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A Review of the Bats of the Genus Ametrida, *Family* Phyllostomidae

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In 1847, J. E. Gray established the genus *Ametrida* with *Ametrida centurio* as the type species on the basis of a single specimen in the British Museum (Natural History) from "Pará, Brazil". The second known specimen was obtained by the Leiden Museum from Surinam and reported by Peters (1866). The third reported specimen was a topotype (Thomas, 1901). According to Sanborn (1938) his report on a specimen in the University of Michigan Museum, from Obidos, Amazonas, Brazil was the fourth known. Subsequent records were reported by Goodwin and Greenhall (1961) listing one specimen from Caripito, Venezuela and another from the Gulf of Paria, between Venezuela and Trinidad. The seventh specimen to be reported was from Surinam (Husson, 1962) followed by two additional records from Trinidad by Goodwin and Greenhall (1964).

In 1894 a specimen in Boston Society of Natural History Museum was described by Harrison Allen as *Ametrida minor*, with the locality unknown, although G. M. Allen (1902) later established that the type locality was quite probably near Paramaribo, Surinam. The second and third specimens were not recorded until Husson (1959) reported on a specimen from Moengo, Surinam and another from Bonaire, Netherlands Antilles. The fourth specimen was recorded from Kartabo, British Guiana by Goodwin and Greenhall (1961) and the fifth from Kaiserberg Airstrip, Surinam by Husson (1962). Goodwin and Greenhall (1964) add one record for Trinidad and one for Venezuela.

In the first 100 years after its discovery the genus *Ametrida* was known by published records of only five specimens, four identified as *A. centurio* and only one (the holotype) as *A. minor*, although at least 14 specimens are now known to have been in various collections by 1947 (see Table I).

On February 26, 1961, the author collected a male *Ametrida* at Nappi Creek in the Kanuku Mountains of British Guiana (ROM 31697) and a second male was taken 20 miles east of Dadanawa in July 1963 by Stanley E. Brock (ROM 32946). These two specimens agreed closely with the published descriptions of *Ametrida minor*.

In the course of identifying these specimens, measurements and other data on the five previously known specimens were tabulated with the surprising discovery that all seven known specimens were males! A similar tabulation for the seven known specimens of *A. centurio* revealed that five were females and two were recorded as males, one being the University of Michigan specimen, No. 53108, reported by Sanborn (1938) and the other the Leiden Museum specimen, No. 13074, as reported by Peters (1866); Jentink (1888) and Husson (1959 and 1962). The author had previously examined the University of Michigan specimen but had noted that no sex had been recorded in the catalogue registry. Dr. W. H. Burt kindly provided the specimen on loan (preserved in alcohol with skull removed) which, under careful examination, proves to be a female, not a male as reported by Sanborn (1938). A letter to Dr. A. M. Husson at Rijksmuseum van Natuurlijke Historie brought the following reply:

Concerning the question of the sex of *Ametrida centurio* (reg. no. Leiden Mus. 13074) I can inform you that this specimen actually is a female, and not a

TABLE I. List of known Specimens of *Ametrida centurio* in order of the date collected. Forearm measurements are listed for specimens for which cranial measurements are not available.

Map No.	Date	Locality	Sex	Catalogue Number	Collection	Remarks
1	before 1847	"Pará, Brazil" [mapped at Belém]	♀	1957a	B.M.	Holotype. *A. centurio* Gray. Alc., skull extracted.
2	1832–39?	Paramaribo, Surinam	♂	11274	MCZ	Holotype. *A. minor* H. Allen. Alc., skull extracted.
—	before 1866	Surinam	♀	13074	RMNH	skin and skull
3	23 Jul 1871	Obidos, Amazonas, Brazil	♀	53108	UMMZ	Alc., skull extracted.
—	1877	Surinam	♀	1633	SMN	Alc., skull extracted.
4	1 Nov 1890	Cururnee, B.G. [=Kairuni, Supenaam River?]	(♂)	91–12–1–1	BM	skin and skull, FA 25.5
5	Nov–Dec 1893	Valencia, Venezuela	(♀)	94–9–25–12	BM	skin and skull.
6	before 1894	North-west Venezuela	♀	94–9–25–31	BM	Alc. FA 32.2
7	ca. 1896	Santarem (in register), Pará (on bottle label), Brazil	♀	96–6–2–10	BM	Alc. FA 30.4
8	ca. 1896	Manaos [Manaus], Brazil	♂	97–2–28–1	BM	Alc., skull extracted
1	before 1901	Pará, Brazil	♂	1–7–19–8	BM	Alc., skull extracted
9	1924	Kartabo, British Guiana	♂	142909	AMNH	Alc., skull extracted
10	1942	Caripito, Venezuela	♂	142612	AMNH	Alc., skull extracted
10	1942	Caripito, Venezuela	♀	142613	AMNH	Alc., skull extracted
11	Apr 1953	Moengo, 85 km E. Paramaribo, Surinam	♂	12512	RMNH	skin and skull
1	27 Apr 1958	Belém, Pará, Brazil	♂	1118	MPEG	skin and skull
12	Oct 1958	Kralendijk, Bonaire, Netherlands Antilles	♂	2346	ZMA	Alc., skull extracted
13	26 Sept 1960	Gulf of Paria, Trinidad	♀	183849	AMNH	Subadult. Alc., skull extracted, damaged.
14	4 Nov 1960	Kaiserberg Airstrip, Zuid River, Surinam	♂	93204	CNHM	skin and skull
15	26 Feb 1961	Nappi Creek, 25 mi E. Lethem, Kanaku Mts., B.G.	♂	31679	ROM	skin and skull
13	20 Jul 1961	Gulf of Paria, Trinidad	♀	347379	USNM	Juv. Alc. FA 32.6
16	31 Jul 1961	Maracas Valley, Trinidad	♀	187225	AMNH	skin and skull (from alc.)
17	7 Aug 1961	38 km S. El Dorado, Venezuela	♀	5519	UCV	skin and skull
13	10 Aug 1961	Gulf of Paria, Trinidad	♀	172127	AMNH	skin and skull
18	11 Oct 1961	Las Cuevas, Trinidad	♂	187224	AMNH	Subadult. skin and skull (from alc.)
17	31 Jul 1962	38 km S. El Dorado, Venezuela	♀	5391	UCV	skin and skull
19	Jul 1963	Comiwari Wau, 20 mi E. Dadanawa, B.G.	♂	32964	ROM	skin and skull
1	26 Sep 1963	Belém, Pará, Brazil	♀	337104	USNM	Alc., skull extracted. FA 31.8
20	17 May 1964	Monos Is., Grand Pond Bay, Trinidad	♀	207967	USNM	skin and skull
21	July 1964	St. Ignatius near Lethem, Rapununi District, B.G.	♀	33939	ROM	Alc., skull extracted

A.M.N.H. American Museum of Natural History, New York
B.M. British Museum (Natural History), London
C.N.H.M. Chicago Natural History Museum, Chicago
R.O.M. Royal Ontario Museum, Toronto
S.M.N. Staatliches Museum für Naturkunde, Stuttgart
U.C.V. Universidad Central de Venezuela, Caracas

male as indicated by me. As far as possible I examine the bats of the old collection of the Leiden Museum; some of them are erroneously sexed by Temminck, Schlegel or Jentink. The *A. centurio* specimen is in a very poor condition; externally the dried skin does not show distinctly the sex of the specimen. In my opinion it was not justified to soften up the specimen, while moreover this character was not important for my study. Therefore I gave the sex as indicated on the label and in Jentink's Catalogue. But now I soaked the specimen in water and noted after careful examination that the specimen is a female. I congratulate you that you can see on the published measurements that it must be a female rather than a male.

A survey of all specimens of *Ametrida* known to me (see Table I) indicates that there are now a total of 30 with 28 of known sex (16 females and 12 males) creating the anomalous situation of having all known *Ametrida centurio* as females and *A. minor* as males. The only basic distinction between the two has been one of size, although males tend to have a more foreshortened rostrum with a steeper facial profile and a more rounded braincase in lateral profile. Examination of measurements presented in Table II shows that there are indeed distinct differences in size with no overlap in such measurements as the length of forearm and in the cranial measurements: condylobasal length, least interorbital width, breadth of palate (M^1–M^1) and length of tooth row (C–M^3). A summary of measurements (Tables II and III) shows that the lengths of the forearm and of the elements of the third, fourth and fifth digits present most striking differences between the sexes, with no overlap in measurements. As they are among the shortest forearms of all known bats, it would appear to be logical to assume that the female would require a greater wing span in order to carry both the developing embryos and the young in flight. The tendency for the females to have a longer forearm has been observed in other genera such as *Lasiurus* but, to my knowledge, none shows such striking differences between the sexes as are found in the genus *Ametrida*. The over-all size differences between males and females are so great and the number of specimens were so few during the first hundred years that the genus was known, it is not surprising that the sexes were thought to represent two distinct species. This error was further supported by the fact that the holotype for *A. centurio* represented a size near the upper limit for the species and the holotype of *A. minor* near the lower limit (Table II).

GENUS *Ametrida* GRAY

Ametrida centurio Gray, 1847

Ametrida minor H. Allen, 1894

Ametrida minor, G. M. Allen, 1902; Cabrera, 1957; Husson, 1959 and 1962; Goodwin and Greenhall, 1961 and 1964.

Holotype. Female adult no. 1957a, British Museum (Natural History) from "Pará, Brazil" collected prior to 1847, preserved in alcohol with skull extracted. In order to avoid confusion between the State of Pará, the river Pará and the precise type locality of *Ametrida centurio*, it appears

TABLE II. Cranial Measurements (in millimetres) of *Ametrida centurio*

♀♀ Cat. No.	Collection	Locality		Forearm	Greatest length skull	Condylobasal length	Zygomatic width	Brain case width	Mastoid width	Interorbital constriction	M^1–M^1 breadth of palace	C–M^3 length
*1957a	BM	Pará, Brazil		33.0	16.2	13.3	11.4	—	—	—	7.8	—
33939	ROM	St. Ignatius, Lethem, B.G.		33.2	16.2	13.4	11.5	8.3	9.7	4.2	7.7	4.6
5391	UCV	38 km S. El Dorado, Venez.		32.6	16.1	13.6	11.3	8.9	10.1	4.0	7.6	4.7
53108	UMMZ	Obidos, Amazonas, Brazil		32.4	17.1	13.6	11.7	9.1	10.0	4.5	7.9	5.2
187225	AMNH	Maracas Valley, Trinidad		32.4	16.3	13.5	11.5	8.7	9.8	4.2	8.0	4.8
142613	AMNH	Caripito, Venez.		32.3	16.2	13.6	11.5	8.3	9.5	4.3	8.3	4.6
5519	UCV	38 km S. El Dorado, Venez.		32.2	15.9	13.4	11.4	9.1	9.8	4.2	7.9	4.7
207967	AMNH	Monos Is., Trinidad		32.2	16.2	—	11.7	9.1	—	4.3	8.0	4.9
172127	AMNH	Gulf of Paria, Trinidad		32.2	16.0	13.5	11.3	8.8	9.7	4.3	7.8	4.8
13074	RMNH	Surinam		32.0	—	—	11.0	—	—	4.1	7.7	4.7
183849	AMNH	Gulf of Paria, Trinidad		31.7	—	—	11.3	8.0	—	4.3	7.6	4.7
1633	SMN	Surinam		31.0	15.6	13.2	10.8	8.6	9.2	3.8	7.6	4.5
94.9.25.12	BM	Valencia, Venez.		29.8	—	—	11.0	—	—	—	7.6	—
*Holotype *A. centurio*			Average	32.1	16.2	13.5	11.3	8.7	9.7	4.2	7.8	4.7
			Number	13	10	9	13	10	8	11	13	11
			Maximum	33.2	17.1	13.6	11.7	9.1	10.1	4.5	8.3	5.2
			Minimum	29.8	15.6	13.2	10.8	8.0	9.2	3.8	7.6	4.5
♂♂												
1118	MPEG	Belém, Pará, Brazil		26.5	—	—	—	—	—	—	—	—
31697	ROM	25 mi E. Lethem, B.G.		26.0	15.0	12.0	10.3	8.4	8.8	3.3	7.3	4.4
12512	RMNH	Moengo, Surinam		25.9	14.9	11.9	10.4	8.3	8.8	3.3	7.4	4.3
142612	AMNH	Caripito, Venez.		25.8	14.8	12.0	10.3±	8.2	8.8	3.4	7.2	4.2
1.7.19.8	BM	Pará, Brazil		25.5	15.6	11.8	10.8	—	—	—	7.2	—
97.2.28.1	BM	Manaos, Brazil		25.4	15.2	12.0	10.5	—	—	—	7.2	—
32946	ROM	20 mi E. Dadanawa, B.G.		25.3	15.7	12.7	10.7	8.5	8.9	3.5	7.2	4.3
187227	AMNH	Las Cuevas, Trinidad		25.2	15.1	12.1	10.4	8.2	9.0	3.2	7.1	4.2
93204	CNHM	Kaiserberg Airstrip, Surinam		25.0	14.5	12.0	10.6	8.5	9.2	3.4	7.2	4.2
142909	AMNH	Kartabo, B.G.		24.8	14.5	11.9	10.3	8.2	8.9	3.3	7.2	4.3
†11274	MCZ	Paramaribo, Surinam		24.8	14.9	12.0	10.3	8.2	—	3.4	7.3	4.4
2346	ZMA	Kralendijk, Bonaire		24.6	14.7	11.8	10.1	8.1	8.8	3.3	7.1	4.2
†Holotype *A. minor*			Average	25.4	15.0	12.0	10.4	8.3	8.9	3.3	7.2	4.3
			Number	12	11	11	11	9	8	9	11	9
			Maximum	26.5	15.7	12.7	10.8	8.5	9.2	3.5	7.4	4.4
			Minimum	24.6	14.5	11.8	10.1	8.1	8.8	3.2	7.1	4.2

TABLE III. Summary of Weights (in grams) and External Measurements (in mm.) of *Ametrida centurio*

Measurement	♂♂				♀♀			
	Average	Min.	Max.	No.	Average	Min.	Max.	No.
Weight	7.8	(5.2)*	—	1(1)*	10.1	(7.2)*	10.2	2(1*)
Head and body length	40	35	46	3	46.6	40	53	4
Ear, from notch	13	11	15	5	13.7	11.5	15.0	7
Calcar	4.8	4.3	5.1	8	4.8	3.5	5.5	10
Tibia	14.7	13.0	15.8	8	15.4	14.0	17.6	11
Forearm	25.4	24.6	26.5	13	32.0	29.8	33.2	17
3rd digit, metacarpal	25.3	23.0	26.9	6	31.9	30.5	33.4	4
3rd digit, metacarpal % of forearm	98.8	92.8	101.7	6	99.3	96.0	102.2	4
3rd digit, 1st phalanx	8.7	8.0	9.4	5	10.7	10.0	11.5	4
3rd digit, 1st phalanx % of forearm	34.5	31.6	37.2	5	33.2	31.3	35.6	4
3rd digit, 2nd phalanx	13.6	13.0	14.1	5	17.7	16.0	18.6	4
3rd digit, 2nd phalanx % of forearm	53.9	52.0	55.7	5	55.0	51.7	57.5	4
4th digit, metacarpal	22.3	21.3	23.5	4	27.7	26.5	29.1	4
4th digit, metacarpal % of forearm	87.5	82.0	91.5	4	86.4	83.5	90.0	4
4th digit, 1st phalanx	9.7	9.5	10.0	4	12.3	11.5	13.0	4
4th digit, 1st phalanx % of forearm	38.3	36.7	40.7	4	38.4	37.1	40.2	4
4th digit, 2nd phalanx	14.1	13.0	15.3	4	17.1	16.4	18.3	4
4th digit, 2nd phalanx % of forearm	55.6	50.6	59.0	4	53.3	50.7	55.2	4
5th digit, metacarpal	23.3	22.5	24.5	4	28.9	27.5	30.5	4
5th digit, metacarpal % of forearm	91.4	87.4	95.5	4	90.0	86.3	94.2	4
5th digit, 1st phalanx	9.4	9.3	9.5	4	11.6	10.5	12.9	4
5th digit, 1st phalanx % of forearm	36.6	36.2	38.6	4	36.1	32.9	39.8	4
5th digit, 2nd phalanx	12.0	10.5	12.5	4	13.9	13.0	14.8	4
5th digit, 2nd phalanx % of forearm	47.2	40.6	50.8	4	43.4	41.7	45.0	4

*Subadult.

desirable to amend the type locality by restricting it to the presently designated town of Belém, capital of the State of Pará, which was formerly known as the town of Pará.

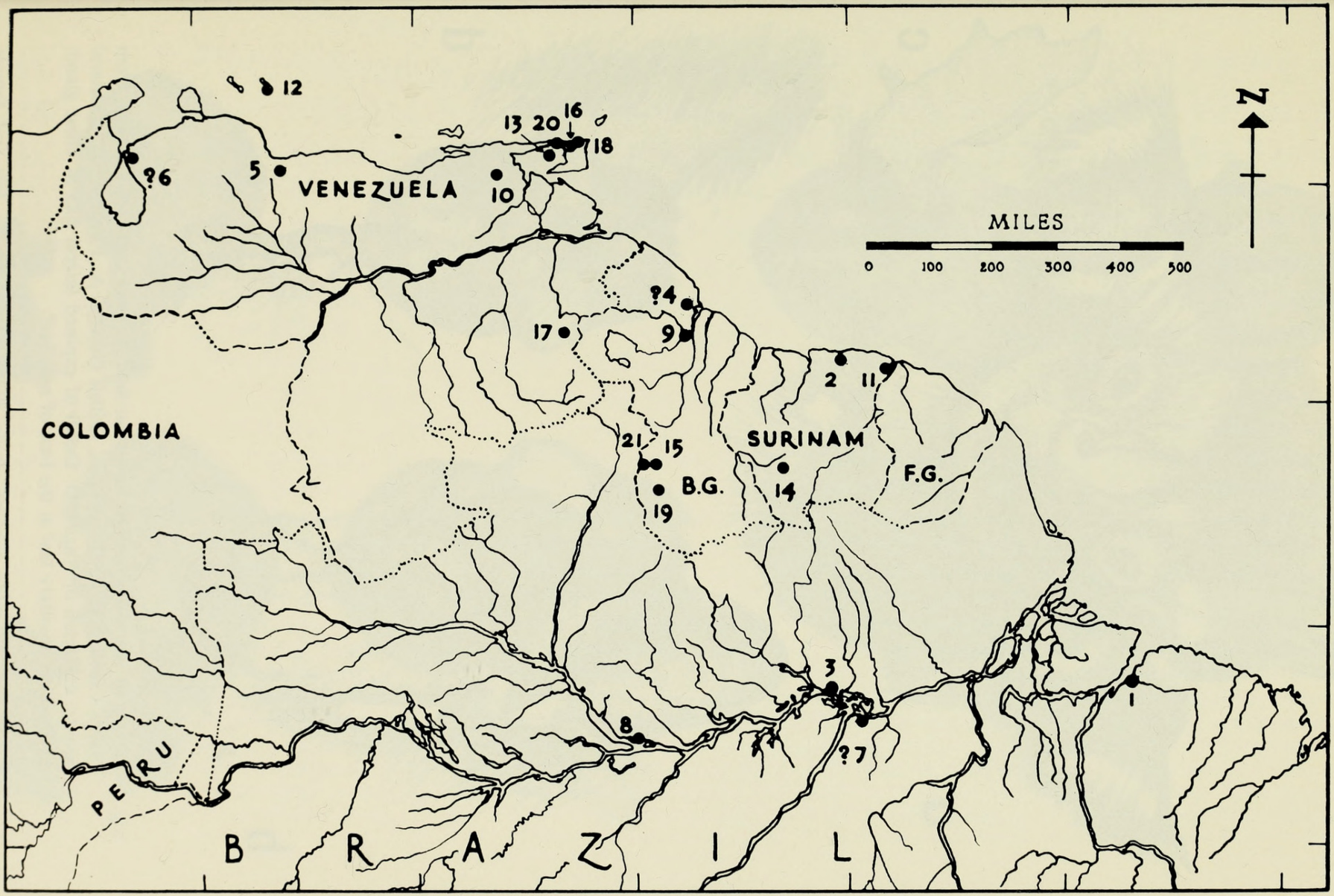
Range. Known from northeastern Brazil along the Amazon River west to Manaus north through the Guianas, Trinidad and Bonaire Island and west to northwest Venezuela (see map).

Dental Formula. $I \frac{2-2}{2-2}, C \frac{1-1}{1-1}, P \frac{2-2}{2-2}, M \frac{3-3}{3-3} = 32$

Description. Small bats of the subfamily *Stenoderminae* with a short broad face with swollen eyelids and a well-developed nose leaf with an accessory glandular fold or flap on each side from which three long hairs extend (see Fig. 1); no external tail; pelage greyish, greyish-brown or brown, darkest on the rump and palest on the head and shoulders; a conspicuous white patch of hair on each shoulder at the origin of the antebrachial membrane and usually a second pair on the sides of the neck below the ears (apparently more conspicuous in males); tragus small, acutely pointed with tooth-like projections on the outer margin; females conspicuously larger than the males (see Tables II and III) particularly in the length of the forearm (males 24.6 to 26.5 mm., females 29.8 to 33.2 mm.) and other wing bones and in cranial measurements such as condylobasal length, least interorbital width, breadth of palate and length of tooth row (see Fig. 2).

There is a glandular area on the chest which was described and figured by Dobson (1878) and which apparently has had no further description since. It is well developed on two males (R.O.M. 31697 and 32946) and protrudes laterally as a pair of bifid pendulant flaps (see Fig. 1). In one female (R.O.M. 33939) it is also well developed but less conspicuous. In another female (U.M.M.Z. 53108) the glandular area is obviously present but is hidden in the long fur of the chest and the details of its shape are obscured by an incision in the skin. The lateral flaps of the gland are almost devoid of hair in R.O.M. 31697, but sparsely haired in both the male (R.O.M. 32946) and the female (R.O.M. 33939). The two males are dried skins (the sketch in Fig. 1 was made from the fresh specimen) with the lateral flaps of the chest gland of R.O.M. 31697 drying into a thin flat condition, while R.O.M. 32946 appears much thicker and turgid, as if filled with a waxy material. Further studies with histological examination of this glandular area are required to clarify its structure and function.

Ecology. Unfortunately little is known about this rare species. It appears to be frugivorous and a forest or jungle dwelling species. The specimen taken by the author was collected with a mist net set across a trail extending through the jungle forest at the base of the Kanuku Mountains, an isolated forested mountain surrounded by savannah. It was flying quite late at night (after midnight). Of the 30 specimens known, three (all females) were taken aboard an oil barge in the Gulf of Paria between Trinidad and Venezuela. Husson (1962) reports that two of the males (Moengo, Surinam and Bonaire Island) were caught indoors. The male and female caught by Stanley E. Brock were taken in mist nets as were most of the more recent specimens now in other collections.



MAP 1—Northeastern South America showing the known distribution of *Ametrida centurio*. See Table I for legend of localities.

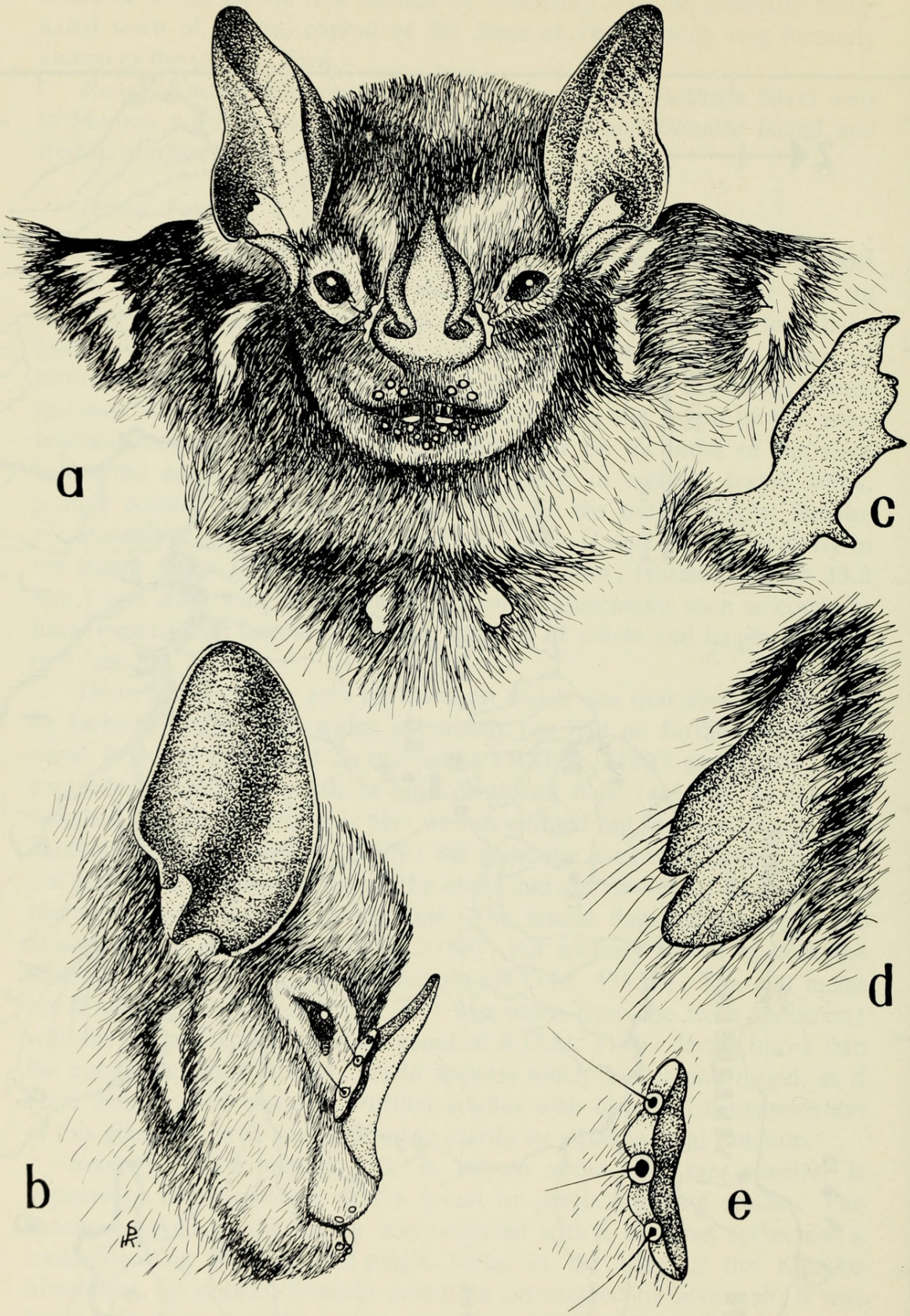
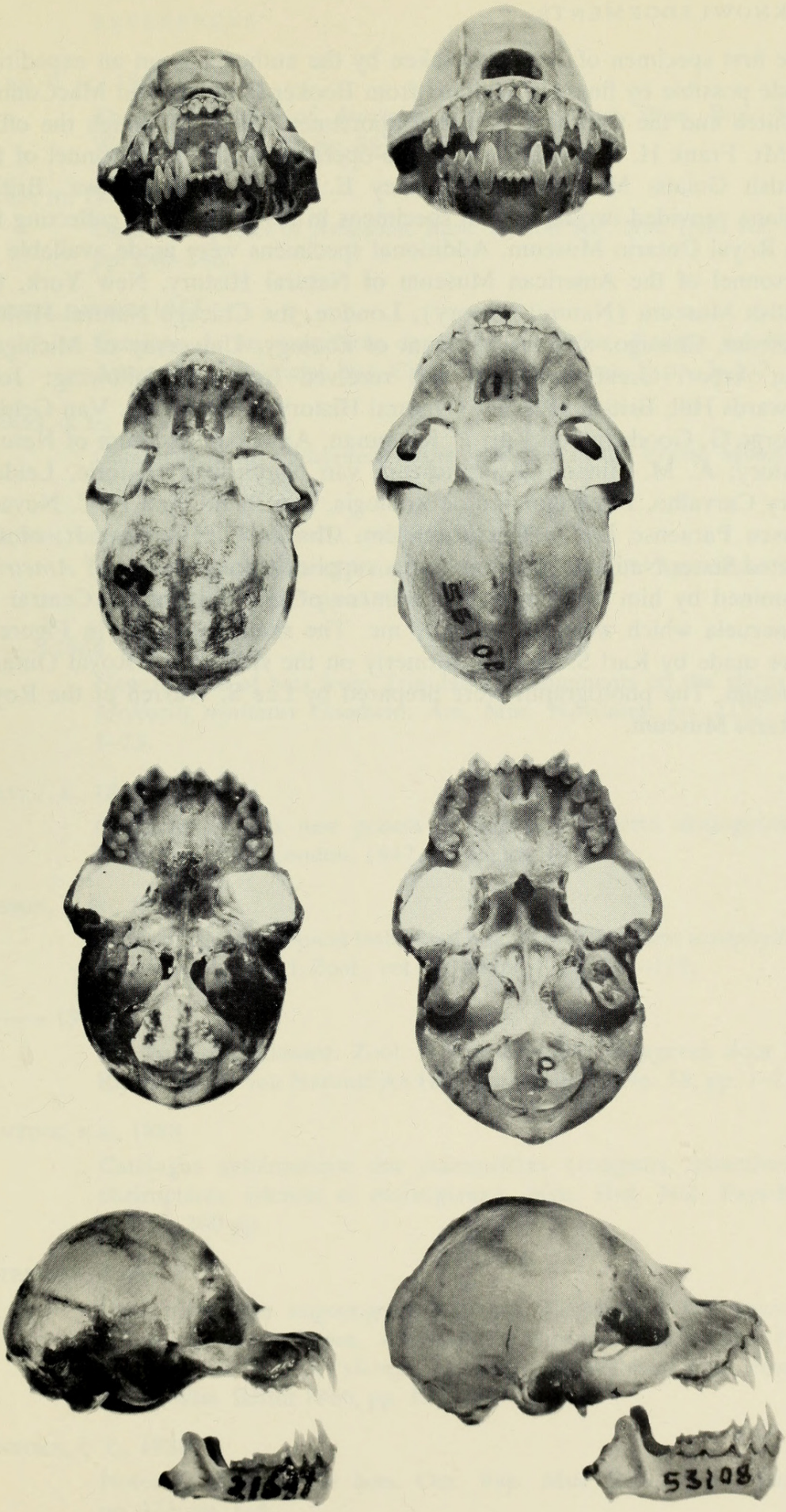


Fig. 1—Details of *Ametrida centurio* based on field sketches of ROM 31679 ♂ from Nappi Creek, Kanuku Mountains, British Guiana. A. Front view; B. Lateral profile; C. Detail of tragus; D. Detail of exposed lateral flap of chest gland; E. Detail of ancillary leaf at the base of nose leaf.

Fig. 2—Crania of *Ametrida centurio*, male ROM 31679 on the left and female U.M.M.Z. 53108 on the right.


53108
53108

ACKNOWLEDGEMENTS

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REFERENCES

ALLEN, G. M., 1902

The type locality of *Ametrida minor* H. Allen. Proc. Biol. Soc. Washington, vol. 15, pp. 88–89.

ALLEN, H., 1894

On a new species of *Ametrida*. Proc. Boston Soc. Nat. Hist. vol. 26, pp. 240–246.

CABRERA, ANGEL, 1957

Catalogo de los mamiferos de America del Sur. Revista del Mus. Argentino de Ciencias Nat. Cien. Zool. vol. 4, no. 1, pp. 1–307.

DOBSON, G. E., 1878

Catalogue of the Chiroptera in the collection of the British Museum. London, pp. 1–567.

GOODWIN, GEORGE G. AND ARTHUR M. GREENHALL, 1961

A review of the bats of Trinidad and Tobago. Bull. Am. Mus. Nat. Hist. vol. 122, art. 3, pp. 190–301.

——— 1964

New records of bats from Trinidad and comments on the status of *Molossus trinitatus* Goodwin. Am. Mus. Novitates, no. 2195, pp. 1–23.

GRAY, J. E., 1847

Characters of six new genera of bats not hitherto distinguished. Proc. Zool. Soc. London, 1847, pt. 15, pp. 14–15.

HUSSON, A. M., 1959

Note on the Neotropical leaf-nosed bat, *Sphaeronycteris toxophyllum* Peters. Arch. Néerl. Zool., vol. 13, suppl. 1, pp. 114–119.

——— 1962

The bats of Suriname. Zool. Verhandelingen Uitgegeven door het Rijksmuseum van Natuurlijke Historie te Leiden, No. 58, pp. 1–282.

JENTINK, F.A., 1888

Catalogue systématique des mammifères (rongeurs, insectivores, cheiroptères, édentés et marsupiaux). Mus. Hist. Nat. Pays-Bas, vol. 12, 280 pp.

PETERS, W., 1866

Über neue oder ungenugend bekannte Flederthiere (*Vampyrops, Uroderma, Chiroderma, Ametrida, Tylostoma, Vespertilio, Vesperugo*) und Nager (*Tylomys, Lasiomys*). Monatsber. Kön. Preuss. Akad. Wiss. Berlin 1866, pp. 392–411.

SANBORN, C. C., 1938

Notes on Neotropical bats. Occ. Pap. Mus. Zool. Univ. Mich., no. 373, pp. 1–5.