

# DESCRIPTIONS OF NEW BATS (*CHIRODERMA* AND *ARTIBEUS*) FROM MEXICO

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Bats of the genus *Chiroderma* are rare in Mexico. *Chiroderma villosum* Peters (= *Chiroderma isthmicum* Miller), the only species previously reported in Mexico, is known from the southern states of Chiapas, Oaxaca, and Veracruz, thence southward through Central America into South America.

The recent discovery of a second species, *Chiroderma salvini* Dobson, in Mexico, extends its known range northward from Honduras (Hall and Kelson, THE MAMMALS OF NORTH AMERICA, 1: 135, 1959). The subspecies *Chiroderma salvini salvini* occurs in eastern Mexico (0.5 miles [0.8 kilometers<sup>1</sup>] NE Las Minas, Veracruz, and an unnamed subspecies has been found on the west coast, north of the Isthmus of Tehuantepec (Anderson, S., UNIV. KANSAS PUBL. MUS. NAT. HIST., 14: 7, 1960; Villa-R., B., ANALES INST. BIOL., Univ. Mex., 33: 382, 1962).

## *Chiroderma salvini scopaeum*,<sup>2</sup> new subspecies

**HOLOTYPE.** U. S. National Museum number 338711, adult female, skin and skull, collected 16 August 1960, by Alfred L. Gardner, at Pueblo Juárez, Colima, México, original number 1565.

**DISTRIBUTION.** Western Mexico, from 1.5 miles [2.4 kilometers] SW Hocuina, Río Septentrion, Chihuahua, south through Sinaloa, Nayarit, Jalisco, and Colima to Acahuizotla, Guerrero, at elevations varying from near sea level in Nayarit to 5650 feet [1722 meters] in Sinaloa.

<sup>1</sup> Locality data have been copied verbatim from labels or literature. Metric equivalents are indicated for distances and elevations given originally in the English system.

<sup>2</sup> *Scopaeum* from the Greek *skopaios*, dwarf.

**DESCRIPTION.** Body size small (forearm 43-47 mm; greatest length of skull 21-25 mm). Dorsal mass effect coloration between Mikado Brown<sup>3</sup> and Verona Brown; individual hairs of dorsum tricolored (Fuscous, buff, and brown, reading from base); a narrow, white, median dorsal stripe extends from rump to shoulders or nape; white supraocular and subocular stripes prominent. Underparts near Wood Brown, varying to slightly browner or grayer. Wing membranes blackish except for translucent, brownish area between fingers II and III; interfemoral membrane brownish-gray. Ears yellowish at base and on lower margins, becoming brownish black toward tip; tragus yellowish; noseleaf simple, blackish; lips whitish. Interfemoral membrane, tibia, foot, and proximal two-thirds of forearm hairy. Rostrum relatively narrow; nasal aperture short; orbital ledges and processes reduced; palate relatively short and broad; median postpalatal process absent; anterior margin of mesopterygoid fossa at least notched and often V-shaped, and located anterior to articular fossae.

**MEASUREMENTS.**<sup>4</sup> Total length ♀ 72 (65-80) 9, ♂ 61, 67; hind foot (dry) ♀ 13 (13-14) 10, ♂ 12, 12; ear from notch ♀ 18 (15-19) 10, ♂ 18, 18; forearm ♀ 45.8 (43.2-47.3) 11, ♂ 44.1, 44.3; tibia ♀ 14.7 (13.3-15.2) 11, ♂ 14.5, 14.8; calcar ♀ 6.5 (6.0-7.4) 8, ♂ 6.9, 6.6.

Greatest length of skull ♀ 24.3 (23.8-24.8) 11, ♂ 23.8, 24.8; zygomatic breadth ♀ 15.1

<sup>3</sup> Capitalized color terms are from Ridgway, *Color Standards and Color Nomenclature*, 1912. Color was measured in diffused "cool white" fluorescent light, without direct natural light.

<sup>4</sup> All in millimeters; extremes in parentheses, preceded by means and followed by number of individuals (only adults included). Measurements of the total length and ear were made by the collectors in the field. All other measurements were made by me in the laboratory (as defined in *Proc. U.S. Nat. Mus.*, 110:98-99, 1959).

(14.4-15.6) 8. ♂ 15.0, 14.9; postorbital breadth ♀ 5.9 (5.6-6.2) 11. ♂ 5.7, 6.2; braincase breadth ♀ 10.7 (10.2-11.0) 11, ♂ 10.3, 11.2; braincase depth ♀ 8.5 (8.0-9.0) 11, ♂ 8.6, 8.9; maxillary tooth row length ♀ 8.7 (8.5-8.8) 10, ♂ 8.3, 8.5; postpalatal length ♀ 7.7 (7.3-8.2) 11, ♂ 7.5, 7.0; palatal breadth at *M2* ♀ 10.7 (10.2-11.1) 11, ♂ 10.7, 10.7; palatal breadth at canines ♀ 5.2 (4.9-5.4) 11, ♂ 5.3, 5.2.

**COMPARISONS.** The west Mexican subspecies is easily distinguished from typical *Chiroderma salvini* of Costa Rica and western Panama by its smaller size (forearm 43-47 vs. 48-53, greatest length of skull 24-25 vs. 26-28) and paler coloration (dorsum more yellowish or sand-brown). On the average, it has a narrower rostrum; shorter nasal aperture; more reduced orbital ledges and processes; shorter, broader palate; and shorter postpalatal extension. In addition, it lacks a median postpalatal process, and the anterior border of the mesopterygoid fossa tends toward a V-shape.

*Chiroderma salvini scopaeum* resembles *Chiroderma villosum* in size but differs from it in having well defined facial stripes (usually absent in *C. villosum*); more prominent and extensive median dorsal stripe; yellow-edged ear; simple, unnotched noseleaf; longer, narrower rostrum; shorter nasal aperture; reduced orbital ledges and processes; narrower palate; shorter postpalatal extension; notched or V-shaped anterior edge of mesopterygoid fossa; broader inner upper incisor; and generally heavier dentition. It lacks a median postpalatal process.

**SPECIMENS EXAMINED** (Several hundred specimens of *Chiroderma* were examined. The following were most pertinent to the present report<sup>5</sup>):

*Chiroderma salvini scopaeum*. MEXICO: *Chihuahua*, Rio Septentrión, 1.5 mi. [2.4 Km] SW Tocuina, 1500 ft. [457 m], 2 (KU). *Sinaloa*, 1 mi. [1.6 Km] E Santa Lucia, 5650 ft. [1722 m], 1 (KU). *Nayarit*, 7 mi. [11.3 Km] N Acajoneta, 1 (KU); 8 mi. [12.9 Km] E San Blas, 2 (UAZ). *Jalisco*,

17 Km SE Talpa [de Allende], 5200 ft. [1585 m], 1 (KU). *Colima*, Pueblo Juárez [= "Hacienda Magdalena", ca. 32 Km SW Colima], 330 m, 2 (IB), 1 (LACM). 1 (UAZ), 1 (type of *C. s. scopaeum* Handley, USNM) 3 Km S Pueblo Nuevo, 2 (LACM). *Guerrero*, Acahuizotla, 2800 ft. [853 m], 1 (TCWC).

*Chiroderma salvini salvini*. MEXICO: *Veracruz*, 0.5 mi. [0.8 Km] NE Las Minas, 1 (USNM). HONDURAS: Subirana, Department of Yoro, 2800 ft. [853 m], 1 (MCZ); Tapasuna, 22 (CNHM). COSTA RICA: Angostura, 1 (USNM); Cañas Gordas, 1 (AMNH). PANAMA: *Chiriquí*, Cuesta de Piedra, 2800-3000 ft. [853-914 m], 3 (USNM). *Bocas del Toro*, upper Río Changuena, 2400-4800 ft. [732-1463 m], 14 (USNM).

*Chiroderma villosum jesupi*. MEXICO: *Veracruz*, Achotal, 1 (CNHM); Presidio, 1 (MCZ). *Oaxaca*, 24 mi. [38.6 Km] N Matías Romero, 1 (MSU). *Chiapas*, Río Ocui-lapa, 12 Km SSE Tonalá, 100 m, 3 (IB). PANAMA: *Panamá*, Cabima, 2 (including type of *C. isthmicum* Miller, USNM). *Darién*, Tacarcuna Village, 7 (USNM). *San Blas*, Armila, 17 (USNM). COLOMBIA: *Cagualito*, 1 (type of *C. jesupi* J. A. Allen, AMNH).

In contrast to the rare species of *Chiroderma*, the bat *Artibeus jamaicensis* is one of the most abundant and widespread species of Stenoderminae in the tropical lowlands of Mexico. Current classifications (e. g., Hall and Kelson, THE MAMMALS OF NORTH AMERICA, 1959) suggest that *A. jamaicensis* is geographically variable in Mexico, with the subspecies *A. j. yucatanicus* J. A. Allen inhabiting the Peninsula of Yucatán and *A. j. jamaicensis* Leach all the remaining tropical lowlands. A study of 352 specimens of *Artibeus jamaicensis* from fourteen states in Mexico shows that the species is indeed variable, but the actual ranges of the subspecies are not those recorded in the literature. *A. j. yucatanicus* has a wide range including all of the tropical Caribbean lowlands of Mexico and the Pacific lowlands southward from the Isthmus of Tehuantepec. Another subspecies inhabits the tropical Pacific lowlands north of the Isthmus. Surprisingly it is unnamed.

<sup>5</sup> For definitions of abbreviations of museum names, see *Acknowledgments* at end of article

*Artibeus jamaicensis triomylus*,<sup>6</sup>  
new subspecies

HOLOTYPE. U. S. National Museum number 126554, adult female, skin and skull, collected 17 April 1903, by E. W. Nelson and E. A. Goldman, at Papayo, Guerrero, México, original number 16302.

DISTRIBUTION. Tropical lowlands of western Mexico, from 23 miles [51.5 kilometers] SSE Culiacán, Sinaloa [Anderson, S., UNIV. KANSAS PUBL. MUS. NAT. HIST., 14 (1): 4-5, 1960], south through the states of Durango [Baker and Greer, PUBL. MUS. MICHIGAN STA. UNIV., BIOL. SER. 2 (2): 70-71, 1962], Nayarit, Jalisco, Colima, and Michoacán, to Acahuizotla, Guerrero, and Coatetelco, Morelos. Altitudinal distribution from sea level to 5500 feet [1676 meters] near Acuitlapán, Guerrero.

DESCRIPTION. Hairs of dorsum with basal three-fourths buffy, distal quarter dark brown, and extreme tip buffy or silvery (dorsal mass effect between Vandyke Brown and Warm Sepia in holotype). Supraocular and subocular stripes faint; buffy. Hairs of underparts gray-brown at base and tipped with buff (mass effect near Wood Brown in holotype). Interfemoral membrane and wing membranes blackish-brown (except for brownish, translucent panel between fingers II and III). Noseleaf, lips, ears, and tragus dark brown on dried specimens. Interfemoral membrane and hind legs almost naked; proximal half of forearm hairy. Rostrum usually flattened and dorsal rostral "shield" short and broad, its supraorbital edges converging sharply

*triomylus*

*M3* present<sup>7</sup>

Rostrum usually flattened

Dorsal rostral "shield" usually short and broad, the supraorbital edges converging sharply posteriorly

Postorbital constriction usually over posterior edge or suborbital shelf

*M1* averages shorter

*M2* averages wider

ply posteriorly; postorbital constriction usually situated above posterior edge of suborbital shelf; anterior margin of mesopterygoid fossa usually U-shaped or V-shaped; *M3* usually present; *M2* averages relatively wide, and *M1* averages relatively short.

MEASUREMENTS. Specimens from Guerrero, including the holotype (boldface) (see footnote 4).

Total length ♀ **82** 86 (82-89) 7, ♂ 87 (82-90) 7; hind foot (dry) ♀ **17** 17 (16-18) 8, ♂ 17 (15-18) 8; ear from notch ♀ 21 (20-27) 7, ♂ 20 (17-21) 10; forearm ♀ **59.4** 59.3 (56.8-61.2) 8 ♂ 58.9 (57.2-60.7) 10; tibia ♀ **19.5** 20.2 (19.3-21.2) 9, ♂ 20.5 (19.8-21.5) 9; calcar ♀ **5.7** 6.2 (5.7-6.8) 9, ♂ 6.2 (5.4-7.0) 10.

Greatest length of skull ♀ **27.6** 27.7 (27.1-28.0) 12, ♂ 27.5 (26.6-28.3) 9; zygomatic breadth ♀ **17.1** 17.2 (16.7-17.9) 11, ♂ 17.3 (16.4-18.0) 9; postorbital breadth ♀ **6.4** 6.6 (6.4-6.9) 12, ♂ 6.8 (6.3-7.3) 10; braincase breadth ♀ **11.8** 12.0 (11.7-12.7) 11, ♂ 12.1 (11.6-12.8) 10; braincase depth ♀ **9.5** 9.7 (9.4-10.1) 10, ♂ 9.9 (9.1-10.3) 9; maxillary tooth row length ♀ **9.9** 10.0 (9.5-10.5) 12, ♂ 10.0 (9.5-10.3) 10; post-palatal length ♀ **8.0** 8.2 (8.0-8.7) 11, ♂ 8.2 (7.7-8.6) 10; palatal breadth at *M2* ♀ **12.3** 12.3 (11.5-13.0) 12, ♂ 12.4 (11.9-13.0) 9; palatal breadth at canines ♀ **7.5** 7.5 (7.2-8.0) 12, ♂ 7.7. (7.4-8.2) 10.

COMPARISONS. *Artibeus jamaicensis triomylus* can be distinguished from the contiguous subspecies *A. j. yucatanicus* by the characteristics outlined in the following chart:

*yucatanicus*

*M3* absent<sup>8</sup>

Rostrum often arched

Dorsal rostral "shield" usually long and narrow, the supraorbital edges subparallel.

Postorbital constriction usually well behind posterior edge of suborbital shelf

*M1* averages longer

*M2* averages narrower

<sup>6</sup> *Triomylus* from the Greek *trion*, three, and *mylos*, molar.

<sup>7</sup> Present in both maxillae in 55 of 57 specimens (96.5%) from Nayarit, Jalisco, Colima, Michoacán, Guerrero, and Morelos.

<sup>8</sup> Absent from both maxillae in 134 of 141 specimens (95%) from Tamaulipas, San Luis Potosí, Veracruz, Tabasco, Yucatán, Oaxaca, and Chiapas.

*Artibeus jamaicensis triomylus* and the similar *Artibeus hirsutus* Andersen occupy almost the same geographic range but they may be ecologically segregated. Paler populations of *A. j. triomylus* (as from Morelos) are indistinguishable colorwise from *A. hirsutus*, and the teeth of the two forms seem to be almost identical. However, *A. j. triomylus* can always be recognized by its nearly naked hind legs and interfemoral membrane. In addition, it averages larger; its skull broader; braincase more inflated; rostrum less arched; dorsal rostral "shield" better developed, shorter, broader, and with more convergent postorbital edges; and mesopterygoid fossa rarely with a median projection on its anterior margin.

REMARKS. Andersen (PROC. ZOOL. SOC. LONDON, 1908: 283 and 267) observed the variation in *M3* in the large *Artibeus* with naked interfemoral membrane in Mexico. He supposed that individuals possessing *M3* were one species (*A. planirostris* Spix), and those lacking *M3* were another (*A. jamaicensis* Leach). Recent authors (e. g., Hershkovitz, PROC. U. S. NAT. MUS., 99: 444, 1949; Dalquest, PROC. BIOL. SOC. WASHINGTON 66: 62, 1953), have realized that the presence or absence of *M3* is not a specific character in these bats but they have overlooked the possibility that it may be a subspecific trait.

SPECIMENS EXAMINED (see footnote 5): *Artibeus jamaicensis triomylus*. MEXICO: *Nayarit*, Tepic, 3 (IB). *Jalisco*, Autlán de la Grana, 1 (IB); 2 mi. [3.2 Km] N Ciudad Guzmán, 4 (CNHM); El Zapote, 1 (IB); Puzamo, 2 (IB). *Colima*, Cerro Grande, 2000 ft. [610 m], near Pueblo Nuevo 1 (IB); Colima, 5 (USNM); Las Juntas, 26 Km W Pueblo Juárez, 4 (IB); Mixcoate, 4 (IB); San Marcos, 4 (IB). *Michoacán*, Boca de Apisa, 3 (IB). *Morelos*, Coatetelco, 9 (IB); Tequesquitengo, Cueva Salitre, 10 (AMNH); no exact locality, 1 (USNM). *Guerrero*, Acahuizotla, 2 (IB); Acapulco 1 (IB); Acuitlapán (Cueva las Granadas) 5500 ft. [1676 m], 8 (IB); 30 Km S Chilpancingo (Agua del Obispo), 980 m, 9 (IB); [El] Papayo, 2 (including the type of *A. j. triomylus* Handley, USNM).

*Artibeus jamaicensis yucatanicus*. MEXICO: *Tamaulipas*, 5 mi. [8 Km] N Antigua Morelos, 1 (AMNH); Aserradero Paraíso, 19 Km (by road) N Chamal 13 (AMNH); 2 Km SSW Quintero (Cueva de Quintero), 1 (IB). *San Luis Potosí*, Cueva del Nacimiento del Río Coy 2 (IB); Cueva de Corinto, 15 Km (by road) NNW Tamexin, 1 (IB); Cueva Sabinos (near Valles), 6 (AMNH); El Salto, 5 (AMNH). *Veracruz*, Boca del Río (and 2 Km SSW), 11 (IB); Paso de Ovejas, 1 (IB); Cueva de la Pesca. Potrero, 650 m, 8 (IB); Cueva del Tigre 5 Km W Tuxpan, 2 (IB); Lago Catemaco (Playa Azul), 5 (IB); Mirador, 3 (USNM); Ojo Chico, 1500 ft. [457 m], 6 (CNHM); Puente Nacional, 150 m, 1 (IB); Sontecomapan, 1 (IB); 2 Km W Suchilapa, 3 (IB); San Andrés Tuxtla (and 2 mi. [3.2 Km] W), 3 (AMNH), 2 (USNM). *Tabasco*, 5.3 Km (by road) NNE Teapa (Cueva la Murcielaguera), 3 (IB). *Campeche*, Apazote, 6 (USNM); Matamoros, 1 (CNHM). *Yucatán*, Chichén Itzá, 2 (including type of *A. j. yucatanicus* J. A. Allen, AMNH), 16 (CNHM), 3 (USNM); 2 Km N Hunucmá (Cenote), 3 (IB); Izamal, 4 (USNM); Mérida, 1 (IB), 1 (USNM); Cueva Oxkintox, 2 (AMNH); Oxkutzcab, 3 (AMNH), 1 (USNM); Progreso, 8 (USNM); Sisal, 2 (IB); Uxmal, 3 (IB); Yokat, 6 (AMNH); no exact locality, 3 (AMNH), 4 (USNM). *Oaxaca*, 12 and 16 Km ENE Piedra Blanca [7 Km WSW Chimalapa], 9 (IB) Río Ostuta, 4 mi. [6.4 Km] W Zanatepec, 1 (AMNH); Río Sarabia, 18-24 mi. [29-38.6 Km] N Matías Romero, 2 (AMNH), 1 (IB); Santo Domingo, 900 ft. [274 m], 13 (USNM); Tapanatepec, 8 (AMNH); Tehuantepec, 1 (USNM). *Chiapas*, Cacahuatal, 4 Km E Rizo de Oro, 13 (IB); 4 mi. [6.4 Km] NE Chiapa de Corzo, 3000 ft. [914 m], 1 (IB); 5 mi. [8 Km] S Chiapa [de Corzo], 8 (AMNH); Cueva Cerro Hueco, (4 Km SE Tuxtla), 800 m, 3 (IB); Huehuetán, 3 (USNM); La Trinitaria (Cueva), 1 (IB); Palenque, 26 (USNM); Río Ensenada, 19 Km N Tonalá, 1 (IB); Río Ocuilapa, 12 Km SSE Tonalá, 100 m, 3 (IB); San Bartolomé, 9 (USNM); San Vicente, 11 (USNM).

ACKNOWLEDGMENTS. I am indebted to colleagues who kindly offered specimens for

use in the description of *Chiroderma salvini scopaeum*: Sydney Anderson, Rollin Baker, E. L. Cockrum, W. B. Davis, A. L. Gardner, J. K. Jones, Jr., H. W. Setzer, and Bernardo Villa-R. I am grateful to the following institutions and to their curators for the loan of specimens or for the opportunity to study in their collections: American Museum of Natural History (AMNH); Chicago Natural History Museum (CNHM), Instituto de Biología, México (IB), Los Angeles County Museum (LACM), Museum of Comparative Zoology, Harvard University (MCZ), Michi-

gan State University (MSU), Texas Cooperative Wildlife Collection, Texas Agricultural and Mechanical University (TCWC), University of Arizona, Department of Zoology (UAZ), University of Kansas, Museum of Natural History (KU). Specimens in the U. S. National Museum, including the collection of the Fish and Wildlife Service, are designated by the abbreviation (USNM). Studies which led to these descriptions were supported by National Science Foundation Grant G-19415.