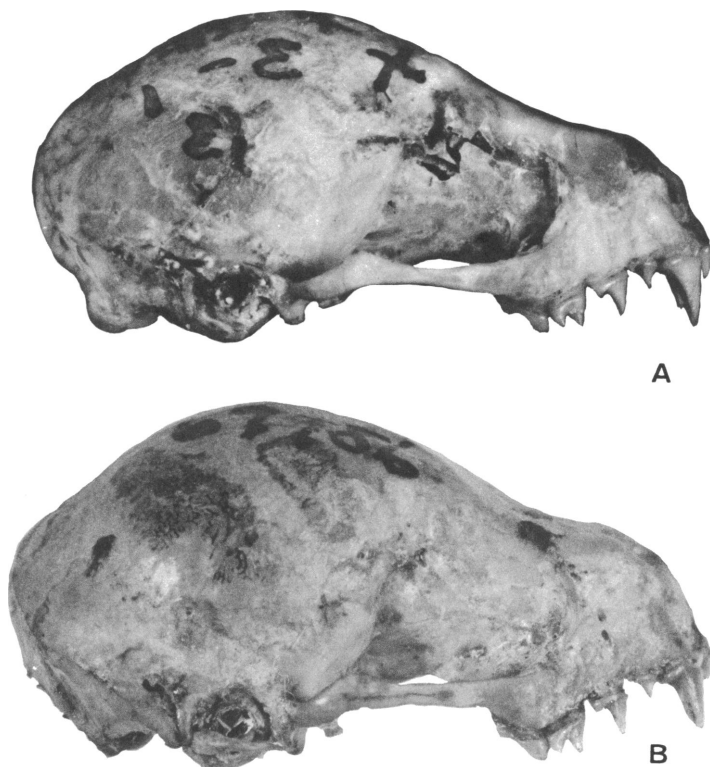


FIG. 5. Lateral view of cranium. A. *V. p. venilla*, adult female, B.M. No. 24.3.1.73, type. B. *V. p. thyone*, adult female, A.M.N.H. No. 67986. Both $\times 5$.

RANGE: Known only from type locality.

GENERAL CHARACTERS: Length of forearm, 30.5; similar in size, color, and general characters to *V. p. thyone* but differing in dental characters.

DESCRIPTION: Pelage on head and shoulders Wood Brown and becoming darker on lower back; facial stripes well defined. Skull slightly smaller than that of *V. p. thyone*; upper incisors close together and filling space between canines, inner incisors nearly parallel, inner edges in contact and not separated basally and convergent terminally as in *V. p. thyone*; upper molars much broader than long.

SPECIMENS RECORDED: Peru: San Lorenzo, one (type, B.M.).

REMARKS: The principal characters separating *V. p. venilla* from *V. p. thyone* seem to be the nearly straight, vertical, inner upper incisors and broad upper molars of *V. p. venilla*. In each of 21 specimens of *thyone* from Peru, Ecuador, Colombia, Panama, and Costa Rica that were

examined, the inner upper incisors are widely separated by a space at the base and strongly convergent terminally.

Thomas named *V. venilla* as a full species, but the differences he noted between *venilla* and *V. thyone* are not greater than those between subspecies of *V. pusilla*. When additional material from the type locality of *venilla* is available, the characteristics of the type and only known specimen of *venilla* may prove to be local or even individual variations of *thyone*.

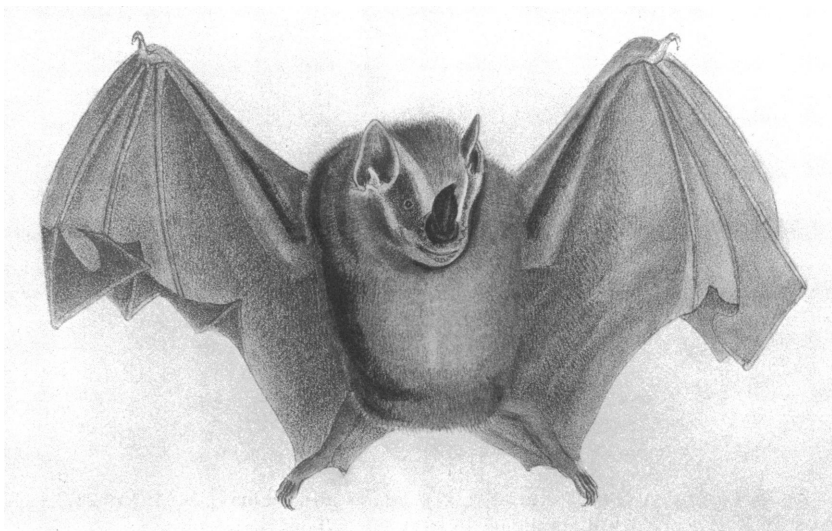


FIG. 6. *Vampyressa nattereri*. After Wagner (1850, pl. 2, fig. 1).

Vampyressa pusilla thyone Thomas

Figures 4, 5B, 12A

Vampyressa thyone THOMAS, 1909, Ann. Mag. Nat. Hist., ser. 8, vol. 4, p. 231.

Vampyressa minuta MILLER, 1912, Proc. U. S. Natl. Mus., vol. 42, p. 25. Type from Cabina, Panama.

Vampyressa thyone, HERSHKOVITZ, 1949, Proc. U. S. Natl. Mus., vol. 99, p. 443.

TYPE LOCALITY: Chimbo, Bolívar Province, western slope of Cordillera Occidental, western Ecuador; altitude 1000 feet.

RANGE: Northeastern South America from southeastern Peru north to northern Colombia, Panama, and southeastern Costa Rica, east to Las Quignas, Venezuela.



FIG. 7. Cranium of *V. nattereri*, adult male, R.M. No. 17256, type. A. Dorsal view. B. Ventral view. Both $\times 5$.

GENERAL CHARACTERS: Length of forearm, 30–32; pelage pale buffy; facial stripes, though present, short and inconspicuous.

DESCRIPTION: Upper parts anteriorly Pinkish Buff grading to Saccardo's Umber or Sayal Brown on lower back; under parts rather darker than Light Buff; facial stripes white, the upper pair extending back to between ears. Skull with a short, broad rostrum, large, full braincase; upper incisors very unequal, the inner more than twice as

high as outer; cutting edges bifid, separated by a space and converging distally but not in contact at tip; upper molars broader than long; lower incisors small, completely filling space between canines, their cutting edges faintly trifid.

SPECIMENS EXAMINED: *Colombia*: Jimenez, one (B.M.); Macarena Mountains, one (A.M.N.H.); Sipí, one (B.M.). *Costa Rica*: Agua Buena, two (A.M.N.H.). *Ecuador*: Boca Curary, two (A.M.N.H.). *Peru*: Marcapata, three (C.M.); Rio Suno, three (A.M.N.H.); San José, six (A.M.N.H.). *Panama*: Tacarcuna Village, Darien, two (U.S.N.M.). *Venezuela*: Las Quignas, one (A.M.N.H.).

REMARKS: As noted by Hershkovitz (1949, p. 444) and Sanborn (1953, p. 1), *V. minuta* Miller is almost certainly a synonym of *V. p.*



FIG. 8. Lateral view of cranium of *V. nattereri*, adult male, R.M. No. 17256, type. $\times 5$.

thyone Thomas, and cranial measurements show that it comes well within the range of the individual variation of Thomas' form.

In the description of *V. thyone*, Thomas followed Peters (1866, p. 395) in the assumption that a larger specimen in the Leiden museum represented typical *V. pusilla*. *Vampyressa thyone* is clearly a subspecies of *pusilla*. Except for a somewhat heavier dentition in *pusilla*, specimens of *thyone* of an age similar to that of the type of *pusilla* agree closely with *pusilla* in size, color, pelage, and dental details.

***Vampyressa nattereri*, new species**

Figures 6, 7, 8, 12B

TYPE: R.M. No. 17256, adult male; probably Ipanema, district of São Paulo, Brazil; collector and date uncertain, probably Johann

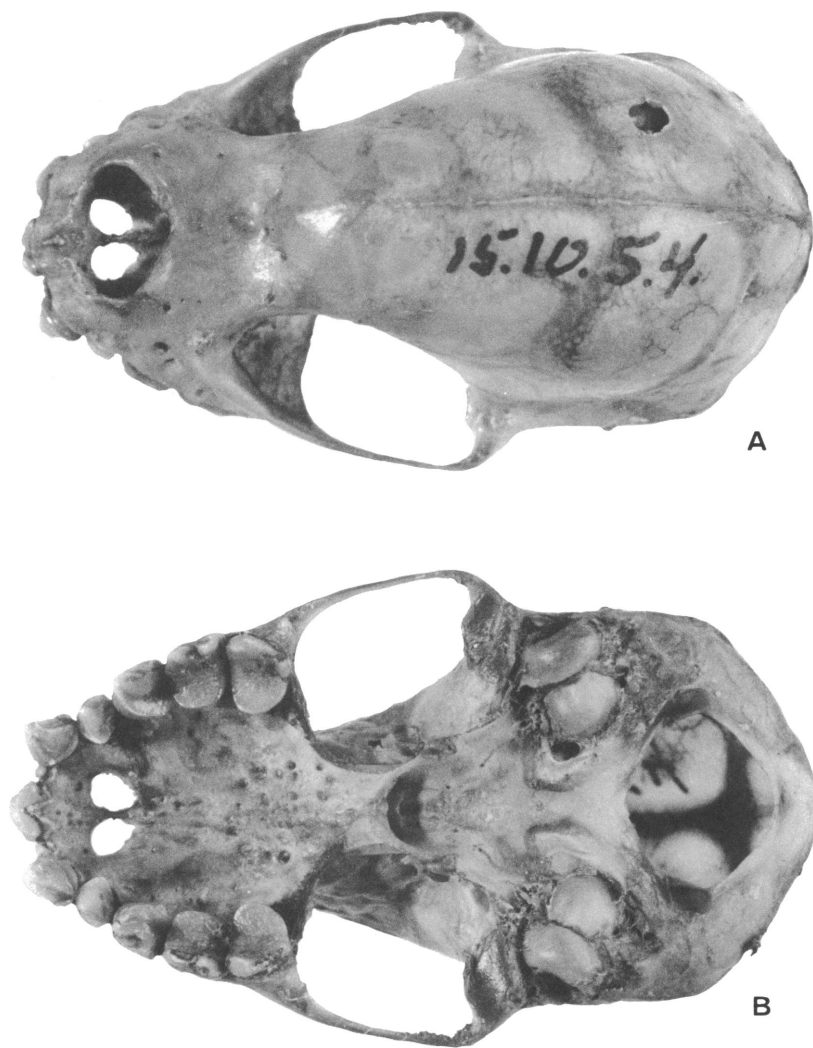


FIG. 9. Cranium of *V. nymphaea*, adult male, B.M. No. 15.10.5.4. A. Dorsal view. B. Ventral view. Both $\times 5$.

Natterer and August 18, 1819; original number 19; skin in badly faded condition, skull originally in skin but removed and complete.

DISTRIBUTION: Known only from the type locality.

DIAGNOSIS: Size relatively large, length of forearm about 35.0; inner upper incisors widely separated at base, converging terminally but not

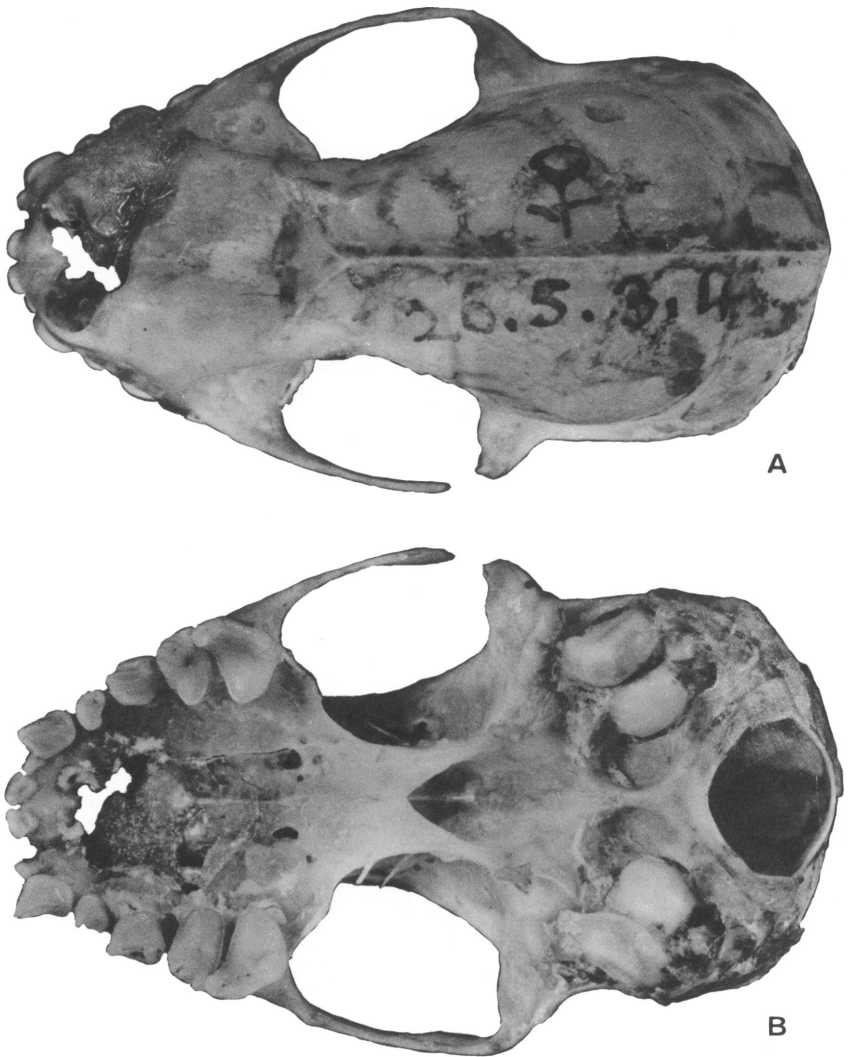


FIG. 10. Cranium of *V. melissa*, adult female, B.M. No. 26.5.3.4, type. A. Dorsal view. B. Ventral view. Both $\times 5$.

in contact at tip; first upper molar slightly broader than long; second upper molar triangular in outline, the anterior border strongly concave and posterior border slightly convex. Cranial characters and dentition in general not unlike those of *V. p. thyone* Thomas of western South America.

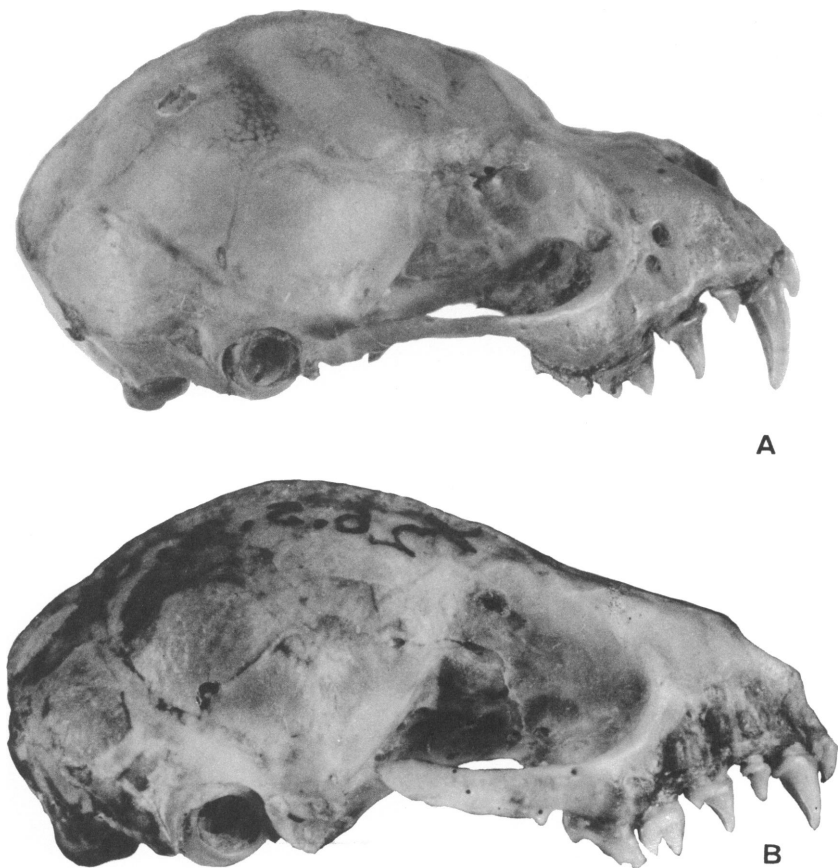


FIG. 11. Lateral view of cranium. A. *V. nympheaea*, adult male, B.M. No. 15.10.5.4. B. *V. melissa*, adult female, B.M. No. 26.5.3.4, type. Both $\times 5$.

DESCRIPTION OF TYPE: Color of pelage in present bleached condition: upper parts Cinnamon Brown, base of hair light yellowish brown; under parts light yellowish. Facial stripes completely faded out owing to long exposure to daylight. Natterer gave the color of an Ipanema specimen as dark reddish brown; under parts paler than back; white facial stripes conspicuous and strongly marked, the inner pair extending back from noseleaf to between ears; tip of ears obtusely pointed. Superior outline of skull slightly depressed in orbital region; sagittal crest undeveloped; ramus of mandible relatively deep, the ascending branch elevated to an angle of almost 90 degrees.

MEASUREMENTS OF TYPE: Forearm, 35; tibia, 13; hind foot, 10; calcar,

3.5. Skull: Greatest length, 20.1; condylobasal length, 18.3; zygomatic breadth, 12.1; interorbital breadth, 5.2; mastoid breadth, 10.1; width across M^2-M^2 , 8.6; mandibular tooth row, $C-M_2$, 7.0; maxillary tooth row, $C-M^2$, 6.7.

SPECIMENS RECORDED: Brazil: Ipanema, one (type, R.M.); two (both destroyed by fire or discarded, formerly N.M.).

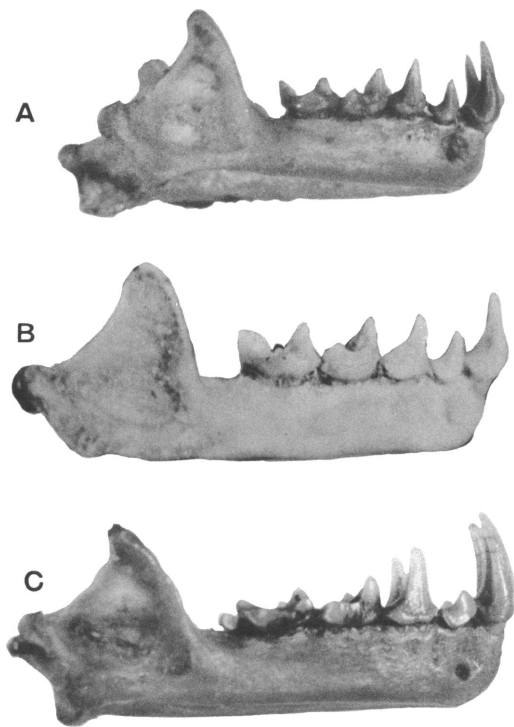


FIG. 12. Lateral view of ramus. A. *V. p. thyone*, A.M.N.H. No. 67986. B. *V. nattereri*, R.M. No. 17256. C. *V. nymphaea*, B.M. No. 15.10.5.4. Both $\times 5$.

REMARKS: There seems sufficient reason to believe that the male specimen collected by Johann Natterer at Ipanema, Brazil, on June 18, 1819, is R.M. No. 17256. This specimen is at the present time without history other than the notation of Brazil on the label. Peters (1866, p. 395) referred to it as a male, though it is impossible to determine the sex from the dried skin. It was collected a considerable time prior to 1866, a species record card of Natterer's Brazilian collection in Vienna shows that a male specimen of *P. pusillum* collected by Natterer at

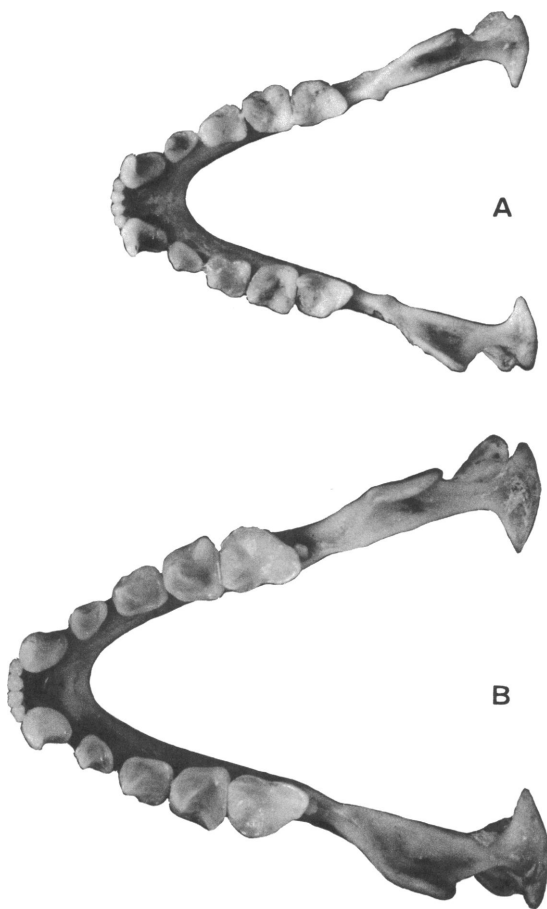


FIG. 13. Dorsal view of mandible. A. *V. p. venilla*, B.M. No. 24.3.1.73. B. *V. melissa*, B.M. No. 26.5.3.4. Both $\times 5$.

Ipanema in 1819 was given to Temminck who was then at the Museum d'Histoire Naturelle du Pays-Bas, now known as the Rijksmuseum van Natuurlijke Historie, Leiden.

In the absence of published descriptions and figures of the cranial and dental characters of the type of *V. p. pusilla*, Peters (1906) figured the skull of the Rijksmuseum specimen as typical *V. p. pusilla*, and Oldfield Thomas based his descriptions of new forms on Peters' figures. A comparison of the dentition of the Leiden Museum specimen with that of the type of *V. p. pusilla* shows that two species are involved, with the

differences between the two specimens well beyond the range of individual variation and of age characters. The left ear of the type of *V. nattereri* is badly damaged, the upper part being completely lacking. The right ear is slightly damaged at the tip, but its shape is not quite

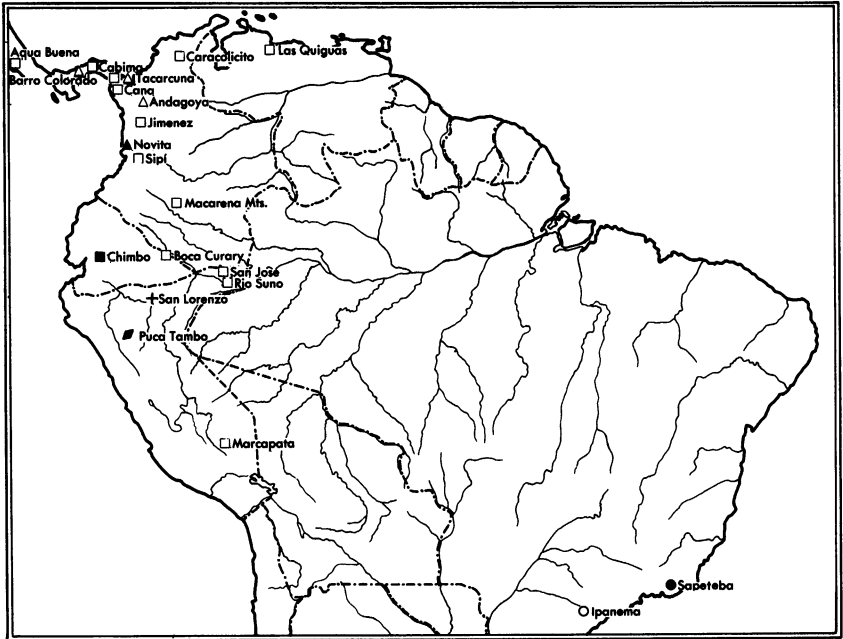


FIG. 14. Map of northern part of South America showing localities referred to in the text and in table. Symbols: ●, type locality of *V. p. pusilla*; +, type locality of *V. p. venilla*; ■, type locality of *V. p. thylene*; □, recorded specimens of *V. p. thylene*; ○, type locality of *V. nattereri*; ▲, type locality of *V. nymphaea*; △, recorded specimens of *V. nymphaea*; ■, type locality of *V. melissa*.

so pointed as the ears shown in Wagner's figure (1850, pl. 2, fig. 1). On the other hand, the ears of the type of *V. nattereri* are not so low and rounded at the tip as are those of the type of *V. p. pusilla*.

Vampyressa nymphaea Thomas

Figures 9, 11A, 12C

Vampyressa nymphaea THOMAS, 1909, Ann. Mag. Nat. Hist., ser. 8, vol. 4, p. 230.

TYPE LOCALITY: Novita, Rio San Juan, Choco, Colombia; altitude 150 feet.

RANGE: Western Colombia and north to the Canal Zone, Panama.

GENERAL CHARACTERS: Length of forearm, about 36; color dark, facial stripes conspicuous; a median white stripe on lower back usually present in adult; skull large, and usually strongly depressed in inter-orbital region.

DESCRIPTION: Color of type smoke gray, rather paler below (Thomas); a subadult female from Barro Colorado, Panama, is Dresden Brown on upper parts and Deep Mouse Gray on under parts; facial stripes white, broad, and conspicuous, the upper pair extending back to behind ears; ears dark brown and narrowly edged with yellowish white. Skull similar to that of *thyone* in structure but larger and teeth differently shaped; second upper premolar rounded, triangular in section, without a conspicuous postero-internal concavity; first upper molar barely as broad as long and with a broad, rounded, quadrangular, internal lobe; second upper molar tending to become quadrangular in shape and not triangular as in *thyone*; first lower molar longer than broad, with one high antero-external cusp and a broad posterior basal ledge.

SPECIMENS EXAMINED: *Colombia:* Andagoya Rio Condoto, one skull (B.M.). *Panama:* Barro Colorado, one (U.K.). Tacarcuna Village, Darien, one (U.S.N.M.).

REMARKS: The specimens from Panama agree in all essentials with the specimen from Andagoya, Colombia, which was considered by Thomas as a typical *V. nymphaea*.

Vampyressa melissa Thomas

Figures 10, 11B, 13B

Vampyressa melissa THOMAS, 1926, Ann. Mag. Nat. Hist., ser. 9, vol. 18, p. 157.

TYPE LOCALITY: Peru, Puca Tambo; altitude 7100 feet.

RANGE: Known only from the type locality.

GENERAL CHARACTERS: Length of forearm, 37.5; pelage dusky, relatively long and soft; about the size of *V. nymphaea*, but facial stripes less distinct, and differing in cranial and dental characters.

DESCRIPTION: Upper parts dull brown, the hairs slaty at base, with a dull whitish subterminal band and tipped with brown; under parts paler than back; ears brown and not edged with white; hind limbs and interfemoral membrane more heavily haired than those of other species of *Vampyressa*. Skull about like that of *nymphaea* but more robust; sagittal crest well developed; inner upper incisors long, slender, nearly parallel-sided, cutting edges with two distinct subterminal cusps; outer upper incisors very small; anteroposterior length of anterior upper molar much less than usual, being scarcely more than half its transverse width;

second lower molar large, its postero-internal cusp very high; a minute third molar present on each side of lower jaw.

SPECIMEN RECORDED: Peru, Puca Tambo, one (type, B.M.).

REMARKS: *Vampyressa melissa* is a strongly marked form. Its large size, dull coloration, inconspicuous facial markings, and peculiar dentition readily distinguish it from other species of the genus.

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