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OCCASIONAL PAPERS OF THE MUSEUM OF
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LOUISIANA STATE UNIVERSITY

BATON ROUGE, LOUISIANA

NEW SPECIES OF *PHILANDER* (MARSUPIALIA:DIDELPHIDAE)
AND *MIMON* (CHIROPTERA:PHYLLOSTOMIDAE) FROM PERU

By ALFRED L. GARDNER¹ AND JAMES L. PATTON²

Included among the mammals acquired in Perú during 1968, 1970, and 1971 and deposited in the collections of the Louisiana State University Museum of Zoology (LSUMZ) and the Museum of Vertebrate Zoology, University of California, Berkeley (MVZ) are two apparently undescribed species. One is a black long-haired species of the "gray" four-eyed opossum genus *Philander* from the eastern lowlands, and the other is an unlined reddish to honey-brown colored species of the phyllostomine bat genus *Mimon* (*Anthorbina*) from the eastern slopes of the Andes.

We are pleased to name the opossum after Mr. John S. McIlhenny as a token of appreciation for his longstanding support of biological research in the Neotropics under the auspices of the Louisiana State University Museum of Zoology.

The bat is named in honor of the late Dr. Maria Koepcke, who served as Curator of Birds and Mammals at the Museo de Historia Natural "Javier Prado" de la Universidad Nacional Mayor de San Marcos, Lima, and whose untimely death terminated years of dedicated research on the fauna of Perú.

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PHILANDER MCILHENNYI new species

Holotype.—Adult female (skin with skull), Louisiana State University Museum of Zoology No. 16395, collected 10 April 1971 by Alfred L. Gardner, original field number 11541.

Type locality.—Balta ($10^{\circ} 08' S$, $17^{\circ} 13' W$), Río Curanja, elevation *ca.* 300 meters, Departamento de Loreto, Perú.

Distribution.—Known only from the type locality.

Diagnosis.—Blackest of known *Philander*; fur long and dense over dorsum and on proximal portion of tail; furred base of tail long, exceeding 22 per cent of tail length; posterior portion of nasals long, extending to near postorbital processes; lacrimals expanded anteriorly from lacrimal foramina; labial margin of styler shelf of third upper molar deeply indented.

Description.—Size average for *Philander*; fur of dorsum and base of tail unusually long (Figure 1); color of dorsum black, becoming blackish to silvery gray on sides of neck, upper shoulders, and sides of body (the paler coloration of sides often contrasting sharply with the black of mid-dorsum);

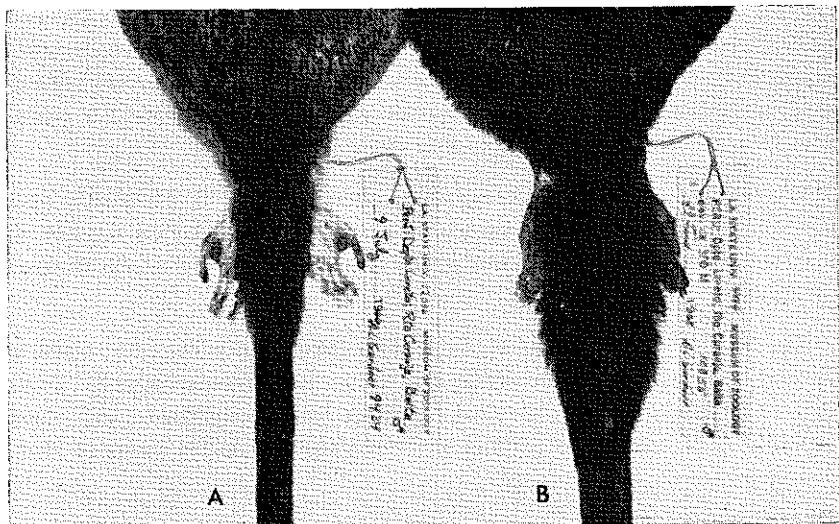


FIGURE 1. Furred base of tails of (A) *Philander opossum*, LSUMZ 12006, and (B) *P. mcilhennyi*, LSUMZ 14014. $\times 1/2$.

venter only slightly paler in color than sides and sometimes with irregular-shaped, small, whitish patches on lower throat and abdomen (one specimen has a creamy white diamond-shaped patch between rami); head black except for sharply contrasting whitish postocular spots, silvery to buffy white cheeks, grayish buff preauricular patches, and nearly obsolete whitish spot behind ears; ears black; forelimbs and hind limbs black with lower inner surfaces flecked with silvery gray; forefeet black with white toes; hind feet and toes all black or toes irregularly blotched with white; furred base of tail all black except for silvery gray flecking on proximal undersurface; scaled bare portion of tail black on proximal half and white distally; skull large with a broad elongate rostrum; nasals long, narrow, elevated above maxillae at about mid-length, and terminating posteriorly near level of postorbital processes; zygomatic arches robust; palate broad anteriorly and with a wide postpalatal shelf; lacrimals expanded anteriorly from small lacrimal foramina; paraoccipital processes massive with blunt tips; dentition heavy throughout; third upper molars with a large, laterally expanded metacone and a prominent indentation on the labial margin of the styler shelf (Figure 2).

Measurements.—Measurements in millimeters of the holotype: total length, 579; tail, 298; hind foot, 43; ear, 39; greatest length of skull, 72.8; condylobasal length, 72.3; palatal length, 43.1; length of nasals, 37.2; zygomatic breadth, 33.6; breadth of brain case, 19.3; interorbital constriction, 12.6; postorbital constriction, 9.0; breadth across upper molars (M^3 - M^3), 21.8; breadth across canines, 10.8; length of maxillary toothrow (C - M^4), 32.4; length of upper molar series (M^1 - M^4), 15.6; length of mandible, 56.9; length of mandibular toothrow (C - M_4), 34.7. Selected measurements are also presented in Tables 1 and 2.

Comparisons.—The strikingly different *P. mcilhennyi* is readily distinguished from sympatric *P. opossum* by its black coloration, much longer fur, more extensively haired base of tail (averaging 26.6 per cent of tail length in nine *mcilhennyi* in contrast to 16.9 per cent in ten *opossum*), larger size (see measurements in Tables 1 and 2), greater length of the nasals (posteriorly elongate in *mcilhennyi* as opposed to short in *opossum*), configuration of the lacrimals (anteriorly expanded in *mcilhennyi* instead of short as in *opossum*), lower zygomatic arch (highly arched anteriorly-posteriorly in *opossum*), and the relatively deep indentation of the labial margin of the third upper molars. The measurements presented in Tables 1 and 2 demonstrate that individuals of *P. mcilhennyi* are consistently larger than sympatric *P. opossum* of the same sex and age class, although larger samples of both species might

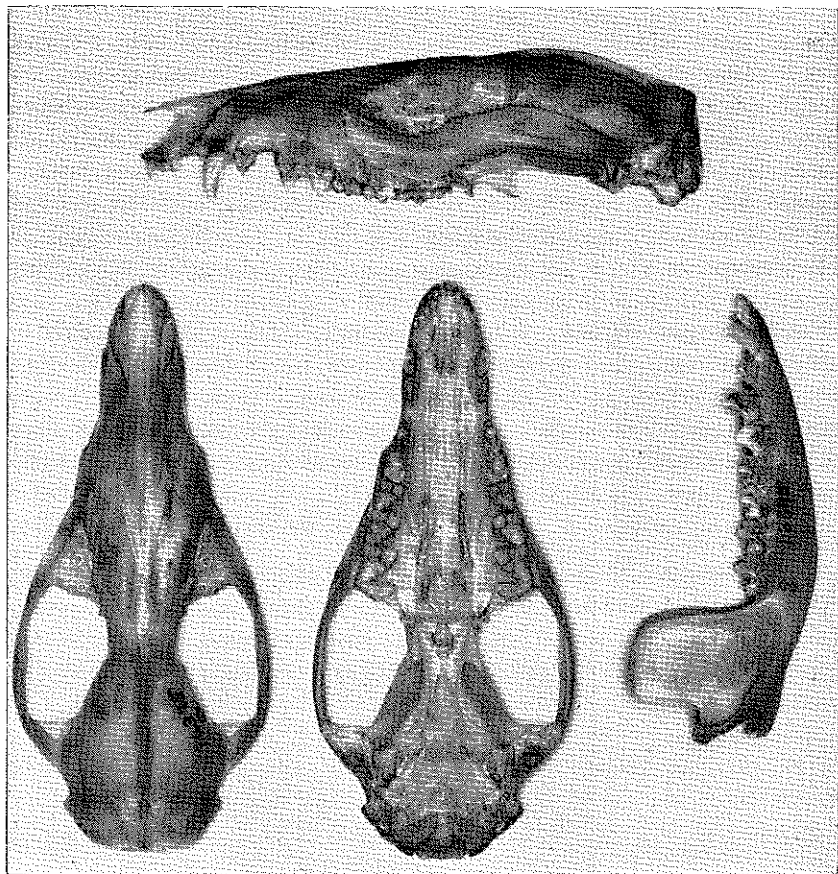


FIGURE 2. *Philander mcilhennyi*, holotype, LSUMZ 16395. $\times 1$.

diminish the magnitude of these differences. Size differences are not always as distinct between Balta *P. mcilhennyi* and individuals of *P. opossum* from elsewhere in Perú. Also, a few individuals of *P. opossum* from populations in Costa Rica, Brazil, and Perú (except Balta) resemble *P. mcilhennyi* in certain features of the nasals, lacrimals, and the upper third molars. Nonetheless, the black coloration, especially the very dark venter, and the exceedingly long fur characterizing *P. mcilhennyi* have not been found among any *P. opossum* examined.

Specimens of *P. mcilhennyi* were compared with two very dark *P. opossum*

from Depto. Ayacucho (a male from San José, ca. 1,000 m, on the Río Santa Rosa, which empties into the Río Apurimac at Hacienda Luisiana, and a female from Huanhuachayo, ca. 1,660 m, on the slope above San José). The two Depto. Ayacucho *P. opossum* are blackish in coloration and are probably referable to the dark subspecies *P. opossum andersoni* Osgood. While superficially similar to *P. mcilhennyi* in their large size, dark overall color pattern, and relatively long nasals, these two specimens differ from *P. mcilhennyi* in the same manner as other *P. opossum* in having shorter fur; paler sides, legs, and venter; broader nasals, narrower anterior palate; more highly arched zygoma; somewhat weaker dentition; and lack of a deep angular indentation on the labial margin of the upper third molars.

Remarks.—There is no doubt that *P. mcilhennyi* is closely related to *P. opossum* and they are the only species recognized in the genus, as presently understood. *Philander mcilhennyi* seems to resemble the Peruvian forms described as *Metachirus andersoni* (= *P. opossum andersoni*) by Osgood (1913:95-96) from Yurimaguas, Depto. Loreto, and *Metachirus opossum nigratus* Thomas, 1923, from Utcuyacu, Depto. Junín. The latter is treated as a synonym of *P. opossum canus* Osgood, by Cabrera (1958:35), although it seems more likely a synonym of *andersoni*. Nevertheless, the descriptions of these and other dark or melanized *Philander opossum* (*Metachirus melanurus* Thomas, 1899; *Metachirus opossum melantho* Thomas, 1923) fail to mention the almost uniformly blackish venter and the very long fur characterizing *P. mcilhennyi*.

Three *P. mcilhennyi* have worn pelage and the split and frayed ends of the longer hair impart a brownish color to the otherwise very dark back, sides, and haired base of tail.

Animals were segregated by sex and age class and comparisons were made only between individuals of the same sex and age class for the purpose of assessing size differences between species. Age classes are based on tooth eruption and wear pattern (Gardner, 1972). Tables 1 and 2 include measurements from only those individuals assignable to age classes 4 (all permanent teeth in place except the last upper molar) and 5 (all teeth fully erupted), and all are considered to have been reproductively mature adults when prepared as museum study specimens.

Three females were recorded with pouched young: one with four 12-millimeter young on 29 June 1968; another with five 3-millimeter young

TABLE 1. SELECTED MEASUREMENTS IN MILLIMETERS OF THREE MALE *PHILANDER MCILHENNYI* AND FIVE MALE *P. OPOSSUM* FROM BALTA, DEPTO. LORETO, PERÚ.

Character	<i>P. mcilhennyi</i> Mean (Range)	<i>P. opossum</i> Mean (Range)
Total length	576.3 (551-608)	525.6 (500-546)
Tail	299.3 (276-329)	277.8 (253-299)
Hind foot	44.3 (41-49)	42.0 (39-46)
Ear	41.3 (41-42)	35.2 (34-36)
Greatest length of skull	72.9 (66.8-76.6)	66.2 (63.4-68.8)
Palatal length	43.8 (40.4-45.9)	39.8 (37.6-41.8)
Length of nasals	37.4 (34.0-39.8)	30.4 (28.6-32.3)
Zygomatic breadth	38.2 (37.7-38.7) ¹	33.4 (31.8-34.4)
Breadth of brain case	19.1 (18.2-19.8)	18.5 (18.1-19.2)
Interorbital breadth	13.0 (11.6-13.9)	11.1 (11.0-11.4)
Breadth across upper molars	23.1 (22.7-23.5) ¹	19.5 (19.1-20.7)
Breadth across upper canines	11.8 (10.7-12.4)	10.2 (9.8-10.7)
Length of maxillary toothrow	32.1 (32.0-32.2) ¹	28.7 (27.6-30.5) ²
Length of upper molar series	15.4 (15.2-15.5) ¹	13.6 (12.9-14.5) ²

The mean and range are given for each character for adult (age classes 4 and 5) male *P. mcilhennyi* and *P. opossum*. Breadth across upper molars was taken across third upper molars and length of upper molar series was taken from the anteriormost face of M¹ to the back of M⁴.

¹ Two specimens

² Four specimens

on 16 July 1968; and a third with five 22-millimeter young on 10 April 1971.

Balta is a small Cashinahua Indian village on the Río Curanja, a tributary of the Río Alto Purús. The dry tropical forest vegetation is undisturbed except for scattered small gardens. Both species of *Philander* were captured in the same vicinity in live traps placed along small forest streams.

Specimens examined.—*PHILANDER MCILHENNYI*. PERÚ: Departamento de Loreto, Balta, Río Curanja, ca. 300 m, four males and five females (LSUMZ 14013-14015 and 16393-16395; MVZ 136379-136381). *PHILANDER OPOSSUM*. COSTA RICA: Provincia de Limón, Pacuare, Río Pacuare, one male and one female (LSUMZ 12630 and 12631); Provincia de San José, Santa Ana, one female (LSUMZ 15752). BRAZIL: Estado de Amapá, Serra do

TABLE 2. SELECTED MEASUREMENTS IN MILLIMETERS OF FIVE FEMALE *PHILANDER MCILHENNYI* AND THREE FEMALE *P. OPOSSUM* FROM BALTA, DEPTO. LORETO, PERÚ.

<i>Character</i>	<i>P. mcilbennyi</i> Mean (Range)	<i>P. opossum</i> Mean (Range)
Total length	589.0 (579-597)	502.3 (489-520)
Tail	308.8 (298-322)	273.7 (269-282)
Hind foot	44.4 (42-50)	38.0 (35-43)
Ear	38.4 (35-42)	33.0 (31-35)
Greatest length of skull	73.0 (70.0-74.9)	62.0 (57.9-67.9)
Palatal length	43.6 (42.9-44.5)	37.7 (34.7-41.7)
Length of nasals	37.5 (35.5-41.6)	27.9 (27.2-28.8)
Zygomatic breadth	35.2 (32.5-36.9)	30.7 (28.5-33.0)
Breadth of brain case	19.1 (17.6-20.1)	17.6 (16.6-18.3)
Interorbital breadth	12.9 (12.0-13.9)	10.1 (9.6-11.1)
Breadth across upper molars	22.5 (21.8-23.9)	18.6 (17.8-19.7)
Breadth across upper canines	11.4 (10.8-12.4)	9.5 (9.0-10.2)
Length of maxillary toothrow	31.7 (31.1-32.4) ¹	27.5 (26.0-29.9)
Length of upper molar series	15.4 (15.1-15.6) ¹	13.4 (12.7-14.5)

The mean and range are given for each character for adult (age classes 4 and 5) female *P. mcilbennyi* and *P. opossum*. See Table 1 for descriptions of certain measurements.

¹ Four specimens

Navio, two males (LSUMZ 15314-15315). PERÚ: *Departamento de Loreto*, Yarinacocha, two males and one female (LSUMZ 14017, 14018, and 16397); Balta, Río Curanja, ca. 300 m, six males and four females (LSUMZ 12006-12010, 14011, 14012, 14016, and 16396; MVZ 136378); *Departamento de Ayacucho*, San José, Río Santa Rosa, ca. 1,000 m, one male (LSUMZ 16398); Huanhuachayo, ca. 1,660 m, one female (LSUMZ 16399).

MIMON KOEPCKEAE new species

Holotype.—Adult female (skin with skull), Louisiana State University Museum of Zoology No. 16447, collected 9 May 1971 by Alfred L. Gardner, original field number 11705.

Type locality.—Huanhuachayo (12° 44' S, 73° 47' W), elevation ca. 1,660 meters, *Departamento de Ayacucho*, Perú.

Distribution.—Known only from the vicinity of the type locality (Huanhuachayo and nearby Estera Ruana).

Diagnosis.—Size average for *Mimon* (*Anthorbhina*); color reddish brown to golden brown; dorsal stripe absent; nose leaf slender, crenulated along proximal margin, and sparsely fringed with short fine hair; skull small with narrow rostrum; auditory bullae narrow; first and second upper molars with a narrow, well-defined vertical cleft separating protocone and hypocone.

Description.—Size average for *Mimon*, forearm 46.9 to 50.2 mm; color of dorsum bright reddish-brown, varying among the three specimens at hand from Mikado Brown (capitalized color terms follow Ridgway, 1912) to Russet and Cinnamon Brown with the individual hairs appearing unicolored; prominent but small pale yellow to yellowish-brown patch at posterior base of ears; venter somewhat paler than dorsum, with hairs conspicuously tipped yellowish-brown; under surface of proximal one-half of forearm clothed with whitish or pale brown hairs; upper surface of forearm in region of elbow, lateral margins of parapatagium, and upper surfaces of hind feet and toes sparsely clothed with relatively long, yellowish buff, hairs; nose leaf long, crenulated along proximal margin, and sparsely fringed with short fine hair; ears and flight membranes blackish brown; skull small with a low sagittal crest, narrow auditory bullae, and a short, comparatively broad, palate; rostrum slender, tapering anteriorly, and lacking a median depression; lingual cingulum of first and second upper molars with a conspicuous, but narrow, vertical cleft between protocone and hypocone; lower jaws slender with post-dental portion of ramus not conspicuously elevated above tooth-bearing portion (Figure 3).

Measurements.—Measurements in millimeters of the holotype: total length, 80; tail, 16; foot, 9; tragus, 10; ear, 23; forearm, 47.4; metacarpal III, 46.8; metacarpal IV, 47.1; metacarpal V, 48.6; tibia, 18.2; greatest length of skull, 21.9; condylobasal length, 18.9; palatal length, 8.8; zygomatic breadth, 11.6; breadth of brain case, 8.6; mastoidal breadth, 10.9; post-orbital constriction, 4.2; breadth across upper molars, 8.2; breadth across canines, 5.0; length of maxillary toothrow, 7.5; length of mandibular toothrow, 8.1; length of mandible, 13.9. Selected measurements are also presented in Table 3.

Comparisons.—*Mimon* (*Anthorbhina*) *koepckeae* is closely related to *Mimon* (*Anthorbhina*) *crenulatum* (E. Geoffroy) and both differ from *Mimon*, *sensu stricto* (*M. bennettii* and *M. cozumelae*), in the same ways

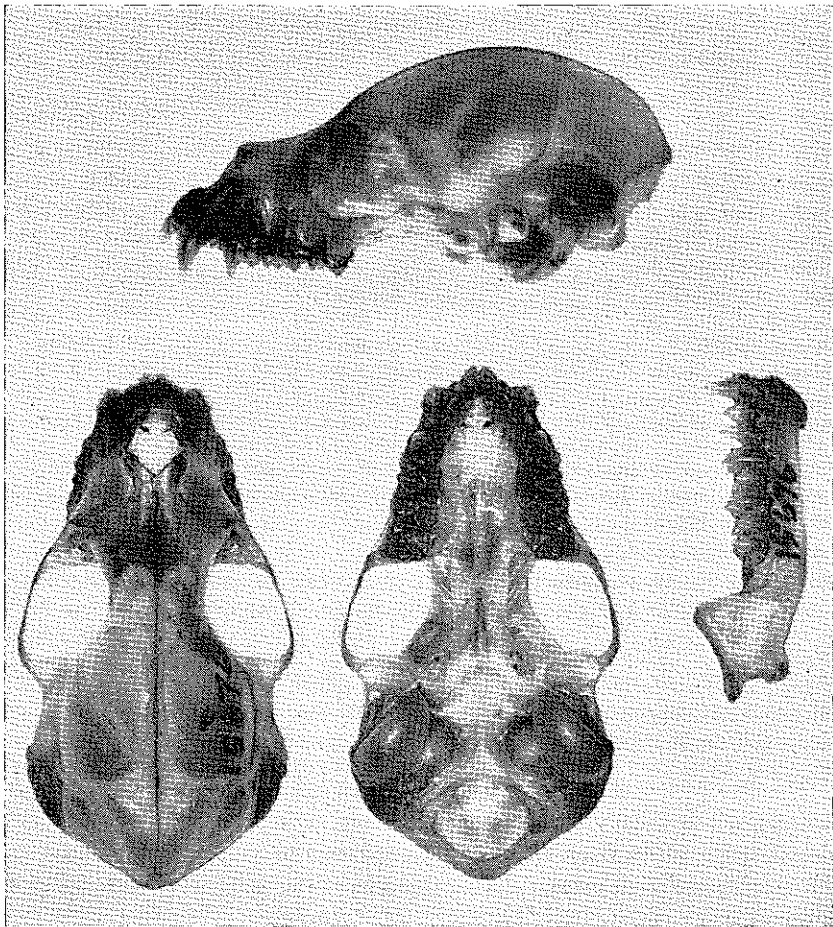


FIGURE 3. *Mimon koepeckae*, LSUMZ 15676. $\times 3$.

(see Handley, 1960:462; Husson, 1962:97-98). *Mimon koepeckae* can be readily distinguished from *M. crenulatum* by the yellowish to honey-brown dorsal coloration, lack of a dorsal stripe, and sparse and shorter pubescence along margin of noseleaf; by smaller skull with a less inflated and more tapering rostrum lacking a distinct median depression; by distinctly smaller less inflated auditory bullae; and by narrow, but conspicuous, vertical cleft in the lingual cingulum between the protocone and hypocone of first and second upper molars (see Figure 3). The smaller auditory bullae of *M.*

TABLE 3. SELECTED MEASUREMENTS IN MILLIMETERS OF THREE
MIMON KOEPCKEAE AND SEVEN *M. CRENULATUM* FROM PERÚ.

Character	<i>M. koepckeeae</i> Mean (Range)	<i>M. crenulatum</i> Mean (Range)
Forearm	48.2 (46.9-50.2)	50.3 (48.9-51.7)
Greatest length of skull	21.8 (21.7-21.9)	23.3 (22.6-23.8)
Condylbasal length	18.8 (18.6-19.0)	20.2 (19.8-20.6)
Interorbital breadth	4.2 (4.1-4.2)	4.4 (4.2-4.5)
Zygomatic breadth	11.6 (11.4-11.7)	12.7 (12.4-13.1)
Breadth of brain case	8.5 (8.4-8.6)	8.8 (8.4-9.1)
Palatal length	8.7 (8.6-8.8)	9.8 (9.4-10.4)
Maxillary toothrow	7.5 (7.5-7.6)	8.3 (8.1-8.6)
Mandibular toothrow	8.1 (8.1-8.2)	9.0 (8.8-9.3)
Breadth across molars	8.1 (8.1-8.2)	8.9 (8.6-9.1)

The mean and range are given for each character for *M. koepckeeae* and *M. crenulatum*. Greatest length of skull includes the incisors; breadth across molars was taken across M²-M².

koepckeeae are also relatively narrower than those of *M. crenulatum*—their width, expressed as a percentage of their length, is 52.6 (from 52.2 to 53.5 in three *koepckeeae*) as opposed to 61.9 (55.6 to 66.7) in seven Peruvian *crenulatum*). A vertical groove is usually present on the lingual surface of the first and second molars of *M. crenulatum*; however, it is never as deep and rarely continues through the cingulum as in *M. koepckeeae*.

Handley (1960:463) states that the median dorsal stripe of *M. crenulatum longifolium* is usually reduced, often obscure, and occasionally absent. The dorsal stripe varies from broad and conspicuous to very faint among seven *M. crenulatum* from eastern Perú assignable to the same subspecies, whereas a dorsal stripe is completely lacking in *M. koepckeeae*.

Remarks.—Although in agreement with Handley's (1960) dispensation of the named forms of *M. crenulatum*, we disagree with his (p. 460) opinion that *Anthorbina* and *Mimon* are not distinguishable even as subgenera. Instead, we prefer to follow the direction of Cabrera (1958:66) and Goodwin and Greenhall (1961:236) by retaining *Anthorbina* as a subgenus of *Mimon*—a point of view strengthened by the discovery of the species described herein as *M. koepckeeae*.

Huanhuachayo is the type locality not only of *M. koepckeeae* but also of two other species of bat, *Sturnira nana* Gardner and O'Neill, 1971, and

Vampyrops nigellus Gardner and Carter, 1972. A short description of this locality is given with the description of *Sturnira nana* (Gardner and O'Neill, 1972:6). Estera Ruana is the name of another small clearing at about 150 meters elevation above Huanhuachayo on the trail to Tambo.

Specimens examined.—*MIMON KOEPCKEAE*. PERÚ: *Departamento de Ayacucho*, Huanhuachayo, ca. 1,660 m, one male and one female (LSUMZ 15675 and 16447); Estera Ruana, one male (LSUMZ 15676). *MIMON CRENU-LATUM*. PERÚ: *Departamento de Loreto*, Balta, Río Curanja, ca. 300 m, four males and three females (LSUMZ 14087-14092 and 16446).

ACKNOWLEDGMENTS

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