

NOTES ON THE AMERICAN BATS OF THE GENUS TADARIDA

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The bats of the genus *Tadarida*¹ were formerly known as *Nyctinomus*. The American forms fall into two groups, one of which was named *Nyctinomops* in 1902 by Miller,² who later found that the characters which divide the American species into two groups do not so divide the genus as a whole, when its Old World members are taken into account. The name *Nyctinomops* has therefore been placed in synonymy.³

The genus *Tadarida* belongs to the group of bats known as free tail bats, because the tail extends for some distance beyond the edge of the interfemoral membrane. Members of this genus are readily distinguished, externally, from all other American members of the family Molossidae, to which it belongs, by the deep vertical grooves or wrinkles on the upper lip; all the other American genera have smooth upper lips. According to Oldfield Thomas⁴ the primary features to be considered in the separation of the skulls of this genus from the skulls of nearly related genera are as follows: First, the definite Z shaped form of the last upper molar (m^3); second the separation of the premaxillae between the upper incisors.

The material examined gives a very satisfactory survey of the genus, so far as its American forms are concerned, except that sufficient specimens of *T. macrotis*, *T. femorosacca*, and *T. aurispinosa* have not been at hand to definitely settle their status. Many more specimens of *T. macrotis* are needed both from North America and South America, and good skulls from the West Indies, before one can decide how many of the names applied to this large *Tadarida* designate valid local forms. Adult skins of *T. femorosacca* are needed to determine whether the apparent difference in color between this form and its South American ally, *T. laticaudata*, is as great as it appears. Specimens are needed from eastern Brazil to decide the

¹ See Lyon, Proc. Biol. Soc. Washington, vol. 27, pp. 217-218, Oct. 31, 1914.

² Miller, Twenty new American bats, Proc. Acad. Nat. Sci. Philadelphia, p. 393, Sept. 12, 1902.

³ Miller, Families and Genera of Bats, Bull. U. S. Nat. Mus., 57, pp. 251-253, June 29, 1907.

⁴ Thomas, Journ. Bombay Nat. Hist. Soc., vol. 22, no. 1, pp. 90-91, Apr. 21, 1913.

real status of *T. aurispinosa*, the type and only known specimen of which has no skull. The differences in this skin from skins of *T. laticaudata* are very slight.

It might be well to observe here that the type of *Nyctinomus orthotis* proves to be a *Eumops*⁵ and that *Nyctinomus kalinowskii* is now placed in the genus *Mormopterus*.⁶

All specimens of the genus *Tadarida* in the American Museum of Natural History, New York City, as well as all South American specimens of the genus in the Field Museum of Natural History, Chicago, have been examined. Specimens listed, that are not followed by abbreviations, are the property of the United States National Museum. The abbreviations F. M. stand for the Field Museum, Chicago, and A. M. N. H. stand for the American Museum of Natural History, New York. My thanks are extended to Mr. H. E. Anthony, of the American Museum of Natural History, New York City, and to Dr. W. H. Osgood, of the Field Museum of Natural History, Chicago, for the loan of specimens under their charge.

KEY TO THE AMERICAN BATS OF THE GENUS TADARIDA

First or *brasilienis* group.—Second phalanx of fourth finger long, 6.6–9.2 mm.; ears extending to or falling short of end of rostrum when laid forward, inner edges not united at base; slight indication of pocket in membrane at the angle of femur and tibia; skull with broad flat rostrum, considerably wider anteriorly than at point of least interorbital breadth; weak sagittal crest; upper incisors strongly converging at tips.

Ear not reaching end of rostrum when laid forward.

Total length of skull 17.0 mm. or over..... *cynocephala*, p. 7

Total length of skull always under 17.0 mm.

Forearm 40.0–42.5 mm..... *murina*, p. 9

Forearm 36.6–41.4 mm..... *antillarum*, p. 10

Ear extending to end of rostrum when laid forward.

Total length of skull never over 16.2 mm.; transverse area of maxillary teeth smaller..... *intermedia*, p. 7

Total length of skull always 16.2 mm. or over; transverse area of maxillary teeth larger.

Forearm frequently under 40.0 mm..... *muscula*, p. 9

Forearm always 40.0 mm. or over.

Breadth at m^2 frequently reaching 7.0 mm.

Forearm 42.2–46.4 mm..... *brasilienis*, p. 3

Forearm 41.6–43.8 mm..... *constanzae*, p. 10

Breadth at m^2 always less than 7.0 mm.

Color lighter, verona brown..... *bahamensis*, p. 8

Color darker, mummy brown..... *mexicana*, p. 4

Second or *macrootis* group.—Second phalanx or fourth finger short, 2.0–4.4 mm.; ears extending well beyond end of rostrum when laid forward, inner edges united at base for about 2 mm.; well-developed pocket in membrane at angle of femur and tibia; skull with slender rostrum, scarcely wider anteriorly than

⁵ Miller, Proc. Biol. Soc. Washington, vol. 19, p. 85, May 1, 1906.

⁶ Miller, Bull. U. S. Nat. Mus., 57, p. 254, 1907.

at point of least interorbital breadth; prominent sagittal crest; upper incisors parallel.

Forearm always 58.0 mm. or over.

Total length of skull 22.2–24.0 mm.----- *macrotis*, p. 15

Forearm 50.0 mm. or less.

Tibia over 15.0 mm.----- *aurispinosa*, p. 11

Tibia less than 15.0 mm.

Total length of skull 18.0 mm. or over.

Occipital depth of skull 6.4–7.0 mm.----- *laticaudata*, p. 12

Occipital depth of skull 6.0–6.4 mm.----- *femorosacca*, p. 13

Total length of skull usually 18.0 mm. or less.

Basal length 13.5–14.2 mm.----- *europs*, p. 14

Basal length 14.6–15.2 mm.----- *yucatanica*, p. 15

BRAZILIENSIS GROUP

The skulls in this group are characterized by their broad, flat muzzle, which is considerably wider anteriorly than at the point of least interorbital breadth; weak sagittal crest posteriorly; upper incisors widely separated at their base by an anterior palatal emargination, and converging strongly toward their tips. Lower incisors normally six; but occasionally only five or four. The outer incisors are very small and are much crowded against the canines, sometimes absent on one side or both. Their absence is most frequent in very young or very old individuals.

At the angle of the tibia and femur there is a small fold of skin on the underside. The nasal border bears a series of rounded spines; this series is continued as a single line descending between the nasal apertures. This descending line never divides at the base into two branches as it does in the *macrotis* group. The tragus is truncate; antitragus low, wider than high. In all South American specimens of *T. brasiliensis*, the ear reaches the end of the nostril, when laid forward, as it also does in *T. intermedia*, *T. mexicana*, *T. bahamensis*, *T. muscula*, and *T. constanzae*. In *T. cynocephala*, *T. antillarum*, and *T. murina* it falls short by about 2 mm. of the end of the rostrum when laid forward. Ears in immature members of this genus are always much shorter than those of the adult.

The second phalanx of the fourth finger is long, 6.6–9.2 mm. in all the specimens measured, or about three times as long as the first phalanx of the same finger. When compared with the length of the forearm it is found to range from 15 per cent in *T. murina* to 19.5 per cent in *T. cynocephala*.

TADARIDA BRASILIENSIS (L. Geoffroy)

1824. *Nyctinomus brasiliensis* GEOFFROY, Ann. Sc. Nat., vol. 1, p. 337.

1827. *Dysopes nasutus* TEMMINCK, Monogr. Mamm., vol. 1, pp. 233–234 (Brazil.)

1840. *Dysopes naso* WAGNER, Schreb. Säugeth. suppl., vol. 1, pp. 475–476 (Brazil.)

1864. *Nyctinomus nasutus* H. ALLEN, Monogr. Bats. N. Amer., p. 7, figs. 6, 7 (part).

1878. *Nyctinomus brasiliensis* DOBSON, Catal. Chiropt. Brit. Mus., pp. 437-439 (part).

1920. *Tadarida brasiliensis* THOMAS, Proc. U. S. Nat. Mus., vol. 58, p. 222. November 10, 1920.

Type locality.—Curityba, Parana, Brazil. In the original description of the species *T. brasiliensis*, I. Geoffroy selects no single specimen from Brazil as the type, but mentions seven specimens from the Province of Missiones and four specimens from the district of Curityba, Province of Parana. Since I have been able to examine six specimens from the province of Parana, I select Curityba as the type locality in order to fix the name on a definite form.

Measurements taken by Mr. Miller in 1904 from a mounted specimen in the Paris Museum marked "Type, Brazil," are as follows: Tail, 36; tibia, 13; foot, 9.4; forearm, 43.8. These measurements all fall within the limits of variation of the measurements of specimens from Parana, as may be seen by comparing them with the table of external measurements on page 18.

Geographic distribution.—From Costa Rica through South America as far south as central Chili.

Diagnosis.—*T. brasiliensis* averages slightly larger than any other form in the *brasiliensis* group. The tibia is, with one exception, constantly over 12.0 mm. in all specimens measured, while the total length of the skull in all but one instance is 17.0 mm. or over. The color of the few skins examined is not different from that of North American forms, except that some skins from Tucuman, Argentina, and also some from Peru show a light sprinkling of white hairs on the back.

Measurements.—For detailed measurements see tables, pages 18 and 23.

Specimens examined.—Seventy-one from the following localities: **Costa Rica**: San Jose, 1 skin; **Venezuela**: 1 skin (A. M. N. H.); **Brazil**: Ciudadeda Barra (Rio S. Francisco, Bahia), 3 alcoholics (F. M.); Province of Parana, 6 alcoholics; **Uruguay**: Maldonada, 6 skins (F. M.) Paysandu, 1 alcoholic; Polaneo, 1 skin (F. M.), 1 skin; no exact locality, 4 alcoholics; **Paraguay**: Villa Rica, 2 skins, 5 alcoholics; **Argentina**: Tucuman, 4 skins, 1 alcoholic; Mendoza, 1 alcoholic; **Peru**: Matchu Picchu, 4 skins; Santa Ana, 2 skins, 22 alcoholics; Lima Surco, 1 skin; **Chili**: Temuco, 1 alcoholic, 2 skins (F. M.), 2 skins (A. M. N. H.); Ramal de Melepillla, 1 alcoholic; Palmilla, La Cruz, 1 skin (F. M.); Province of Valdivia, 1 skin (F. M.), Province Aconcaqua, Papuda, 1 skin (F. M.).

TADARIDA MEXICANA (Saussure)

1860. *Molossus mexicanus* SAUSSURE, Revue et Magasin de Zoologie, ser. 2, vol. 12, p. 283, July, 1860.

1864. *Nyctinomus nasutus* H. ALLEN, Monogr. Bats N. Amer., Smiths. Miscell. Coll., no. 165, pp. 7-10, June, 1864 (part).

1878. *Nyctinomus brasiliensis* DOBSON, Catal. Chiropt. Brit.-Mus., pp. 437-439 (part).
1889. *Nyctinomus mohavensis* MERRIAM, N. Amer. Fauna, no. 2, p. 25, October 30, 1889.
1894. *Nyctinomus brasiliensis californicus* H. ALLEN, Monogr. Bats N. Amer., Bull. U. S. Nat. Mus., 43 (1893), p. 166, March 14, 1894.
1918. *Nyctinomus mexicanus* H. GRINNELL, A Synop. Bats Calif., Univ. Calif. pub. zool., vol. 17, pp. 361-369, January 31, 1918.
1924. *Tadarida mexicana* MILLER, N. Amer. Recent Mamm. 1923, Bull. U. S. Nat. Mus. 128, p. 86, April 29, 1924.

Type locality.—Ameca, Jalisco, Mexico. The describer selects no specimen as type, but gives as the habitat the plateau of Mexico. Specimens are mentioned from Ameca, Jalisco, and from Cofre de Perote, Vera Cruz. In the United States National Museum collection are three specimens from San Pedro, Jalisco, which is in the immediate vicinity of Ameca, and 23 others from various places in Jalisco. I have therefore chosen Ameca, Jalisco, as the type locality. A specimen labeled, "Mexico" (Saussure) and marked type of *Mollossus mexicanus* was examined in the Berlin Museum in 1904 by Mr. Miller who thinks that it is probably a cotype. Measurements were taken at the time as follows: Total, 91; tail, 32.6; tibia, 12; foot, 9; forearm, 41.6; ear from meatus, 19; ear from crown 15. Adult male.

Geographic distribution.—Mexico, Texas, New Mexico, Arizona, California, Lower California, Utah, and Oregon.

Diagnosis.—The forearm is 40.4-46.6 mm. in length, usually ranging somewhere between 42 and 44 mm. It only seldom reaches 45 and rarely goes below 42. Length of tibia from 11.4-13.0 mm., average about 12. Length of skull 16.2-17.8 mm., usually 16.2-17.4. Ear extends to end of nostril when laid forward. When the skulls are compared with those of *T. brasiliensis* the greatest difference is seen to be the narrower rostrum in the Mexican form. In 18 skulls of *T. brasiliensis* the width at m^2 ranges from 6.8 to 7.2 mm.; while in 50 skulls of *T. mexicana* the width at m^2 ranges from 6.2 to 6.8 mm. In only one of the South American skulls measured is the total length under 17.0 mm., while in *T. mexicana* it is frequently less than 17.0 mm. The tibia averages somewhat shorter than that of *T. brasiliensis*.

Measurements.—For detailed measurements see tables, pages 18 and 24.

Specimens examined.—Seven hundred twenty-two from the following localities: Mexico (285): Puebla, 3 skins, 14 alcoholics; Vera Cruz, 3 skins; Morelos, 2 skins, 10 alcoholics; Lerma, 2 skins, 23 alcoholics; Tacubaya, 6 skins, 18 alcoholics; Hidalgo, 1 skin, 2 alcoholics; Michoacan, 6 skins, 32 alcoholics; Colima, 76 alcoholics; Chapala, 1 alcoholic; Jalisco, 26 alcoholics; Queretaro, 5 alcoholics; Guanajuato, 24 alcoholics; San Luis Potosi, 83 alcoholics; Zacatecas, 4

skins, 20 alcoholics; Tamaulipas, 1 skin; Durango, 1 alcoholic; Sinaloa, 1 alcoholic; Nuevo Leon, 1 skin; Coahuila, 17 skins; Chihuahua, 2 skins 1 alcoholic; Sonora, 1 skin; Rio Pecos to Rio Grande Rivers, 1 alcoholic; San Pedro, 1 alcoholic: no exact locality, 1 alcoholic. **Texas** (257): Brownsville, 10 alcoholics; Hidalgo, 1 alcoholic; Laredo, 1 skin; Padre Island, 1 alcoholic; Runge, 2 skins; Eagle Pass, 9 alcoholics; Uvalde, 9 alcoholics; Del Rio, 4 skins; Comstock, 136 skins; Langtry, 2 skins; Valverde County, 12 alcoholics; Fort Clark, 4 skins; Victoria, 3 alcoholics; San Antonio, 1 skin, 1 alcoholic; Austin, 2 alcoholics; Kerrville, 5 skins, 9 alcoholics; San Angelo, 1 alcoholic; Burnet, 1 alcoholic; Brazos, 8 skins, 10 alcoholics; Fort Stockton, 3 skins, 1 alcoholic; Alpine, 2 alcoholics; Boquillas, 1 alcoholic; Davis Mountains, 3 skins; El Paso, 1 skin; Mitchell Lake (near San Antonio), 1 alcoholic; no exact locality, 13 alcoholics. **New Mexico** (17): Carlsbad, 4 skins, 3 alcoholics; Las Vegas, 1 alcoholic; San Mateo Mountains, 1 skin; Deming, 1 skin; Mimbres Range to the Rio Grande, 1 skin; Animas Valley, 2 skins; Cloverdale, 4 skins. **Arizona** (44): San Bernardino Ranch, 4 skins, 2 alcoholics; Parker, 1 skin, 1 alcoholic; York, 1 alcoholic; Safford, 1 skin; White Rive, 1 alcoholic; Grand Falls, Little Colorado River, 7 alcoholics; Tucson, 1 alcoholic; Pima County, 1 skin; Fort Mohave, 1 skin; Yuma, 4 skins, 19 alcoholics; Colorado River, Diamond Creek, 3 alcoholics. **California** (109): Fort Yuma, 1 alcoholic; Carrizo Creek, San Luis Rey, San Diego County, 5 alcoholics; Covina, 1 skin; Los Angeles, 1 alcoholic; Pasadena, 1 skin; Alhambra, 4 alcoholics; Bear Valley, San Bernardino County, 4 alcoholics; 29 Palms, San Bernardino County, 1 skin; Cloverdale, 4 alcoholics; Buttonwillow, 1 skin; Lemoore, 19 alcoholics; San Jose, 4 alcoholics; Monterey, 1 alcoholic; Santa Cruz, 4 alcoholics; Death Valley, Inyo County, 8 alcoholics; Three Rivers, 13 alcoholics; Chinese Camp, Tuolumne County, 2 alcoholics; Auburn, 1 alcoholic; Gilroy, 1 skin; Colusa, 12 skins, 13 alcoholics; Chico, 5 skins, 3 alcoholics. **Utah**: Jensen, 1 alcoholic. **Oregon**: Fort Dallas, 1 skin. **Lower California** (10, A. M. N. H.): Carrizo, 1 alcoholic; San Pedro Martir, 2 alcoholics; San Telmo, 6 alcoholics; Villadares, 1 alcoholic.

Remarks.—This species is plentifully represented in the United States National Museum collection. Its range covers a territory in Mexico on the south from the State of Pueblo north to central Texas (Austin on the east, and as far north as Brazos, Palo Pinto County), thence west through New Mexico, Arizona, Utah (north-eastern), and from southern California north to Chico in Butte County and Fort Dallas, Oreg. This bat has a remarkably extensive range for a single species and varies only slightly in intensity of color, mummy brown to Prout's brown (Ridgway 1912). These variations are never localized, and dark and light examples can be matched from almost any two localities.

TADARIDA INTERMEDIA, new species

Type.—Adult male (in alcohol), Cat. No. 78488, U.S.N.M., Biological Survey Collection. Collected in the Valley of Comitán, Chiapas, Mexico, December 11, 1895, by E. W. Nelson and E. A. Goldman.

Distribution.—Tropical zone in Southern Mexico and Guatemala.

Diagnosis.—Skull and teeth smaller than in *T. mexicana*; greatest length of skull 15.5–16.2 mm. instead of 16.2–17.8 mm. Ear extends to end of nostril when laid forward.

Teeth.—The molariform teeth are smaller in transverse extent than those of *T. mexicana* or *T. brasiliensis*. The length of the maxillary tooth row is 5.5–6.0 mm. instead of 5.8–6.5 mm. and 6.0–6.6 mm., respectively, in these two related forms.

Measurements.—Type: Head and body, 52.4; tail, 27.6; tibia, 12.8; foot, 8.8; forearm, 45.0; third metacarpal, 44.6; fifth metacarpal, 26.4; thumb, 6.5; ear from meatus, 16.0; ear from crown, 12.8; ear width, 15.2; total length of skull, 15.8; zygomatic breadth, 8.5; interorbital breadth, 3.8; occipital depth, 5.8; breadth of braincase, 7.8; basal length, 13.2; maxillary tooth row (including incisor), 5.6; breadth at m^2 , 6.4; breadth at canines, 3.6; length of mandible, 11.4; length of maxillary tooth row, 6.2. For measurements, see pages 18 and 24.

Specimens examined.—Fourteen from the following localities: Chiapas, Valley of Comitán, 11 alcoholics including the type; Guatemala, Jacatlenango, 3 alcoholics.

Remarks.—This bat is not different from *T. mexicana* in outward appearance or external measurements, but the skulls run smaller in all their measurements, their uniformly less size being at once noticeable when specimens are laid out in a series. The range is intermediate between *T. mexicana* and *T. brasiliensis*, but the characters are not.

TADARIDA CYNOCEPHALA (LeConte)

1831. *Nyct [icea] cynocephala* LECONTE, McMurtrie's Cuvier, Animal Kingdom, vol. 1, p. 432.
1837. *Molossus fuliginosus* COOPER, Ann. Lyc. Nat. Hist. New York, vol. 4, pp. 67–68, pl. 3, figs. 3–4. November, 1837.
1855. *Rhinopoma carolinense* LECONTE, Proc. Acad. Nat. Sci. Philadelphia, vol. 7, pp. 437–438.
1864. *Nyctinomus nasutus* H. ALLEN, Mon. Bats N. Amer., Smiths. Miscell. Col., no. 165, pp. 7–10, June, 1864 (part).
1893. *Nyctinomus brasiliensis* H. ALLEN, Mon. Bats N. Amer., Bull. U. S. Nat. Mus., no. 43, pp. 163–171 (part).
1898. *Nyctinomus cynocephalus* MILLER, Proc. Boston Soc. Nat. Hist., vol. 28, p. 218, March, 1898.
1924. *Tadarida cynocephala* MILLER, N. Amer. Recent Mamm. 1923, Bull. U. S. Nat. Mus. 128, p. 85, April 29, 1924.

Type locality.—Georgia, probably in the neighborhood of the LeConte plantation, Liberty County. Type specimen not known to be in existence.

Geographic distribution.—Louisiana, Alabama, Florida, Georgia, and South Carolina.

Diagnosis.—The skull, which is constantly 17.0 mm. or over in its total length, is like its South American ally *T. brasiliensis*; but larger than *T. mexicana* whose skull is usually less than 17.0 mm. The uniformly short tibia and ear are the most reliable characters to separate it from both *T. brasiliensis* and *T. mexicana*. The color runs more uniformly toward the darker shade for the genus.

Measurements.—For detailed measurements see tables, pages 20 and 25.

Specimens examined.—Two-hundred fifty-eight specimens from the following localities: **Louisiana:** Houma, 77 alcoholics; New Orleans, 33 alcoholics. **Alabama:** Orange Beach, 1 skin; Greensboro, 30 alcoholics. **Georgia:** Savannah, 1 skin, 1 alcoholic. **Florida:** Gainesville, 20 skins, 74 alcoholics; Kissimmee, 1 skin; Wacissa River, 1 skin; southern Florida, 1 skin; no exact locality, 10 alcoholics. **South Carolina:** Columbia, 8 skins.

WEST INDIAN FORMS

Taken as a whole the Antillean members of the genus *Tadarida* are smaller than the mainland forms. The differences that I have been able to find, among these island forms themselves, are in averages rather than individual measurements. The insular forms divide reasonably well into two groups, a southern group including those found on the islands from Dominica up to and including Porto Rico, a northern group including those found on the islands of Jamaica, Hispaniola, Cuba, and the Bahamas. In the northern group the skull ranges in total length from 16.0–16.8 mm., or always 16.0 mm. or over. In the southern group the total length of the skull ranges from 14.6–16.5 mm. (usually less than 16.0 mm.). The ear in members of the northern group is longer, extending, in alcoholic specimens, to the edge of the nostril when laid forward. This last statement is not true of the Jamaican form, as it has a short ear, but I have placed it in the northern group because of the uniformly larger skull. In the southern group the ear is shorter; it fails to reach the edge of the nostril by about 2 mm. when laid forward.

TADARIDA BAHAMENSIS (Rehn)

1902. *Nyctinomus bahamensis* REHN, Proc. Acad. Nat. Sci. Philadelphia, p. 641, December 12, 1902.
 1911. *Nyctinomus brasiliensis bahamensis* G. M. ALLEN, Bull. Mus. Comp. Zoöl., vol. 59, p. 245, July, 1911.
 1923. *Tadarida bahamensis* MILLER, N. Amer. Recent Mammals 1923, Bull. U. S. Nat. Mus. 128, p. 85, April 29, 1924.

Type locality.—Governor's Harbor, Eleuthera, Bahamas. Type specimen in the collection of the School of Biology, University of Pennsylvania.

Geographic distribution.—Bahama Islands, Eleuthera Island, Long Island, and Little Abaco Island.

Diagnosis.—Size largest of the West Indian forms; forearm 40.0–43.6 mm., usually, 41.0 mm. or over; length of tibia, 12.0–12.8 mm., usually over 12.0 mm.; length of skull, 16.5–16.8 mm.; color lighter, about Verona Brown (Ridgway, 1912).

Measurements.—For detailed measurements see tables, pages 20 and 25.

Specimens examined.—Eighty-five specimens, all alcoholics, except five skins, from Clarence Harbor, Long Island, Bahama Islands.

TADARIDA MUSCULA (Gundlach)

1840. *Rhinopoma carolinensis* GUNDLACH (not Geoffrey), Wieg. Archiv., vol. 1, p. 358

1861. *Nyctinomus musculus* GUNDLACH, Monatsber. k. preuss. Akad. Wissensch. Berlin, p. 149

1924. *Tadarida muscula* MILLER, N. Amer. Recent Mammals 1923, Bull. U. S. Nat. Mus. 123, p. 86, April 29, 1924.

Type locality.—Cuba. Mr. Miller, while in the Berlin Museum in 1904 found six specimens of *T. muscula*. A mounted specimen and a bottle containing four in alcohol were marked type. Measurements taken at that time of an adult male in alcohol are as follows: Total length, 85; tail, 31; tibia, 10.4; foot, 7; forearm, 38; ear from meatus, 16; ear from crown, 13.

Geographic distribution.—Cuba.

Diagnosis.—This bat is separable from *T. bahamensis* by its shorter tibia, 11.0–12.2 mm. as against 12.0–12.8 mm., and its darker color. From *T. murina* by its longer ear, 16.2–17.5 mm. as against 15.0–16.2 mm., and its average shorter forearm. From *T. constanzae* by its average shorter forearm, 38.2–41.2 mm. as against 41.0–43.0 mm.

Measurements.—For detailed measurements see tables, pages 20 and 26.

Specimens examined.—Twenty-three from the Island of Cuba, including 16 alcoholics and 7 skins.

TADARIDA MURINA (Gray)

1827. *Nyctinomus murinus* GRAY, Cuvier's Animal Kingdom, Griffith edition, vol. 5, p. 66

1861. *Nyctinomus nasutus* TOMES, Proc. Zool. Soc. London, pp. 68–69, 1861. (Not of Spix, 1823).

1878. *Nyctinomus brasiliensis* DOBSON, Catal. Chiropt. Brit. Mus., pp. 437–439 (part).

1911. *Nyctinomus brasiliensis musculus* G. M. ALLEN, Bull. Mus. Comp. Zoöl., vol. 59, p. 244, July, 1911.

1918. *Nyctinomus murinus* ANTHONY, Mem. Amer. Mus. Nat. Hist., new ser., vol. 2, pt. 2, pp. 363-364, October 12, 1918.

Type locality.—Jamaica. Type specimen in the British Museum.

Geographic distribution.—Jamaica.

Diagnosis.—Size not so large as in the Bahaman animal; forearm, 40.0-42.5 mm.; tibia, 11.0-12.0 mm.; length of skull, 16.0-16.6 mm.; the color is a reddish chocolate brown. Distinguished from *T. muscula* and *T. constanzae* by its smaller ear, and from *T. bahamensis* by its shorter tibia as well as shorter ear.

Measurements.—For detailed measurements see tables, pages 20 and 26.

Specimens examined.—Sixteen (including 10 alcoholics), all from the island of Jamaica.

TADARIDA CONSTANZAE, new species

Type.—Adult male (in alcohol), No. 217205, U.S.N.M., collected at Constanza, Dominican Republic, September 26, 1916, by Dr. W. L. Abbott.

Geographic distribution.—Haiti and the Dominican Republic.

Diagnosis.—Next smaller in size to *T. bahamensis* of the West Indian group. For measurement see pages 21 and 26.

Measurements.—Type: Head and body, 54.2 mm.; tail, 32.2; tibia, 11.4; foot, 8.6; forearm, 41.0; third metacarpal, 42.6; fifth metacarpal, 24.2; ear from meatus, 17.2; ear from crown, 12.4; ear width, 15.2; total length of skull, 16.5; zygomatic breadth, 8.8; inter-orbital breadth, 3.8; occipital depth, 5.8; breadth of braincase, 7.8; basal length, 13.8; maxillary tooth row, 5.6; breadth at m², 6.4; breadth at canines, 3.8; length of mandible, 11.4; mandibular tooth row, 6.2.

Specimens examined.—Sixty-nine from the following localities: Haiti: Bombardopolis, 1 skin, 1 alcoholic; St. Michel, 2 alcoholics. Dominican Republic: Constanza, 1 skin and 64 alcoholics.

Remarks.—This species is separable from the Bahaman form by its shorter tibia, slightly smaller skull, and darker color; from the Cuban form by its longer forearm; and from the Jamaican form by its larger ear as well as its slightly longer tibia.

TADARIDA ANTILLULARUM (Miller)

1902. *Nyctinomus antillularum* MILLER, Proc. Acad. Nat. Sci. Philadelphia, p. 398, September 3, 1902.

1911. *Nyctinomus brasiliensis antillularum* G. M. ALLEN, Bull. Mus. Comp. Zool., vol. 54, p. 245, July, 1911.

1924. *Tadarida antillularum* MILLER, N. Amer. Recent Mamm. 1923, Bull. U. S. Nat. Mus. 128, p. 85, April 29, 1924.

Type-locality.—Roseau, Dominica, W. I. Type-specimen in United States National Museum.

Geographic distribution.—The islands of Dominica, St. Lucia, Guadeloupe, Montserrat, Antigua, Barbuda, St. Kitts, and Porto Rico.

Diagnosis.—Size small for the genus, forearm 36.6 to 41.4 mm., usually less than 40.0 mm.; length of tibia, 10.0 to 12.4 mm., usually less than 12.0 mm.; length of skull, 14.6–16.5 mm., usually 16.0 mm. or less. There are two color phases, mummy brown and russet. Ear falling short of the end of muzzle when laid forward.

Measurements.—For detailed measurements see tables, pages 21 and 26.

Specimens.—One hundred eighty-four from the following islands: Dominica, 34 alcoholics, 2 skins; St. Lucia, 11 alcoholics; Guadeloupe, 18 alcoholics; Montserrat, 2 alcoholics; Antigua, 21 alcoholics; Barbuda, 11 alcoholics; St. Kitts, 8 alcoholics, 2 skins; Porto Rico, 42 alcoholics, 3 skins U.S.N.M., 30 alcoholics A. M. N. H.

MACROTIS GROUP

The skulls in the members of the *macrotis* group are characterized by the long narrow rostrum, which is scarcely wider anteriorly than at the point of the least interorbital breadth; rather well developed sagittal crest; palate sometimes without an anterior emargination (*macrotis*) or with a very narrow one (*laticaudata*, *yucatanica*, *europs*, *femorosacca*); upper incisors set closely at their base, nearly touching, and extending in a parallel position downward; lower incisors four.

At the angle of the tibia and femur there is a conspicuous fold of membrane which forms a pocket on the under side. With the exception of *Tadarida europs* and *T. yucatanica* the animals are larger than the members of the *brasiliensis* group. The spines on the nasal border are sometimes continued downward as two lines between the nasal apertures converging in the middle until they touch, though sometimes they form a single line; but always there are two distinct lines at the base. Tragus somewhat as in members of the *brasiliensis* group, but not squarely truncate, its upper posterior corner bearing a small projection. Antitragus higher than wide. The ears are large; they extend well beyond tip of muzzle when laid forward, and their inner margins are united for about 2 mm. at base.

The second phalanx of the fourth finger is short, 2.0–4.4 mm. in all the specimens measured, and of equal length with the first phalanx, except in *T. europs*, where it is slightly longer than the first. When compared with the length of the forearm it is found to range from 3.5 per cent in *T. macrotis* to 9.5 per cent in *T. europs*.

TADARIDA AURISPINOSA (Peale)

1848. *Dysopes aurispinosus* PEALE, U. S. Expl. Exp., vol. 8, Mammalogy and Ornithology, p. 21. (Ed. 1.)

1858. *Molossus aurispinosus* CASSIN, U. S. Expl. Exp., vol. 8, Mammalogy and Ornithology, pp. 5–7. (Ed. 2.)

1902. *Nyctinomops aurispinosus* MILLER, Proc. Acad. Nat. Sci. Philadelphia, vol. 15, p. 393, May, 1902.
1909. *Dysopes aurispinosus* LYON and OSGOOD, Catal. Type-Spec. Bull. U. S. Nat. Mus. 62, p. 279, January 28, 1909.

Type locality.—The type and only specimen known was taken "on board the U. S. S. *Peacock* off the coast of Brazil. On the 18th of November, when the ship was about 100 miles from land, south of Cape St. Roque." Type specimen in United States National Museum.

Diagnosis.—This bat is intermediate in size between *T. laticaudata* and *T. macrotis*, its nearest relatives. The tibia is 15.5 mm. and the forearm is 50.0 mm., while in *T. laticaudata*, the tibia is 13.2–14.6 and the forearm 46.0–48.6. In *T. macrotis* the tibia is 16.4–17.8 and the forearm 58.2–63.8.

Measurements.—For detailed measurements see table, page 22.

Specimens examined.—One, the type.

Remarks.—This bat is nearer to *T. laticaudata* than to *T. macrotis*; in fact it is my opinion that it is the same as the first-named species; but until specimens of *T. laticaudata* are known with a forearm reaching 50.0 mm. and a tibia as long as 15.5 mm., one can not positively say that it is.

It was originally a dry skin, but was placed in alcohol November 27, 1899, after relaxing in water to bring out the characters of the ears and membranes. Mr. Gerrit S. Miller, jr., then made a note of the color on the back of the label: "Belly wood brown; back between wood brown and russet." There is no skull.

TADARIDA LATICAUDATA (E. Geoffroy)

1805. *Molossus laticaudatus* GEOFFROY, Ann. Mus. Paris, vol. 6, p. 156.
1876. *Nyctinomus gracilis* DOBSON, Proc. Zool. Soc. London, p. 731, November 7, 1876 (part).
1878. *Nyctinomus gracilis* DOBSON, Catal. Chiropt. Brit. Mus., pp. 436–437, (part).
1902. *Nyctinomops laticaudatus* MILLER, Proc. Acad. Nat. Sci. Phila., p. 393, May, 1902.

Type locality.—Paraguay. Geoffrey in his description of the species bases his name on Azara's description of bat No. 8 from Paraguay.

Geographic distribution.—Brazil and Paraguay.

Diagnosis.—Upper parts vandyke brown (Ridgway 1912), under parts paler, the hairs tipped with pale buff. One skin from Brazil is lighter in color, more of a reddish brown, but this skin is immature. Forearm, 45.6–48.6 mm.; total length of skull, 18.5–19.5 mm. This species is intermediate in size between *T. europs* and *T. macrotis*.

Measurements.—For detailed measurements see tables, pages 22 and 27.

Specimens examined.—Thirty-eight from the following localities: **Brazil**: Piracicaba, 1 skin; St. Catherine, 2 skins. **Paraguay**: Asuncion, 9 alcoholics, 5 skins; Sapucay, 10 alcoholics and 11 skins.

Remarks.—This bat bears a close relationship to *T. aurispinosa* the type and only known specimen of which has no skull. However, *T. aurispinosa* has a longer tibia and forearm, 15.5 mm. and 50.0 mm. as against a shorter tibia and forearm, 13.2–14.6 mm. and 45.6–48.6 mm. in *T. laticaudata*, which leaves some ground, though slight, for the separation of the two animals.

TADARIDA FEMOROSACCA (Merriam)

1889. *Nyctinomus femorosaccus* MERRIAM, North Amer. Fauna, No. 2, p. 23, October 30, 1899.
 1902. *Nyctinomops femorosaccus* MILLER, Proc. Acad. Nat. Sci. Philadelphia, p. 393, September 3, 1902.
 1923. *Tadarida femorosacca* MILLER, List North Amer. Recent Mamm. 1923, Bull. U. S. Nat. Mus. 128, p. 86, April 29, 1924.

Type locality.—Agua Caliente, Sonoma County, California. Type specimen in United States National Museum.

Geographic distribution.—Arizona, California, Lower California, and Jalisco, Mexico.

Diagnosis.—Like *T. laticaudata* but occipital depth of skull slightly less, 6.0–6.4 mm. as against 6.5–7.0 mm., and color of only skin examined, which is immature, darker, and less red than in South American specimens of similar age.

Measurements.—For detailed measurements see tables, pages 22 and 27.

Specimens examined.—Nine specimens examined from the following localities: **Arizona:** Fort Huachuca, 1 alcoholic, Coyote Mountains, 1 skin. **California:** Agua Caliente (type), 1 alcoholic; Colorado River mouth, 1 alcoholic. **Lower California:** Santa Anita, 1 alcoholic; San Pedro Mountains, 1 alcoholic. **Jalisco:** Zacoalco, 3 alcoholics.

Remarks.—The skins of *T. laticaudata* are near vandyke brown (Ridgway 1912), except one immature skin which is lighter in color than the adults, but distinctly different in color from the young *T. femorosacca*.

This form is so like *T. laticaudata* that if the form had not already been named there would be no very good reason for separating it.

The three specimens from Jalisco extend the known range of *Tadarida femorosacca* into central western Mexico. These specimens have been in the collection since 1892, but had never previously been separated from some specimens of *T. mexicana* collected at the same locality. Compared with specimens taken farther north they have a slightly longer ear, 22.2–22.8 mm. as against 18.6–21.5 mm. in five specimens from the United States and Lower California. The skulls have a rather better developed sagittal crest and the width at the base of the canines is greater, but these differences are slight and of no great importance in so small a series.

All specimens examined were alcoholics except one skin from Coyote Mountains, Arizona, which, as mentioned above, is immature, and indistinguishable in point of color from specimen of *T. mexicana*.

TADARIDA EUROPS (H. Allen)

1889. *Nyctinomus europs* H. ALLEN, Proc. Amer. Philos. Soc., vol. 26, pp. 558-561, October 4, 1889.

1904. *Nyctinomops europs* TROUËSSART, Catal. Mamm. viv. foss. suppl., p. 103.

Type locality.—Brazil, no exact locality given. Lectotype in United States National Museum.

Type specimen.—Harrison Allen based his description on 20 adult alcoholic specimens from Brazil, without exact locality. Ten of these specimens are in the United States National Museum collection. No. 101498, adult female, is therefore chosen as the lectotype.

Geographic distribution.—Brazil and Venezuela.

Diagnosis.—The nearest relative of *T. europs* is *T. yucatanica* from Yucatan, but *T. europs* is slightly the smaller of the two. The fur on the back of *T. europs* is dark (auburn), instead of vandyke brown (Ridgway 1912) as in *T. yucatanica*. However, the most noticeable external character of this bat is the peculiar manner of the growth of the fur on the back, where below the arm it does not extend on to the wing membrane, as it does in other members of the American forms of the genus *Tadarida*; instead, immediately below the humerus there is an abrupt inward narrowing of the fur area into a kind of slender pannel extending down to the base of the tail. This leaves an unusual bare spot on both sides of the back. This character will distinguish this species externally from any other American form of the genus.

Measurements.—For detailed measurements see tables, pages 22 and 27.

Specimens examined.—One hundred sixty-seven from the following localities: **Brazil**: no exact locality, 10 alcoholics. **Venezuela** (all specimens from Venezuela are American Museum specimens): Casiquiare Canal, Buena Vista, 7 skins, 1 alcoholic; Casiquiare Canal, Amapure, 25 skins, 20 alcoholics; Libreto, 15 skins; Paripari, 35 skins, Ocamo River, 54 skins.

Remarks.—When work began on this paper only 10 specimens of *T. europs* were available for study; however, since that time I have been able to see and examine the splendid collection of 157 specimens secured recently in Venezuela by G. H. H. Tate, of the American Museum of Natural History, New York. Mr. Tate explains in his field catalogue that these bats were collected in splits in the granite rocks along the edge of the Orinoco and Casiquiare Canal in the Province of Amazonas. Collected with bat net spread over crevices in rocks. Very numerous at dusk.

Tadarida europs departs farther from the standards for the *macrotis* group than any other species in the group. The manner of the growth

of the fur on the back, as described above, is different from that in any other American *Tadarida*. The second phalanx of the fourth finger is longer than the first phalanx, while in all other members of this group it is shorter.

TADARIDA YUCATANICA (Miller)

1876. *Nyctinomus gracilis* DOBSON, Proc. Zool. Soc. London, p. 731, November 7 (part).
 1902. *Nyctinomops yucatanica* MILLER, Proc. Acad. Nat. Sci., Philadelphia, p. 393, September 3, 1902.
 1912. *Nyctinomus yucatanicus* MILLER, List N. Amer. Land Mamm. 1911, Bull. U. S. Nat. Mus. 79, p. 70, December 31, 1912.
 1923. *Tadarida yucatanica* MILLER, List North Amer. Recent Mamm. 1923, Bull. U. S. Nat. Mus. 128, p. 87, April 29, 1924.

Type locality.—Chichen Itza, Yucatan. Type-specimen in United States National Museum.

Geographic distribution.—Yucatan and Guatemala.

Diagnosis.—This species is nearest the Brazilian *Tadarida europs*, but it has a larger skull, total length 17.6–18.2 mm. as against 16.5–17.0 mm., and a longer tibia 12.6–13.8 mm. as against 11.2–12.0 mm. The palatal emargination is present, but very small.

Measurements.—For detailed measurements see tables, page 22 and 27.

Specimens examined.—One hundred twenty-four specimens were examined from the following localities: Chichen Itza, Yucatan, 12 skins, including the type; Flores, Peten, Guatemala, 29 skins, 52 alcoholics, and 31 skeletons without skins.

Remarks.—The specimens from Guatemala recorded by Dobson under the name *Nyctinomus gracilis* (1876)⁷ undoubtedly pertain to this form. This bat is not very different in size from members of the *brasiliensis* group, but its deep reddish brown color is diagnostic.

TADARIDA MACROTIS (Gray)

1839. *Nyctinomus macrotis* GRAY, Ann. Nat. Hist., vol. 4, pp. 5–6, September, 1839. (Cuba.)
 1843. *Dysopes auritus* WAGNER, Wieg. Archiv., vol. 1., p. 368. (Cuyaba, Brazil.)
 1876. *Nyctinomus megalotis* DOBSON, Proc. Zool. Soc., London, pp. 728–729, November 7, 1876. (Surinam.)
 1878. *Nyctinomus megalotis* DOBSON, Catal. Chiroptera Brit. Mus., pp. 434–435.
 1878. *Nyctinomus magrotis* DOBSON, Catal. Chiroptera Brit. Mus., pp. 435–436.
 1891. *Nyctinomus depressus* WARD, Amer. Nat., vol. 25, pp. 747–750, August, 1891. (Federal District, Mexico.)
 1894. *Nyctinomus macrotis nevadensis* H. ALLEN, Monogr. Bats. N. Amer. (1893), p. 171, March 17, 1894. (California.)
 1900. *Promops affinis* J. A. ALLEN, Bull. Amer. Mus. Nat. Hist., vol. 13, pp. 91–92. December, 1900. (Colombia.)

⁷ Proc. Zool. Soc. London, p. 731, 1876

1902. *Nyctinomops depressus* MILLER, Proc. Acad. Nat. Sci. Philadelphia, p. 393, September 12, 1902.
1902. *Nyctinomops macrotis* MILLER, Proc. Acad. Nat. Sci. Philadelphia, p. 393, September 12, 1902.
1902. *Nyctinomops affinis* MILLER, Proc. Acad. Nat. Sci. Philadelphia, p. 393, September 12, 1920.
1902. *Nyctinomops nevadensis* MILLER, Proc. Biol. Soc. Washington, vol. 15, p. 250, December 16, 1902.
1914. *Nyctinomops aequatorialis* J. A. ALLEN, Bull. Amer. Mus. Nat. Hist., vol. 33, p. 386, July 9, 1914. (Ecuador.)
1923. *Tadarida depressa* MILLER, List N. Amer. Recent Mamm. 1923, Bull. U. S. Nat. Mus., 128, p. 86, April 29, 1924.
1924. *Tadarida nevadensis* MILLER, N. Amer. Recent Mamm. 1923, Bull. U. S. Nat. Mus., 128, p. 87, April 29, 1924.
1924. *Tadarida macrotis* MILLER, N. Amer. Recent Mamm. 1923, Bull. U. S. Nat. Mus., 128, April 29, 1924.

Type locality.—Cuba. Collected by W. S. MacLeay in the interior of the Island of Cuba, where it was found in a hollow tree. Type specimen presumably in the British Museum.

Geographic distribution.—Brazil, Ecuador, Colombia, Cuba, Jamaica, Mexico, Arizona, California, and Iowa.

Diagnosis.—Size largest of the genus in the Western Hemisphere. Greatest length of skull, 22.2–24.0 mm.; maxillary tooth row, 8.2–9.5 mm.; forearm, 58.2–63.8 mm.; tibia 16.4–18.0 mm. The larger size makes it at once separable from any other American form of the genus.

Measurements.—For detailed measurements see tables, pages 23 and 27.

Specimens examined.—Fifty, from the following localities: **Brazil**: Ypiranga, 1 skin. **Ecuador**: Manvi Chone, 1 skin type of *N. aequatorialis*. **Colombia**: Tagauga, 1 skin type of *Promops affinis*. **Cuba**: 2 alcoholics. **Jamaica**: 30 alcoholics. **Dominican Republic**: 7 alcoholics. **Lower California**: 4 alcoholics. **Arizona**: 1 skin. **California**: no exact locality, 1 alcoholic. **Nevada**: 1 alcoholic. **Iowa**: 1 skin.

Remarks.—Because of the small number of specimens from the mainland, it has been very difficult to come to a conclusion on the status of the several described forms of this large *Tadarida*. A considerable number of specimens have been examined from the West Indies, but the larger part of them were immature. Only three skins have been obtainable from South America and with two of these, the types of *N. aequatorialis* and *Promops affinis* it has been impossible to take measurements of the tibiae, while it also appears that the forearm of *N. aequatorialis* has been broken off at the elbow, so that the forearm measurement may not be truly representative. I am unable to find any characters of differentiation in the skulls.

Dobson in his Catalogue of the Chiroptera in the British Museum, 1878, lists specimens of *N. macrotis* from Cuba, Brazil, and Paraguay. Two years previous, 1876, in Proceedings Zoological Society of London, he describes a new form from Surinam, *N. megalotis*, basing

his separation from *M. macrotis* on supposed larger size; but the measurements I have made of West Indian specimens alone show this difference in size to be of no value.

The next name applied to specimens from South America was *Promops affinis*, based on one adult and five young from Colombia. In J. A. Allen's description he has the following to say:

The skull of *Promops affinis*, allowing for the immaturity of the specimens, closely resembles, in general form and character of the teeth, that of *P. depressus* (Ward) from Mexico. The two species are also practically of the same size and proportions, but in color *P. affinis* is much darker than *P. depressus*, and has the lower outer lobe of the ear much narrower, and the inflated upper internal border wider. They are obviously closely related forms, but their exact relationship can be determined only on comparison of a larger amount of more strictly comparable material.

Miller in 1902⁸ concluded that *Nyctinomus nevadensis* and *Nyctinomus depressus* were the same, and I have found nothing to upset his conclusion. I have examined the skin of the type of *Promops affinis*, which has no skull, also adult skins (one each) from Brazil, Ecuador, Arizona, Iowa, and an alcoholic (dried out) from Lower California. In all these specimens the color is argus brown (Ridgway, 1912), with the exception of the skin from Iowa, which is much darker than the others, near mummy brown (Ridgway, 1912). Five young specimens taken with the type of *Promops affinis* are also much darker in color than the adult skin. The fur in each skin is whitish at the base. I have not seen the type of *N. depressa*, but since the two adult skins from South American are so exactly like the adult skin from Arizona, there is no reason to suppose that the type of the Mexican *N. depressa* is different.

It may be necessary to recognize several local forms when adequate series of specimens are available for measurement of the forearm and tibia; but at present there is nothing to show that such forms exist.

⁸ Proc. Biol. Soc. Washington, vol. 15, p. 250, December 16, 1902.

External measurements of the *brasiliensis* group

TADARIDA BRASILIENSIS

Locality	No.	Sex	Head and body	Tail	Tibia	Foot	Forearm	Third meta-carpal	Fifth meta-carpal	Thumb	Ear from meatus	Ear from crown	Ear width
Brazil: Province of Parana	18550	♂	62.2	33.8	12.5	7.8	44.6	44.2	25.5	7.2	18.8	15.0	16.8
	18551	♂	59.8	35.0	12.2	8.6	45.2	46.6	27.6	8.0	17.2	13.4	17.0
	18552	♂	61.8	37.4	12.4	8.2	43.5	46.0	26.4	7.5	17.6	12.5	16.0
	18553	♂	61.2	35.6	12.2	8.2	45.2	45.6	26.8	7.2	18.6	14.0	15.6
	18554	♂	61.0	31.0	13.2	8.5	44.6	44.0	26.4	7.5	17.8	14.2	17.6
	18555	♂	61.6	33.6	13.2	8.8	45.6	45.6	27.2	7.6	18.2	13.2	17.4
Mendoza: Mendoza	236234	♂	58.8	36.0	13.6	8.6	44.4	44.2	26.0	7.6	17.4	13.2	17.0
Tucuman: Tucuman	236229	♂	63.6	34.0	11.4	8.4	42.4	43.0	25.6	7.4	18.5	12.6	16.1
Chili: Ramal de Mélépilla	142106	♀	58.5	32.5	13.2	8.2	45.6	46.0	27.0	7.0	17.2	12.2	16.8
Uruguay	102592	♂	58.5	31.2	12.5	8.4	44.5	45.2	27.2	6.6	18.2	12.2	17.0
	102593	♂	57.6	33.6	12.2	7.8	44.0	43.5	26.5	7.2	18.0	13.5	16.5
Paraguay: Villa Rica	105686	♂	61.5	36.8	13.2	8.6	45.0	45.8	28.0	7.2	16.6	13.2	16.6
	105687	♂	56.2	35.0	13.2	9.2	46.4	46.6	27.6	8.0	18.0	14.0	17.6
	105688	♂	59.4	34.2	13.2	8.5	43.5	43.2	25.5	7.2	17.4	12.4	16.6
Peru: Santa Ana	195150	♂	59.8	32.0	13.0	8.8	46.4	47.2	28.2	7.6	16.4	12.4	18.0
	195151	♂	58.2	35.2	13.0	7.5	45.6	46.4	27.4	7.5	17.4	12.4	17.4
	195152	♂	59.5	32.8	12.4	7.8	45.2	45.2	26.8	7.2	17.2	13.0	18.5
	195153	♂	58.5	36.0	12.2	8.5	45.4	46.5	27.2	7.8	17.4	13.5	17.4
	195155	♂	56.5	32.8	12.5	7.2	44.0	43.0	25.5	7.0	18.0	12.8	17.5
	195156	♂	60.2	35.6	12.8	7.5	45.5	44.4	26.6	7.0	18.2	14.2	18.0
	195157	♂	59.8	34.6	12.6	8.2	45.2	46.0	27.5	7.0	16.6	13.5	17.6
	195158	♂	58.4	33.0	12.2	8.2	45.6	44.8	27.5	6.6	16.2	13.0	17.2

TADARIDA INTERMEDIA

Guatemala: Jacatle-nango	78517	♂	58.4	33.8	12.6	-----	44.0	44.0	26.4	6.8	16.6	10.5	15.5
	78518	♂	51.2	32.8	12.6	8.5	43.2	43.2	25.5	7.2	15.0	10.0	15.6
	78519	♂	53.8	34.6	13.2	8.6	44.8	45.8	26.2	7.4	16.2	11.8	13.5
Chiapas: Valley of Comitán	78486	♂	50.6	34.5	11.6	8.6	42.4	42.8	25.2	6.5	17.2	13.0	15.0
	78487	♂	54.6	32.8	13.2	9.0	43.8	44.2	26.6	7.6	18.2	14.0	18.6
	78488	♂	52.4	27.6	12.8	8.8	45.0	44.6	26.4	6.5	16.0	12.8	15.2
	78489	♂	54.5	32.6	12.5	8.6	42.6	43.8	25.5	7.6	18.0	13.8	16.4
	78490	♂	57.5	32.8	12.2	8.8	44.0	44.2	26.5	6.8	17.4	13.2	14.4
	78491	♂	54.8	31.2	12.0	8.5	43.2	44.6	26.2	7.0	16.5	12.5	15.5
	78492	♂	53.0	32.8	12.5	8.4	43.8	44.0	26.0	7.0	14.8	11.5	16.2
	78493	♂	56.0	31.8	12.4	8.5	45.4	46.8	27.0	7.2	17.2	12.2	15.6
	78494	♂	55.2	36.5	12.6	8.0	43.8	43.3	25.8	6.8	17.4	13.4	16.5
	78495	♂	55.8	37.8	12.0	8.4	43.2	43.8	26.4	6.5	16.5	12.6	14.8
	78496	♂	56.2	34.4	12.4	8.8	44.2	45.2	26.8	7.4	16.4	13.2	14.8

TADARIDA MEXICANA

Puebla: Tehuacan	53776	♀	56.5	28.6	12.5	8.2	44.0	44.0	26.2	7.6	16.6	12.2	14.4
	53777	♀	56.2	36.6	12.5	8.2	43.4	44.5	26.2	7.4	18.4	12.8	17.0
	53778	♀	59.4	30.0	11.6	8.2	44.6	43.8	26.6	7.8	17.2	12.5	14.6
	53779	♀	54.6	32.4	11.4	7.8	44.4	44.8	26.8	7.6	17.4	12.2	15.6
	53785	♀	56.4	36.2	12.4	7.8	43.6	44.2	25.6	7.4	17.6	13.4	17.4
	53788	♀	59.6	34.2	12.5	7.2	43.6	43.8	26.2	7.8	18.2	13.6	16.6
	53789	♀	58.2	32.2	12.0	7.8	44.5	44.2	26.5	7.5	16.6	12.2	17.6
	64340	♀	60.6	29.0	12.2	8.2	45.5	45.6	26.6	6.0	18.4	12.2	14.2
	64341	♀	62.6	35.8	12.5	8.8	46.6	47.0	26.0	7.4	19.5	13.0	18.6
	64342	♀	57.8	34.4	12.6	8.2	45.4	47.0	27.8	7.0	17.4	13.8	17.2
Morelos: Tetela del Volcan	53773	♂	56.5	40.0	12.5	8.2	45.6	46.5	26.8	6.8	17.2	13.8	17.5
Mexico District: Ixtapalapa	52430	♀	61.0	39.5	12.8	8.6	46.0	46.2	28.2	7.0	17.2	11.8	16.5
	52435	♀	60.8	37.2	11.8	8.4	42.4	43.6	25.8	7.0	17.6	12.4	16.8
	52436	♀	58.6	31.5	11.6	8.2	43.2	43.0	27.0	7.2	16.6	14.2	18.0
	52437	♀	59.4	34.0	13.0	8.0	44.6	45.6	26.8	6.8	16.5	13.5	17.0
	52439	♀	59.0	36.2	12.5	7.5	43.8	44.2	26.4	6.5	18.2	12.2	18.2
	52444	♀	60.4	39.6	12.6	8.6	45.2	46.0	27.2	7.2	18.8	13.8	19.0
	52445	♀	59.4	36.4	12.2	8.5	45.2	46.2	28.0	7.2	16.5	13.8	18.4
	52446	♀	61.2	37.0	12.2	8.2	44.2	45.5	26.8	6.6	18.0	13.8	18.8
	52447	♀	58.8	32.0	12.4	8.0	43.2	43.6	25.6	6.6	18.8	13.6	16.5
	52449	♀	59.8	32.4	11.6	7.4	42.2	42.5	25.6	6.6	18.0	14.0	16.8

1 Type.

External measurements of the *brasilensis* group—Continued

TADARIDA MEXICANA—Continued

Locality	No.	Sex	Head and body	Tail	Tibia	Foot	Forearm	Third meta-carpal	Fifth meta-carpal	Thumb	Ear from meatus	Ear from crown	Ear width	
Michoacan: Patzacaero.	52266	♂	58.2	29.0	11.8	9.5	43.5	43.0	25.8	7.2	17.4	13.8	15.8	
	52267	♂	57.4	30.8	13.0	8.4	45.5	45.4	26.5	7.5	17.2	12.2	17.2	
	52268	♂	57.6	36.6	12.4	8.2	45.2	45.5	27.5	8.0	18.0	13.6	17.0	
	52269	♂	57.2	32.2	11.5	7.2	44.2	44.8	27.8	7.0	17.8	12.2	16.6	
	52270	♂	58.2	33.6	12.0	8.8	43.8	44.6	26.8	7.4	19.8	14.4	18.8	
	52289	♂	55.5	33.2	12.2	8.2	43.4	44.5	27.4	7.2	16.6	13.5	17.5	
	52291	♂	57.8	33.5	12.0	8.4	43.8	45.6	26.8	7.2	17.8	13.6	17.5	
	52292	♂	57.0	32.2	11.8	8.4	43.8	44.8	26.6	7.2	17.6	13.6	17.0	
Guanajuato	62459	♂	55.6	32.8	11.8	8.8	43.6	43.2	26.5	7.0	17.8	13.5	17.5	
	62460	♂	58.5	33.5	12.2	7.5	43.0	43.8	27.2	6.8	19.4	14.5	17.5	
	62461	♂	55.5	31.5	12.2	7.8	42.6	43.6	26.6	7.4	17.8	13.8	18.6	
	62465	♂	57.6	31.5	11.5	7.5	42.5	43.5	25.5	6.4	16.4	12.4	16.0	
Colima: Colima.	52067	♂	59.2	32.0	12.6	8.2	44.8	45.6	26.6	7.2	16.8	12.5	16.0	
	52070	♂	58.4	30.5	11.8	7.8	42.0	43.8	26.0	6.4	17.8	13.8	16.0	
Jalisco: Zapotlan.	52118	♂	56.0	33.5	12.5	8.0	43.2	43.4	25.0	7.2	17.6	12.8	15.8	
	52119	♂	55.5	32.4	12.8	8.2	44.4	45.5	27.2	7.5	16.6	13.2	16.5	
	52120	♂	55.0	34.8	12.5	8.0	42.4	43.2	25.5	6.8	18.0	14.2	17.0	
	52121	♂	54.6	30.8	12.0	8.0	44.0	44.2	26.4	6.6	17.2	13.0	16.6	
San Luis Potosi: Ahualulco.	52165	♂	58.5	32.5	11.8	4.5	44.0	44.8	26.8	7.0	17.5	11.8	16.0	
	52166	♂	58.8	32.0	11.5	7.8	42.6	43.4	26.0	7.4	17.0	12.8	17.0	
	52169	♂	56.0	36.0	13.0	8.8	45.5	45.2	26.4	7.0	17.6	13.5	17.8	
	52170	♂	58.2	34.6	12.2	8.6	43.2	43.4	26.0	7.4	17.5	12.2	17.2	
Zacatecas:														
	San Juan	92558	♀	58.2	33.6	11.8	8.5	42.6	44.0	26.0	6.5	18.8	12.4	17.6
Capistrano	92469	♀	59.5	30.0	12.0	7.8	42.2	42.0	25.0	7.5	17.4	13.8	16.2	
	92489	♀	58.2	33.5	12.0	8.2	43.0	-----	25.8	7.4	18.0	12.5	17.6	
Durango: Durango	132499	♀	54.8	33.2	12.6	7.5	42.8	42.5	26.2	7.4	15.6	12.8	16.4	
Sinaloa: Culiacan.	96900	♂	52.6	32.2	12.0	7.8	42.0	42.8	25.6	7.0	17.8	13.2	16.6	
Texas:														
	Austin	123379	♂	52.0	33.5	12.2	8.2	44.4	45.0	27.5	7.2	17.6	13.2	16.8
		123380	♂	53.4	35.0	12.5	8.6	43.6	44.6	25.4	7.6	18.0	13.2	17.4
	Uvalde	235266	♂	58.4	33.2	12.2	8.5	43.2	43.8	26.6	7.6	17.5	13.4	17.2
		235268	♂	57.2	34.0	12.4	8.5	44.5	45.0	26.8	6.4	16.8	12.8	16.6
	235269	♂	55.6	33.4	11.6	9.0	44.2	44.0	26.4	7.0	17.5	12.8	16.8	
New Mexico:														
	Carlsbad Cave	244435	♂	60.3	-----	13.0	8.5	45.2	44.8	27.8	7.8	18.2	13.8	18.4
		244436	♂	58.0	34.2	12.5	8.8	44.6	44.2	27.0	7.6	17.5	13.6	17.4
	244437	♂	57.6	31.8	12.8	8.1	45.0	45.0	27.0	7.0	17.5	12.8	17.2	
Arizona: Yuma.	53071	♂	58.8	32.2	12.8	8.8	43.4	44.2	26.4	7.4	17.2	12.6	16.5	
	99693	♂	59.4	33.0	12.2	8.6	43.2	43.4	26.6	7.0	18.5	13.6	16.6	
Utah: Jensen.	239522	♀	59.5	32.2	12.0	8.2	42.8	44.5	25.8	7.4	18.5	13.1	17.0	
California:														
	Bear Valley	65382	♂	61.0	33.5	13.0	8.2	43.2	44.8	26.4	7.6	19.0	14.4	16.2
		65384	♂	61.0	29.6	12.8	8.2	43.6	44.2	25.6	7.8	18.5	13.2	17.8
		65385	♂	59.5	35.6	12.8	8.5	45.0	45.6	26.8	7.8	18.0	15.2	16.8
	Chinese Camp	65380	♂	59.8	36.8	13.0	8.6	46.0	45.5	27.0	6.8	18.0	13.6	17.4
	Tuolumne County	65381	♂	58.4	32.8	12.2	8.6	44.2	43.6	26.2	7.2	18.8	14.2	17.5
	Alhambra	61381	♂	63.4	32.6	13.0	8.8	44.2	43.4	25.8	7.6	18.0	13.2	16.0
		61382	♂	63.2	31.2	12.5	8.6	43.2	44.0	26.2	8.0	17.6	13.2	15.8
		61383	♂	58.4	33.2	11.4	8.2	40.4	41.8	25.6	6.6	16.8	13.5	14.8
		61384	♂	60.8	31.8	11.8	8.8	41.6	42.8	25.2	7.2	17.2	13.2	17.5
	San Jose	55575	♂	60.6	33.2	12.2	8.4	43.4	43.5	26.2	6.8	18.8	14.5	16.6
		55576	♂	59.5	33.6	12.6	8.2	44.0	44.4	26.8	7.2	17.8	13.6	17.8
		55577	♂	60.6	33.5	12.4	9.0	43.8	44.2	26.0	7.2	18.2	13.4	16.2
		55578	♂	55.8	32.0	11.8	8.2	42.2	43.0	25.4	6.8	16.5	12.8	16.5
	Cloverdale	16518	♂	55.8	33.5	12.5	8.4	43.0	45.0	26.2	7.0	16.8	12.6	15.6
		16519	♂	60.6	33.8	11.8	8.0	42.2	44.8	26.2	6.5	16.2	11.6	16.8
		16520	♂	54.8	33.2	11.5	8.2	42.5	44.2	26.4	6.6	16.8	13.0	16.5
	16521	♂	60.2	31.8	12.4	8.0	42.2	43.5	25.4	6.8	17.2	12.5	16.5	
Colusa	133098	♂	57.8	33.2	12.5	8.4	45.0	45.2	27.2	7.0	18.0	12.8	16.0	
	133099	♂	55.0	31.8	12.0	8.4	43.0	44.2	26.0	7.2	17.5	12.8	15.6	
	133100	♂	59.0	35.6	12.8	8.0	42.8	43.0	25.8	7.2	18.5	13.4	17.5	
	133258	♀	58.0	33.5	12.2	8.0	44.2	45.2	27.0	7.8	18.5	13.0	18.2	

External measurements of the *brasiliensis* group—Continued

TADARIDA CYNOCEPHALA

Locality	No.	Sex	Head and body	Tail	Tibia	Foot	Forearm	Third meta-carpal	Fifth meta-carpal	Thumb	Ear from meatus	Ear from crown	Ear width
Louisiana: Houma...	52832	♂	62.2	26.8	11.2	7.8	42.8	42.8	25.8	7.4	18.6	15.0	16.8
	52836	♂	57.4	32.0	11.5	9.2	42.8	43.2	25.5	8.0	18.4	13.6	17.8
	52841	♂	61.6	37.0	11.5	8.8	43.0	43.8	26.6	8.0	18.0	13.4	17.2
	52845	♂	64.8	31.8	12.2	8.4	45.5	45.4	27.4	7.5	19.2	15.2	18.2
	52847	♂	61.5	31.6	11.2	8.4	43.6	45.2	27.0	8.4	19.8	14.2	17.8
	52873	♂	64.0	32.2	11.5	8.4	44.2	44.5	27.2	7.2	19.0	13.0	16.0
	52875	♂	63.2	29.2	12.0	9.2	43.8	44.2	26.5	7.4	18.6	12.5	18.0
Alabama: Greensboro.	23424	♂	59.0	30.8	11.2	8.0	42.4	43.2	26.0	7.6	17.8	12.2	16.6
	23425	♂	56.0	32.8	11.5	7.8	43.2	44.5	27.2	7.2	19.4	12.8	17.6
	23428	♂	58.8	32.4	11.6	8.2	44.0	44.8	27.4	7.0	17.6	11.6	17.2
	23430	♂	62.0	31.4	11.2	8.6	42.2	44.2	26.6	7.2	18.8	12.6	16.4
	23431	♂	55.2	32.8	11.0	8.2	42.4	42.2	25.6	7.0	17.5	12.2	16.0
Florida: Gainesville..	243241	♂	65.2	27.5	11.2	7.8	41.5	42.5	25.5	7.5	18.4	13.4	17.0
	243248	♂	59.8	30.8	11.2	7.4	42.2	44.5	25.5	7.2	18.0	14.2	16.6
	243249	♂	63.6	31.2	11.4	8.2	42.5	44.4	26.0	8.2	19.0	13.6	18.6
	243250	♂	60.6	30.4	11.5	8.0	43.4	44.4	26.2	6.8	17.5	13.2	16.8
	243252	♂	63.4	31.2	11.6	8.0	42.2	42.8	25.6	7.4	18.5	13.5	17.5
	243256	♂	57.5	31.6	11.4	8.6	43.0	44.0	26.5	6.8	18.2	13.8	17.0
	243257	♂	62.8	31.2	11.2	7.6	43.0	43.0	26.4	7.4	17.6	13.5	16.2
	243258	♂	61.0	33.2	11.6	8.2	42.5	43.8	25.8	7.2	18.0	14.0	17.2
	243259	♂	60.0	35.2	11.8	7.8	44.5	44.2	26.0	7.2	18.0	13.5	17.0
	243260	♂	60.5	31.0	11.8	8.2	41.5	43.2	25.6	7.4	17.4	13.8	17.5

TADARIDA BAHAMENSIS

Bahama Islands.....	217290	♂	---	31.5	12.2	8.2	42.4	43.8	25.2	6.2	17.4	13.2	15.5
	217293	♂	55.6	33.4	12.5	8.8	42.5	43.0	26.2	6.5	17.0	13.5	16.2
	217294	♂	58.5	30.8	12.2	8.8	41.2	42.2	24.6	7.2	15.5	11.5	15.8
	217295	♂	57.0	30.5	12.4	8.2	42.0	43.4	25.2	6.5	16.0	11.2	15.6
	217296	♂	53.6	31.5	13.2	8.8	41.2	41.4	24.5	7.2	16.8	11.5	14.5
	217297	♂	56.6	33.0	12.6	8.0	42.0	42.2	25.0	6.2	15.8	13.0	16.2
	217300	♂	55.5	28.8	12.0	8.4	40.0	40.0	22.6	6.5	17.2	12.6	14.8
	217276	♂	61.0	31.8	12.4	8.2	43.2	43.5	25.0	6.6	16.6	13.6	16.6
	217285	♂	59.0	33.5	12.5	8.2	41.6	42.5	25.4	6.6	17.2	12.2	15.2
	217287	♂	57.2	33.4	12.8	8.2	42.2	41.8	24.0	7.2	15.8	12.6	15.2

TADARIDA MUSCULA

Cuba.....	103771	♀	---	---	---	---	38.2	---	---	---	16.2	---	---
	103773	♀	---	---	---	---	39.5	---	---	---	16.5	---	---
	103774	♂	52.5	32.5	11.0	7.6	39.8	39.8	22.6	6.2	17.0	11.6	16.0
	175745	♂	---	---	---	---	40.5	---	---	---	17.0	---	---
	175746	♂	---	---	---	---	40.0	---	---	---	16.2	---	---
	216691	♂	50.5	29.8	11.2	8.0	40.2	41.0	24.6	6.5	16.8	12.2	14.5
	216692	♂	---	---	---	---	39.5	---	---	---	16.8	---	---
	218015	♂	51.8	30.5	11.0	8.0	39.5	40.2	24.0	6.2	16.2	11.4	13.5
	218016	♀	52.5	34.0	12.0	8.0	39.8	41.5	24.6	6.2	16.5	11.6	14.5
	218017	♂	58.5	36.0	12.0	8.2	41.0	42.2	25.0	6.2	17.0	12.0	16.0
	123181	♂	48.5	30.0	11.0	7.8	38.8	39.2	22.0	6.5	16.8	12.0	14.8
	123182	♀	54.5	33.6	12.0	8.5	40.0	40.5	24.2	6.0	16.2	12.2	16.2
	123183	♀	53.0	30.5	11.2	8.5	40.0	41.2	24.0	6.0	16.2	12.0	13.2
	123184	♀	53.5	31.0	12.2	8.0	41.2	41.4	24.6	6.5	16.8	11.0	15.0

TADARIDA MURINA

West Indies: Jamaica..	103921	♂	50.8	33.0	11.8	8.0	41.4	42.0	24.8	6.6	15.5	11.0	15.2
	122643	♂	56.0	33.0	12.0	8.2	42.6	42.2	24.6	6.6	16.2	11.0	15.0
	122642	♂	55.5	32.5	12.0	8.0	41.0	41.2	24.4	6.8	15.8	10.6	14.6
	122644	♂	53.8	31.0	11.0	7.6	40.4	41.0	24.2	6.6	15.8	12.5	14.6
	122645	♂	56.6	34.2	11.8	7.6	41.0	42.0	24.4	6.5	16.2	10.6	15.0
	122646	♂	52.5	30.5	11.2	7.2	40.6	40.8	23.8	6.2	16.2	12.5	15.6
	122647	♂	51.4	30.5	11.4	8.2	40.0	40.6	24.0	6.0	16.2	12.0	14.4
	122648	♂	55.5	32.5	11.4	8.2	40.6	41.8	24.2	6.8	15.8	13.0	15.0
	122649	♂	53.0	31.8	11.8	7.8	40.2	40.8	23.2	6.0	15.8	10.8	15.0
	122650	♀	57.0	32.8	11.2	8.5	41.8	41.8	24.5	6.2	15.0	11.6	15.2

External measurements of the *brasiliensis* group—Continued

TADARIDA CONSTANZAE

Locality	No.	Sex	Head and body	Tail	Tibia	Foot	Forearm	Third meta-carpal	Fifth meta-carpal	Thumb	Ear from meatus	Ear from crown	Ear width
Haiti-----	240925	♂	56.0	30.5	12.0	8.0	41.8	43.8	-----	5.0	15.5	11.5	12.5
	240924	♂	55.0	30.5	11.5	8.2	42.0	42.5	24.0	5.5	17.0	12.0	12.6
Santo Domingo: Constanza-----	217150	♀	57.5	28.5	12.0	7.8	43.0	43.0	25.4	6.6	14.8	12.0	13.0
	217168	♀	54.4	34.2	11.8	8.0	41.0	42.0	24.2	6.5	17.5	12.5	14.8
	217169	♀	55.5	-----	11.5	7.6	41.0	42.0	24.4	6.6	16.0	12.0	16.0
	217173	♀	57.4	31.8	12.2	8.2	42.0	43.0	25.8	6.4	16.0	13.4	15.8
	217183	♀	55.4	33.6	12.0	8.6	42.2	42.6	24.5	6.6	17.0	12.4	16.4
	217182	♀	53.0	28.4	12.0	8.2	42.2	41.5	24.2	6.6	16.6	12.0	15.4
	217184	♀	57.2	31.0	12.2	8.6	41.4	42.4	24.2	6.6	16.0	11.4	15.2
	217194	♀	52.6	30.5	11.8	8.0	41.2	40.6	23.6	6.0	16.8	12.8	15.5
	217198	♀	52.8	29.8	12.2	8.2	-----	41.6	24.6	6.0	17.2	12.5	16.4
	217205	♀	54.2	32.2	11.4	8.6	41.0	42.6	24.2	6.2	17.2	12.4	15.2

TADARIDA ANTILLARUM

Porto Rico: Hucare.	86316	♂	51.5	31.0	12.0	8.0	39.6	40.0	23.5	7.4	14.0	11.0	15.0
	86317	♀	52.6	31.0	12.0	7.4	39.9	41.5	24.5	7.2	17.0	12.0	15.2
	86318	♀	50.0	30.2	11.2	8.2	39.2	39.5	24.2	6.4	15.5	11.0	13.2
	86319	♀	50.5	30.6	11.0	8.0	39.2	38.8	23.0	7.2	15.5	11.6	13.5
	86320	♀	52.0	33.0	11.5	7.5	38.2	38.8	24.2	7.0	15.6	12.0	13.6
Adjuntas-----	104075	♀	52.5	32.8	11.6	8.2	41.0	40.5	24.0	7.4	16.5	12.0	14.2
	86330	♀	53.0	33.5	11.2	8.2	40.0	40.2	23.8	6.4	16.0	10.5	13.0
	86334	♂	50.0	32.5	12.0	8.2	40.0	40.8	23.5	6.2	15.8	10.5	13.2
West Indies:													
St. Kitts-----	86865	♀	54.5	29.5	11.4	7.8	39.5	40.5	24.2	6.4	14.6	10.6	14.0
	86866	♀	49.5	32.2	11.2	7.8	38.4	39.8	24.6	7.0	14.8	11.0	12.5
	86867	♀	52.5	32.2	12.2	7.6	39.0	39.2	24.0	6.5	16.0	11.2	14.0
	86868	♀	52.0	31.6	11.4	7.6	38.6	39.2	23.2	6.6	14.0	11.8	14.2
	10940	♀	55.5	-----	12.0	7.6	39.6	41.0	24.5	7.0	15.4	11.6	14.5
Barbuda-----	123234	♀	51.2	28.2	11.4	7.8	39.4	40.0	24.5	6.8	14.0	11.5	12.2
	123235	♀	50.6	31.8	12.0	8.2	40.0	40.5	24.4	6.8	14.5	10.0	13.5
	123236	♀	53.6	32.5	12.0	8.6	40.5	40.8	24.8	6.5	14.4	11.2	14.0
	123237	♀	49.0	31.5	11.0	8.0	39.6	41.8	24.6	6.6	14.0	11.0	13.5
	123238	♀	51.8	32.4	12.2	8.0	39.0	41.6	25.0	7.0	15.5	10.6	13.5
	123240	♀	53.5	32.5	12.4	7.5	40.5	40.5	25.0	6.6	15.0	11.2	15.4
	123241	♀	49.4	-----	11.8	7.4	37.6	38.2	23.4	6.4	14.8	10.4	13.5
	123242	♀	49.8	34.2	12.2	7.8	39.5	39.4	24.5	7.2	15.0	11.5	13.2
	123243	♀	51.0	33.2	12.0	8.4	40.2	40.8	25.4	7.0	14.6	9.8	14.6
British West Indies:													
Antigua-----	219311	♀	54.0	30.6	11.4	7.8	40.0	40.5	24.5	7.0	14.0	11.4	13.5
	219313	♀	56.5	33.5	12.4	9.0	41.2	42.0	26.0	6.6	15.6	12.2	14.6
	219314	♀	54.5	32.5	11.5	9.2	40.4	41.4	24.4	6.0	13.0	11.4	13.6
	219315	♀	56.5	33.8	12.5	7.8	40.5	42.6	25.5	6.8	13.5	12.0	14.5
	219316	♀	53.8	32.0	11.5	7.6	39.2	41.5	24.5	6.4	16.0	11.5	13.0
	219317	♀	56.6	29.5	12.2	8.4	41.4	42.0	25.8	7.4	13.5	11.2	15.0
	219318	♀	55.4	31.6	12.4	7.8	40.4	42.2	25.5	6.8	13.6	11.5	14.5
	219319	♀	56.2	33.0	12.2	8.0	40.5	41.6	25.0	6.5	14.6	11.4	14.8
	219320	♀	56.0	33.2	12.2	8.0	40.0	41.4	25.0	6.5	15.2	11.2	12.5
	219321	♀	55.4	30.2	11.6	7.6	39.4	41.5	24.5	6.4	15.2	11.4	14.8
	219322	♀	55.6	32.0	12.2	7.8	38.8	40.5	24.2	6.2	15.0	10.0	14.0
Montserrat-----	101580	♀	51.8	29.4	11.4	7.2	37.6	38.0	23.0	6.0	13.8	10.4	14.0
	143876	♀	49.2	30.5	11.0	7.6	37.8	37.6	22.5	6.2	14.6	10.4	14.2
Guadeloupe-----	113505	♀	54.0	31.0	11.8	8.0	38.2	39.5	23.5	7.0	16.5	11.0	14.0
	113506	♀	53.4	30.4	11.2	8.0	39.0	39.5	24.2	6.4	15.8	11.6	14.6
	113507	♀	51.8	31.5	11.2	8.2	38.8	38.5	23.0	6.0	16.5	10.2	13.5
	113508	♀	53.2	29.0	12.5	8.2	39.6	41.0	24.2	7.0	15.5	11.6	14.0
	113509	♀	55.0	32.8	11.0	8.6	39.6	39.6	23.6	6.6	16.0	12.5	15.5
Dominica-----	113640	♀	52.4	29.0	10.8	7.8	38.2	38.0	22.2	7.0	15.2	11.0	14.6
	113642	♀	46.6	28.0	11.0	7.6	37.2	37.6	21.8	6.2	16.0	9.0	12.2
	113643	♀	50.2	28.0	10.8	7.2	36.6	37.0	21.6	5.8	15.2	11.2	15.2
	113644	♀	50.0	31.2	11.6	8.2	37.6	38.8	23.4	6.2	14.5	11.4	14.0
	113646	♀	52.8	29.0	12.4	7.6	37.4	37.4	22.0	6.2	14.6	10.0	13.2
	113188	♀	50.6	29.5	11.6	6.5	39.4	40.2	23.4	6.2	14.6	11.5	12.8
St. Lucia-----	110906	♀	52.5	32.4	11.5	7.8	37.8	38.2	22.8	5.5	15.4	11.6	14.0
	110907	♀	51.4	32.4	11.0	7.8	39.0	40.8	23.8	6.6	15.4	11.5	14.4
	110908	♀	52.8	31.5	11.6	7.8	39.6	40.5	24.0	7.0	16.0	11.4	14.0
	110909	♀	49.4	29.0	10.0	8.0	37.0	37.6	22.0	6.0	15.2	12.0	13.4
	110910	♀	51.5	31.0	10.8	8.6	38.5	39.5	23.5	6.5	15.0	11.8	14.4

External measurements of the macrotis group

TADARIDA AURISPINOSA

Locality	No.	Sex	Head and body	Tail	Tibia	Foot	Forearm	Third meta-carpal	Fifth meta-carpal	Thumb	Ear from meatus	Ear from crown	Ear width
Brazil (100 miles off coast)-----	1 3726	♂	-----	-----	15.5	8.6	50.0	51.2	29.5	7.0	-----	-----	-----

TADARIDA LATICAUDATA

Paraguay: Sapucay...	114965	♂	62.8	45.0	14.2	9.0	46.5	45.2	27.4	7.2	21.2	16.4	18.8
	114966	♂	67.0	40.8	13.6	8.0	48.6	47.0	27.5	7.2	21.8	17.0	22.5
	114967	♂	67.2	42.2	14.0	9.2	46.2	45.2	26.5	7.2	21.6	16.2	22.0
	114968	♂	65.8	41.2	13.6	8.4	46.8	47.4	28.2	7.6	20.4	15.0	20.6
	114969	♂	67.8	43.4	14.2	9.8	48.2	48.0	28.8	7.2	20.8	14.5	20.2
	114970	♂	65.0	44.2	14.6	9.5	48.2	46.8	27.5	8.0	21.5	15.4	22.0
	114971	♂	63.2	39.8	13.4	8.8	46.2	45.5	27.2	7.0	19.4	14.4	20.2
	114972	♂	63.2	37.2	13.2	9.0	46.8	47.0	28.0	7.6	20.5	15.5	20.0
	114974	♂	65.0	41.2	14.2	8.4	47.2	47.6	28.4	7.5	21.0	16.6	21.2
	114976	♀	64.6	45.2	13.6	8.6	45.6	46.4	27.6	7.0	21.0	14.8	20.0

TADARIDA FEMOROSACCA

Jalisco: Zacoalco-----	51520	♂	64.0	40.0	13.8	8.2	47.2	47.2	26.4	7.8	22.8	17.2	21.6
	51522	♂	60.2	43.0	14.2	8.6	49.2	50.0	27.8	7.0	22.2	15.6	21.5
Arizona: Fort Huachuca-----	51521	♂	-----	44.0	13.2	8.0	-----	47.2	26.5	7.2	22.2	16.5	19.5
	20922	♀	54.4	-----	13.4	8.5	46.6	45.2	25.8	6.4	18.6	11.8	16.8
	36038												
California: Colorado Desert-----	186447	♂	60.6	41.6	13.0	7.6	47.8	47.8	28.0	7.0	20.6	15.4	18.8
Lower California: Santa Anita-----	96486	♂	61.6	39.0	12.6	8.0	46.4	46.6	26.2	6.8	21.2	15.0	20.0
San Pedro Mts-----	38919	♂	65.2	40.0	12.6	8.2	48.2	47.8	26.6	6.4	21.5	13.5	18.8
	22458												
Mexico: Colorado R. Mth.-----	11170	♂	-----	36.4	12.2	8.2	45.5	44.8	26.2	7.2	-----	-----	-----

TADARIDA YUCATANICA

Yucatan: Chichen Itza-----	108156	♂	54.0	41.8	13.8	8.8	43.2	45.2	25.2	7.8	-----	-----	-----
	108157	♂	58.0	37.0	13.5	7.8	43.2	44.4	25.0	6.6	-----	-----	-----
	108159	♂	55.2	33.5	12.6	7.8	41.8	42.4	23.6	6.8	-----	-----	-----
	108161	♀	60.4	-----	12.2	8.2	42.6	42.0	23.8	6.4	-----	-----	-----
	108166	♀	58.4	39.0	13.6	8.4	43.5	43.6	24.4	6.5	-----	-----	-----
Guatemala: Peten-----	245219	♂	56.4	37.4	13.5	8.2	43.0	42.4	24.2	7.2	19.2	13.2	19.2
	245228	♂	63.5	38.8	11.8	7.5	44.2	44.4	24.8	7.4	19.5	15.2	19.6
	245245	♂	58.2	39.4	12.5	8.0	44.5	43.4	25.2	7.0	20.0	14.6	18.5
	245250	♂	62.8	39.2	11.5	8.2	44.4	43.8	24.8	7.4	20.6	15.6	19.8
	245265	♂	61.2	35.6	12.5	8.5	44.6	44.0	24.6	7.4	19.5	13.6	17.5

TADARIDA EUROPS

Brazil-----	101492	♀	55.6	35.8	11.4	7.5	44.2	44.4	26.2	6.8	17.8	14.0	16.5
	101493	♀	56.8	37.5	11.5	7.4	43.0	43.2	26.4	7.4	17.4	13.2	16.5
	101495	♀	60.4	36.6	11.2	8.0	42.5	43.8	26.0	7.2	17.6	12.4	15.2
	101496	♀	57.8	39.6	12.0	8.6	45.2	45.2	27.5	7.8	18.0	11.6	15.0
	101498	♀	58.8	36.2	11.6	7.5	43.2	44.5	27.2	7.4	18.6	13.6	15.0
	101500	♀	57.8	37.6	11.2	8.4	43.6	42.8	26.6	7.4	19.5	14.8	17.4
	101502	♀	56.0	35.2	11.8	7.6	43.6	43.6	26.0	7.5	17.4	15.0	15.6
	101504	♀	56.2	35.8	11.5	7.4	42.6	42.6	25.8	7.4	19.6	12.0	16.4
	101505	♀	55.4	35.4	11.4	7.6	-----	-----	25.2	7.4	18.4	12.5	17.2
	101508	♀	56.4	37.6	11.4	7.6	42.8	42.2	25.8	7.0	18.0	12.2	17.4

¹ Type.² Lectotype.

External measurements of the *macrotis* group—Continued

TADARIDA MACROTIS

Locality	No.	Sex	Head and body	Tail	Tibia	Foot	Forearm	Third meta-carpal	Fifth meta-carpal	Thumb	Ear from meatus	Ear from crown	Ear width
Jamaica.....	96192	♂	70.0	49.8	17.0	10.2	58.2	59.8	28.2	7.6	29.0	19.5	26.2
	91194	♂	74.5	48.0	17.2	11.0	60.0	58.4	29.0	8.2	27.4	18.2	25.0
	122655	♂	72.0	50.4	17.8	9.4	59.5	58.8	28.0	6.6	26.2	19.2	24.4
Dominican Republic.....	105696	♂	68.8	49.2	16.4	10.4	59.8	58.8	29.2	8.0	28.2	18.2	24.2
	105697	♂	75.8	53.6	17.6	9.8	61.5	60.0	28.4	7.5	26.8	18.6	24.4
	105699	♂	77.0	51.5	16.4	9.8	61.8	59.5	30.4	8.2	30.4	20.5	24.2
	105700	♂	73.5	51.5	16.6	9.4	61.8	60.0	29.4	8.5	27.8	19.8	26.6
	105701	♂	73.4	53.8	17.6	9.5	60.0	60.2	29.8	9.2	28.6	21.4	26.4
	105702	♂	71.6	50.5	17.2	9.2	60.0	59.4	29.8	8.0	27.5	17.5	25.8
Cuba.....	105703	♂	74.0	49.2	17.8	9.2	60.5	58.6	30.0	8.2	29.4	21.2	27.2
	252961	♂	71.5	47.0	16.8	10.0	59.6	58.6	30.0	7.8	26.0	20.5	25.0
Mexico.....	252962	♂	74.0	50.0	17.4	9.4	60.5	59.2	29.6	8.0	27.8	20.0	24.8
	416	♂	72.0	52.0	18.0	13.0	60.0	58.7	29.0	-----	-----	-----	-----
Lower California:													
Santa Anita.....	96487	♂	74.4	51.4	16.4	10.4	62.6	61.0	31.0	7.8	27.6	17.6	23.5
	96488	♂	75.2	55.5	17.0	9.5	62.8	61.0	31.0	7.8	28.6	16.2	23.2
	96489	♂	74.0	51.8	17.8	9.4	60.6	61.2	31.0	7.6	28.0	17.8	24.2
	148549	♂	75.6	49.2	16.8	8.9	63.8	61.4	30.5	8.5	28.4	15.8	23.8
California.....	{ 15178 } { 36569 }	♀	-----	48.2	18.2	9.4	58.0	56.6	29.4	7.2	22.2	-----	-----
Arizona: Chiricahua Mountains (A. M. N. H.)	{ 8414 } { 6740 }	♀	-----	-----	16.6	10.2	61.2	59.4	30.0	-----	-----	-----	-----
Iowa: Marshalltown (F. M.)	21819	♀	-----	-----	18.0	10.0	61.4	59.8	30.4	-----	-----	-----	-----
Brazil: Ypiranga.....	200994	♂	73.6	44.0	17.6	9.5	63.8	60.6	30.2	6.8	-----	-----	-----
Surinam (B. M.).....	(6)	♂	67.0	57.0	17.0	9.0	60.4	-----	-----	-----	29.0	19.0	31.0
Ecuador: A. M. N. H.	7 34383	(♀)	66.6	52.2	-----	10.2	60.0	63.4	30.4	7.6	-----	-----	-----
Colombia: A. M. N. H.	8 15109	♀	-----	-----	-----	-----	61.8	60.5	30.0	-----	-----	-----	-----

♂ Young.

♂ Type of *Nyctinomus depressus*, measurements taken from original description.

♂ Dry skin.

♂ Type of *Nyctinomus megalotis*, measurements taken by G. S. Miller, jr., 1904.♂ Type of *Nyctinomus equatorialis*.♂ Type of *Promops affinis*.Cranial measurements of the *brasilienis* group

TADARIDA BRASILIENSIS

Locality	No.	Sex	Total length	Zygomatic breadth	Interorbital breadth	Occipital depth	Breadth of braincase	Basal length	Maxillary toothrow	Breadth at M ²	Breadth at canines	Length of mandible	Mandibular toothrow
Costa Rica: San Jose.....	{ 87552 } { 13810 }	♂	17.2	-----	4.2	6.0	8.2	14.2	6.2	6.8	4.4	12.0	6.4
Brazil: Province of Parana.....	37872	♂	17.0	9.8	4.0	6.0	8.5	14.2	6.2	7.2	-----	12.0	6.6
	37873	♂	17.4	10.2	4.2	6.2	8.5	14.5	6.4	7.0	-----	12.5	6.8
	37874	♂	17.2	-----	4.0	5.8	8.0	14.6	6.0	7.2	4.4	12.2	6.5
Paraguay: Villa Rica.....	105617	♂	17.2	9.8	4.4	6.2	8.6	14.5	6.4	6.8	4.5	-----	-----
	105618	♂	17.5	10.2	4.2	6.4	8.6	15.0	6.6	7.2	4.5	12.5	6.6
Peru:													
Matchu Picchu.....	194440	♂	17.5	-----	4.2	6.0	8.5	14.8	6.5	7.0	4.0	12.2	7.2
	194441	♂	18.0	10.2	4.2	6.2	8.8	14.8	6.5	7.0	4.2	13.0	7.0
Santa Ana.....	194443	♂	17.6	9.6	4.4	6.0	8.6	14.6	6.4	6.8	4.5	12.6	6.8
	194444	♂	17.4	10.0	4.2	6.0	8.5	14.5	6.2	7.0	4.2	12.5	7.0
	194446	♂	17.5	9.5	4.0	6.0	8.2	14.8	6.5	7.0	4.0	12.8	7.0
	194448	♂	17.0	9.4	4.0	5.8	8.4	14.4	6.2	6.8	4.2	12.2	6.6
Lima Surca.....	155564	♂	16.5	9.0	3.8	6.2	8.0	13.8	6.2	6.8	3.8	11.5	6.6
Chile:													
Temuco.....	242899	♂	17.0	-----	4.0	-----	8.5	-----	6.4	6.8	-----	12.2	6.8
	142107	♂	17.6	9.8	4.2	6.0	8.6	14.8	6.5	7.2	4.0	12.8	7.0
Ranal de Melipilla.....	155555	♂	17.0	9.4	4.0	6.4	8.4	14.2	6.0	6.8	4.0	12.4	6.6
Argentina: Tucuman.....	155556	♂	17.0	-----	4.0	6.0	8.2	14.2	6.2	6.6	3.8	12.0	6.5
	236354	♂	17.4	10.0	4.2	6.0	8.5	14.6	6.4	6.8	4.0	12.0	6.8
	236355	♂	17.2	9.8	4.2	6.2	8.6	14.8	6.4	7.0	4.0	12.4	6.8

Cranial measurements of the *brasiliensis* group—Continued

TADARIDA INTERMEDIA

Locality	No.	Sex	Total length	Zygomatic breadth	Interorbital breadth	Occipital depth	Breadth of braincase	Basal length	Maxillary toothrow	Breadth at M ²	Breadth at canines	Length of mandible	Mandibular toothrow
Guatemala: Jacatle-nango.	78517	♂	16.2	9.2	3.8	6.2	8.2	13.8	5.8	6.6	4.2	11.8	6.5
	78519	♂	16.2	9.2	4.0	5.8	7.8	13.5	5.8	6.4	3.8	11.8	6.2
	78486	♂	15.8	8.8	3.8	5.6	7.6	13.2	5.6	6.2	3.8	10.8	6.0
	78489	♂	15.8	8.5	3.8	5.8	7.8	13.2	5.6	6.4	3.6	11.4	6.2
	78489	♂	16.0	-----	4.2	6.0	8.2	13.5	5.8	6.5	3.6	11.2	6.2
	78490	♂	-----	-----	-----	5.6	7.8	13.6	6.0	-----	-----	11.8	6.2
	78491	♂	15.5	9.2	4.0	5.5	7.8	13.0	5.5	6.4	4.0	11.4	6.0
	78492	♂	15.5	-----	3.8	5.8	7.8	13.0	5.6	6.4	3.4	11.6	6.2
	78493	♂	-----	9.5	4.2	6.0	8.2	13.8	6.0	6.4	4.0	11.8	6.4
	78494	♂	16.2	-----	3.8	-----	7.6	-----	5.8	6.2	3.5	10.8	6.2
	78495	♂	-----	8.6	4.2	-----	7.8	-----	6.0	6.4	3.8	11.4	6.4
	78496	♀	15.8	8.8	3.8	6.2	8.4	12.8	5.8	6.4	4.2	11.6	6.4

TADARIDA MEXICANA

Puebla: Tehuacan....	53778	♀	16.8	9.4	3.8	5.8	8.2	14.2	6.2	6.6	3.8	12.0	6.5
	53780	♂	16.6	9.4	4.2	5.8	8.2	14.2	6.0	6.6	3.8	11.8	6.2
	53781	♂	16.8	9.6	4.4	6.2	8.2	14.4	6.2	6.6	4.0	12.0	6.6
Michoacan: Patzcuaro	53782	♂	16.8	-----	4.2	5.8	8.4	14.4	6.2	6.8	4.5	12.4	6.8
	52267	♂	17.0	9.6	4.2	6.2	8.2	14.4	6.2	6.8	4.0	12.0	6.5
	52268	♂	17.4	9.4	3.8	5.8	8.2	14.8	6.6	6.8	4.2	12.2	6.5
	52270	♂	17.2	9.5	4.2	6.2	8.2	14.6	6.4	6.5	4.2	12.2	6.6
	52141	♂	17.2	9.6	4.2	6.2	8.2	14.5	6.2	6.8	4.2	12.4	6.6
Colima: Colima.....	52068	♂	17.0	9.5	4.2	6.0	8.2	14.0	6.2	6.5	3.8	12.2	6.6
	52070	♂	16.4	9.0	4.0	6.0	8.0	14.2	6.0	6.4	3.8	11.5	6.2
	52071	♂	16.4	-----	4.0	-----	-----	6.0	6.4	3.6	11.2	6.0	6.0
	52072	♂	16.8	-----	4.0	5.8	8.2	14.2	6.2	6.6	4.0	12.5	6.5
Michoacan: La Palma	112188	♂	16.4	9.0	3.8	6.0	8.0	14.2	6.0	6.5	3.6	11.2	6.2
	112190	♂	17.2	9.5	4.2	5.8	8.2	14.4	6.2	6.8	4.0	12.0	6.6
	112191	♂	17.0	9.2	4.0	6.2	8.2	14.6	6.2	6.4	3.8	12.0	6.6
Jalisco: Huejuguilla..	92494	♂	16.6	9.4	3.8	5.8	8.4	14.2	6.2	6.4	3.6	12.0	6.6
	92495	♂	17.0	9.5	4.2	6.0	8.2	14.2	6.2	6.6	3.8	11.8	6.4
	92496	♀	16.8	9.6	4.0	5.8	8.0	14.2	6.0	6.4	4.0	12.0	6.4
Coahuila: Sabinas....	117119	♂	16.6	9.5	4.2	6.2	8.2	14.0	6.0	6.8	4.2	11.6	6.2
	117120	♂	17.0	9.5	4.2	6.2	8.4	14.2	6.0	6.8	4.2	11.6	6.4
	117122	♂	17.0	9.5	4.2	6.0	8.2	14.2	6.0	6.5	4.0	11.5	6.4
	117123	♀	17.0	9.6	4.2	6.0	8.2	14.0	6.2	6.8	4.2	11.5	6.8
	117124	♂	16.4	9.2	4.0	6.0	8.2	13.4	5.5	6.6	3.8	10.5	6.0
	117125	♂	17.0	9.2	4.0	6.4	8.2	14.2	6.0	6.6	4.0	11.4	6.5
	117126	♂	16.2	9.2	3.8	5.8	8.0	13.4	5.8	6.6	3.8	11.5	6.2
Durango.....	96900	♂	16.6	9.2	4.0	6.0	8.2	13.6	6.0	6.6	4.0	11.8	6.5
Sinaloa: Cullacan....	22104	♀	16.4	9.2	4.2	6.2	8.2	13.8	6.0	6.6	4.0	11.4	6.4
Mexico: Tampico....	22126	♀	16.4	-----	4.0	5.6	8.2	14.2	5.8	6.5	3.8	11.6	6.4
	22187	♀	16.4	-----	4.0	5.8	8.0	13.5	5.8	6.8	4.2	11.6	6.2
	22188	♀	16.5	9.5	4.0	6.2	8.0	13.8	6.0	6.5	3.8	11.8	6.4
	22191	♀	16.4	9.2	4.2	6.2	8.2	14.0	5.8	6.4	3.6	11.8	6.2
	22194	♀	16.5	-----	4.0	6.0	8.2	13.6	6.0	6.5	3.8	12.0	6.4
	Texas:												
Brazos.....	118405	♂	16.6	9.2	4.2	6.0	8.0	14.2	6.0	6.8	4.2	12.2	6.5
	118407	♂	16.8	-----	3.8	5.8	8.2	14.2	6.0	6.6	4.2	12.4	6.4
	118408	♂	16.8	9.2	4.2	-----	8.4	14.2	5.8	6.4	4.0	11.6	6.4
	118409	♂	16.8	9.2	4.2	6.0	8.4	14.5	6.0	6.4	4.0	12.0	6.4
	118410	♂	16.8	8.8	4.2	6.2	8.2	14.2	5.8	6.4	-----	12.2	6.4
Kerrville.....	97054	♂	16.6	9.5	4.0	6.0	8.2	13.8	5.8	6.6	4.0	11.8	6.4
	97057	♂	17.2	9.6	4.0	6.2	8.2	14.2	6.2	6.6	4.0	12.2	6.5
	97058	♂	17.2	9.6	3.8	6.2	8.2	14.5	6.0	6.8	3.8	11.8	6.4
	139269	♂	17.2	9.4	4.0	6.2	8.0	14.5	6.2	6.8	3.8	12.2	6.6
	110404	♂	17.2	9.6	4.0	5.8	8.4	14.4	6.2	6.5	3.6	11.8	6.4
New Mexico:													
Cloverdale Hills..	157598	♂	16.8	-----	4.2	-----	8.4	-----	6.0	6.6	4.0	12.0	6.4
	157601	♂	16.8	9.2	4.0	5.8	7.8	14.2	5.8	6.4	4.0	12.2	6.2
	157390	♂	17.0	-----	4.0	6.0	8.2	14.2	6.2	6.5	3.6	11.8	6.2
	244467	♂	17.2	9.8	4.2	6.0	8.2	14.4	6.2	6.8	3.8	12.4	6.4
Carlsbad Cave....	244468	♂	17.2	9.4	3.8	6.2	8.4	14.2	6.0	6.8	3.8	12.2	6.6

1 Type.

Cranial measurements of the *brasilensis* group—Continued

TADARIDA MEXICANA—Continued

Locality	No	Sex	Total length	Zygomatic breadth	Interorbital breadth	Occipital depth	Breadth of braincase	Basal length	Maxillary toothrow	Breadth at M ²	Breadth at canines	Length of mandible	Mandibular toothrow
Arizona:													
Yuma.....	136127	♂	17.0	9.8	4.0	6.0	8.2	14.5	5.8	6.8	4.5	12.0	6.4
	136130	♂	16.6	9.2	4.2	5.8	8.4	14.2	6.2	6.8	4.2	11.8	6.5
Indian Oasis.....	229312	♂	16.5	9.2	4.0	6.5	8.2	14.2	5.8	6.5	3.8	11.8	6.4
Safford.....	204294	♂	16.6	9.4	4.0	6.2	8.2	14.4	6.2	6.5	4.2	11.6	6.6
California:													
Gilroy.....	150825	♂	17.2	9.4	4.0	6.2	8.5	14.6	6.0	6.8	4.2	12.2	6.6
San Jose.....	55576	♂	17.2	9.2	4.2	6.4	8.4	14.4	6.0	6.6	4.0	11.8	6.6
	55577	♂	17.4	9.4	4.0	5.8	8.5	14.5	6.4	6.8	4.2	11.8	6.6
Lemoore.....	77453	♂	16.4	9.2	4.2	5.5	8.0	13.8	6.2	6.6	3.8	11.5	6.5
	77456	♂	16.4	9.2	4.0	5.5	8.0	13.6	5.8	6.2	4.2	11.6	6.0
Colusa.....	133279	♂	17.2	9.2	3.8	6.0	8.0	14.5	6.2	6.4	3.8	12.2	6.8
	133281	♂	17.5	9.5	4.0	6.0	8.2	14.6	6.2	6.6	4.0	12.5	6.4
	133282	♂	17.8	9.6	4.2	5.0	8.6	14.8	6.2	6.8	4.2	12.2	6.8
	133284	♂	17.4	9.6	4.2	5.6	8.2	14.4	6.2	6.8	4.4	12.0	6.6
	133285	♂	17.2	9.2	3.8	6.0	8.2	14.5	6.2	6.5	4.0	11.8	6.8
	133286	♂	17.2	9.6	4.0	5.8	8.8	14.4	6.5	6.8	4.5	12.4	7.0
	133288	♂	16.8	9.2	3.8	5.6	8.2	14.4	6.0	6.6	4.4	12.2	6.6

TADARIDA CYNOCEPHALA

Louisiana:													
Morgan City.....	247029	♂	17.5	9.2	4.2	6.4	8.4	14.6	6.2	6.8	4.2	12.8	6.8
	247031	♂	17.5	9.2	4.2	6.4	8.5	14.8	6.4	6.8	4.2	12.6	7.0
	247032	♂	17.5	9.2	4.2	6.4	8.8	14.6	6.2	6.8	4.4	12.8	6.8
Baton Rouge.....	180902	♂	17.5	9.2	3.8	6.2	8.2	14.8	6.2	6.2	4.4	12.4	6.8
	180903	♂	17.8	10.0	4.6	6.4	8.8	14.8	6.2	7.0	4.4	12.4	6.8
Houma.....	52869	♂	17.6	9.2	4.4	6.2	8.6	14.6	6.2	7.0	4.2	12.4	6.8
	52872	♂	17.2	10.0	4.5	6.2	8.2	14.4	6.2	6.8	4.2	12.2	6.8
	52873	♀	17.2	10.2	4.2	6.2	8.8	14.5	6.2	6.2	4.2	12.5	6.6
Alabama: Orange Beach.....	178258	♀	17.5	9.2	4.2	6.5	8.5	14.5	6.2	6.8	4.2	12.6	6.6
	178001	♂	17.0	9.2	4.2	6.0	8.8	14.0	6.0	7.0	4.2	12.2	6.6
Georgia: Savannah.....	159414	♂	18.0	9.8	4.2	6.6	8.5	15.2	6.2	7.0	4.6	12.8	7.0
South Carolina: Columbia.....	71615	♂	17.4	10.2	4.2	6.2	8.6	14.8	6.2	6.8	4.2	12.2	6.6
	71620	♂	17.2	10.2	4.2	6.2	8.6	14.8	6.2	6.2	4.2	12.2	6.6
Florida: Gainesville.....	239253	♂	18.0	10.0	4.2	6.4	8.8	15.0	6.5	7.2	4.2	12.6	7.0
	239254	♂	17.5	9.2	4.4	6.2	8.2	14.8	6.0	7.2	4.6	12.6	6.8
	239255	♂	17.2	9.2	4.2	6.4	8.4	14.0	6.0	7.2	4.6	12.5	6.4
	239256	♂	17.2	9.8	4.0	6.2	8.5	14.4	6.0	7.0	4.5	12.5	6.8
	239257	♂	17.2	9.5	4.0	6.2	8.5	14.6	6.0	7.0	4.4	12.4	6.5
	239262	♂	17.5	9.5	4.2	6.2	8.5	14.6	6.4	6.8	4.2	12.8	6.8
	239263	♂	17.4	9.8	4.0	6.4	8.5	14.5	6.2	7.0	4.4	12.5	6.8
	239264	♂	17.2	9.6	4.2	6.2	8.2	14.4	6.2	6.8	4.4	12.2	6.6
	239265	♂	17.2	9.2	4.2	6.2	8.5	14.0	6.2	6.8	4.4	12.2	6.6
	239266	♂	17.5	9.2	4.4	6.4	8.8	14.5	6.2	6.8	4.2	12.2	6.6
	239267	♀	17.2	9.2	4.2	6.2	8.6	14.0	6.0	6.8	4.2	11.6	6.8

TADARIDA BAHAMENSIS

Bahama: Long Island.....	122025	♂	16.8	9.4	3.8	6.0	7.6	14.2	6.0	6.6	4.5	12.0	6.5
	122026	♂	16.6	9.0	3.8	6.0	7.8	14.2	6.0	6.5	4.0	11.6	6.5
	122027	♂	16.5	9.4	3.6	6.0	7.8	14.2	5.8	6.5	4.2	11.8	6.5
	122028	♂	16.5	9.2	4.0	6.0	7.8	13.8	5.6	6.6	4.5	11.8	6.5
	122029	♂	16.5	9.5	3.8	6.0	8.0	14.0	5.6	6.5	4.0	11.5	6.2
Bahama Islands.....	217273	♂	16.6	9.0	3.8	5.8	7.6	14.0	6.0	6.5	4.0	12.0	6.2
	217281	♂	16.0	8.8	3.8	5.6	7.8	13.6	5.6	6.4	3.6	11.8	6.2
	217288	♂	16.5	9.0	3.8	5.8	7.6	13.6	5.8	6.4	3.6	12.0	6.2
	217289	♂	16.0	9.0	3.8	5.8	7.6	13.6	5.8	6.2	3.6	11.6	6.2
	217291	♂	16.6	9.2	3.8	6.2	8.0	14.0	5.8	6.6	3.6	11.8	6.2
	217292	♂	16.0	9.0	3.6	5.8	7.8	13.6	5.8	6.2	3.5	11.6	6.2

Cranial measurements of the *brasiliensis* group—Continued

TADARIDA CONSTANZAE

Locality	No.	Sex	Total length	Zygomatic breadth	Interorbital breadth	Occipital depth	Breadth of braincase	Basal length	Maxillary toothrow	Breadth at M ³	Breadth at canines	Length of mandible	Mandibular toothrow
Haiti:													
Bombardopolis	218198	♂	16.5	9.0	3.8	6.2	8.0	13.6	5.6	6.4	4.0	11.5	6.0
San Michel	240924	♂	16.6	9.5	4.0	6.0	8.2	14.0	6.0	7.0	4.2		
Do.	240925	♂	16.4	9.0	4.0	6.2	7.6	14.0	5.6	6.5	4.0	11.4	6.0
Santo Domingo: Constanza													
	217150	♂	16.0	9.2	4.0	6.0	8.0	13.6	5.6	6.5	3.8	11.2	6.2
	217158	♂	16.0	8.5	3.6	6.0	7.6	13.5	5.6	6.5	4.0	11.0	6.5
	217170	♂	16.0	-----	3.8	6.0	8.2	13.2	5.6	-----	-----	11.8	6.0
	217184	♂	16.0	9.0	3.8	5.6	8.0	13.6	5.6	6.5	-----	11.2	6.2
	217199	♂	16.2	9.2	4.2	-----	8.2	-----	5.6	6.6	3.6	11.4	6.2
	217205	♂	16.5	8.8	3.8	5.8	7.8	13.8	5.6	6.4	3.8	11.4	6.2
	217245	♂	16.4	8.8	3.8	6.0	7.8	-----	5.8	6.6	4.0	11.6	6.2

TADARIDA MUSCULA

Cuba	103775	♂	16.0	8.8	3.6	6.0	7.6	13.2	5.0	6.4	4.0	11.4	6.0
	103777	♂	16.4	9.0	4.0	6.0	7.8	14.0	5.8	6.5	4.2	11.8	6.2
	103778	♂	16.4	9.2	3.6	6.0	8.0	13.7	5.6	6.4	3.8	11.2	6.2
	103779	♂	16.2	8.8	4.0	6.6	7.6	13.2	5.6	6.4	3.6	11.0	6.0
	103780	♂	16.0	8.5	4.0	5.8	7.8	13.5	5.6	6.2	3.6	11.4	6.0
	143846	♂	16.0	-----	4.0	5.6	7.8	13.2	5.6	6.2	4.0	11.8	6.2

TADARIDA MURINA

Jamaica	96190	♂	16.2	9.2	3.6	6.2	7.8	13.2	5.5	6.5	3.5	11.2	6.0
	102519	♂	16.0	8.5	3.6	6.0	7.6	13.5	5.6	6.6	3.6	11.4	6.2
	122425	♂	16.4	-----	4.0	6.2	8.2	13.8	5.5	6.6	3.8	11.2	6.2
	122426	♂	16.6	-----	4.0	6.0	8.2	14.0	5.8	6.6	4.0	11.5	6.2
	122427	♂	16.2	9.2	3.8	6.2	7.8	13.8	5.6	6.5	3.8	11.4	6.2

TADARIDA ANTILLULARUM

Porto Rico:													
Adjuntas	86337	♂	15.6	8.8	4.0	5.8	7.6	13.4	5.6	6.4	3.8	10.5	6.2
	86339	♂	16.0	9.0	4.0	6.0	8.0	13.4	5.5	6.5	3.5	11.2	6.2
	86340	♂	15.6	8.6	3.6	6.0	7.5	13.0	5.4	6.4	3.6	11.0	6.0
Cayas	86345	♂	15.8	-----	4.0	6.0	7.8	13.4	5.5	6.4	3.8	11.0	6.0
Mayaquez	112108	♂	-----	9.2	3.8	6.0	7.6	13.5	5.6	6.5	4.0	11.2	6.0
	112109	♂	-----	9.0	4.2	-----	-----	-----	5.4	6.5	3.6	11.4	6.0
West Indies:													
St. Kitts	86869	♂	16.0	8.8	3.6	5.8	7.5	13.2	5.5	6.4	3.8	11.0	6.0
	86870	♂	15.8	8.6	3.6	5.8	7.6	13.4	5.6	6.4	4.0	10.6	5.8
Barbuda	123240	♂	15.8	-----	3.6	5.8	7.5	13.5	5.6	6.2	3.5	11.6	6.2
	123241	♂	15.0	-----	3.6	5.5	7.2	12.8	5.4	6.6	3.4	10.6	5.6
	123244	♂	15.5	-----	3.6	5.6	7.6	12.8	5.6	6.0	3.2	10.6	5.8
Montserrat	101580	♂	15.6	8.8	3.6	5.8	7.4	13.2	5.5	6.2	4.0	11.2	5.8
St. Lucia	110906	♂	15.0	-----	3.6	-----	7.4	-----	5.4	6.2	3.6	10.8	5.6
	110907	♂	15.8	-----	3.8	5.6	7.5	13.0	5.6	6.4	3.6	11.4	6.2
	110914	♂	15.5	-----	3.6	-----	-----	-----	5.6	6.0	3.8	11.4	6.2
	110915	♂	16.0	9.2	3.8	5.8	7.8	13.4	5.4	6.2	4.0	11.6	5.8
West Indies: Antigua (English Harbor)													
	219311	♂	15.6	9.0	3.5	5.8	7.5	13.5	5.5	6.4	3.8	11.2	6.0
	219313	♂	16.2	9.2	3.6	6.2	7.8	13.6	5.5	6.5	3.6	11.0	6.0
	219314	♂	15.8	9.0	3.6	6.0	7.5	13.2	5.5	6.5	4.0	11.4	6.2
	219316	♂	16.2	8.8	3.6	5.8	7.6	13.5	5.6	6.4	3.8	11.2	6.0
	219320	♂	16.0	9.0	3.6	6.2	7.5	13.4	5.6	6.4	3.8	11.0	6.2
Guadeloupe	113525	♂	15.8	9.0	-----	-----	7.8	-----	5.8	6.5	4.2	11.8	6.2
	113527	♂	16.0	9.5	3.8	6.0	7.6	13.5	5.8	6.5	4.4	11.4	6.2
	113531	♂	-----	9.2	3.5	5.6	7.8	-----	5.8	6.4	4.0	11.5	6.2
	113532	♂	16.2	9.2	3.8	6.2	7.8	14.0	5.6	6.6	4.0	11.4	6.2
	113533	♂	16.4	9.4	3.6	6.2	7.6	13.6	5.8	6.4	4.0	11.2	6.2
	113534	♂	16.5	9.5	3.8	6.0	8.0	14.2	5.8	6.6	4.0	11.8	6.4
	113188	♂	16.0	8.8	3.6	5.8	7.6	13.2	5.5	6.2	3.8	11.0	6.2
Dominica: Roseau	113635	♂	15.8	8.8	3.6	5.8	7.6	13.2	5.6	6.5	4.0	10.6	6.0
West Indies:													
Dominica	113637	♂	14.6	8.5	3.6	5.6	7.4	12.6	5.5	5.6	3.6	10.2	5.6
	113640	♂	15.8	9.0	3.6	5.6	7.5	13.0	5.6	6.2	3.6	11.2	5.8
	113644	♂	15.5	8.6	3.6	5.6	7.5	13.0	5.5	6.2	3.8	10.6	5.8
	113646	♂	15.8	8.8	3.5	5.8	7.5	13.2	5.6	6.2	3.8	10.5	6.0
La Haut	113187	♂	14.8	8.4	3.6	5.6	7.4	12.6	5.4	6.2	3.6	10.5	5.6

1 Type.

Cranial measurements of the macrotis group

TADARIDA LATICAUDATA

Locality	No.	Sex	Total length	Zygomat- ic breadth	Interorbital breadth	Occipital depth	Breadth of braincase	Basal length	Maxillary toothrow	Breadth at M ²	Breadth at canines	Length of mandible	Mandibular toothrow
Paraguay:													
Villa Rica-----	114952	♀	19.5	10.5	4.2	7.0	9.2	16.4	7.2	7.5	4.4	14.0	7.6
Sapucay-----	114953	♂	18.8	9.8	3.8	6.4	8.8	15.6	6.8	7.2	4.0	13.2	7.5
	114954	♀	19.5	10.0	4.0	6.8	8.8	16.2	7.2	7.2	4.2	13.4	7.6
	114955	♂	18.6	10.2	3.8	6.4	9.0	15.6	7.2	7.4	3.8	13.6	7.5
	114956	♀	19.0	10.0	4.0	7.0	9.0	15.8	7.2	7.4	4.0	13.2	7.5
	114957	♀	19.0	10.2	3.8	6.6	8.8	15.5	7.0	7.2	4.0	13.2	7.2
	114958	♂	18.6	9.5	3.8	6.5	8.8	-----	6.8	7.2	3.8	13.2	7.2
	114964	♀	18.5	9.8	3.8	6.6	9.0	15.2	6.8	7.5	4.0	12.5	7.2

TADARIDA FEMOROSACCA

Arizona:													
Fort Huachuca--	{ 36038 20922 }	♀	19.2	9.6	3.8	6.0	8.8	16.2	7.2	7.2	3.6	13.2	7.8
Coyote Moun- tains-----	209318	♀	19.2	9.6	3.8	6.2	9.2	16.2	7.5	7.2	3.8	13.5	7.6
Lower California:													
Santa Anita-----	96486	♀	18.4	-----	3.6	6.2	8.8	-----	7.0	6.6	3.2	12.5	7.2
San Pedro Moun- tains-----	{ 38919 22458 }	♂	19.4	9.8	4.0	6.2	9.0	16.5	7.2	6.6	3.8	13.8	7.6
Jalisco:													
Zacoalco-----	51521	♂	-----	10.4	3.8	-----	9.0	-----	7.2	7.2	4.2	14.2	7.8
	51520	♂	19.2	10.4	3.8	6.4	9.2	16.8	7.4	7.0	4.4	14.0	7.8

TADARIDA YUCATANICA

Yucatan:													
Chichen Itza----	108156	♀	18.0	9.5	4.0	-----	8.6	-----	6.6	6.6	3.6	13.2	7.2
	108157	♂	18.0	9.4	3.8	6.4	8.5	15.0	6.5	6.6	3.8	12.6	7.2
	108158	♀	18.2	9.6	4.0	6.5	8.6	15.2	6.8	6.8	3.8	12.6	4.4
	108161	♀	17.8	9.6	3.6	6.5	8.4	14.8	6.4	6.4	3.8	12.6	7.0
	108162	♀	17.8	9.2	3.8	6.5	8.5	14.6	6.5	6.4	3.6	12.2	7.0
	108163	♀	18.0	9.6	4.0	6.4	8.4	15.2	6.6	6.8	3.6	12.4	7.2
	108164	♀	17.6	9.4	3.8	6.5	8.8	14.5	6.4	6.2	3.5	12.6	7.2
	108165	♀	17.8	9.8	3.8	6.4	8.8	14.6	6.5	6.8	3.8	12.6	6.8
	108166	♀	17.8	9.4	3.6	6.2	8.6	14.6	6.4	6.6	3.5	12.6	7.0

TADARIDA EUROPS

Brazil-----	101492	♀	16.6	9.0	3.6	6.2	7.6	13.5	6.2	6.6	3.4	11.2	6.6
	101493	♀	16.6	9.4	3.4	6.2	8.2	13.6	6.4	6.6	3.6	11.8	6.6
	101495	♀	17.0	9.0	3.4	6.2	8.0	13.8	6.2	6.2	3.5	11.8	6.6
	101496	♀	17.2	9.4	3.4	6.4	8.2	14.2	6.2	6.6	-----	12.5	6.6
	101502	♀	16.5	9.2	3.5	6.4	8.2	13.8	6.2	6.6	3.4	12.2	6.6
	101498	♀	16.6	9.2	3.4	6.2	8.2	13.6	6.4	6.5	3.4	12.2	6.6

TADARIDA MACROTIS

Jamaica-----	96192	♀	22.2	11.6	4.2	7.5	10.0	19.5	8.8	8.2	4.6	16.0	9.2
	96194	♀	-----	-----	-----	-----	-----	-----	8.8	-----	-----	16.4	9.2
	122655	♀	22.6	11.5	4.4	7.8	10.0	20.0	8.8	7.8	4.6	16.4	9.4
Dominican Republic:													
	105696	♀	-----	-----	4.2	-----	-----	-----	8.2	8.0	4.5	16.0	9.0
	105697	♀	22.6	10.6	4.2	7.6	10.4	19.5	8.5	7.6	4.5	16.2	8.8
	105700	♀	-----	-----	-----	-----	-----	-----	8.8	-----	-----	16.2	9.6
	105701	♀	23.4	11.5	-----	-----	-----	20.6	9.0	8.2	4.5	16.5	9.4
	105702	♀	-----	-----	-----	-----	-----	-----	8.8	8.2	4.5	16.5	9.4
	105703	♀	-----	-----	-----	-----	-----	-----	8.8	-----	4.6	16.5	9.5
California-----	{ 36569 15178 }	♀	22.4	10.5	4.2	7.2	10.0	19.4	8.4	7.6	4.2	15.8	9.0
Lower California:													
Santa Anita-----	96487	♂	23.6	10.4	4.4	7.5	10.4	20.4	8.8	7.6	4.4	16.6	9.8
	96488	♂	22.6	-----	4.2	7.5	10.0	20.2	8.6	7.6	4.2	17.0	9.4
	96489	♂	23.6	10.2	4.2	6.8	10.2	20.4	8.8	7.4	4.2	16.8	9.5
	148549	♂	24.0	11.4	4.5	7.8	10.2	20.8	8.6	8.0	4.5	17.4	9.8
Arizona: Chiricahua Mountains (A. M. N. H.)-----	6740	♀	23.5	11.5	4.4	7.5	10.4	20.6	9.0	8.2	5.2	17.0	9.5
Iowa: Marshalltown (F. M.)-----	21819	♀	23.6	11.0	4.4	-----	10.4	-----	9.0	7.4	4.4	16.6	9.2
Brazil: Ypiranga-----	200694	♀	22.6	-----	4.5	7.4	10.2	19.6	8.8	8.0	4.5	16.4	9.2
Surinam (B. M.)-----	(⁵)	♂	24.0	13.0	-----	-----	10.4	-----	9.0	-----	-----	17.0	9.8
Ecuador: Manavi Chone (A. M. N. H.)--	34383	♂	24.0	11.5	4.2	7.8	10.2	21.0	9.5	8.5	4.8	17.6	9.8

¹ Type of *Nyctinomus yucatanica*.² Lectotype.³ Type of *Nyctinomus nevadensis*.⁴ Young.⁵ Type of *Nyctinomus megalotis*, measurements taken by G. S. Miller, jr., 1904.⁶ Type of *Nyctinomus equatorialis*.