

NOTEWORTHY RECORDS OF MEXICAN AND
CENTRAL AMERICAN BATS

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ABSTRACT: Twenty-seven species of bats which are rare in collections and/or which constitute noteworthy records of range extension are discussed. Two are new to México: 8 to Chiapas, 3 to Veracruz, 4 to Honduras, 6 to Nicaragua, one to Panamá, 2 to Guatemala. The systematic status of *Sturnira mordax* (Goodwin) is discussed. Weights, measurements and biological data are included for most species.

In the course of field investigations (1961–1963) on the distribution and relationships of the mainland representatives of the guano bats, genus *Tadarida*, field parties from the Department of Wildlife Management have collected and preserved several thousand bats from México and all of the Central American countries. In the collections are a number of noteworthy records which add to the knowledge of the chiropteran fauna of that region.

All specimens here reported are deposited in the Texas Cooperative Wildlife Collections, Department of Wildlife Management. Project S-1316, Texas Agricultural Experiment Station, supported by the National Institutes of Health Grant No. AI-03743.

Saccopteryx leptura (Schreber)

Nicaragua: Dept. Zelaya. 6 miles W Rama, 50 ft, 1 ♀, 1 ♂. Dept. Matagalpa. 2 miles SE Dario, 1,500 ft, 1 ♀.

Panamá: Prov. Veraguas. 2 miles S San Francisco, 200 ft, 1 ♀.

We have seen no report of the occurrence of this species north of the Canal Zone, Panamá. On 28 February 1963, a female, containing an embryo measuring 11 mm in C–R length, was collected in a mist net on the Río Santa Maria in Panamá. The net was set across a shallow portion of the river which ran between a long, partially wooded island and the wooded north bank.

On 26 April a small colony of about 10 of these bats was found near Rama, Nicaragua hanging to the trunk of a large chilamate tree, situated on the bank of the Río Siquia, a few feet above a colony of *Rhynchonycteris naso*. We shot 2 of the former and both groups dispersed. The *Rhynchonycteris* returned shortly to the same roost, but the *S. leptura* were not seen again. Near Dario, we shot another specimen on 26 May as it foraged above scattered brush. *S. leptura* began feeding about 6:30 PM, at a time when there was scarcely sufficient light for shooting, and it was seen foraging 10 to 20 feet above the ground, over scattered, low brush, under and among large trees along the Río Dario. *Balantiopteryx plicata* foraged in the same situation but began feeding at sundown and terminated its activity 10–20 minutes before *S. leptura* appeared.

The female collected 26 April contained a single embryo 13 mm in C–R length; the one collected 26 May contained one embryo 20 mm in C–R length—half the head and body length of the mother.

Measurements (male followed by female—from Rama).—Total length, 60 (67); tail, 15 (16); foot, 8 (8); ear from notch, 14 (14); forearm, 38.5 (40.6); metacarpal III, 36.6 (38.4); first phalanx (3rd digit), 11.6 (11.7); second phalanx, 20 (20); greatest length of skull, 14.0 (14.3); zygomatic breadth, 8.4 (8.9); interorbital breadth, 3.9 (3.9); maxillary tooththrow, 5.3 (5.7). Weight: male, 4.3 g; gravid female from Panamá, 4.3 g.

Peropteryx macrotis macrotis (Wagner)

México: Chiapas. Santo Domingo, ca. 4 km SSE Chiapa de Corzo, 1,300 ft, 1 ♀.

This appears to be the first record of this bat from Chiapas. Other records north of South America are from Veracruz and Yucatán in México and from British Honduras and Guatemala. Our specimen was shot while it was foraging for insects at a street light.

Measurements.—Total length, 62; tail, 12; foot, 10; ear from notch, 16; forearm, 44; greatest length of skull, 15.0; zygomatic breadth, 8.0; length of maxillary tooththrow, 5.8.

Noctilio leporinus mexicanus Goldman

México: Veracruz. 1 mile E Jaltipan, 50 ft, 2 ♀ ♀, 1 ♂.

Nicaragua: Dept. Zelaya. Cacao (22 km by road W Muelle de las Bueyes), 400 ft, 1 ♂.

These appear to be the first records of this species from Veracruz (see Hall and Dalquest, Univ. Kans. Publ. Mus. Nat. Hist., 14 (14): 165–362, 1963) and Nicaragua. All specimens were caught in mist nets. At Jaltipan the net was set across an open, shallow pool in a creek; at Cacao it was set across a deep pool of the Río Cacao where tall trees formed a nearly complete canopy. All 4 were caught in the lower pocket of the nets. Each of the females, taken 30 December contained a single embryo about 2 mm in C–R length.

The 2 females weighed 60 and 77 g, the two males, 77 and 82. Forearm (females) 85 mm and 86.4 mm, males, 88.2 and 88.6.

Noctilio labialis minor Osgood

Honduras: Río Coco. 78 miles ENE Danlí, 900 ft, 19 ♀ ♀, 12 ♂ ♂.

Nicaragua: Dept. Jinotega. 55 miles NNE Jinotega, 1,100 ft, 1 ♀, 1 ♂. Dept. Zelaya. 2 miles W Rama, 50 ft, 1 ♀, 1 ♂.

Costa Rica: Prov. Heredia. 4 miles W Puerto Viejo, 300 ft, 1 ♀. Prov. Puntarenas. 9 miles ENE Puerto Gofito, 100 ft, 2 ♀ ♀, 1 ♂.

The previous northernmost locality whence this species has been recorded is El Toro Rapids, Lake Nicaragua. Bats of this species were abundant along the reaches of the Río Coco which forms part of the boundary between Honduras and Nicaragua, as well as along the Río Siquia near Rama, Nicaragua, and the Río Claro near Puerto Gofito, Costa Rica. They foraged over riverbeds which were 50 yards or more in width.

On the Río Claro, *N. labialis* foraged 5 to 20 feet above the water or dry riverbed. They began feeding a short time after sunset and continued for 20–30 minutes, after which they drank and disappeared. When foraging, several individuals formed small groups which moved up and down the river. *Molossus ater* also fed in the same general area but their activity was restricted to a zone 30–100 feet above the river.

N. labialis exhibited a similar behavior on the Río Siquia and the Río Coco. At the Honduran locality on the Río Coco we were camped at the mouth of Marrana Creek, the bed of which is 10–15 yards wide for at least a mile upstream. Each evening, just after sunset, about 100 of these bats descended the creek, flying in small groups about 3 feet above the surface of the water. They fed over the Río Coco and returned to the creek approximately 45 minutes after leaving it. A second period of feeding occurred between 11:00 PM and midnight.

We examined a number of stomachs and found them to contain only insects.

One of the 2 females collected near Puerto Golfito (14 March) was lactating. The female collected near Puerto Viejo (14 April) contained a single embryo 24 mm in C–R length. The female from the Río Siquia contained an embryo 28 mm in C–R length. Of the 21 females collected on the Río Coco, 15 contained single embryos measuring 25–33 mm in C–R length. Although we were in the field from mid-February through May, we saw no young individuals.

Pteronotus suapurensis suapurensis J. A. Allen

México: Veracruz. 3 km ENE San Andres Tuxtla, 1,000 ft, 1 ♂.

As far as we have been able to determine, this is the first record of this bat from Veracruz, and it is the northernmost record of the species. Compared with Goodwin's description (Amer. Mus. Novitates, 1871: 1–2, 1958) of *P. s. calvus* from Tehuantepec, Oaxaca, to which race we expected our specimen to be assignable on geographic grounds, our specimen is considerably larger. Measurements of the Veracruz specimen fall within the range of variation of a large series from El Salvador which Felten (Senckenbergiana Biol., 37: 77, 1956) assigned to *suapurensis*.

Measurements.—Forearm, 52.3; greatest length of skull, 17.6; zygomatic breadth, 10.6; maxillary toothrow, 7.4. Weight, 17.5 g.

This specimen was taken 24 December in a cave, locally known as Cueva Laguna Encantada, which also harbored the smaller *Pteronotus davyi* and two species of *Chilonycteris* (*psilotis* and *parnellii*).

Micronycteris brachyotis (Dobson)

México: Chiapas. Florida, 50 km E Altamirano, ca. 525 m, 1 ♀.

To our knowledge, this is the first record of this bat from México and the third specimen to be reported north of South America. The 2 other specimens were reported under the name *Micronycteris platyceps* Sanborn by Sanborn (Fieldiana-Zool., 31(27): 224, 1949) from Volcán de Chinandega, Nicaragua.

Our specimen was caught 10 July in a mist net set across a trail through dense vegetation near the airport at Florida.

Measurements.—Total length, 72; tail, 10; foot, 13; ear from notch, 18; forearm, 39.9; greatest length of skull, 21.1; zygomatic breadth, 9.9; maxillary tooth-row, 8.0

Micronycteris schmidtorum Sanborn

Nicaragua: Dept. Zelaya. Cacao (22 km by road W Muelle de las Bueyes), 400 ft, 1 ♂.

This specimen, apparently the first to be reported from Nicaragua, was caught in a mist net set across the Río Cacao (a small stream about 30 feet wide) under a forest canopy. Other records are from Yucatán, Guatemala and extreme western Honduras.

Measurements.—Total length, 58; tail, 11; foot, 11; ear from notch, 20; forearm, 3.3; greatest length of skull, 19.5 mm; interorbital breadth, 4.5; zygomatic breadth, 9.1; maxillary toothrow, 7.6. Weight, 7 g.

Macrophyllum macrophyllum Schinz

Honduras: Río Coco, 76 miles E Danlí, 1,000 ft, 3 ♂ ♂.

Panamá: Prov. Veraguas, 2 miles S San Francisco, 200 ft, 1 ♂.

Nicaragua: Dept. Zelaya. Cacao (22 km W by road from Muelle de las Bueyes), 400 ft, 2 ♂ ♂.

This species has been reported previously from only 4 localities north of South America. Goldman (Smithsonian Misc. Coll., 69(5): 183–184, 1920) collected 6 specimens in a vaulted cellar in the ruins of old Panama City, Panamá, in February 1912; Felten Senckenbergiana Biol. 37(3/4): 183–185, 1956) took 5 males, 3 of which were in breeding condition, from Cueva Hedi-onda, near the coast in the Department of La Libertad, El Salvador, in December 1953; Greenfield (Handley, J. Mamm., 38(3): 406–407, 1957) collected one specimen near the Río Sucre, Colon, Honduras, in late March 1952; and Lay (Anales Inst. Biol., 33(1 and 2): 373–377, 1962) collected 2 specimens near Teapa, Tabasco, México in May 1960. Our specimens constitute new records for Central America and the first for Nicaragua.

Both of our Nicaraguan specimens were caught shortly after dark in a mist net stretched across a quiet pool in the Río Cacao about 30 feet wide, 3 feet deep and bordered by large broad-leafed trees. The net was set in such fashion that the ends were against the cut banks of the stream and the bottom of the net barely cleared the surface of the water. Both bats were caught in the bottom "pocket" of the net about 2 feet from the bank. In other words, the bats were flying close to the bank and probably not more than a foot above the water. This behavior, coupled with the long legs, large feet and copious interfemoral membrane, suggested to one of us (Davis) that the bats were foraging for aquatic insects or small fish. The stomach of each bat, however, was empty. It should be emphasized in this connection that, relatively speak-

ing, the hindfeet of *Macrophyllum* are larger than those of the known fish-eater *Noctilio leporinus*. The former weighs only one-eighth as much as the latter, yet its feet are about half as long and appear suitable for flipping small minnows into the air.

Other bats caught in this particular net during the 6 nights it was set were *Noctilio leporinus*, *Uroderma bilobatum*, *Sturnira lilium*, *Carollia perspicillata*, *Carollia subrufa*, *Carollia castanea*, *Myotis nigricans*, *Rhynchonycteris naso*, *Artibeus jamaicensis*, *Artibeus lituratus*, *Artibeus turpis*, *Vampyrops helleri* and *Micronycteris schmidtorum*.

Measurements (two males from Nicaragua).—Total length, 87, 85; tail, 43, 42; foot, 13, 14; ear from notch, 16, 15. Weight, 10 and 9 g, respectively.

Tonatia nicaraguae Goodwin

Panamá: Prov. Veraguas. 2 miles S San Francisco, 200 ft, 1♀.

This appears to be the third known specimen of this species and the first record from Panamá (see Davis and Carter, *Southwestern Nat.*, 7(1): 67, 1962). The male of this species is not known. This female, collected 27 February, contained one embryo 4 mm in C-R length. The specimen was collected in a mist net set across a shallow channel of the Río Santa Maria. There were large trees and moderately thick undergrowth along the banks of the river, but the area as a whole was grassland with some second-growth brush.

Measurements.—Forearm, 34.4; metacarpal III, 25.2; first phalanx (3rd digit), 9.8; second phalanx, 11.5; greatest length of skull, 19.3; interorbital breadth, 3.0; width of braincase, 8.0; width across upper canines, 3.7; width across M²-M², 6.0; maxillary tooththrow, 6.9; mandibular tooththrow, 7.5. Weight, 7.2 g.

Chrotopterus auritus Peters

México: Chiapas. Zapaluta Cave, 1.3 miles SSE Zapaluta (= La Trinitaria), ca. 5,700 ft, 1♂.

This bat appears not to have been reported previously from Chiapas nor from such a high elevation. Other Mexican records are from the lowlands of Yucatán and southern Veracruz. Our specimen was caught 22 July in a mist net set at the mouth of Cueva de Zapaluta; another one hit our net the night of 25 July, but it escaped.

It should be pointed out that the keys in both Miller's "Families and Genera of Bats" and Hall and Kelson's "The Mammals of North America" are misleading in that this species is placed in the group of Phyllostominae with one lower incisor and two lower premolars, but in both publications the correct number of lower premolars (3) is given later in the text. The middle lower premolar (Pm₃) is minute and crowded out of the tooththrow medially so that Pm₂ and Pm₄ are in broad contact.

Glossophaga commissarisi Gardner

Guatemala: Dept. Huehuetenango. La Democracia, 3,300 ft, 1♀, 1♂.

Honduras: Río Coco. 78 miles ENE Danlí, 900 ft, 2♂♂.

Nicaragua: Dept. Zelaya. 6 miles W Rama, 50 ft, 5♀ ♀, 1♂.

Two species of *Glossophaga* are represented in our collections from the above-mentioned countries. One is the ubiquitous *G. soricina*; the other is small, dark colored, and seems to be referable to the species *G. commissarisi* (Gardner, Los Angeles Co. Mus., Contr. in Sci., 54: 1-7, 1962). At Rama, both species were taken in the same nets, but at the other localities only one species, *commissarisi*, was taken. Previous records of this species are all from México.

Leptonycteris sanborni Hoffmeister

México: Chiapas. 7 miles WSW Ocozocoautla, 2,500 ft, 1♀ ♀, 15♂ ♂.

This appears to be the first record of this species from Chiapas (see Davis and Carter, Proc. Biol. Soc. Washington, 75: 197, 1962). They were all collected from a cave in which they were roosting.

Lonchophylla concava Goldman

Costa Rica: Prov. Puntarenas. 9 miles ENE Puerto Golfito, 100 ft, 2♀ ♀, 1♂.

As far as we can determine, this species was previously known only from the type which was collected by E. A. Goldman at Cana, eastern Panamá, in 1912. Our specimens were caught in a mist net set on a gravel bar at the edge of a quiet pool in the Río Claro where several species of bats came to drink. One of the females, taken 14 March, was lactating; the other showed no evidence of breeding. The male weighed 7.4 g.

Measurements (male, followed by 2 females in parentheses).—Total length, 65 (66, 65); tail, 8 (6, 7); foot, 9 (10, 10); ear from notch, 14 (14, 15); forearm, 34.1 (33.8, 33.8); metacarpal III, 32.5 (33.4, 33.3); first phalanx (3rd digit), 12.0 (11.8, 12.1); second phalanx, 17.3 (17.1, 16.6); greatest length of skull, 22.9 (23.0, 22.9); interorbital breadth, 4.0 (4.2, 4.4); mastoidal breadth, 9.5 (9.4, 9.8); maxillary tooththrow, 7.5 (7.5, 7.6); length of mandible, 15.8 (16.0, 16.3).

Choeronycteris mexicana Tschudi

Honduras: Dept. Tegucigalpa. 12 miles N Tegucigalpa, 2,800 ft, 1♀ ♀.

There appears to be no previous record of this long-tongued bat from Honduras. The closest record is from southwestern Guatemala, some 300 miles west of Tegucigalpa. This specimen was caught about 10 feet above the ground in a mist net set in a banana grove.

Measurements.—Total length, 82; tail, 9; foot, 10; ear from notch, 16; greatest length of skull, 29.9; length of rostrum, 14; breadth of cranium, 9.9; maxillary tooththrow, 11.5. Weight, 14 g.

Lichonycteris obscura Thomas

Nicaragua: Dept. Zelaya. 6 miles W Rama, 50 ft, 1♀ ♀.

Only 5 specimens, 4 females and one male, of this bat are known from Central America—3 from Costa Rica (Goodwin, Bull. Amer. Mus. Nat. Hist.,

87(5): 315, 1946; Tamsitt and Valdivieso, Rev. Biol. Trop., 9(2): 221, 1961) and 2 from Nicaragua, including the type from Managua.

Our specimen was taken in a mist net set on an open, grass-covered slope near the Río Siquia. It represents the first record of this bat from the Caribbean side of Central America. In this general area much of the land along the river is cultivated to some extent. However, humid tropical forest predominates only a short distance from the river when it does not extend to the river's edge.

Measurements.—Total length, 52; tail, 6; foot, 7; ear from notch, 12; forearm, 30; metacarpal III, 30.5; first phalanx (3rd digit), 11.5; second phalanx, 16; greatest length of skull, 17.8; interorbital breadth, 3.3; width of braincase, 7.8; maxillary tooththrow, 5.8; mandibular tooththrow, 6.0. Weight, 4.7 g.

Sturnira mordax (Goodwin)

Costa Rica: Prov. Alajuela. Cariblanco, 18 miles NE Naranjo, 2,900 ft, 2 ♀ ♀, 7 ♂ ♂.

Because Goodwin's (Amer. Mus. Novitates, 976: 1–2, 1938) descriptions of the genus *Sturnirops* and the species *S. mordax* are based on only the type specimen, and because no additional specimens seem to have been reported since the type was taken in 1931, our 9 specimens are of particular interest. For the first time sufficient material is available to judge the validity of Goodwin's conclusions.

Externally, *mordax* is remarkably similar to *Sturnira ludovici* in size and general appearance, but it differs, as pointed out by Goodwin, in having (1) the hindfeet sparsely covered with fine hairs and (2) a nearly uniform dark coloration (light mummy brown) both ventrally and dorsally. Although the type, an adult male, apparently lacks shoulder glands, in 3 of our males these structures are well developed. The waxy exudate from them has stained the surrounding hairs a conspicuous dark amber.

In addition to the sparsity of hair on the feet and the darker coloration of the body, other external features that separate *mordax* from *ludovici* are few. The forearm averages longer in *mordax* (46.8 mm in males, 45.6 in females as opposed to 44.5 and 43.1, respectively, in *ludovici*) as do the segments of the third finger. Metacarpal III (males), 44.6 in *mordax*; 41.6 in *ludovici*; first phalanx, 17.3 as opposed to 15.7; second phalanx, 22.5 as opposed to 19.4. For additional measurements see Table 1.

On the basis of external features alone, little justification can be advanced for recognizing *Sturnirops* as a valid genus. Cranial characters, however, lend more support to this view. Four conspicuous differences separate "*Sturnirops*" from *Sturnira*, all of which were noted by Goodwin. In "*Sturnirops*" (1) the inner upper incisors are noticeably larger, bifid and in contact nearer the cutting edge (see Fig. 1); (2) the canines are larger and more massive; (3) the upper molars are noticeably narrower and relatively smaller and (4) the sides of the interorbital region are nearly parallel, but converge slightly anteriorly.

TABLE 1.—Selected measurements in millimeters of *Sturnira mordax* from near Naranjo, Costa Rica

Sex	Forearm	Metacarpal III	First phalanx	Second phalanx	Greatest length of skull	Greatest breadth of skull	Least interorbital breadth	Width across upper molars	Maxillary toothrow	Length of mandible	Mandibular toothrow M ₁ -C
♀	45.0	43.3	16.5	20.6	24.8	12.5	5.5	7.7	6.8	15.8	7.8
♀	46.3	43.5	17.0	21.5	25.5	13.0	5.6	7.6	6.8	16.0	7.5
♂	46.5	45.2	17.0	21.6	25.5	13.3	5.5	8.0	7.0	16.1	7.7
♂	46.0	44.4	17.6	22.4	25.6	13.4	5.7	8.1	7.1	15.9	7.6
♂	47.4	44.5	17.7	23.0	26.1	13.7	6.0	7.8	7.0	16.5	8.0
♂	45.5	43.4	17.0	22.2	25.8	13.7	6.2	8.0	7.2	16.5	7.7
♂	46.6	43.2	17.2	21.6	26.0	13.5	6.0	7.9	7.0	16.2	7.5
♂	48.0	45.1	17.5	22.5	26.6	13.8	6.1	8.0	6.9	16.5	7.8

There can be no doubt that *mordax* is specifically distinct from other members of the *Sturnirinae*, but we question the usefulness or desirability of separating it at the generic level. Differences between *mordax*, *lilium* and *ludovici* are certainly no greater than those separating the species of *Miconycteris*, or those of *Molossus*; or those of several other currently recognized genera of bats. To us, *mordax* is a well-differentiated species of *Sturnira*, and we therefore concur with Cabrera (Cat. Mam. Amer. del Sur, 1: 78, 1957) in submerging *Sturnirops* Goodwin as a synonym of *Sturnira* Gray.

Uroderma bilobatum Peters

México: Veracruz. 1 mile E Jaltipan, 50 ft, 2 ♀ ♀.

Nicaragua: Dept. Boaca. San Francisco (at K 92 on Rama Road), 400 ft, 1 ♂. Dept. Chontales. 1 km NW La Gatiada, 1,300 ft, 1 ♀. Dept. Zelaya. Cacao (22 km by road W Muelle de las Bueyes), 400 ft, 3 ♀ ♀, 2 ♂ ♂. Dept. Rivas. 12.5 miles S and 13 miles E Rivas, 125 ft, 2 ♂ ♂.

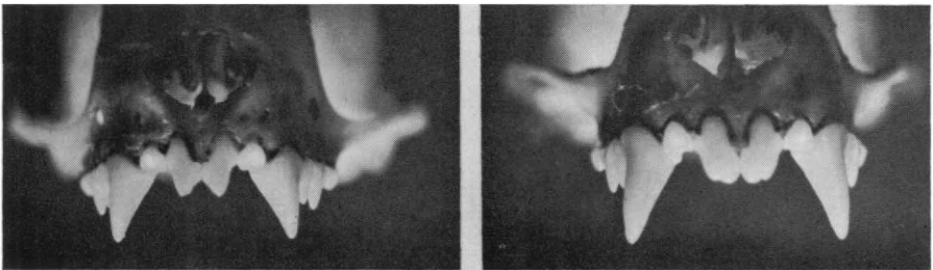


FIG. 1.—Frontal view of dentition of two species of *Sturnira*. Left: *Sturnira ludovici*. Right: *Sturnira mordax*. $\times 6$

These appear to be the first reported records of the occurrence of "tent-making" bats in Veracruz and Nicaragua. All specimens were taken in mist nets set across streams. At the locality south of Rivas, Carter also caught 3 half-grown individuals with the 2 lactating females on 20 August. Weight of 6 females ranged from 18 to 23 g; that of 3 males, 19 to 21, with a mean of 20 g in both sexes. The heaviest female, taken 31 December, was excessively fat.

Vampyrops vittatus Peters

Costa Rica: Prov. Alajuela. Cariblanco, 18 miles NE Naranjo, 3,000 ft, 2♀♀, 1♂.

In 1878 Dobson (Cat. Chiroptera British Museum, p. 525) first reported *vittatus* from "Costa Rica," but Sanborn (Fieldiana-Zool., 37: 404, 1955) questioned the occurrence of this species outside South America. Tamsitt and Valdivieso (Rev. Biol. Trop., 9(2): 221, 1961) later reported one female from San Jose, Costa Rica. The capture of these 4 specimens, therefore, firmly establishes the occurrence of *vittatus* in Central America. Our specimens were captured in mist nets on 6 and 11 April. Each of the females contained one nearly full-term embryo (36 mm and 42 mm C-R length).

This species differs from *V. helleri* not only in larger size, but also in much darker dorsal coloration (sooty brown) and in the absence of a white stripe from the corner of the mouth to the ear. The interfemoral membrane, however, is narrow and distinctly fringed as in *helleri*. For measurements see Table 2.

Vampyrops helleri Peters

México: Chiapas. 4 miles NE Chiapa de Corzo (at K 1110), 3,000 ft, 1♂; Florida, 50 km E Altamirano, ca. 525 m, 2♀♀, 2♂♂.

Guatemala: Dept. Alta Verapaz. 10 miles N Sebol, 900 ft, 1♂.

Honduras: Río Coco, 78 miles ENE Danlí, 900 ft, 1♀.

Nicaragua: Dept. Chontales. 1 km NW La Gatiada, 1,300 ft, 1♂.

Costa Rica: Prov. Puntarenas. 9 miles ENE Puerto Golfito, 100 ft, 1♀, 1♂.

This seemingly is a rare bat in Central America, at least in collections. Previous records north of South America are from Fulta, Oaxaca; Tapasuna, Hon-

TABLE 2.—Selected measurements in millimeters of three *Vampyrops vittatus* for Costa Rica

Sex	Forearm	Metacarpal III	First phalanx	Second phalanx	Greatest length of skull	Zygomatic breadth	Postorbital breadth	Mastoidal breadth	Width across M ² -M ³	Maxillary toothrow	Weight (grams)
♀	62.1	57.0	22.7	33.0	33.4	20.3	8.5	16.2	15.1	13.2	71.8
♀	62.4	56.5	22.5	33.7	34.1	19.7	8.0	16.0	15.6	13.6	63.4
♂	61.2	57.0	23.1	32.2	33.0	19.6	7.6	15.6	15.0	12.9	51.0

duras; Guayabo and Jimenez, Costa Rica; Cabima and Cana, Panamá (Sanborn, Fieldiana-Zool., 37: 412, 1955) and Barro Colorado Island, Panamá (Hall and Jackson, Univ. Kansas Publ. Mus. Nat. Hist., 5(37): 645, 1953). All of our specimens were caught in mist nets. The net at Chiapa de Corzo was set parallel to a road and at right angles to a steep slope covered with arid-tropical vegetation. All of the other nets were set in humid tropical forest either across streams or in openings. One of the females from Florida, Chiapas, taken 4 July, contained one embryo 21 mm in C-R length.

Measurements (averages and extremes) of 6 adults.—Length of head and body, 60 (55–66); forearm, 38.6 (37.5–40.0); greatest length of skull, 22.2 (21.7–22.9); zygomatic breadth, 12.5 (12.5–12.6); maxillary toothrow, 7.9 (7.5–8.5). The largest measurements are those of a female. A male from Nicaragua weighed 14 g.

In addition to the 4 white facial and single middorsal stripes, an excellent field character we have not seen mentioned in the literature is the conspicuous fringe of hairs on the free edge of the narrow interfemoral membrane. There is no visible tail.

Vampressa pusilla thyone Thomas

México: Chiapas. Florida, 50 km E Altamirano, ca. 525 m, 1 ♀.

To our knowledge, this rare bat has not been recorded north of southeastern Costa Rica, several hundred miles south and east of our Chiapan locality (see Goodwin, Amer. Mus. Novitates, 2125: 14, 1963). Our specimen, an adult female containing one embryo 8 mm in C-R length, was collected 4 July in a mist net set on the airstrip parallel to the bank of the Río Jatate. This locality is about 80 km (airline) northeast of Comitán. This is the sixth specimen known from north of South America and the first from México.

Measurements.—Head and body, 52; foot, 9; ear from notch, 14; forearm, 31.3; metacarpal III, 27.7; first phalanx (3rd digit), 12.3; second phalanx, 15.1; third phalanx, 8.7; greatest length of skull, 18.8; zygomatic breadth, 10.6; least interorbital breadth, 5.0; mastoidal breadth, 9.4; maxillary toothrow, 6.0; mandibular toothrow, 6.5; length of mandible, 12.0. The four facial stripes are distinct. Superficially the bat resembles a small *Artibeus cinereus*.

Vampyroides major G. M. Allen

México: Chiapas. Florida, 50 km E Altamirano, ca. 525 m, 1 ♀, 2 ♂.

Honduras: Río Coco, 78 miles ENE Danlí, 900 ft, 1 ♀.

This species was first reported from México by Lay (Anales Inst. Biol., 33(1 and 2): 375, 1962) on the basis of one specimen from near Valle Nacional, Oaxaca, and currently only 12 specimens are known to science. Four are from México, 4 from Escobas, Guatemala (Sanborn, Field Mus. Nat. Hist., Zool. Ser., 20(13): 101, 1936), one each from Honduras; Vijagual, Nicaragua; and Cerro Santa Maria, Costa Rica (Goodwin, Bull. Amer. Mus. Nat. Hist., 87(5): 320, 1946), one from Barro Colorado Island (Hall and Jackson, Univ. Kansas

Publ. Mus. Nat. Hist., 5(37): 645, 1953) and the type from San Pablo, Panamá. All 4 of our bats were caught in mist nets: 2 in nets set on the airstrip, one in a net set across a small stream that flows into the Río Jatata a short distance east of the "puerto aero" at Florida and one in a net set across a small stream in a heavily forested area of eastern Honduras.

Sexual dichromatism is apparent in our specimens; the females are considerably paler than either of the males. The Mexican female, taken 4 July, contained one embryo 15 mm in C-R length. The Honduran female, collected 11 May, was lactating.

Chiroderma villosum jesupi J. A. Allen

México: Chiapas. 3 miles SSE Sayaló, 3,000 ft, 1 ♀; 18 miles S La Trinitaria, 2,800 ft, 5 ♀ ♀; Florida, 50 km E Altamirano, 5 ♀ ♀.

The only other Mexican records we have been able to locate are from Veracruz. Our 12 specimens, all females, were caught in mist nets set across streams. Three of the 5 from Florida, taken 9 and 12 July, were gravid, each with one embryo, 2 of which were 20 mm in C-R length; the third was minute. Two of the 5 taken south of La Trinitaria 20 December, 21 were also gravid, each with one embryo about 4 mm in C-R length. The female from Sayaló, taken 5 May, was lactating. These data suggest that this bat breeds throughout the year.

Length of forearm, 43.5–48.5; weight, 22 to 26 g.

Artibeus toltecus Saussure

México: Chiapas. Cerro Hueco Cave, 2 miles SE Tuxtla Gutierrez, 2,600 ft, 2 ♀ ♀; Yaxoquintela, 37 km NE Altamirano, ca. 590 m, 1 ♀; 14 miles SSE Zapaluta (= La Trinitaria), ca. 2,700 ft, 1 ♀; Florida, 50 km E Altamirano, ca. 525 m, 7 ♀ ♀, 3 ♂ ♂; 4 miles NE Chiapa de Corzo, 3,000 ft, 3 ♀ ♀, 1 ♂.

These appear to be the first records of *toltecus* from Chiapas. These specimens were either collected in caves or caught in mist nets. Three females taken on 9 May were lactating; each of 4 taken from 27 June–5 July contained one embryo, nearly full term; one taken on 7 August was lactating. These data suggest an extended breeding season and possibly 2 "litters" a year.

Artibeus aztecus Anderson

México: Chiapas. Zapaluta Cave, 1.3 miles SSE Zapaluta (= La Trinitaria), ca. 5,700 ft, 1 ♀; 2 km W Teopisca, ca. 7,000 ft, 5 ♂ ♂. Hidalgo. 6 miles NE Jacala, 6,000 ft, 1 ♂.

These appear to be the first records of *aztecus* from Chiapas and Hidalgo. The specimen from Zapaluta was caught in a mist net as it was emerging from the cave; those from near Teopisca were shot while they were roosting in a cave, a short distance from the entrance. As presently known, this species occupies a range extending from Rancho del Cielo, Tamaulipas in eastern México (Alvarez, Univ. Kansas Publ. Mus. Nat. Hist., 14(15): 403, 1963) and

Ciudad Guzman, Jalisco in western México (Davis, Proc. Biol. Soc. Wash., 71: 165, 1958) southward to the highlands of Chiapas. All locality records, except Rancho del Cielo (3,300 ft), are at elevations above 5,000 feet. In our experience, this species is restricted to the pine-oak, pine and cloud forest associations.

Centurio senex Gray

México: Chiapas. 2 miles S Zapaluta (= La Trinitaria), 5,700 ft, 1 ♀; Florida, 50 km Altamirano, 525 m, 1 ♀; 2 ♂ ♂.

Honduras: Río Coco. 78 miles ENE Danlí, 900 ft, 1 ♀.

El Salvador: Dept. La Libertad. 20 miles W La Libertad, 10 ft, 1 ♀.

There appears to be no previous record of this bat from Chiapas and Honduras, and there is only one other known specimen from El Salvador (Felten, Senckenbergiana Biol., 38(5/6): 352, 1956). Because most of the published records are from the lowlands, the specimen from Zapaluta is of special interest. This specimen was caught 6 April in a mist net set across a small pond. Both this female and the one captured at Florida on 5 July were pregnant, each with a single large embryo. Weight, one male, 23 g; one non-gravid female from Plan del Río, Veracruz, 23 g.

Myotis velifer velifer (J. A. Allen)

Honduras: 2 miles S Zamorano, Francisco Morazan, 2,800 ft, 1 ♂.

Compared with Goodwin's description of *M. v. cobanensis* from Guatemala, this specimen differs in being larger in all measurements and in the presence of a distinct cingulum on the middle upper premolar. Consequently, we refer it to the subspecies *velifer*.

This appears to be a new addition to the known mammalian fauna of Honduras as well as the southernmost record for this species of *Myotis*. The specimen was captured 5 August 1963, in a mist net set across a small stream (about 4 feet wide) almost in the center of Zamorano Valley. Surrounding the site were fields of grain, milo and corn.

Length of forearm, 43; greatest length of skull, 16.3; zygomatic breadth, 10.7; length of maxillary toothrow, 6.5; width across M^3 - M^3 , 6.8. Weight, 9.4 g.

Rhogeessa tumida major Goodwin

México: Guerrero. Agua de Obispo, 3,300 ft, 1 ♂.

This specimen constitutes the second known record of this species from Guerrero. It was captured in a mist net set across the end of a concrete swimming pool situated in a ravine at the edge of the pine-oak forest. Its measurements do not differ materially from those of the type (Goodwin, Amer. Mus. Novitates, 1923: 4, 1958). Weight, 5.5 g.

Baeodon alleni Thomas

México: Puebla. 10 miles W Acatlán, ca. 6,000 ft, 1 ♀.

Our specimen appears to be the first record from the state of Puebla and the sixth known specimen of this rare bat. Carter's notes for 1 March 1962 follow: "Saw several bats feeding in canyon, rather late twilight. Two kinds feeding; one small, somewhat slow flying . . . killed 2 but found only one."

Measurements.—Total length, 95; tail, 39; foot, 7; ear from notch, 17; forearm, 32.5; greatest length of skull (including incisors), 15; zygomatic breadth, 9.5; maxillary toothrow, 5.5.

Department of Wildlife Management, Texas A & M University, College Station, Texas. Received 11 July 1963.

ECOLOGICAL NOTES AND LABORATORY LIFE HISTORY OF THE CANYON MOUSE

BY HAROLD J. EGOSCUE

ABSTRACT: The canyon mouse, *Peromyscus crinitus pergracilis*, was more difficult to rear in captivity than other cricetids. It is seasonally polyestrous in the laboratory, but young are born all months of the year. Gestation during lactation was 27–31 days; a limited amount of evidence indicates non-lactating pregnancies last approximately 24–25 days. Litter size ranges from 1–5; only one litter of 5 was recorded among 130 litters. Females had as many as 8 litters per year, average 2.05. Maximum reproductive lifetime of females was 46 months. Young are born in a slightly more advanced state than deer mice, but are not weaned until 4 weeks of age. A few pairs bred when only 70 days old; most breeders did not produce young until they were 4–6 months of age. Examples of catches from marginal, good and excellent canyon mouse habitat are given, together with associated small mammals from each.

The canyon mouse, *Peromyscus (Haplomylomys) crinitus*, is a widely distributed but little-known rodent of western North America. Hall and Hoffmeister (1942) reviewed the species and assigned geographic ranges to the then currently recognized 7 subspecies. An additional subspecies was described by Goin (1944) for populations west of the Green River in eastern Utah and extreme southern Wyoming. Hall and Kelson (1959: 601–603) provided the most up-to-date distribution map and taxonomic synopsis. Some faunal accounts briefly mention its predilection for cliffs and stony places and its comparatively low reproductive rate. Hall (1946: 504) pointed out that only one specimen among those collected in Nevada was caught as far as 50 feet from rocks. In Oregon, Bailey (1936: 186–187) found canyon mice "in the Snake, Malheur and Deschutes river valleys, wherever there are suitable cliffs" and thought that crevices and cracks were their real homes. The few records of this species for New Mexico are all from the northwestern corner, where, according to Bailey (1931: 161), "they seem to be restricted to the Upper Sonoran Zone and apparently, more than any other species, are limited to