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Bats of the Genus *Rhogeessa*

BY GEORGE G. GOODWIN

Although there is a close similarity in the external appearance of most of the named forms in the genus *Rhogeessa*, a careful study of the material now available indicates that it can be separated into three specific forms: a big-eared species with thin flying membranes, a large species with short ears and thick membranes, and a small species.

The proportionate length of the forearm and color of the pelage cannot be relied on as determining factors except in a very general way. Cranial measurements can also be confusing unless accompanied by comparative material.

All the named forms have been seen, and a total of 152 specimens has been examined, including 10 named forms, three of which are described as new.

Unfortunately a large proportion of the present material has been preserved in spirits for a long time which has not only made the color characters unreliable but has in many cases caused shrinkage and distortion of skulls.

The known range of the genus extends from Santa María, Tamaulipas, and Alamos, Sonora, Mexico, south through Central America to eastern Panamá and south in South America to Bogotá, Colombia, and Puná Island, Ecuador, eastward through Columbia and northern Venezuela and to Maranhao, Alto Parnahyba, Brazil.

There is a surprising lack of individual variation in long series from one locality, but geographical variation in a given subspecies is often quite apparent in cranial characters.

The symmetrically formed warty outgrowth on the back of the ears, mentioned by some authors, is not a diagnostic character of any par-

ticular named form. It is present in some individuals and absent in others of the same subspecies and from the same locality.

All measurements are given in millimeters, and capitalized names of colors used in descriptions are after Ridgway, "Color standards and color nomenclature," Washington, D. C., 1912. The forearm measurement is taken from the elbow to the proximal extremity of the folded fingers of the wing. The length of skull is taken at right angles, with the axis from the front of the incisors to the most posterior extension of the braincase; the condylobasal length is exclusive of the incisors; tooth row is the distance from the front of the upper canine to the back of the last molar.

Abbreviations of museums from which specimens have been examined are:

A.M.N.H., the American Museum of Natural History
B.M., British Museum (Natural History)
C.N.H.M., Chicago Natural History Museum
L.S.U., Louisiana State University
M.C.Z., Museum of Comparative Zoölogy at Harvard College
U.K., University of Kansas
U.S.N.M., United States National Museum

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Rhogeëssa gracilis Miller

Rhogeëssa gracilis MILLER, 1897, North Amer. Fauna, no. 13, p. 126.

TYPE LOCALITY: Piaxtla, Puebla, Mexico.

RANGE: Known only from Piaxtla, Puebla, and the Isthmus of Tehuantepec.

GENERAL CHARACTERS: A medium-sized species with large ears that, when laid forward, reach beyond the tip of the nose; flying membrane thin and more or less naked; fur relatively long, averaging about 9 mm. on middle of back. Color of fur everywhere Light Sepia at base, followed by dull yellowish brown, that on the back tipped with Chestnut (Miller, from specimens immersed two and one-half years in alcohol). Skull very similar to that of *R. parvula parvula* but larger, braincase

more globular and more sharply elevated above rostrum; bullae relatively large.

SPECIMEN RECORDS: *Mexico*: Puebla: Piaxtla, two in spirits (U.S.-N.M.). Oaxaca: Isthmus of Tehuantepec, one in spirits (U.S.N.M.).

Rhogeëssa tumida tumida H. Allen

R[hogeëssa] tumida H. ALLEN, 1866, Proc. Acad. Nat. Sci. Philadelphia, vol. 18, p. 286.

TYPE LOCALITY: Mirador, Veracruz, Mexico.

RANGE: From Santa Maria, Tamaulipas, south through eastern Mexico, except the Yucatán Peninsula, and Central America to Panamá and northern Columbia.

GENERAL CHARACTERS: A relatively large form; color of upper parts Snuff Brown, base of hairs Pinkish Buff for two-thirds of their length; under parts Cinnamon Buff; skull large and relatively long; braincase high, long, and drawn out to an elevated peak posteriorly; rostrum high, broad, and not flattened in orbital region.

SPECIMEN RECORDS: *Mexico*: Tamaulipas: Santa Maria, one (A.M.-N.H.); San Luis Potosi: Ten kilometers west-southwest of Ebano, one (L.S.U.); 19 kilometers southwest of Ebano, 12 (L.S.U.); 3 kilometers north of Taninul, six (L.S.U.). Veracruz: Boca del Rio, one (U.K.); Mirador, one in spirits (U.S.N.M.); Rio Blanco, one (U.K.). *Guatemala*: La Libertad, Peten, one (A.M.N.H.); Moca, one in spirits (M.C.Z.). *Honduras*: Comayagua, one (M.C.Z.); Escuela Agricola Panamericana, one in spirits (M.C.Z.); La Flor Archaga, one (M.C.Z.); El Pedrero, La Paz, nine (A.M.N.H.); Patuca, two (U.S.N.M.); Portillo Grande, Yoro, one (M.C.Z.). *Nicaragua*: Chinanudega, one skin (A.M.N.H.); Matagalpa, three (A.M.N.H.). *Costa Rica*: Pacific coast region, three (A.M.N.H.). *Panamá*: Ancon, three in spirits (M.C.Z.); Balboa, nine in spirits (M.C.Z.); Bugaba, one (M.C.Z.); La Palma de Darien, one in spirits (U.S.N.M.); San Pablo, three in spirits (U.S.N.M.). *Colombia*: Bogotá?, one in spirits (B.M.); Catival, upper Río San Jorge, one in spirits (U.S.N.M.); Río Guaimaral, one skin (U.S.N.M.).

REMARKS: Typical specimens of *tumida* are represented from Tamaulipas south to Bugaba, Panamá, but the material from Nicaragua and Costa Rica is too fragmentary for satisfactory determination. Specimens from eastern Panamá, while sharing characteristics of *tumida*, are smaller than typical specimens. The scanty material from northern Colombia, with incomplete cranial material, is near the size of *minutilla* but has the color of *tumida* and can be given only provisional identification.

***Rhogeessa tumida major*, new subspecies**

TYPE: A.M.N.H. No. 175263, skin and skull; adult male; San Bartolo Yautepec, Yautepec, Oaxaca, Mexico; altitude 800 meters; collector, Thomas MacDougall; January 17, 1957; original no. 1872. The type skin is in good condition, and the skull is complete.

RANGE: Western mainland of Mexico from Colima to Huehuetan in southern Chiapas.

GENERAL CHARACTERS: A large subspecies, with relatively large ears; interfemoral membrane moderately well haired on upper side from base to about a line across distal end of tibia; pelage rather long and lax, averaging about 8 mm. on middle of back.

DESCRIPTION OF TYPE: General color of upper parts Snuff Brown, the hairs dull Cinnamon Brown from base for most of their lengths; under parts dull Cinnamon Buff; a specimen from Santo Domingo, Oaxaca, is richer in color than the type and about Sayal Brown on upper parts. Skull large, with widely spreading zygomatic arches, broad low rostrum, relatively narrow interorbital space, braincase rising rather abruptly from rostrum; postorbital region flattened and not convex as in *tumida*. Dentition relatively heavy.

MEASUREMENTS OF TYPE: (Those of an adult female from Santo Domingo are given in parentheses). Total length, 71 (80); length of tail, 30 (47); hind foot, 6.4 (7); length of forearm, 32 (33); length of tibia, 12.7 (12); ear from meatus, 13.5 (13.6). Skull: greatest length, 13.1 (13); condylobasal length, 12.7 (12.5); interorbital width, 3.2 (3.6); zygomatic breadth, 8.5 (8.3); mastoid breadth, 7 (6.8); width across upper molars, 5.6 (5.65); maxillary tooth row, 5.0 (5.0).

SPECIMEN RECORDS: *Mexico*: Colima: Colima, three in spirits (U.S.-N.M.); Chiapas: Huehuetan, one in spirits (U.S.N.M.); Guerrero: Amula, one in spirits (U.S.N.M.); Oaxaca: San Bartolo Yautepec, one (A.M.N.H.); Santo Domingo, one (U.S.N.M.); Tehuantepec, two (A.M.N.H.).

REMARKS: The specimen from Guerrero is immature and has a relatively long narrow skull. The three from Colima appear to be adult and are considerably smaller in external and cranial measurements than the type, but they seem to be more similar to *major* than to either *parvula* or *tumida*. As with the Guerrero specimen, they are badly faded, having been a long time in spirits, but the interfemoral membrane is definitely hairy on the upper side.

***Rhogeessa tumida bombyx* Thomas**

Rhogeessa bombyx THOMAS, 1913, Ann. Mag. Nat. Hist., ser. 8, vol. 12, p. 569.

TYPE LOCALITY: Condoto, Chocó, Colombia, altitude 300 feet.

RANGE: Known only from the type locality.

GENERAL CHARACTERS: A large species, color above and below yellowish, darkened by the blackish tips of hairs, glands at back of ears large and prominent (Thomas). Skull conspicuously larger and heavier than in *tumida*, with braincase more swollen and frontal profile more convex; occipital protuberance well marked; teeth large; interfemoral membrane naked.

SPECIMEN RECORDS: *Colombia:* Condoto, Chocó, one in spirits (B.M.).

REMARKS: While the external measurements of the type are not excessive, the large size of the skull and teeth of *bombyx* seems sufficient to distinguish it from all named forms except *major*.

***Rhogeessa tumida riparia*, new subspecies**

TYPE: A.M.N.H. No. 69968, skin and skull, adult female; Cuchivano, 3 miles west of Cumanacoa, Province of Sucre, northeastern Venezuela. Altitude 700 feet; collector, G. H. H. Tate, March 3, 1925; original no. 3236. The type skin is in good condition, and the skull is complete.

RANGE: Coastal plains of northeastern Venezuela and Trinidad.

GENERAL CHARACTERS: A medium-sized, robust species, with dark reddish brown pelage and a short, broad, rounded skull.

DESCRIPTION OF TYPE: General color of upper parts Raw Umber, the hairs Cinnamon Buff from base for two-thirds of their length, under parts Tawny Olive; ears, flying membranes blackish brown. Skull short and broad, with a very broad, flattened rostrum, braincase broad and low and not elevated posteriorly to form an angular peak; molariform teeth relatively broad and heavy, palate broad.

MEASUREMENTS OF TYPE: Length of forearm, 28.3; tibia, 10.5; hind foot, 6.9. Skull: greatest length, 12.4; condylobasal length, 11.5; breadth of braincase, 6; zygomatic breadth, 8.3; mastoid breadth, 6.8; interorbital width, 3.4; breadth of rostrum over roots of canines, 4; breadth of rostrum at base of zygomatic arches, 5.5; breadth across molars, 5.6; maxillary tooth row, 4.5.

SPECIMEN RECORDS: *Venezuela:* Cuchivano, one (A.M.N.H.). *Trinidad:* Maracas Valley, four in spirits (A.M.N.H.); Petit Valley, three in spirits (A.M.N.H.); St. Augustine, three in spirits (B.M.); no exact locality, one in spirits (B.M.).

REMARKS: The type of *riparia* is quite distinct from *minutilla* and does not resemble it in either external or cranial characters. Compared with a paratype of *io*, *riparia* is much darker and richer in color and

has a decidedly shorter, broader, and more robust skull, with a larger and more rounded braincase and a broader and flatter rostrum. Specimens from Trinidad referred to this form have the tips of the hairs more blackish in color than the type. Most of the Trinidad specimens are either immature or have fragmentary skulls. The skulls of three adult individuals, however, are complete and agree with the type in essential characters.

Rhogeëssa parvula parvula H. Allen

R[hogeëssa] parvula H. ALLEN, 1866, Proc. Acad. Nat. Sci. Philadelphia, vol. 18, p. 285.

TYPE LOCALITY: Tres Marias Islands, Nayarit, Mexico.

RANGE: Tres Marias Islands and the western mainland of Mexico from Alamos, Sonora, south to San Blas, Nayarit.

GENERAL CHARACTERS: Smallest form in the genus. Color of an adult female in fresh pelage from Maria Madre Island: upper parts Cinnamon Brown, this color lightened by the Sayal Brown basal two-thirds of the hair; under parts Sayal Brown to roots of hair. Skull small and slender; braincase small, rounded anteriorly and elevated to a peak posteriorly; zygomatic arches slender and widely spreading; interorbital region relatively narrow and flattened.

SPECIMEN RECORDS: *Mexico*: Nayarit: Maria Madre Island, one (A.M.N.H.); Tres Marias Islands, two in spirits (U.S.N.M.); Maria Magdalena Island, five in spirits (A.M.N.H.); 1/2 mile east of San Blas, three (U.K.); San Juanito Island, two (A.M.N.H.). *Sonora*: Alamos, two (U.K.).

REMARKS: The specimens from the mainland are smaller than *R. t. tumida*, but are somewhat larger, with a larger and fuller braincase, than typical *parvula*.

Rhogeëssa parvula aeneus, new subspecies

TYPE: A.M.N.H. No. 91234, skin and skull, adult, not sexed; Chichen Itza, Yucatán, Mexico; collector, Robert T. Hatt; October 23, 1929; original no. 49. The type skin is in good condition, and the skull is complete.

RANGE: Restricted to the Yucatán Peninsula.

GENERAL CHARACTERS: A small reddish brown bat about the size of typical *R. parvula* but more reddish in color, with shorter and closer pelage.

DESCRIPTION OF TYPE: General color of upper parts Prout's Brown, the hairs Cinnamon Buff from base for most of their length; under

parts Tawny Olive; flying membranes blackish brown and leathery as in other members of this species. Skull small, with widely spreading zygomatic arches and about the size of *parvula* from Sonora, braincase larger than in typical *parvula* and only slightly elevated posteriorly, rostrum relatively long and flattened in interorbital region.

MEASUREMENTS OF TYPE: Total length, 75; length of tail, 37; hind foot, 6; ear, 10; forearm, 27.5. Skull: greatest length, 11.9; condylobasal length, 11.5; zygomatic breadth, 7.6; mastoid breadth, 6.4; breadth of braincase, 5.3; least interorbital width, 3; breadth across molars, 5.1; maxillary tooth row, C-M³, 4.2.

SPECIMEN RECORDS: *Mexico*: Campeche: La Tuxpana Champoton, one (U.S.N.M.). *Yucatán*: Chichen Itza, one (A.M.N.H.), two in spirits (M.C.Z.).

REMARKS: The type is fully adult, with teeth showing considerable wear. Its small size, dark color, and cranial peculiarities seem to be beyond the range of extreme variation in *tumida*. The skull of *aeneus*, compared with that of typical *parvula*, is larger, with a larger braincase and broader rostrum. The adult male from La Tuxpana Champoton referred to this form is paler colored and has a more slender skull than the type.

Rhogeessa parvula minutilla Miller

Rhogeessa minutilla MILLER, 1897, Proc. Biol. Soc. Washington, vol. 11, p. 139.

TYPE LOCALITY: Margarita Island, Venezuela.

RANGE: Margarita Island, Trinidad, lowlands of northwestern Venezuela to the Sierra de Perijá and southward east of the highlands to Cucutá, Colombia.

GENERAL CHARACTERS: A small, light-colored form similar to *Rhogeessa parvula* *io* but smaller and paler colored and differing in cranial details. General color of upper parts Tawny Olive, the hairs Light Buff from base for about two-thirds of their length, under parts Pinkish Buff. Skull small and slender, with a relatively small, rounded braincase, elevated to a peak posteriorly; interorbital region narrow; rostrum relatively long and narrow.

SPECIMEN RECORDS: *Colombia*: Ten miles north of Cucutá, two in spirits (C.N.H.M.). *Trinidad*: Port-of-Spain, two in spirits (A.M.N.H.); no exact locality, one in spirits (B.M.), one in spirits (U.S.N.M.). *Venezuela*: El Panorama, Río Aurare, one (C.N.H.M.); Empalado, 30 miles east of Maracaibo, four in spirits (C.N.H.M.), two in spirits (M.C.Z.); Margarita Island, two (U.S.N.M.); Río Cogollo, one in spirits (C.N.-

H.M.); Río Tocuyo, 12, 34 in spirits (A.M.N.H.); Santa Elena Guachi, one in spirits (C.N.H.M.).

REMARKS: Individuals in the Río Tocuyo series agree in size, color, and cranial characters with a topotype of *minutilla* and can be considered as near typical. Specimens from the vicinity of Lake Maracaibo average small in size and have light-colored pelage and suggest a closer relationship with *minutilla* than with either *io* or *tumida*. Trinidad specimens referred here to *minutilla* have the basic color of the hair yellowish, and the skulls are small and slender; unfortunately all have been in spirits for some time.

Rhogeessa parvula io Thomas

Rhogeessa io THOMAS, 1903, Ann. Mag. Nat. Hist., ser. 7, vol. 11, p. 382.

TYPE LOCALITY: Valencia, Venezuela.

RANGE: Known only from the type locality.

GENERAL CHARACTERS: Similar in general characters to *minutilla* but averaging larger and darker in color. General color of upper parts, according to Thomas, Raw Umber but more yellowish than in *R. tumida*. Skull smaller and more slender than that of *tumida* but larger and more massive than that of *R. minutilla*; rostrum short and broad; braincase rather large, angular posteriorly in superior view and extended to a peak that projects beyond the occipital plane; zygomatic arches broadly expanded; braincase with a low but distinct sagittal crest. Compared with the skull of *minutilla*, that of a topotype of *io* has a noticeably larger and more angular braincase, less elevated posteriorly, and a broader rostrum. Compared with that of *tumida*, this skull is flatter above, more slender, and more angular, with interorbital region flatter and braincase narrower.

SPECIMEN RECORDS: *Venezuela*: Valencia, four in spirits (B.M.).

REMARKS: In his type description Thomas gives the forearm measurements of the type and three paratypes as 27.6, 28, 28.3, 29. On the basis of one paratype seen by the author and Thomas' type description, *io* can be recognized as a subspecies of *parvula*, but it is closely allied to *minutilla*.

Rhogeessa parvula velilla Thomas

Rhogeessa velilla THOMAS, 1903, Ann. Mag. Nat. Hist., ser. 7, vol. 11, p. 383.

TYPE LOCALITY: Purá, Puná Island, Gulf of Guayaquil, Ecuador.

RANGE: Known only from the type locality.

GENERAL CHARACTERS: Described as similar in color to *R. parvula io*, but bases of hairs more whitish; skull similar to that of *io*, but

quite without the "marked helmet" found in other forms, the posterior line of the skull running directly across, without mesial angulation projection behind (Thomas).

SPECIMEN RECORDS: *Ecuador*: Purá, Puná Island, one in spirits (B.M.).

Rhogeessa tumida subsp.?

One skin without skull in the Chicago Museum from Maranhao, Alto Parnahyba, Brazil, is very similar in color and texture of the pelage to the type of *R. tumida riparia*, but it has a longer forearm (29.5) than the latter.

TABLE 1
MEASUREMENTS (IN MILLIMETERS) OF SPECIES OF THE GENUS *Rhogeessa*

| Species and No. | Sex | Locality | Forearm | Length of Skull | Condylbasal Length | Breadth of Braincase | Zygomatic Breadth | Mastoid Breadth | Breadth Across Upper Molars | Tooth Row |
|-------------------------|-----|--|---------|-----------------|--------------------|----------------------|-------------------|-----------------|-----------------------------|-----------|
| <i>R. gracilis</i> | | | | | | | | | | |
| U.S.N.M. No. 7069* | ♂ | Piaxtla, Puebla | 33.3 | 12.8+ | — | 6.1+ | 8.0+ | — | 5.1 | 4.8 |
| U.S.N.M. No. 7069 | ♀ | Piaxtla, Puebla | 32.2 | — | — | — | — | — | 5.2 | 4.8 |
| U.S.N.M. No. 38294 | ♀ | Isthmus Tehuantepec, Oaxaca | 30.3 | 12.5 | 11.5 | 6.1 | 7.6 | 6.3 | 4.9 | 4.8 |
| <i>R. tumida tumida</i> | | | | | | | | | | |
| A.M.N.H. No. 148196 | ♂ | Santa Maria, Tamaulipas | 30.8 | 13.0 | 12.0 | 6.1 | 7.9 | 6.6 | 5.4 | 4.6 |
| L.S.U. No. 4937 | ♀ | 3 kilometers north of Taninul, San Luis Potosi | 30.5 | 12.8 | 12.5 | 5.7 | 8.4 | 6.9 | 6.7 | 4.7 |
| L.S.U. No. 4938 | ♂ | 3 kilometers north of Taninul, San Luis Potosi | 29.0 | 12.5 | 11.8 | 5.8 | 8.2 | 6.8 | 5.6 | 4.7 |
| L.S.U. No. 4939 | ♂ | 3 kilometers north of Taninul, San Luis Potosi | 30.0 | 12.9 | 12.5 | 5.5 | 8.2 | 6.9 | 5.7 | 4.8 |
| L.S.U. No. 4940 | ♂ | 3 kilometers north of Taninul, San Luis Potosi | 31.7 | 12.6 | 12.4 | 5.7 | 8.6 | 6.8 | 5.7 | 4.6 |
| L.S.U. No. 4941 | ♂ | 3 kilometers north of Taninul, San Luis Potosi | 29.9 | 12.5 | 12.2 | 5.9 | 8.3 | 6.8 | 5.5 | 4.7 |

TABLE 1—(Continued)

| Species and No. | Sex | Locality | Forearm | Length of Skull | Condylobasal Length | Breadth of Braincase | Zygomatic Breadth | Mastoid Breadth | Breadth Across Upper Molars | Tooth Row |
|-----------------|-----|--|---------|-----------------|---------------------|----------------------|-------------------|-----------------|-----------------------------|-----------|
| L.S.U. No. 4942 | ♂ | 19 kilometers southwest of Ebano, San Luis Potosi | 31.2 | 12.5 | — | — | — | — | 5.5 | 4.7 |
| L.S.U. No. 4943 | ♂ | 19 kilometers southwest of Ebano, San Luis Potosi | 29.2 | 12.2 | 11.7 | 5.7 | 8.1 | 6.6 | 5.65 | 4.7 |
| L.S.U. No. 4944 | ♂ | 19 kilometers southwest of Ebano, San Luis Potosi | 29.8 | 12.1 | 11.9 | 5.5 | 8.3 | 6.5 | 5.5 | 4.7 |
| L.S.U. No. 4945 | ♀ | 19 kilometers southwest of Ebano, San Luis Potosi | 30.0 | 12.8 | 11.9 | 5.5 | 8.3 | 6.6 | 5.7 | 4.8 |
| L.S.U. No. 4946 | ♀ | 19 kilometers southwest of Ebano, San Luis Potosi | 29.5 | 12.15 | 11.55 | 5.5 | 7.8 | 6.5 | 5.5 | 4.5 |
| L.S.U. No. 4947 | ♀ | 19 kilometers southwest of Ebano, San Luis Potosi | 30.0 | 12.7 | 12.0 | 5.5 | 8.2 | 6.8 | 5.4 | 4.7 |
| L.S.U. No. 4948 | ♀ | 19 kilometers southwest of Ebano, San Luis Potosi | 30.6 | 12.5 | 12.2 | 5.5 | 8.3 | 6.8 | 5.6 | 4.6 |
| L.S.U. No. 4949 | ♂ | 19 kilometers southwest of Ebano, San Luis Potosi | 31.5 | 12.0 | 11.8 | 5.5 | 7.9 | 6.5 | 5.3 | 4.7 |
| L.S.U. No. 4950 | ♀ | 19 kilometers southwest of Ebano, San Luis Potosi | 30.5 | 12.5 | 12.1 | 5.7 | 8.4 | 7.0 | 5.6 | 4.7 |

TABLE 1—(Continued)

| Species and No. | Sex | Locality | Forearm | Length of Skull | Condylbasal Length | Breadth of Braincase | Zygomatic Breadth | Mastoid Breadth | Breadth Across Upper Molars | Tooth Row |
|--------------------------------|-----|---|---------|-----------------|--------------------|----------------------|-------------------|-----------------|-----------------------------|-----------|
| L.S.U. No. 4951 | ♀ | 19 kilometers southwest of Ebano, San Luis Potosi | 30.7 | 12.7 | 12.3 | 5.3 | 8.2 | 6.5 | 5.5 | 4.7 |
| L.S.U. No. 4952 | ♂ | 19 kilometers southwest of Ebano, San Luis Potosi | 29.5 | 12.9 | 12.6 | 5.9 | 8.6 | 6.9 | 5.6 | 4.7 |
| L.S.U. No. 4953 | ♂ | 19 kilometers southwest of Ebano, San Luis Potosi | 30.5 | 12.6 | 12.3 | 5.6 | 8.2 | 6.5 | 5.6 | 4.6 |
| U.K. No. 29886 | ♂ | Boca del Rio, Veracruz | 28.7 | 12.7 | 11.9 | 5.7 | 8.4 | 6.9 | 5.6 | 4.6 |
| U.K. No. 19231 | ♀ | Rio Blanco, Veracruz | 30.5 | 13.2 | 12.4 | 5.6 | 8.4 | 7.0 | 5.6 | 4.8 |
| U.S.N.M. No. 8195 ^a | ♂ | Mirador, Veracruz | 29.5 | 12.3 | 11.3 | — | — | 6.5 | 5.4 | 4.68 |
| A.M.N.H. No. 144697 | ♀ | La Libertad, Guatemala | 28.8 | 12.5 | 12.0 | 5.5 | 8.3 | 6.7 | 5.4 | 4.6 |
| M.C.Z. No. 28144 | ♂ | Moca, Guatemala | 28.3 | — | — | — | — | — | 5.5 | 4.5 |
| A.M.N.H. No. 126901 | ♂ | El Pedrero, Honduras | 30.0 | 12.8 | 12.4 | 5.9 | 8.2 | 6.8 | 5.8 | 4.8 |
| A.M.N.H. No. 126902 | ♂ | El Pedrero, Honduras | 29.4 | 12.7 | 12.0 | 5.7 | 7.8 | 6.8 | 5.5 | 4.7 |
| A.M.N.H. No. 126903 | ♀ | El Pedrero, Honduras | 28.7 | 12.4 | 11.7 | 5.7 | 8.2 | 6.8 | 5.5 | 4.6 |
| A.M.N.H. No. 126904 | ♀ | El Pedrero, Honduras | 30.7 | 12.4 | 12.0 | 5.8 | 8.3 | 6.9 | 5.6 | 4.7 |
| A.M.N.H. No. 126905 | ♀ | El Pedrero, Honduras | 30.0 | 12.3 | 11.8 | 5.5 | 7.8 | 6.5 | 5.5 | 4.5 |
| A.M.N.H. No. 126909 | ♀ | El Pedrero, Honduras | 30.0 | 12.8 | 12.1 | 5.9 | 8.2 | 7.0 | 5.6 | 4.6 |
| M.C.Z. No. 45401 | ♀ | Escuela Agrícola, Honduras | 32.2 | 12.3 | 12.0 | 5.5 | — | 6.3 | 5.5 | 4.6 |

TABLE 1—(Continued)

| Species and No. | Sex | Locality | Forearm | Length of Skull | Condylbasal Length | Breadth of Braincase | Zygomatic Breadth | Mastoid Breadth | Breadth Across Upper Molars | Tooth Row |
|----------------------------------|-----|---------------------------------|---------|-----------------|--------------------|----------------------|-------------------|-----------------|-----------------------------|-----------|
| M.C.Z. No. 28976 | ♂ | La Flor Archaga, Honduras | 30.5 | 12.2 | 11.6 | 5.7 | 7.2 | 6.6 | 5.5 | 4.6 |
| M.C.Z. No. 33869 | ♀ | Portillo Grande, Yoro, Honduras | 31.0 | 12.7 | 11.9 | 5.7 | 8.1 | 6.5 | 5.5 | 4.7 |
| A.M.N.H. No. 29864 | ♂ | Matagalpa, Nicaragua | 29.0 | 12.5 | 11.7 | 5.5 | 7.8 | 6.7 | 5.4 | 4.5 |
| A.M.N.H. No. 29865 | ♂ | Matagalpa, Nicaragua | 29.0 | 12.1 | 11.5 | 5.6 | 7.5 | 6.4 | 5.4 | 4.6 |
| A.M.N.H. No. 29863 | ♀ | Matagalpa, Nicaragua | 30.5 | 11.8 | 11.5 | 5.5 | 7.6 | 6.4 | 5.4 | 4.5 |
| A.M.N.H. No. 4966 | ? | Pacific coast, Costa Rica | 28.3 | 12.0 | — | — | 6.5 | — | 5.3 | 4.4 |
| A.M.N.H. No. 4967 | ? | Pacific coast, Costa Rica | 28.5 | 12.3 | — | — | 7.8 | — | 4.9 | 4.5 |
| M.C.Z. No. 10446 | ♂ | Bugaba, Panamá | — | 13.0 | 12.8 | — | 8.0 | — | 5.5 | 4.6 |
| U.S.N.M. No. 180877 | ♀ | La Palma, Darien, Panamá | 28.7 | 12.2 | 11.5 | 6.0 | 7.9 | 6.6 | 5.4 | 4.4 |
| U.S.N.M. No. 21087 | ♀ | San Pablo, Panamá | 28.7 | 12.2 | 11.4 | 5.7 | 7.4 | 6.6 | 5.5 | 4.4 |
| U.S.N.M. No. 171213N | ♀ | San Pablo, Panamá | 31.0 | 12.5 | 11.5 | 5.8 | 7.9 | 6.8 | 5.4 | 4.5 |
| U.S.N.M. No. 171212 | ♀ | San Pablo, Panamá | 29.5 | 12.3 | 11.5 | 5.9 | 8.2 | 6.8 | 5.5 | 4.5 |
| M.C.Z. No. 33525 | ♂ | Balboa, Panamá | 29.0 | 11.8 | 11.6 | 5.7 | 7.1 | 6.2 | 5.3 | 4.3 |
| M.C.Z. No. 28100 | ♀ | Ancon, Panamá | 27.7 | 11.4 | 11.3 | 5.5 | 7.3 | 6.5 | 5.5 | 4.0 |
| U.S.N.M. No. 281921 | ♀ | Colonia Agrícola, Colombia | 28.3 | 11.7 | 11.2 | 6.3 | 7.8 | 6.5 | 5.0 | 4.3 |
| C.H.M. No. 29526 | ♂ | Catival, Colombia | 27.6 | 11.7 | — | 5.6 | 7.1 | — | 5.2 | 4.3 |
| <i>R. tumida major</i> | | | | | | | | | | |
| A.M.N.H. No. 175263 ^b | ♂ | San Bartolo, Oaxaca | 32.0 | 13.1 | 12.7 | 6.0 | 8.5 | 7.0 | 5.6 | 5.0 |

TABLE 1—(Continued)

| Species and No. | Sex | Locality | Forearm | Length of Skull | Condylobasal Length | Breadth of Braincase | Zygomatic Breadth | Mastoid Breadth | Breadth Across Upper Molars | Tooth Row |
|---------------------------------|-----|-----------------------------|---------|-----------------|---------------------|----------------------|-------------------|-----------------|-----------------------------|-----------|
| U.S.N.M. No. 73269 | ♀ | Santo Domingo, Oaxaca | 33.0 | 13.0 | 12.5 | 6.0 | 8.3 | 6.8 | 5.6 | 5.0 |
| A.M.N.H. No. 178744 | ♂ | Tehuantepec, Oaxaca | 30.5 | 13.1 | 12.5 | 5.7 | 8.4 | 7.2 | 5.5 | 4.8 |
| A.M.N.H. No. 178745 | ♀ | Tehuantepec, Oaxaca | 31.0 | 12.8 | 12.4 | 5.7 | 8.4 | 6.7 | 5.4 | 4.7 |
| U.S.N.M. No. 78600 | ♂ | Huehuetan, Chiapas | 30.0 | 13.05 | 12.2 | 6.0 | 8.5 | 7.2 | 5.6 | 4.8 |
| U.S.N.M. No. 187713 | ♀ | Amula, Guerrero | 30.5 | 12.8 | 12.1 | 6.0 | 7.5 | 6.8 | 5.2 | 4.6 |
| U.S.N.M. No. 52102 | ♀ | Colima, Colima | 29.8 | 12.0 | 11.4 | 5.7 | 7.8 | 6.7 | 5.1 | 4.5 |
| U.S.N.M. No. 52065 | ♂ | Colima, Colima | 30.0 | 12.0 | 11.4 | 5.7 | 7.6 | 6.4 | 5.4 | 4.4 |
| U.S.N.M. No. 52066 | ♂ | Colima, Colima | 28.0 | 12.2 | 11.3 | 5.7 | 8.0 | 6.65 | 5.3 | 4.4 |
| <i>R. tumida riparia</i> | | | | | | | | | | |
| A.M.N.H. No. 69968 ^b | ♀ | Cuchivano, Venezuela | 28.2 | 12.2 | 12.0 | 6.0 | 8.1 | 6.9 | 5.5 | 4.6 |
| B.M. No. 37.8.30.30 | ♀ | Trinidad, no exact locality | 29.1 | 12.4 | 11.9 | 6.0 | 8.1 | 7.0 | 5.5 | 4.5 |
| B.M. No. 45.292 | ♂ | Maracas Valley, Trinidad | 28.0 | 12.0 | 11.5 | 6.0 | 8.1 | 6.8 | 5.5 | 4.5 |
| A.M.N.H. No. 175727 | ♂ | Maracas Valley, Trinidad | 28.5 | 12.7 | 11.8 | 5.9 | 8.1 | 6.6 | 5.2 | 4.5 |
| A.M.N.H. No. 176380 | ♀ | Maracas Valley, Trinidad | 29.0 | 12.4 | 12.0 | 5.9 | — | 6.7 | — | 4.6 |
| <i>R. tumida bombyx</i> | | | | | | | | | | |
| B.M. No. 13.10.29 | ♂ | Condoto, Chocó, Colombia | 32.0 | 14.5 | — | 6.7 | 9.5 | 7.8 | 62. | 5.2 |
| <i>R. parvula parvula</i> | | | | | | | | | | |
| U.S.N.M. No. 7841 ^c | ? | Tres Marias I., Nayarit | 27.4 | — | — | — | — | — | — | — |

TABLE 1—(Continued)

| Species and No. | Sex | Locality | Forearm | Length of Skull | Condylobasal Length | Breadth of Braincase | Zygomatic Breadth | Mastoid Breadth | Breadth Across Upper Molars | Tooth Row |
|---------------------------------|-----|----------------------------------|---------|-----------------|---------------------|----------------------|-------------------|-----------------|-----------------------------|-----------|
| U.S.N.M. No. 7842 | ? | Tres Marias I., Nayarit | — | 11.8 | 10.9 | — | — | 6.2 | 4.9 | 4.3 |
| A.M.N.H. No. 180566 | ♀ | Maria Madre I., Nayarit | 27.7 | 11.5 | 11.2 | 5.1 | 7.4 | 6.1 | 4.9 | 4.2 |
| A.M.N.H. No. 180543 | ♂ | San Juanito I., Nayarit | 27.1 | 11.5 | 11.0 | 5.7 | 7.4 | 6.2 | 5.0 | 4.3 |
| A.M.N.H. No. 180544 | ♀ | San Juanito I., Nayarit | 28.5 | 11.6 | 11.0 | 5.1 | 7.5 | 6.2 | 5.0 | 4.3 |
| U.S.N.M. No. 92413 | ? | Maria Madre I., Nayarit | 26.0 | 11.25 | 10.5 | — | — | 6.1 | 4.7 | 4.1 |
| U.K. No. 39723 | ♂ | ½ mile east of San Blas, Nayarit | 27.2 | 12.2 | 11.5 | 7.6 | 7.9 | 6.5 | 5.1 | 4.5 |
| U.K. No. 39724 | ♂ | ½ mile east of San Blas, Nayarit | 27.3 | 11.7 | 10.7 | 7.2 | 7.4 | 6.4 | 4.8 | 4.2 |
| U.K. No. 39725 | ♀ | ½ mile east of San Blas, Nayarit | 28.0 | 12.0 | 10.9 | — | 6.6 | 6.9 | 5.1 | 4.4 |
| U.K. No. 24853 | ♀ | Alamos, Sonora | 29.5 | 11.7 | 10.8 | 7.7 | 7.8 | 6.5 | 4.8 | 4.2 |
| U.K. No. 24854 | ♀ | Alamos, Sonora | 29.0 | 11.4 | 10.6 | 7.4 | 7.6 | 6.1 | 4.9 | 4.4 |
| <i>R. parvula aeneus</i> | | | | | | | | | | |
| A.M.N.H. No. 91234 ^b | — | Chichen Itza, Yucatán | 27.5 | 11.9 | 11.5 | 5.3 | 7.6 | 6.4 | 5.1 | 4.2 |
| M.C.Z. No. 32868 | ♂ | Chichen Itza, Yucatán | 27.0 | 12.0 | 11.4 | 5.4 | 7.6 | 6.3 | 5.3 | 4.5 |
| M.C.Z. No. 10807 | ♀ | Chichen Itza, Yucatán | 26.9 | 12.3 | 11.4 | 5.4 | 7.7 | 6.4 | 5.3 | 4.5 |
| U.S.N.M. No. 170858 | ♂ | La Tuxpana, Campeche | 26.7 | 12.2 | 11.3 | 5.2 | 7.6 | 6.5 | 4.9 | 4.5 |
| <i>R. parvula minutilla</i> | | | | | | | | | | |
| U.S.N.M. No. 63216 ^c | ♂ | Margarita I., Venezuela | 25.5 | 11.8 | — | 5.4 | — | — | 5.1 | 4.6 |
| U.S.N.M. No. 113497 | ♀ | Margarita I., Venezuela | 26.1 | 11.9 | — | 5.4 | 7.5 | — | 4.8 | 4.4 |

TABLE 1—(Continued)

| Species and No. | Sex | Locality | Forearm | Length of Skull | Condylbasal Length | Breadth of Braincase | Zygomatic Breadth | Mastoid Breadth | Breadth Across Upper Molars | Tooth Row |
|---------------------|-----|------------------------------------|---------|-----------------|--------------------|----------------------|-------------------|-----------------|-----------------------------|-----------|
| U.S.N.M. No. 130677 | ♂ | Río Tocuyo, Venezuela | 26.9 | 11.5 | — | 5.5 | 7.8 | — | 5.1 | 4.5 |
| U.S.N.M. No. 130671 | ♀ | Río Tocuyo, Venezuela | 27.0 | 12.0 | 11.5 | 5.5 | 7.6 | 6.2 | 5.3 | 4.5 |
| U.S.N.M. No. 130672 | ♂ | Río Tocuyo, Venezuela | 26.8 | 12.5 | 11.8 | 5.5 | 7.7 | 6.6 | 5.2 | 4.7 |
| U.S.N.M. No. 130673 | ♀ | Río Tocuyo, Venezuela | 28.0 | 12.0 | 11.2 | 5.3 | 7.8 | 6.4 | 5.0 | 4.5 |
| U.S.N.M. No. 130674 | ♂ | Río Tocuyo, Venezuela | 27.2 | 12.0 | 11.5 | 5.5 | 7.6 | 6.4 | 5.1 | 4.4 |
| U.S.N.M. No. 130675 | ♀ | Río Tocuyo, Venezuela | 27.4 | 12.0 | 11.2 | 5.6 | 7.5 | 6.3 | 5.2 | 4.4 |
| C.N.H.M. No. 18711 | ♀ | El Panorama, Venezuela | 28.5 | 12.5 | 12.0 | 5.5 | 7.7 | 6.7 | 5.2 | 4.5 |
| C.N.H.M. No. 21894 | ♀ | Río Cogollo, Venezuela | 28.2 | 11.9 | 11.5 | 5.5 | 7.8 | 6.3 | 5.1 | 4.0 |
| C.N.H.M. No. 21895 | ♀ | Santa Elena Guachi, Venezuela | 27.5 | 11.9 | 11.4 | 5.7 | 8.0 | 6.6 | 5.3 | 4.3 |
| C.N.H.M. No. 18742 | ♂ | Empalado Savannas, Venezuela | 29.3 | 12.0 | 11.5 | 5.8 | 7.6 | 6.6 | 5.2 | 4.3 |
| C.N.H.M. No. 18743 | ♀ | Empalado Savannas, Venezuela | 27.3 | 11.8 | — | 5.5 | — | — | — | 4.2 |
| C.N.H.M. No. 15744 | ♂ | Empalado Savannas, Venezuela | 27.4 | 12.0 | 11.2 | 5.9 | 7.7 | 6.4 | 5.3 | 4.2 |
| C.N.H.M. No. 15745 | ♂ | Empalado Savannas, Venezuela | 26.5 | — | — | — | 7.5 | — | 5.0 | 4.2 |
| M.C.Z. No. 33511 | ♀ | Empalado Savannas, Venezuela | 27.8 | 12.1 | 11.5 | 5.5 | 7.0 | 6.3 | 5.0 | 4.3 |
| C.N.H.M. No. 29825 | ♂ | 10 miles north of Cucutá, Colombia | 25.5 | 11.5 | 11.0 | 5.4 | 7.4 | 6.3 | 5.0 | 4.1 |
| C.N.H.M. No. 29526 | ♀ | 10 miles north of Cucutá, Colombia | 26.6 | 12.0 | 11.4 | 5.7 | 7.7 | 6.5 | 5.2 | 4.3 |
| B.M. No. 37.8.30.29 | ♂ | Trinidad, no exact locality | 27.4 | 11.0 | 10.4 | 5.2 | 6.6 | 5.8 | 4.6 | 4.1 |
| U.S.N.M. No. 141885 | ♀ | Trinidad, no exact locality | 28.0 | 12.0 | 11.2 | 5.7 | 7.0 | 6.6 | 5.3 | 4.4 |

TABLE 1—(Continued)

| Species and No. | Sex | Locality | Forearm | Length of Skull | Condylobasal Length | Breadth of Braincase | Zygomatic Breadth | Mastoid Breadth | Breadth Across Upper Molars | Tooth Row |
|---|-----|-------------------------|---------|-----------------|---------------------|----------------------|-------------------|-----------------|-----------------------------|-----------|
| C.N.H.M. No. 51157 <i>R. parvula</i> ^{to} | ♀ | Port-of-Spain, Trinidad | 29.0 | 11.5 | 10.8 | 5.5 | 6.8 | 5.9 | 4.8 | 4.3 |
| B.M. No. 94.9.25.1 ^b | ♂ | Valencia, Venezuela | 28.0 | 12.1 | — | 6.0 | 8.1 | 7+ | 5.5 | 4.6 |
| B.M. No. 94.9.25.19 | ♂ | Valencia, Venezuela | 27.6 | 11.9 | 11.25 | 5.7 | 7.9 | 6.65 | 5.0 | 4.3 |
| <i>R. parvula velilla</i> | | | | | | | | | | |
| B.M. No. 99.8.1.5 ^b | ♂ | Pará, Puná I., Ecuador | 28.0 | 11.8 | — | 5.7 | 7.8 | 6.8 | 5.3 | 4.5 |

• Type; specimen not examined.

^b Type.

