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# A NEW SPECIES OF CHIRODERMA FROM GUADELOUPE, WEST INDIES (CHIROPTERA: PHYLLOSTOMATIDE)

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During the course of a study of the bat faunas of the Caribbean islands we obtained a specimen of *Chiroderma* from the island of Guadeloupe in the Lesser Antilles. The nearest known populations of this genus occur on Tobago and Trinidad (*C. villosum* and *C. trinitatum*), approximately 550 kilometers to the south. This specimen represents a distinct new species that appears to be most closely related to *C. doriae* and *C. villosum*. This new species is named and described below.

**Chiroderma improvisum**, new species

*Holotype.*—Adult male, skin and skull, number 19900 of The Museum, Texas Tech University (TTU); from Guadeloupe: Basse-Terre; 2 km. S, 2 km. E Baie-Mahault; obtained on 29 July 1974 by Genoways and Baker; original number John C. Patton 552; karyotype number TK 8285. Live cell lines are frozen in liquid nitrogen at The Museum, Texas Tech University.

*Geographic distribution.*—Presently known only from the type locality.

*Description.*—Size largest for genus, both externally and cranially (Table 1 and Figs. 1 through 4). Dorsal coloration grayish brown with a distinct white line down the center of the posterior half of the back; ventral coloration gray, tips of the hairs with a white band producing a "frosted" effect; indistinct white lines above and below each eye. Karyotypic features include a diploid number of 26 and a fundamental number of 48 (Fig. 5). The autosomes consist of eleven pairs

TABLE 1.—*Measurements of five species of* Chiroderma. *See text for additional comparison of* C. improvisum *to* C. doriae. *All specimens are adults. Definition of measurements is given in Baker (1972). All measurements are in millimeters.*

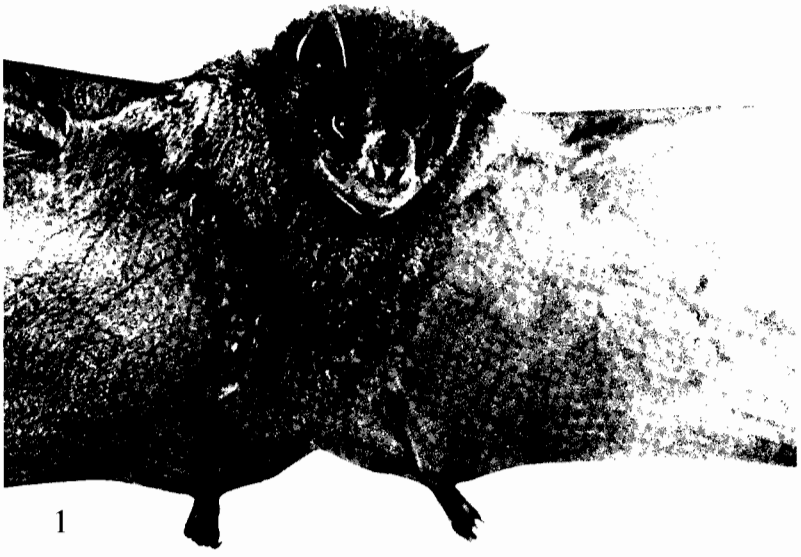
| Museum number | Sex | Locality | Total length | Hind foot | Ear | Tragus | Forearm | Greatest length of skull | Condylobasal length | Zygomatic breadth | Mastoid breadth | Interorbital breadth | Breadth across upper canines | Maxillary tooth row | Mandibular length |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | *Chiroderma improvisum* | | | | | | | | |
| 19900 | ♂ | Guadeloupe | 87 | 15 | 21 | 7 | 57.5 | 29.9 | 27.7 | 18.9 | 14.3 | 6.5 | 7.2 | 10.7 | 20.3 |
| | | | | | | | *Chiroderma villosum* | | | | | | | | |
| 5276 | ♂ | Trinidad | 73 | 11 | 17 | 6 | 47.1 | 25.3 | 22.2 | 15.7 | 11.9 | 5.8 | 6.0 | 8.5 | 16.0 |
| 9016 | ♂ | Trinidad | 76 | 11 | 18 | 5 | 47.3 | 25.6 | 22.9 | 15.1 | 12.1 | 5.8 | 6.0 | 8.5 | 16.3 |
| 9017 | ♀ | Trinidad | 66 | 11 | 15 | 4 | 46.6 | 26.0 | 22.5 | 15.8 | 12.2 | 5.9 | 6.1 | 8.9 | 16.3 |
| 5354 | ♀ | Trinidad | 75 | 12 | 18 | 7 | 48.9 | 26.2 | 23.5 | 17.0 | 12.9 | 6.2 | 6.2 | 9.2 | 16.9 |
| 5361 | ♀ | Trinidad | 64 | 11 | 17 | 6 | 46.8 | 24.9 | 22.7 | 15.3 | 11.9 | 5.6 | 6.0 | 8.8 | 15.6 |
| | | | | | | | *Chiroderma salvini* | | | | | | | | |
| 9998 | ♂ | Veracruz | 65 | 12 | 19 | 3 | 47.0 | 25.2 | 22.3 | 15.5 | 12.0 | 5.7 | 6.0 | 8.6 | 15.9 |
| 9999 | ♂ | Veracruz | 62 | 11 | 15 | 5 | 46.2 | 24.4 | 22.0 | 14.0 | 11.2 | 5.5 | 5.7 | 8.5 | 15.5 |
| 12087 | ♂ | Honduras | 72 | 14 | 18 | 7 | 46.3 | 26.9 | 24.2 | 16.4 | 13.1 | 6.2 | 6.2 | 9.6 | 17.5 |
| 12800 | ♂ | Honduras | 76 | 13 | 19 | 8 | 47.5 | 26.5 | 24.1 | 16.1 | 12.5 | 6.2 | 6.0 | 9.3 | 17.0 |
| 6123 | ♂ | Colima | 72 | 11 | 17 | 7 | 43.7 | 24.4 | 21.8 | 15.0 | 11.8 | 5.8 | 5.2 | 8.6 | 15.3 |

TABLE 1.—*Continued.*

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Chiroderma trinitatum* | | | | | | | | | | | | | | |
| 5223 | ♀ | Trinidad | 69 | 12 | 18 | 7 | 41.8 | 22.8 | 19.8 | 13.4 | 11.0 | 5.4 | 5.1 | 7.8 | 14.2 |
| 5382 | ♀ | Trinidad | 55 | 11 | 16 | 6 | 39.4 | 22.4 | 19.6 | 13.7 | 11.2 | 5.4 | 4.9 | 7.4 | 14.0 |
| 5487 | ♂ | Trinidad | 56 | 10 | 15 | 6 | 38.9 | 22.5 | 19.8 | 13.5 | 11.1 | 5.5 | 4.8 | 7.6 | 13.4 |
| 8989 | ♂ | Trinidad | 56 | 11 | 16 | 6 | 40.6 | 22.2 | 19.8 | 13.6 | 11.0 | 5.2 | 4.9 | 7.5 | 14.1 |
| 9014 | ♂ | Trinidad | 62 | 10 | 16 | 6 | 39.4 | 22.1 | 19.1 | 13.4 | 10.8 | 5.5 | 5.1 | 7.4 | 13.8 |
| *Chiroderma doriae* | | | | | | | | | | | | | | | |
| Males* | | Brazil | | | | | | | | | | | | | |
| Average | | | 74.8 | | 20.2 | 7.3 | 52.0 | 28.0 | 26.1 | 17.6 | 13.8 | 6.3 | 6.4 | 10.2 | 19.8 |
| Minimum | | | 69.0 | | 19.0 | 7.0 | 49.4 | 27.3 | 25.5 | 17.2 | 13.6 | 5.9 | 6.2 | 9.9 | 19.3 |
| Maximum | | | 78.5 | | 21.5 | 7.5 | 53.5 | 28.7 | 26.8 | 18.5 | 14.3 | 6.7 | 6.6 | 10.4 | 20.2 |
| Females** | | Brazil | | | | | | | | | | | | | |
| Average | | | 75.5 | | 20.4 | 7.3 | 53.0 | 28.2 | 26.3 | 17.8 | 14.0 | 6.3 | 6.5 | 10.3 | 19.8 |
| Minimum | | | 70.0 | | 19.0 | 7.0 | 51.0 | 27.5 | 25.6 | 16.9 | 13.6 | 6.1 | 6.1 | 10.1 | 19.4 |
| Maximum | | | 80.0 | | 21.5 | 7.5 | 55.5 | 28.7 | 26.7 | 18.4 | 14.3 | 6.6 | 6.8 | 10.5 | 20.3 |

*Sample size 15 (Taddei, 1973).

**Sample size 21 for external measurements and 15 for cranial measurements (Taddei, 1973).



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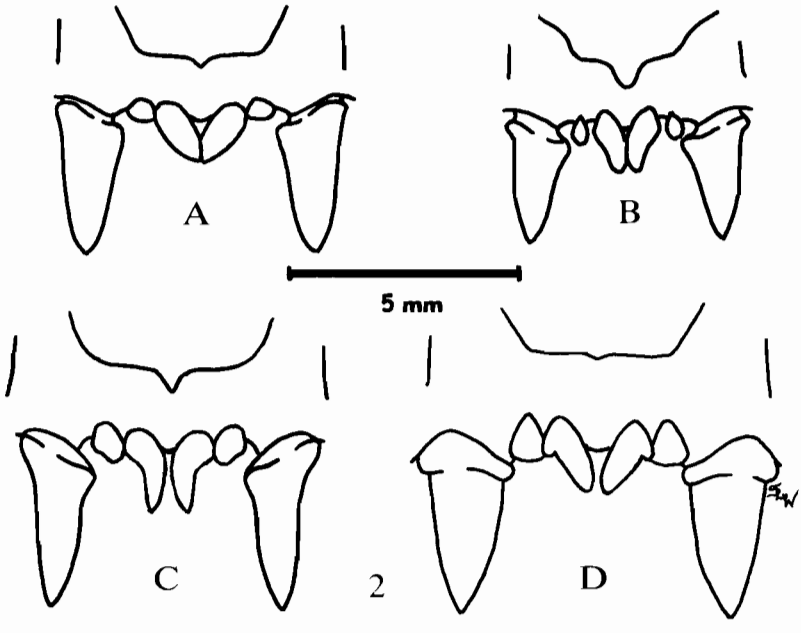
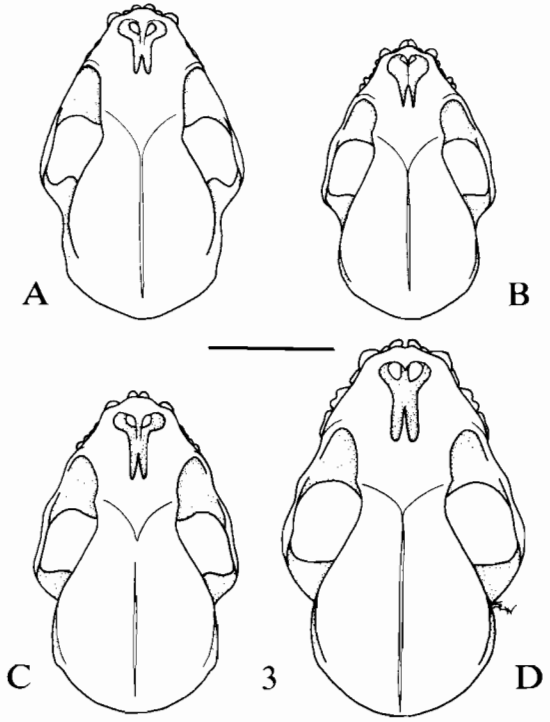



FIG. 1.—Photograph of the face and venter of the holotype of *Chiroderma improvisum* in life.

FIG. 2.—Anterior view of the upper incisors and canines of four species of *Chiroderma*: A, *C. salvini*; B, *C. trinitatum*; C, *C. villosum*; and D, *C. improvisum*.



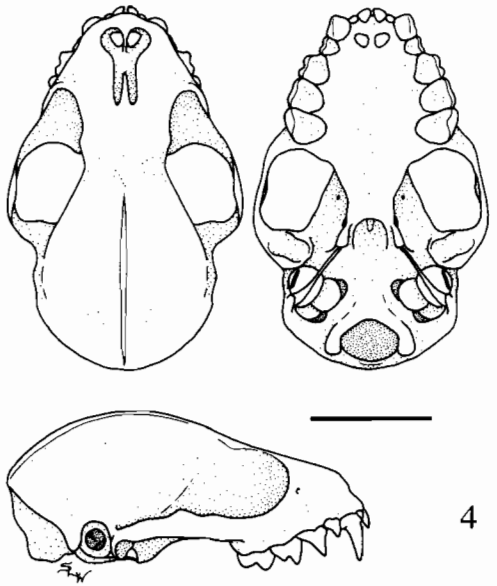




FIG. 3.—Dorsal views of the skulls of four species of *Chiroderma*: A, *C. salvini*; B, *C. trinitatum*; C, *C. villosum*; and D, *C. improvisum*. Bar represents 5 millimeters.

FIG. 4.—Dorsal, ventral, and lateral views of the skull of the holotype of *Chiroderma improvisum*. Bar represents 5 millimeters.

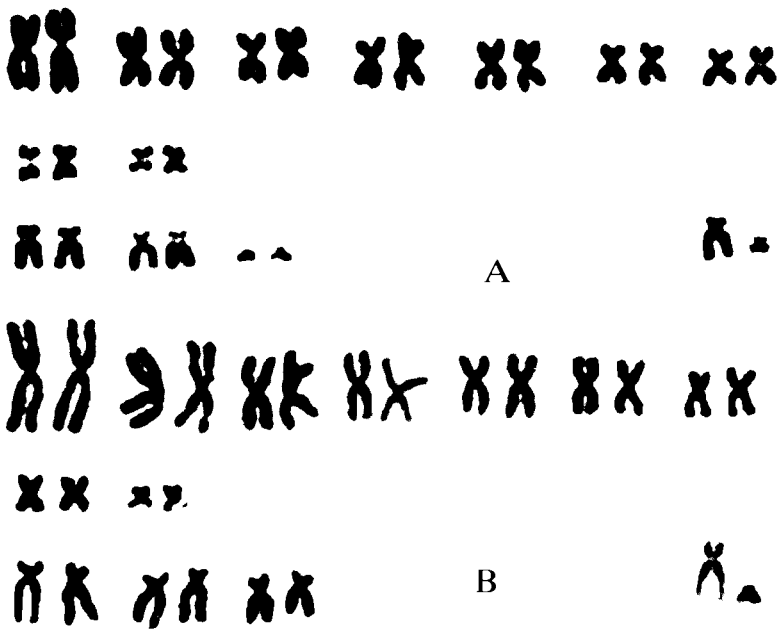



FIG. 5.—A, karyotype of the holotype of *Chiroderma improvisum*; B, karyotype of a male *Chiroderma trinitatum* from Trinidad.

of biarmed elements and one pair of acrocentric elements (the smallest pair of autosomes). Of the 11 biarmed pairs of autosomes, two pairs have a subtelocentric placement of the centromere whereas the remainder have either a submetacentric or metacentric placement of the centromere. The X-chromosome is subtelocentric and the Y-chromosome is a small element with a minute second arm.

*Measurements.*—Measurements for the holotype of *C. improvisum* and the four other species of *Chiroderma* are given in Table 1. The holotype of *C. doriae* (the species nearest *C. improvisum* in size) was measured by Dr. Dilford C. Carter during a visit to the British Museum (Natural History) in 1966, and he has kindly allowed us to use his measurements. The skull of the holotype of *doriae* is broken, and the forearms were damaged in preparation so that only a few measurements could be taken. For consistency, we asked Dr. Carter to take the same measurements on the holotype of *C. improvisum*.

His measurements for the holotypes of *C. improvisum* and *C. doriae*, respectively, follow: metacarpal III, 57.6, 52.8; phalanx 1, digit III, 22.8, 20.5; phalanx 2, digit III, 31.0, 28.5; metacarpal IV, 54.9, 51.7; phalanx 1, digit IV, 19.2, 17.1; metacarpal V, 46.8,

53.4; phalanx 1, digit V, 24.8, 12.9; length of tibia, 19.8, 18.0; postorbital constriction, 6.5, 6.2; length of mandible, 21.2, 18.9; length of mandibular toothrow, 12.1, 11.5; length of maxillary toothrow, 11.0, 10.6; breadth across upper molars, 13.6, 13.2; breadth across upper canines, 7.2, 6.6; length of nose leaf, 5.9, 6.0; length of calcar, 7.2, 6.2.

Additional measurements are given for species of *Chiroderma* in Goodwin (1946:321-322), Goodwin and Greenhall (1961:257-259), Handley (1960, 1965), Husson (1962:166-169), and Villa-R. (1966: 288-293).

*Comparison.*—*Chiroderma improvisum* is the largest species of the genus. This is reflected in the 13 measurements in Table 1, where the only overlap between *C. improvisum* and the other three common species is in length of tragus. Measurements for the holotype of *C. improvisum* are larger than any recorded for *C. doriae* (Taddei, 1973) in total length, forearm, greatest length of skull, condylobasal length, zygomatic breadth, breadth across upper canines, and length of maxillary toothrow (Table 1). Other measurements of *C. improvisum* are large relative to the range reported for *C. doriae* (Taddei, 1973). *Chiroderma improvisum* has more massive canines (Fig. 2) than any of the three more common species. Upper incisor one is quite broad at the cingulum, and the outside lateral cingulum is better developed than in *C. villosum*, *C. salvini*, or *C. trinitatum*. The holotype of *C. improvisum* has a distinct white line down the back. Such a dorsal marking is recorded as absent from the holotype of *C. doriae*. However, the specimens of Taddei (1973, figs. 2-6, 33, and personal communication) show a broad dorsal stripe and white stripes above and below the eye. These stripes in Taddei's specimens are more distinct than those of the holotype of *C. improvisum*.

Chromosomally, the karyotype of *C. improvisum* (Fig. 5) is distinguished from that of *C. villosum*, *C. trinitatum* (Baker, 1970), and *C. salvini* (Baker, 1973) by the presence of a pair of small, nearly acrocentric autosomes and only two pairs of subtelocentric autosomes. In *C. villosum*, *C. salvini*, and *C. trinitatum*, there are three pairs of autosomes with a subtelocentric placement of the centromere, and the smallest pair of autosomes is submetacentric or metacentric in nature.

*Remarks.*—*Chiroderma improvisum* is obviously specifically distinct from *C. villosum*, *C. salvini*, and *C. trinitatum*. We have not had the opportunity to examine a specimen of *C. doriae*, but from Table 1 it is clear that the holotype of *C. improvisum* is considerably larger than any specimen of *C. doriae* thus far reported. It is possible that *C. improvisum* and *C. doriae* are relictual populations of a once

widespread species of *Chiroderma* and that their large size and similar descriptions of canines and incisors (Thomas, 1891) reflect a true relationship. Of the species on Guadeloupe, only *Artibeus jamaicensis* is found in the area of southeastern Brazil where *C. doriae* has been reported, and it seems unlikely that populations of only a single species would be found on Guadeloupe and in southeastern Brazil. Another possibility is that these two taxa represent the product of convergent evolution. Some taxa of bats (*Eptesicus guadeloupensis* and *Sturnira thomasi*) on Guadeloupe are larger than their nearest evolutionary relatives. If convergent evolution has accounted for this similarity between *C. doriae* and *C. improvisum*, then the nearest evolutionary relative of *C. improvisum* is probably *C. villosum*. Karyotypic data from *C. doriae* would certainly be valuable, for if *C. doriae* had the *C. improvisum* karyotype, a common ancestor for these two forms would be highly probable.

*Etymology.*—The specific name *improvisum* is from Latin, meaning unforseen or unexpected. We did not expect to find *Chiroderma* on Guadeloupe because the nearest known representative from the Caribbean occurs on Trinidad and Tobago, 550 kilometers to the south.

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