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Musonycteris harrisoni.

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Musonycteris Schaldach and McLaughlin, 1960

Musonycteris Schaldach and McLaughlin, 1960:1. Type species *Musonycteris harrisoni* Schaldach and McLaughlin, 1960.

Musonycteris harrisoni Schaldach and McLaughlin, 1960

Trumpet-nosed Bat

Musonycteris harrisoni Schaldach and McLaughlin, 1960:3. Type from "2 km SE Pueblo Juárez (formerly Hacienda La Magdalena), Colima, México."
Choeronycteris harrisoni Handley, 1966:86.

CONTEXT AND CONTENT. Order Chiroptera, Suborder Microchiroptera, Family Phyllostomidae, Subfamily Glossophaginae (Koopman, 1993). *Musonycteris harrisoni* is monotypic (Jones and Carter, 1976; Webster et al., 1982); Handley (1966) included *Musonycteris* in *Choeronycteris* (Phillips, 1971).

DIAGNOSIS. *Musonycteris harrisoni* is easily discernible from other glossophagines by its extremely elongate muzzle (Fig. 1) and its restricted geographic distribution. *Musonycteris* is most similar to *Choeronycteris*; however, compared with *Choeronycteris*, the rostrum of *Musonycteris* is distinctly longer than the postrostral part of the cranium (rather than equal in length). The upper molars are essentially equal in size, each with a distinctive metastyle (rather than M3 smaller than M1 and M2 and lacking metastyles). The nasals are noticeably domed dorsally (rather than slightly elevated). There is a well-developed median crest on the basisphenoid (rather than a poorly developed ridge). The hamular processes of the pterygoids are evenly rounded (rather than inwardly concave), and the posterior palatine emargination is more broadly rounded and U-shaped (rather than V-shaped). The uropatagium has a darkly-pigmented, inverted U-shaped pattern (rather than lacking it). *Musonycteris* has a fundamental number of 24 (rather than 22—Jones and Carter, 1976; Medellín et al., 1997; Phillips, 1971; Schaldach and McLaughlin, 1960; Webster et al., 1982).

GENERAL CHARACTERS. *Musonycteris* is a medium-sized glossophagine bat with an extremely long rostrum (Fig. 2). The tongue of one individual measured 76 mm from the "gape of the jaw to the outstretched tip" (Schaldach and McLaughlin, 1960: 7). The ears are small and rounded. The uropatagium is complete and encloses the relatively short tail. The general color is grayish-brown; pelage in the posterior region of the dorsum is between Mummy brown and Clove brown, but slightly paler in the mid-dorsum, shoulders, and venter. The bases of the individual hairs are between Avellaneous and white and the tips are brown (Ceballos and Miranda, 1986; Hall, 1981; Schaldach and McLaughlin, 1960). Averages of selected external and cranial measurements (in mm) are as follows: total length, 84.8; length of the forearm, 42.2; tail length, 9.8; greatest length of skull, 34.1; length of rostrum, 17.3; length of the maxillary toothrow, 13.2; interorbital breadth, 3.9; mastoid breadth, 9.7; length of the palate, 22.4; length of the mandible, 25.5; and rostral length 50.76% of greatest length of skull (Schaldach and McLaughlin, 1960; Swanepoel and Genoways, 1979; Villa-R., 1967). The mass averages 12.6 g for males (Polaco and Muñíz-M., 1987; Ramírez-Pulido et al., 1977) and 10.9 g for females (Sánchez-Hernández, 1978).

The skull is long. The cheek teeth are small with a reduction of the lingual elements; a wide space is present between P2 and P3. The rostrum is extremely long, averaging over one half of the greatest length of the skull. The interpterygoid space is "V" shaped anteriorly. The nasals are elevated dorsally and are lengthy and closely parallel-sided. The internasal septum is completely internal, and the ridge does not continue onto the roof of the interpterygoid fossa. The hamular processes of the pterygoids extend onto the ventral surface of the auditory bullae, with anterior margins of the auditory meati connected by the tips of the hamuli. The basioccipital and basisphenoid are combined into an elevated median ventral crest. The dental formula is i 2/0, c 1/1, p 2/3, m 3/3, total 30, with wide diastemas between cheek teeth (Schaldach and McLaughlin, 1960).

DISTRIBUTION. *Musonycteris harrisoni* is endemic to the Pacific coast of Mexico and is restricted to west of the Isthmus of Tehuantepec (Koopman, 1976; Fig. 3). It is known from the Mexican states of Colima (Kennedy et al., 1984), Guerrero (Winkelman, 1962), Jalisco (Ceballos and Miranda, 1986), Mexico (Alvarez-Castañeda, 1991), and Morelos (Alvarez-Castañeda and López-Forment, 1995). The maximum altitudinal record for the species is over 1,700 m (Alvarez-Castañeda and López-Forment, 1995).

FORM AND FUNCTION. The aspect ratio, 6.3, is one of the highest among members of the subfamily. The wing morphology is as follows: alpha angle, 33.22; tip index, 1.9; aspect ratio of the wing tip, 5.13; aspect ratio of the plagiopatagium, 1.55; and wing loading, 15.58 N/m^2. In relative terms, the dimensions of the wing are as follows: length of the wing, 1.75; length of the forearm, 0.59; length of digit III, 1.16; length of digit IV, 0.82; and length of digit

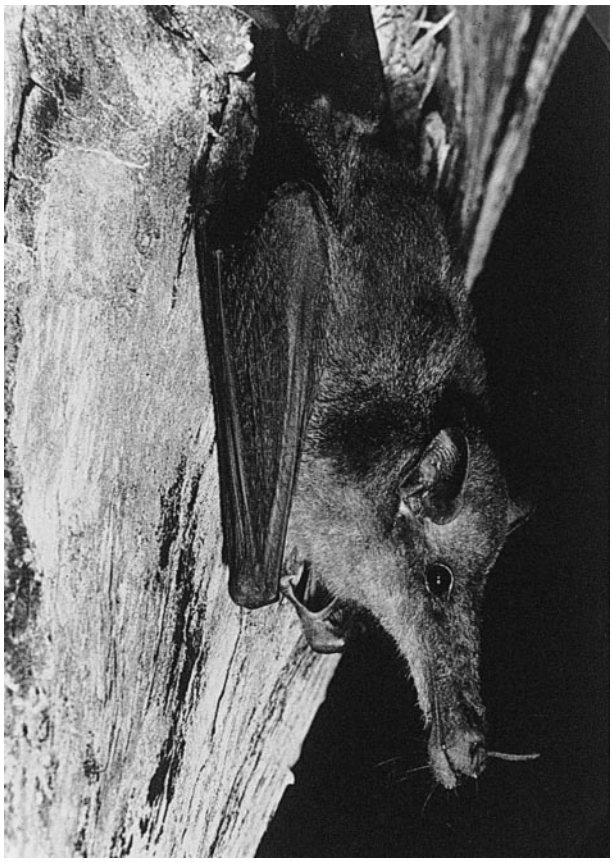

FIG. 1. Adult male *Musonycteris harrisoni* collected in Callejones, ca. 12 km NE from Cerro de Ortega, Colima, Mexico (photograph by Marco Tschapka).

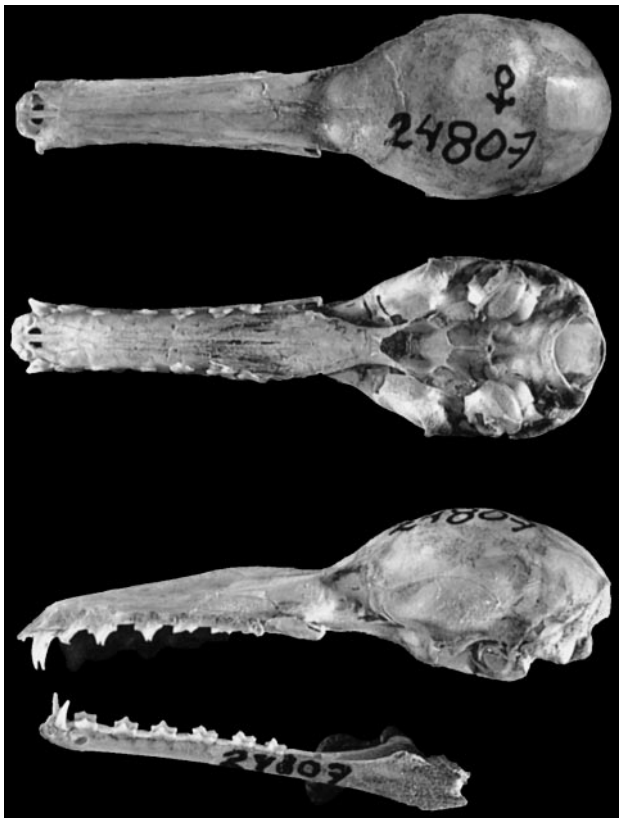

FIG. 2. Dorsal, ventral and lateral views of cranium and lateral view of mandible of *Musonycteris harrisoni* (UNAM 24807, adult female, from 1 km from Playa Revolcadero, Acapulco, Guerrero). Greatest length of skull is 30.04 mm.

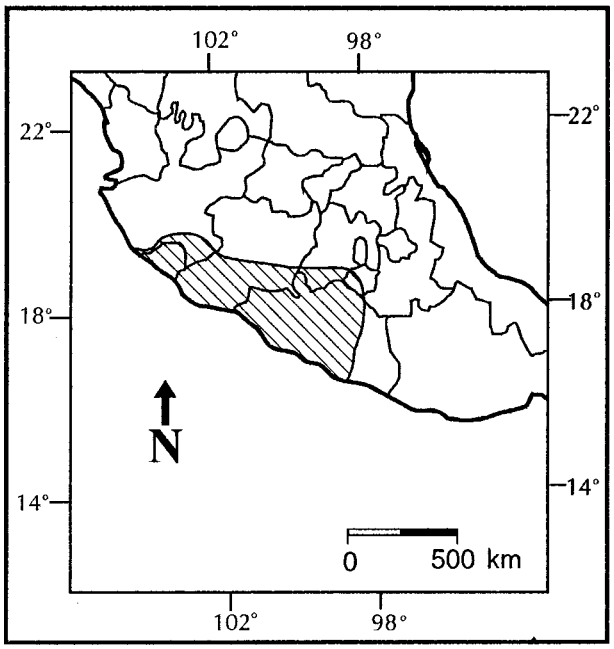

FIG. 3. Geographic distribution of *Musonycteris harrisoni* in western Mexico (modified from Hall, 1981).

V, 0.76. Digits III, IV, and V are made up of metacarpals and phalanges in the following proportions: digit III—metacarpal, 47.12%, first phalanx, 17.47%, second phalanx, 23.11%, and third phalanx, 12.31%; digit IV—metacarpal, 60.43%, first phalanx, 16.88%, and second phalanx, 22.70%; and digit V—metacarpal, 61.87%; first phalanx, 15.77%, and second phalanx, 22.36% (Smith and Starret, 1979).

The morphology of the teeth has been described in detail (Phillips, 1971; Phillips et al., 1977). The upper incisors are small, with a small diastema between the inner incisors (I1s); the I1s have a broad oval crown in the occlusal outline. The I2s are larger and have a pointed crown with strongly oblique edge. The canines are narrow and slightly recurved, and they possess a small posterolingual cingular style. The upper premolars are widely spaced and have the same size and form, with a trenchant main cone and small anterior and posterior cingular styles. The lower premolars also are widely spaced and similar in size; however, the first premolar (p2) is broader than p3 and p4, owing to a slightly convex lingual surface; the main cone is low; the anterior style is reduced; and the posterior cingular style is small. The other two lower premolars have higher main cones with more conspicuous anterior and posterior cingular styles. The three upper molars have highly modified but similar morphologies. The parastyle is prominent anteriorly; the metacone is prominent but smaller than, and located posterolingually to, the parastyle; and the large metastyle is located posterolabially to the metacone. The paracone and mesostyle are lacking, the protocone is a low cusp, and the hypoconal basin is lacking. The three lower molars are long and narrow; the first is the largest and the last is the smallest; the paraconid is upturned and has an small anterior projection. The metaconid, protoconid, and entoconid have equally large prominent cusps; the hypoconid is low and rounded; and the posteristid has a small posteriorly-directed flange.

The tongue of *Musonycteris harrisoni* lacks lateral grooves. The number and size of vertical papillae on the dorsolateral edge are variable. This is thought to facilitate nectar feeding (Winkelmann, 1971).

The esophagus is short (27.7 mm) and thin, and internally it has long vertical folds. The stomach is reduced compared with the stomach of other glossophagines (5 mm wide by 10 mm long); the pylorus is narrow and short (1.1 by 2.5 mm) and highly muscular. Externally, both intestines are similar, but internally the small intestine has many hairy folds (Pacheco and Salazar, 1990).

ONTOGENY AND REPRODUCTION. Reproductive records are limited. Two pregnant females were collected in Colima in September (Wilson, 1979). A male with abdominal testes was caught in a culvert in the spring (Uribe et al., 1981). Another male with abdominal testes was captured with a lactating female and a newborn male in August (Sánchez-Hernández, 1978). Testes have measured 2–5 mm in length, and 3 mm in width (Ramírez-Pulido et al., 1977; Uribe et al., 1981).

ECOLOGY. Three trumpet-nosed bats were found roosting in a sheltered, but not secluded, rocky overhang above a stream in a canyon at ca. 600 m in elevation (Winkelman, 1962). Apparently, its occurrence is restricted to the arid thorn and tropical deciduous forest along the coast and in the Balsas River Basin. These habitats have a clear summer rainy season (from July to October) and a remarkably dry season (from November to May). During this last period the majority of the trees lose their leaves. The dominant species in these habitats are *Cordia alliodora, Caesalpina eriostachys, Lysiloma divaricata, Brosimun alicastrum, Tabebuia donnell-smithi* (Rzedowsky, 1978).

Three other specimens were caught ca. 1.5 m above the ground in a flowering banana grove at 2200 h (Schaldach and McLaughlin, 1960). In addition, this bat was found roosting in a culvert with *Glossophaga* (probably *G. soricina*) and *Macrotus waterhousii* (Uribe et al., 1981) and in a cave with *Desmodus rotundus.* The species has been captured in mist nets with other bat species such as *Balantiopteryx plicata, Pteronotus parnellii, Mormoops megalophylla, Glossophaga soricina, G. morenoi, Anoura geoffroyi, Leptonycteris curasoae, Macrotus mexicanus, Sturnira lilium, S. ludovici, Artibeus intermedius, A. jamaicensis, A. lituratus, Dermanura tolteca, D. phaeotis, Centurio senex, Desmodus rotundus, Natalus stramineus, Eptesicus fuscus, Myotis yumanensis, Tadarida brasiliensis, Nyctinomops femorosacca* and *N. macrotis* (Alvarez-Castañeda, 1991; Polaco and Muñíz-Martínez, 1987; Sánchez-Hernández, 1978; Schaldach and McLaughlin, 1960; Winkelman, 1962).

This nectarivorous species was first discovered in a banana grove, where it ostensibly was feeding on pollen, nectar, and insects found in the banana flowers (Gardner, 1977). Pollen of *Cordia alliodora, Ceiba pentandra,* and *Ipomea* were found in the stomach,

and pollen of *Alnus jorulensis* and *C. alliodora* were found on the muzzle of the same *M. harrisoni* (Alvarez and Sánchez, 1997).

GENETICS. The standard karyotype of *M. harrisoni* (2n = 16; FN = 22) resembles those of *Choeronycteris* and *Hylonycteris* in chromosomal number; however, it differs autosomally from these genera in that it possesses three small pairs of acrocentrics rather than two. The karyotype of *Musonycteris* also contains one large pair of submetacentrics, one large pair of subtelocentrics, a medium-sized pair of subtelocentrics, and a medium-sized pairs of submetacentrics. The sex chromosomes of *Musonycteris* are a small heteromorphic pair of metacentrics. A synapomorphic pericentric inversion in pair I is shared with *Choeronycteris*, and a polymorphism in pair H is shared with *Hylonycteris* (Haiduk and Baker, 1982; Webster et al., 1982).

REMARKS. The name *Musonycteris* comes from the Arabic word for banana (*musa*) and the Greek word for bat (*nycteris*—Alvarez-Castañeda and Alvarez, 1996). The species is named in honor of Ed N. Harrison, who supported the Mexican field work of W. J. Schaldach (Schaldach, and McLaughlin, 1960). The trumpet-nosed bat is considered a "treatment species" by the Mexican Ministry of Ecology (SEDESOL, 1994) and "vulnerable" by the IUCN (Ceballos and Arita, 1997).

LITERATURE CITED

Alvarez, T., and N. Sánchez C. 1997. Notas sobre la alimentación de *Musonycteris* y *Choeroniscus* (Mammalia: Phyllostomidae) en México. Revista Mexicana de Mastozoología, 2: 113–115.

Alvarez-Castañeda, S. T. 1991. Nuevos registros de murciélagos (Orden Chiroptera) para los Estados de México y Chiapas. Anales de la Escuela Nacional de Ciencias Biológicas, México, 34:215–222.

Alvarez-Castañeda, S. T., and T. Alvarez. 1996. Etimologías de los géneros de mamíferos Mexicanos. Ciencia, 47:39–49.

Alvarez-Castañeda, S. T., and W. López-Forment. 1995. Datos sobre los mamíferos del área aledaña a Palpan, Morélos, México. Anales del Instituto de Biología, Universidad Nacional Autónoma de México, Serie Zoología, 66:123–133.

Ceballos, G., and H. T. Arita. 1997. The mammals of Mexico: distribution and conservation status. Revista Mexicana de Mastozoología, 2:33–71.

Ceballos, G., and A. Miranda. 1986. Los mamíferos de Chamela, Jalisco. Manual de campo. Instituto de Biología, Universidad Nacional Autónoma de México, 436 pp.

Gardner, A. L. 1977. Feeding habits. Pp. 293–350, *in* Biology of the bats of the New World family Phyllostomatidae. Part II (R. J. Baker, J. K. Jones, Jr., and D. C. Carter, eds.). Special Publications, The Museum, Texas Tech University, 13:1–364.

Haiduk, M. W., and R. J. Baker. 1982. Cladistical analysis of G-banded chromosomes of nectar feeding bats (Glossophaginae: Phyllostomidae). Systematic Zoology, 31:252–265.

Hall, E. R. 1981. The mammals of North America. Second ed. John Wiley & Sons, New York, 1:1–600 + *90*.

Handley, C. O., Jr. 1966. Descriptions of new bats (*Choeroniscus* and *Rhinophylla*) from Colombia. Proceedings of the Biological Society of Washington, 79:83–88.

Jones, J. K., Jr., and D. C. Carter. 1976. Annotated checklist, with keys to subfamilies and genera. Pp. 7–38, *in* Biology of the bats of the New World family Phyllostomatidae. Part I (R. J. Baker, J. K. Jones, Jr., and D. C. Carter, eds.). Special Publications, The Museum, Texas Tech University, 10:1–218.

Kennedy, M. L., T. L. Best, and M. J. Harvey. 1984. Bats of Colima, Mexico. Mammalia, 48:397–408.

Koopman, K. F. 1976. Zoogeography. Pp. 39–47, *in* Biology of the bats of the New World family Phyllostomatidae. Part I (R. J. Baker, J. K. Jones, Jr., and D. C. Carter, eds.). Special Publications, The Museum, Texas Tech University, 10:1–218.

———. 1993. Order Chiroptera. Pp. 137–241, *in* Mammals species of the world (D. E. Wilson, and D. M. Reeder, eds.). Smithsonian Institution Press, Washington, District of Columbia, 1206 pp.

Medellín, R. A., H. T. Arita, and O. Sánchez H. 1997. Clave de campo para la identificación de los murciélagos de México. Asociación Mexicana de Mastozoología, Asociación Civil. Publicaciones Especiales, 2:1–83.

Pacheco, J. R., and L. Salazar E. 1990. Anatomía gruesa y descríptiva del aparato digestivo de los quirópteros frugívoros de la Costa Chica de Guerrero, México. Bachelors thesis. Universidad Nacional Autónoma de México, México, 82 pp.

Phillips, C. J. 1971. The dentition of glossophaginae bats: development, morphological characteristics, variation, pathology, and evolution. Miscellaneous Publications of the Museum of Natural History, University of Kansas, 54:1–38.

Phillips, C. J., G. W. Grimes, and G. L. Forman. 1977. Oral biology. Pp. 121–246, *in* Biology of the bats of the New World family Phyllostomatidae. Part II (R. J. Baker, J. K. Jones, Jr., and D. C. Carter, eds.). Special Publications, The Museum, Texas Tech University, 13:1–364.

Polaco, O. J., and R. Muñiz-Martínez. 1987. Los murciélagos de la costa de Michoacán, México. Anales de la Escuela Nacional de Ciencias biológicas, México, 31:68–89.

Ramírez-Pulido, J., A. Martínez, and G. Urbano. 1977. Mamíferos de la Costa Grande de Guerrero, México. Anales del Instituto de Biología, Universidad Nacional Autónoma de México, Serie Zoología, 48:245–292.

Rzedowski, J. 1978. Vegetación de México. Editorial Limusa, México, 432 pp.

Sánchez-Hernández, C. 1978. Registro de murciélagos para el estado de Jalisco, México. Anales del Instituto de Biología, Universidad Nacional Autónoma de México, Serie Zoología, 49:249–256.

Schaldach, W. J., and C. A. McLaughlin. 1960. A new genus and species of glossophagine bat from Colima, Mexico. Contributions in Science, Los Angeles County Museum, 37:1–8.

SEDESOL (Secretaria de Desarrollo Social). 1994. Norma Oficial Mexicana NOM-059-ECOL-1994, que determina las especies y subespecies de flora y fauna silvestres terrestres y acuáticas en peligro de extinción, amenazadas, raras y las sujetas a protección especial y que establece especificaciones para su protección. Diario Oficial de la Federación, 438:2–60.

Smith, J. D., and A. Starret. 1979. Morphometric analysis of chiropteran wings. Pp. 229–316, *in* Biology of the bats of the New World family Phyllostomatidae. Part III (R. J. Baker, J. K. Jones, Jr., and D. C. Carter, eds.). Special Publications, The Museum, Texas Tech University, 16:1–441.

Swanopoel, P., and H. H. Genoways. 1979. Morphometrics. Pp. 13–106, *in* Biology of the bats of the New World family Phyllostomatidae. Part III (R. J. Baker, J. K. Jones, Jr., and D. C. Carter, eds.). Special Publications, The Museum, Texas Tech University, 16:1–441.

Uribe Peña, Z., B. Gaviño de la Torre, and C. Sánchez-Hernández. 1981. Vertebrados del rancho "El Reparito" Municipio de Arteaga, Michoacán, México. Anales del Instituto de Biología, Universidad Nacional Autónoma de México, Serie Zoología, 51:615–646.

Villa-R., B. 1967. Los murciélagos de México. Instituto de Biología, Universidad Nacional Autónoma de México, México, D.F., 491 pp.

Webster, W. D., L. W. Robbins, R. L. Robbins, and R. J. Baker. 1982. Comments on the status of Musonycteris harrisoni (Chiroptera: Phyllostomidae). Occasional Papers, The Museum Texas Tech University, 78:1–5.

Wilson, D. E. 1979. Reproductive patterns. Pp. 317–378, *In* Biology of the bats of the New World family Phyllostomatidae. Part III (R. J. Baker, J. K. Jones, Jr., and D. C. Carter, eds.). Special Publications, The Museum, Texas Tech University, 16: 1–441.

Winkelman, J. R. 1962. Mammal records from Guerrero and Michoacan, Mexico. Journal of Mammalogy, 43:108–109.

———. 1971. Adaptations for nectar-feeding in glossophagine bats. Ph.D. dissertation. University of Michigan, Ann Arbor, 122 pp. (not seen, cited in Phillips et al., 1977).

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