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# Lonchorhina aurita.

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## *Lonchorhina* Tomes, 1863

*Lonchorhina* Tomes, 1863:81. Type species *Lonchorhina aurita* Tomes, 1863, by monotypy.

**CONTEXT AND CONTENT.** Order Chiroptera, Suborder Microchiroptera, Family Phyllostomidae, Subfamily Phyllostominae, Genus *Lonchorhina*. The genus *Lonchorhina* contains four species. A key to the species follows (measurements in mm; Williams and Genoways, in litt.):

1. Forearm longer than 46.0; greatest length of skull more than 19.5 ..... 2
   Forearm shorter than 46.0; skull shorter than 19.8 ..... 3
2. Forearm longer than 57.0; greatest length of skull more than 22.0 ..... *Lonchorhina marinkellei*
   Forearm shorter than 57.0; skull shorter than 22.7 ..... *Lonchorhina aurita*
3. First phalanx of third digit longer than 13.0; greatest length of skull more than 18.0 ..... *Lonchorhina orinocensis*
   First phalanx of third digit shorter than 13.0; skull shorter than 18.0 ..... *Lonchorhina fernandezi*

## *Lonchorhina aurita* Tomes, 1863

### Tomes' Long-eared Bat

*Lonchorhina aurita* Tomes, 1863. Type locality West Indies (restricted to Trinidad, West Indies, by Dobson, 1878).

*Lonchorhina occidentalis* Anthony, 1923:13. Type locality "Puente de Chimbo," Guayas, Ecuador.

**CONTEXT AND CONTENT.** Context as in generic summary above. Although Anthony (1923) named *L. occidentalis* as a species, recent workers have synonymized it with *L. aurita*, which is monotypic (Solmsen, 1985).

**DIAGNOSIS.** *Lonchorhina aurita* can be distinguished from its congeners by its medium size (larger than *L. orinocensis* and *L. fernandezi*, and smaller than *L. marinkellei*). Greatest length of skull of *L. aurita* ranges from 19.5 to 22.7 mm, compared to *L. orinocensis* (18.3 to 19.7 mm), *L. fernandezi* (17.5 to 17.7 mm), and *L. marinkellei* (25.2 mm, Holotype; Ochoa and Ibañez, 1982). The forearm of *L. aurita* generally is well-furred dorsally and ventrally.

*Lonchorhina aurita* differs from *L. orinocensis* by having a reduced second lower premolar, trilobate lower incisors (bilobate in *L. orinocensis*), a broader palate, and proportionally shorter tympanic bullae. *L. aurita* lacks granulations on the anterior margins of the ears, and has well developed hair on the ventral surface of the ears, nose leaf, and on the dorsal side of the forearms (Linares and Ojasti, 1971). *L. aurita* is distinctly darker in color than *L. orinocensis*.

The major difference between *L. aurita* and *L. marinkellei* is that *L. aurita* is about 20% smaller. In *L. aurita*, the height of the braincase is greater than the height of the rostrum, weight ranges from 10 to 16 g, and length of hair on the dorsum is 9 mm or less; whereas in *L. marinkellei* the braincase and rostrum are equal in height, the weight of the holotype was 27 g, and length of hair on the dorsum is 12 mm (Hernández-Camacho and Cadena, 1978).

*Lonchorhina aurita* and *L. fernandezi* also are distinguished by size, with *L. fernandezi* being the smallest in the genus. Palatal length in *L. aurita* ranges from 9.1 to 10.6 mm, in contrast to 6.4 to 6.6 mm in *L. fernandezi*. *L. aurita* has longer fur (9 mm) than *L. fernandezi* (6 mm) and individual hairs are paler basally (Ochoa and Ibañez, 1982).

**GENERAL CHARACTERS.** *Lonchorhina aurita* is a slender, medium-sized bat with a long, distinctively pointed nose leaf (Fig. 1). The color has been reported as "reddish brown" (Tomes, 1863:83), "Mummy Brown" (Goodwin and Greenhall, 1961:234), "shades of Prout's Brown" (Goodwin, 1946:303), and "chestnut-brown" to "cinnamon-brown" (Anthony, 1923:13). Specimens housed at the National Museum of Natural History (USNM) range from shades of reddish brown through dark brown to almost black. The color is nearly uniform, with the underparts being only slightly paler than the dorsum. Some individuals show a silvery buff on their underside. Variation in pelage color shows no obvious geographic pattern.

The ears are broad, bluntly pointed, and approximately as long as the head. The conch of the ears curves around to the side of the head and attaches near the mouth. The tragus is more than one-half the length of the ear and is notched at the base. The external ear canal is partially surrounded by a lobed, fleshy ridge, which is capable of completely closing the aperture (Tomes, 1863).

The nose leaf is lance-shaped, with a prominent longitudinal

FIG. 1. Photograph of *Lonchorhina aurita* from Panama. (Photograph by M. D. Tuttle.)

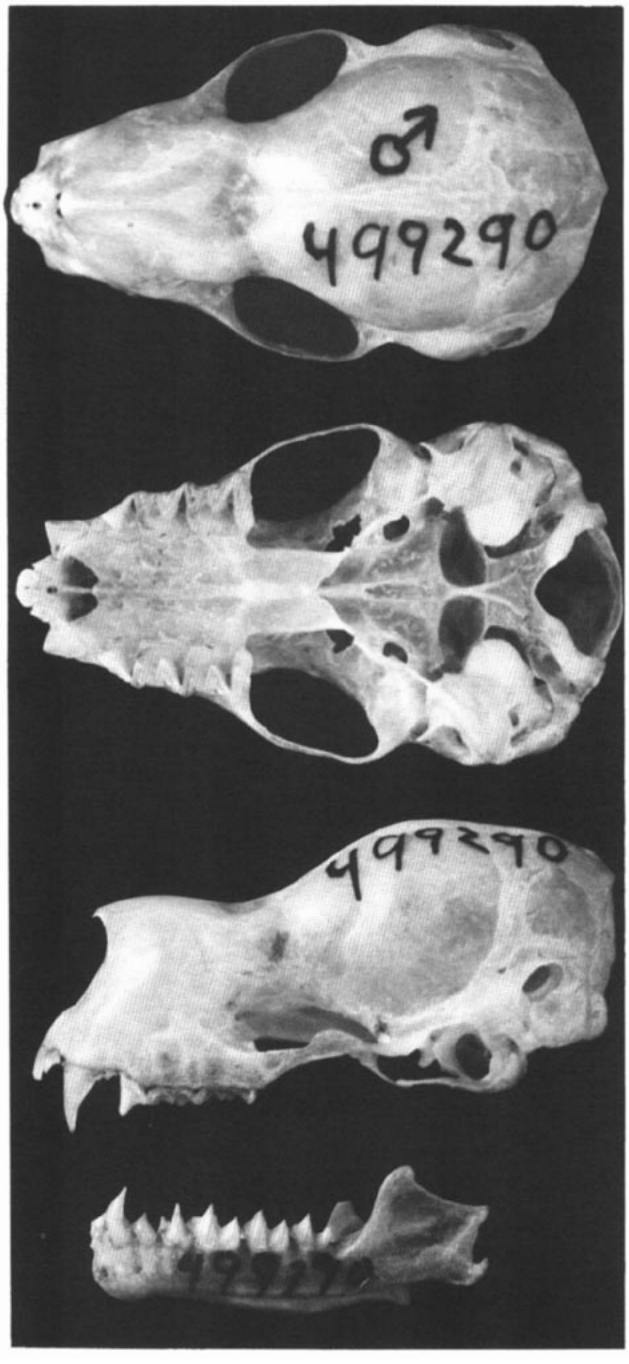


FIG. 2. Dorsal, ventral, and lateral views of cranium, and lateral view of mandible, of a male *Lonchorhina aurita* from Colombia (National Museum of Natural History 499290). Greatest length of skull is 19.6 mm.

ridge. The ridge divides a deep pit which surrounds the nostrils. The lance tapers to an acute point, with the entire nose leaf nearly equal in length to the ears. Five fleshy protuberances collectively hide the opening to the nostrils (Dobson, 1878).

The lower lip contains an inverted triangular space that is flanked laterally by elongate, smooth pads. The upper lip is covered with small, fleshy warts, which hang over the bottom lip (Tomes, 1863).

The tail, composed of eight vertebra, is longer than the femur, and reaches to the posterior tip of the uropatagium (Solmsen, 1985). The wings extend to the distal end of the tibia, are sparsely furred dorsally (humerus and forearm only), and lightly furred ventrally near the body. The foot is about two-thirds the length of the tibia, and shorter than the calcar.


FIG. 3. Geographic distribution of *Lonchorhina aurita*.

Ranges of external measurements (in mm) of adults are: length of head and body, 53 to 67; length of tail, 42 to 65; length of foot, 10 to 17; length of ear from notch, 19.2 to 35; ear width, 18.6 to 23; forearm, 46.7 to 56.7; height of nose leaf, 18.2 to 27.1; height of tragus, 11.6 to 18.6; length of tibia, 19.4 to 22.4 (Anthony, 1923; Genoways, et al., 1981; Goodwin, 1942 and 1946; Goodwin and Greenhall, 1961; Hall, 1981; Hernández-Camacho and Cadena, 1978; Linares and Naranjo, 1973; Linares and Ojasti, 1971; Miller, 1912; Nelson, 1965; Solmsen, 1985; Swanepoel and Genoways, 1979; Tuttle, 1970; and specimens in USNM). The weights of specimens at the USNM range from 12.1 to 16.5 g for adults.

The skull (Fig. 2) is narrow and distinctly concave between the orbits at the base of the rostrum, and the height of the braincase generally is greater than the height of the rostrum (Hernández-Camacho and Cadena, 1978). The nasal bones are arched, curved, and overhang the nasal opening. The cranium is indented between the frontal and parietal bones. The palatines extend back to the zygomatic arches, which are complete. The auditory bullae are small (Dobson, 1878).

The dental formula is i 2/2, c 1/1, p 2/3, m 3/3, total 34. The inner upper incisors are chisel-shaped and larger than the outers, each of which has a short, pointed cusp and projects inward. The lower incisors are comparatively flat and trilobate, and with the canines form a complete row. The first upper and second lower premolars are reduced in size relative to the other premolars. The tongue is short, thick, and covered with fine papillae, which are directed backward (Hernández-Camacho and Cadena, 1978).

Ranges of selected skull measurements (in mm) of adults are: greatest length of skull, 19.5 to 22.7; condylobasal length, 17.8 to 20.7; zygomatic breadth, 9.5 to 11.68; interorbital breadth, 4.3 to 7.5; length of maxillary tooth row, 6.2 to 7.6; length of mandible, 12.4 to 13.8 (Anthony, 1923; Genoways et al., 1981; Goodwin, 1946; Hall, 1981; Linares and Naranjo, 1973; Linares and Ojasti, 1971; Miller, 1912; Nelson, 1965; Ochoa and Ibañez, 1982; Solmsen, 1985; Swanepoel and Genoways, 1979; specimens in USNM).

**DISTRIBUTION.** *Lonchorhina aurita* occurs (Fig. 3) from southern México (Oaxaca, Tabasco, Chiapas, Quintana Roo) southward through Central America, and in South America from Colombia, Venezuela, and the Guianas to Peru (Pasco; Tuttle, 1970), Bolivia (Santa Cruz; Sanborn, 1932), and southeastern Brazil (Sao Paulo; Trajano, 1982). There are several records of *L. aurita* from the Islands of Tobago and Trinidad. A specimen from Nassau Harbor in the Bahamas (Miller, 1905) has been regarded as an accidental occurrence by most subsequent authors (Baker and Genoways, 1978; Corbet and Hill, 1986; Koopman et al., 1957). Specimens have been reported from 375 m in Ecuador (Anthony, 1923), and from 1,200 m in Costa Rica (Nelson, 1965). The USNM collection contains specimens captured at altitudes ranging from 25 to 1,537 m. This species is associated most commonly with forested habitats, but also has been reported from agricultural areas (Handley, 1976). There is no known fossil record of *L. aurita*.

**ONTOGENY AND REPRODUCTION.** Pregnant females have been reported from Panama in February and March (Bloedel, 1955; Fleming et al., 1972), México in March (Schaldach, 1965), and Trinidad in April (Goodwin and Greenhall, 1961). A lactating female was reported from Peru in July (Tuttle, 1970). The collection at the USNM contains four females recorded as lactating in April and June, and three fetuses (21 to 31 mm, crown-rump lengths) from animals collected in April and May. These data indicate that *L. aurita* is pregnant during the dry season (February to April) and parturition usually coincides with the rainy season (Wilson, 1979). A juvenile male weighed 11.2 g when collected in Trinidad (Goodwin and Greenhall, 1961). A juvenile female in the USNM weighed 16.0 g.

**ECOLOGY AND BEHAVIOR.** *Lonchorhina aurita* is widely distributed throughout tropical forests of Central and South America. Although it is primarily a rainforest species, it has been reported from a semiarid contact zone between caatinga and cerrado forests in Brazil (Mares et al., 1981). It seems to occur at a variety of population densities, and often roosts in dense clusters. Numbers of "at least 500" of both sexes were recorded in Sardanillo Mine, Panama (Bloedel, 1955:234), 20 in a cave in Oaxaca, México (Constantine, 1966), and 12–15 in a water-filled cavern in Quintana Roo, México (Jones et al., 1973). This species has been mist-netted in forests over trails (Tuttle, 1970) and streams (Carter et al., 1966), and at the mouths of caves (Nelson, 1965). *L. aurita* roosts with other bats, including *Carollia, Desmodus, Pteronotus, Mormoops, Anoura, Natalus,* and *Myotis* (Bloedel, 1955; Goodwin and Greenhall, 1961; Jones et al., 1973).

In Costa Rica, several individuals were caught in mist-nets as they left a cave, and Nelson (1965) suggested that they may roost in inaccessible crevices because he was unable to locate them in the cave prior to netting them. The bats did not attempt to depart from the cave until full darkness, although other species left earlier. Other species in the cave flew directly into the net, whereas *L. aurita* stopped before reaching the net, hovered before it, and either landed on it or flew back into the cave. This behavior, coupled with extra-sensitive sonar capability, might make these bats difficult to net and help to explain their scarcity in collections (Nelson, 1965). Emitted sound frequencies in captive individuals were studied by Griffin and Novick (1955). The average duration of a sound burst was 2.7 milliseconds, and the average fundamental frequency was 12 kilocycles (kc). The highest frequency components of the second and third harmonics ranged from 24 to 46 kc.

*Lonchorhina aurita* is primarily insectivorous (Fleming et al., 1972; Gardner, 1977; Goodwin and Greenhall, 1961; Howell and Burch, 1974; Ruschi, 1953). One specimen collected by Fleming et al. (1972) contained some fruit pulp, but this is the only reported case of *L. aurita* eating anything other than insects. The insect remains identified by Howell and Burch (1974) in their specimen included Lepidoptera. Nothing is known concerning predators of this species. The following ectoparasites have been recorded from *L. aurita* (Webb and Loomis, 1977): Batflies—*Basilia wenzeli* (Nycteribiidae), *Speiseria ambigua, Strebla altmani, S. carolliae, Trichobius dugesioides, T. joblingi, T. macrophylli, T. yunkeri* (Streblidae); Mites—*Nycterinastes primus* (Trombiculidae), *Periglischrus gameroi* (Spinturnicidae), *Psorergatoides lonchorhinae* (Psorergatidae); Ticks—*Ornithodoros azteci, O. broydi, O. hasei* (Argasidae). Histoplasmosis was isolated from a Panamanian *L. aurita* (Jones, 1976), and Ruschi (1953) reported rabies in animals from southern Brazil.

**GENETICS.** The karyotype of *L. aurita* contains a diploid number of 32 chromosomes and a fundamental number of 60. There is a metacentric X, and an acrocentric Y (Baker, 1973; Baker and Hsu, 1970). The karyotype of an animal collected in Surinam ". . . is essentially like that reported by these authors, except that in a smaller pair of autosomes, the short arm is reduced to a point where the element may appear acrocentric in overcontracted spreads" (Baker et al., 1981:336). It is uncertain whether this represents geographic variation.

**REMARKS.** Anthony (1923) described *L. occidentalis* as new, but subsequent authors (Sanborn, 1932; Goodwin and Greenhall, 1961; Hernández-Camacho and Cadena, 1978; Jones, 1966; Tuttle, 1970) treated it as a subspecies, *L. aurita occidentalis*. The name *Lonchorhina* is derived from the Greek words *lonche* meaning "spear," and *rhinos*, meaning "nose." The specific epithet *aurita* comes from the Latin *auritus*, which means "furnished with ears."

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## LITERATURE CITED

ANTHONY, H. E. 1923. Preliminary report on Ecuadorean mammals, no. 3. Amer. Mus. Novitates, 55:1–14.

BAKER, R. J. 1973. Comparative cytogenetics of the New World leaf-nosed bats (Phyllostomatidae). Periodicum Biologorum 75: 37–45.

———. 1979. Karyology. Pp. 107–155, *in* Biology of bats of the New World family Phyllostomatidae Part III (R. J. Baker, J. K. Jones, Jr., and D. C. Carter, eds.). Spec. Publ. Mus., Texas Tech Univ., 16:1–441.

BAKER, R. J., AND H. H. GENOWAYS. 1978. Zoogeography of Antillean Bats. Pp. 53–97, *in* Zoogeography in the Caribbean: the 1975 Leidy Medal Symposium (F. B. Gill, ed.). Spec. Publ. Acad. Nat. Sci. Philadelphia, 13:1–128.

BAKER, R. J., AND T. C. HSU. 1970. Further studies on the sex-chromosome systems of the American leaf-nosed bats (Chiroptera, Phyllostomatidae). Cytogenetics, 9:131–138.

BAKER, R. J., H. H. GENOWAYS, AND P. A. SEYFARTH. 1981. Results of the Alcoa Foundation-Suriname expeditions. VI. Additional chromosomal data for bats. (Mammalia: Chiroptera) from Suriname. Ann. Carnegie Mus., 50:333–344.

BLOEDEL, P. 1955. Observations on life histories of Panama bats. J. Mamm., 36:232–235.

CARTER, D. C., R. H. PINE, AND W. B. DAVIS. 1966. Notes on Middle American bats. Southwestern Nat., 11:488–499.

CONSTANTINE, D. G. 1966. New bat locality records from Oaxaca, Arizona, and Colorado. J. Mamm., 47:125–126.

CORBET, G. B., AND J. E. HILL. 1986. A world list of mammalian Species. 2nd ed. British Mus. (Nat. Hist.), London, 254 pp.

DOBSON, G. E. 1878. Catalog of the Chiroptera in the collection of the British Museum. British Mus., London. 567 pp.

FLEMING, T. H., E. T. HOOPER, AND D. E. WILSON. 1972. Three Central American bat communities: structure, reproductive cycles, and movement patterns. Ecology, 53:555–569.

GARDNER, A. L. 1977. Feeding habits. Pp. 293–350, *in* Biology of bats of the New World family Phyllostomatidae Part II (R. J. Baker, J. K. Jones, Jr., and D. C. Carter, eds.). Spec. Publ. Mus., Texas Tech Univ., 16:1–364.

GENOWAYS, H. H., S. L. WILLIAMS, AND J. A. GROEN. 1981. Results of the Alcoa Foundations-Suriname Expeditions. V. Noteworthy records of Surinamese mammals. Ann. Carnegie Mus., 50:319–332.

GOODWIN, G. G. 1942. Mammals of Honduras. Bull. Amer. Mus. Nat. Hist., 79:107–195.

———. 1946. Mammals of Costa Rica. Bull. Amer. Mus. Nat. Hist., 87:271–473.

GOODWIN, G. G., AND A. M. GREENHALL. 1961. A review of the bats of Trinidad and Tobago. Bull. Amer. Mus. Nat. Hist., 122:187–302.

GRIFFIN, D. R., AND A. NOVICK. 1955. Acoustic orientation of Neotropical bats. J. Exp. Zool., 130:251–299.

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

HANDLEY, C. O., JR. 1976. Mammals of the Smithsonian Venezuelan Project. Brigham Young Univ. Science Bulletin, 20(5): 1–91.

HERNÁNDEZ-CAMACHO, J., AND G. A. CADENA. 1978. Notas para la revisión del género *Lonchorhina* (Chiroptera, Phyllostomidae). Caldasia, 12:199–251.

HOWELL, D. J., AND D. BURCH. 1974. Food habits of some Costa Rican bats. Rev. Biol. Trop., 21:281–294.

JONES, C. 1976. Economics and conservation. Pp. 133–145, *in* Biology of bats of the New World family Phyllostomatidae Part I (R. J. Baker, J. K. Jones, Jr., and D. C. Carter, eds.). Spec. Publ. Mus., Texas Tech Univ., 16:1–218.

JONES, J. K., JR., J. D. SMITH, AND H. H. GENOWAYS. 1973. Annotated checklist of the mammals of the Yucatan Peninsula, México. I. Chiroptera. Occas. Papers. Mus., Texas Tech Univ. 13:1–31.

KOOPMAN, K. F., M. K. HECHT, AND E. LEDECKY-JANECEK. 1957. Notes on the mammals of the Bahamas with special reference to the bats. J. Mamm., 38:164–174.

LINARES, O. J., AND C. J. NARANJO. 1973. Notas acerca de una coleccion de murciélagos del género *Lonchorhina*, de la cueva

de Archidona, Ecuador (Chiroptera). Boletín Soc. Venezuela Espeleol., 4:175–180.

LINARES, O. J., AND J. OJASTI. 1971. Una nueva especie de murciélago del género *Lonchorhina* (Chiroptera: Phyllostomidae) del sur de Venezuela. Novedades Científicas. Contrib. Occas. Mus. Hist. Nat. La Salle, 36:1–8.

MARES, M. A., M. R. WILLIG, K. E. STREILEIN, AND T. E. LACHER, JR. 1981. The mammals of northeastern Brazil: a preliminary assessment. Ann. Carnegie Mus., 50:81–137.

MILLER, G. S., JR. 1905. The Mammals of the Bahama Islands. Geographic Society of Baltimore. Pp. 373–390.

———. 1912. A small collection of bats from Panama. Proc. U.S. Natl. Mus., 42:21–26.

NELSON, C. E. 1965. *Lonchorhina aurita* and other bats from Costa Rica. Texas J. Sci., 17:303–306.

OCHOA, J., AND C. IBAÑEZ. 1982 [1984]. Nuevo murciélago del género *Lonchorhina* (Chiroptera: Phyllostomidae). Memoria Soc. Cienc. Nat. La Salle, 118:145–159.

RUSCHI, A. 1953. Morcegos do estado do Espírito Santo*XIII. Família *Phyllostomidae*. Descrição das espécies *Mimon bennettii* e *Lonchorhina aurita*, com algumas observações. Boletim. Mus. Biol. Prof. Mello-Leitão, Santa Teresa-E. E. Santo-Brasil, Zool., 15:1–11.

SANBORN, C. C. 1932. Neotropical bats in the Carnegie Museum. Ann. Carnegie Mus., 21:171–183.

SCHALDACH, W. J., JR. 1965. Notas breves sobre algunos mamíferos del sur de México. Ann. Inst. Biol., Univ. Nac. Auto. México, 35:129–137.

SOLMSEN, E. 1985. *Lonchorhina aurita* Tomes, 1863 (Phyllostominae, Phyllostomidae, Chiroptera) im westlichen Ecuador. Z. Saugetierk., 50:329–337.

SWANEPOEL, P., AND H. H. GENOWAYS. 1979. Morphometrics. Pp. 13–106, *in* Biology of bats of the New World family Phyllostomatidae Part III (R. J. Baker, J. K. Jones, Jr., and D. C. Carter, eds.). Spec. Publ. Mus., Texas Tech Univ., 16: 1–441.

TOMES, R. F. 1863. On a new genus and species of leaf-nosed bats in the museum at Fort Pitt. Proc. Zool. Soc. London, 1863:81–84.

TRAJANO, E. 1982. New records of bats from southeastern Brazil. J. Mamm., 63:529.

TUTTLE, M. D. 1970. Distribution and Zoogeography of Peruvian bats, with comments on natural history. Univ. Kansas Sci. Bull., 49:45–86.

WEBB, J. P., JR., AND R. B. LOOMIS. 1977. Ectoparasites. Pp. 57–119, *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.). Spec. Publ. Mus., Texas Tech Univ., 16:1–364.

WILSON, D. E. 1979. Reproductive patterns. Pp. 317–378, *in* Biology of bats of the New World family Phyllostomatidae Part III (R. J. Baker, J. K. Jones, Jr., and D. C. Carter, eds.). Spec. Publ. Mus., Texas Tech Univ., 16:1–441.

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