

Two Rare Species of the Bats, *Triaenopus rufus* and *Mormopterus jugularis* (Mammalia, Chiroptera) from Madagascar

By

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Abstract Madagascan red trident bat, *Triaenopus rufus* of the Hipposideridae and Peter's wrinkle-lipped bat, *Mormopterus jugularis* of the Molossidae are the endemic species in Madagascar. The materials of these species have been few until present time. The present paper describes the external, cranial and dental characters of these imperfectly known species.

The author had the opportunity to examine bats belonging to the Hipposideridae and the Molossidae of the Chiroptera from Madagascar. A specimen of *Triaenopus rufus* of the Hipposideridae was picked up by Dr. Hiroyuki MORIOKA and seven specimens of *Mormopterus jugularis* of the Molossidae were obtained by Dr. Takaaki SAKANAKURA from Madagascar. Both species have not yet been studied fully, since the original description were published.

I wish to express my hearty thanks to Dr. Hiroyuki MORIOKA, Director of the Department of Zoology, National Science Museum, Tokyo and Dr. Takaaki SAKANAKURA, Researcher of the Research Institute of Evolutionary Biology, Tokyo, who gave me the opportunity of studying the invaluable materials.

Triaenopus rufus MILNE-EDWARDS, 1881

[Japanese name: Madagasukaru-mitsumata-kagura-koumori]

(Figs. 1–5)

Triaenopus rufus MILNE-EDWARDS, 1881, C. R. Acad. Sci. Paris., 1035.

Type locality. East coast of Madagascar.

Type specimen. Type specimen is in the Muséum National d'Histoire Naturelle, Paris.

Specimen examined. As Tables 1, 2.

Description. External characters (Table 1, Fig. 1): Ear short, nearly as broad as long, with acutely pointed tip, anterior margin convex, posterior margin with central step like to emargination, posterior margin concave immediately beneath the tip, remaining part convex. Noseleaf very complicated (Fig. 1),

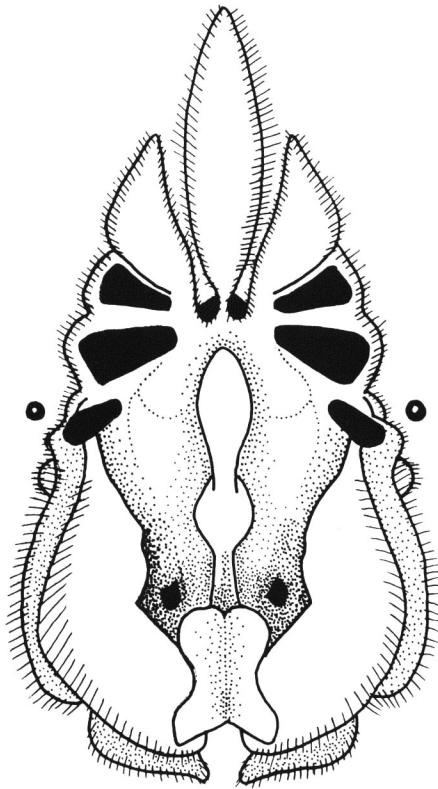


Fig. 1. Noseleaf of *Triaenopus rufus*, NSMT-M 29878, adult female from Madagascar.

consisting of anterior, intermediate, posterior leaves and lateral supplementary leaflets. Anterior leaf with broad, flattened, longitudinal horizontal process which extend mediantly from the front of the internarial septum to that central part; intermediate leaf with prominent, pointed projecting process, bowling-pin shaped on the median part; posterior leaf complex, tridentate behind, the central lamina the longest, broad linear-shaped; the lateral laminae small, triangle-shaped. Their laminae with many cell on basal portion of central and lateral sides of anterior leaf.

Wing membrane translucent, blackish, attached to the base of metatarsal. Hind foot longer than length of a half tibia length; the fifth metacarpals, the shortest. Plagiopatagium, also translucent, blackish, attached to a lower portion of lower leg, without keel and terminal lobe; terminal tail vertebra generally free from margin of uropatagium. Fur silky and glossy, general effect a buff brown or drably brown produced by varying combinations of gold under colour and the darker hair tips, underpart orange in both distal and proximal parts., approximate hair length of back and belly 5–6 mm.



Figs. 2-5. Skull of *Triaenopus rufus*, NSMT-M 29878, adult female from Madagascar. — 2, Dorsal view; 3, ventral view; 4, lateral view, 5, lateral view of mandible.

Table 1. External measurements of *Triaenops rufus* MILNE-EDWARDS, 1881 and *Mormopterus jugularis* (PETERS, 1865) from Madagascar (in mm).

		FA	TL	T	HB	HFcu	Tib	E	Tragus	BWt (g)
<i>T. rufus</i> :										
Type		55						14		
NSMT-M										
29878	Female	50	88	30	58	10	16	13		
Loc. Ampijovoa, Andranofasika, Madagascar, Alt. 50 m										
Picked up by H. MORIOKA, on 8th November, 1994.										
<i>M. jugularis</i>										
Type	Male	37	89	19			10.5	14		
93.8.25-1	Female	37	84	29	55	10.5	9.5	15	3.5	6.0
	2 Ditto	37	88	32	56	10.5	10.5	15.5	4.5	6.9
	3 Ditto	36.4	90	31	59	10.5	10.5	15	3	6.8
	4 Ditto	35.1	88	29	59	9.5	10.5	15.5	3	6.8
	5 Ditto	36.9	87.5	27	60.5	10.5	10.5	15.0	2	7.1
	6 Male	35.7	92	30	62	10	10.5	16	2.5	8
	7 Ditto	37.3	94	33	61	10.5	10.5	15.5	3	7.8
Loc. Madagascar.										

Abbreviations: FA, forearm; TL, total length; HB, Head and body; T, tail; HFcu, hind foot cum unguis; Tib. tibia; E, ear; BWt, body weight; Loc., locality.

Table 2. Cranial and dental measurements of *Triaenops rufus* MILNE-EDWARDS, 1881 and *Mormopterus jugularis* (PETERS, 1865) from Madagascar (in mm).

		GLS	CCL	INT	ZYG	WBC	MAST	C-C	M3-M3	C-M3	MAND	c-m3
<i>T. rufus</i>												
Type		No data										
NSMT-M												
29878		18.1	17.3	2.5	8.1	8.0	8.0	4.5	6.6	5.9	10.7	5.9
<i>M. jugularis</i>												
Type		No data										
93.8.25-1		15.2	13.6	3.6	9.3	7.9	9.3	3.9	6.7	5.5	10.3	5.9
	3	16.0	15.5	3.5	9.6	8.0	9.3	3.8	6.8	5.8	11.1	6.3
	4	16.4	15.5	3.7	9.7	8.0	9.6	4.1	6.7	6.0	11.0	6.2
	5	16.0	14.6	3.7	9.7	7.9	9.3	4.1	6.8	5.8	10.9	6.1
	6	17.1	15.4	3.8	10.5	8.3	10.0	4.7	7.0	6.2	11.4	6.2
	7	17.0	16.1	3.8	10.5	7.9	10.0	4.8	7.0	6.1	11.4	6.7

Abbreviations; GLS, greatest length of skull without incisors; CCL, condylocanine length; INT, interorbital constriction; ZYG, zygomatic width; WBC, width of braincase; MAST, mastoid width; C-C, width across C-C (crown); M3-M3, width across M3-M3; C-M3, upper tooth row (canine to last molar); MAND, mandible; c-m3, lower tooth row (canine to last molar).

Skull (Table 2, Figs. 2-5). Dorsal view (Fig. 2):—Skull small and elongate with well developed sagittal crest; anterior naris deep, its posterior margin lying at the level of the anterior border of anterior upper molar (M1); lachrymal foramen small and subcircular; rostrum slightly elevated, the posterior narial

compartments inflated and small, anterior one much large and slightly inflated. Ventral view (Fig. 3): Anterior palatal emargination deep, its posterior margin lying almost on a line connecting the anterior margins of first upper molars (M1); auditory bullae small, covering a half of the surface of large cochleae. Palate wide, so deeply emarginate both in front and behind. Lateral view (Fig. 4): The dorsal margin of skull the highest at the anterior portion of braincase, slightly concave at the interorbital portion; zygomatic arch short, convex at the middle, zygomatic process large and high in the height. Mandible (Fig. 5): Mandible weak, mental protuberance vertical, lower margin of body straight; coronoid, condyloid and angular process protrude posteriorly.

Teeth (Table 2, Figs. 3–5). Upper incisor very small, wedge-shaped, upper canine slender, with evident secondary cusp; upper anterior premolar P2 minute outside tooth-row, the crown area same to that of upper incisor; large posterior premolar P4 touching upper canine, its crown area smaller than that of canine; anterior molar M1 and M2 almost of the same size, crown area of M3 almost identical with that of two-thirds of that M1. Lower incisors not imbricate, the tips equal trifid, their crown area almost same; lower canine slender, crown area of lower anterior premolar p2 slightly smaller than that of posterior premolar p4. Lower molars m1, m2 and m3 similar to one another, but the crown area of m3 smaller than that of m1 and m2.

Mormopterus jugularis PETERS, 1865

[Japanese name: Pita-ohiki-koumori]

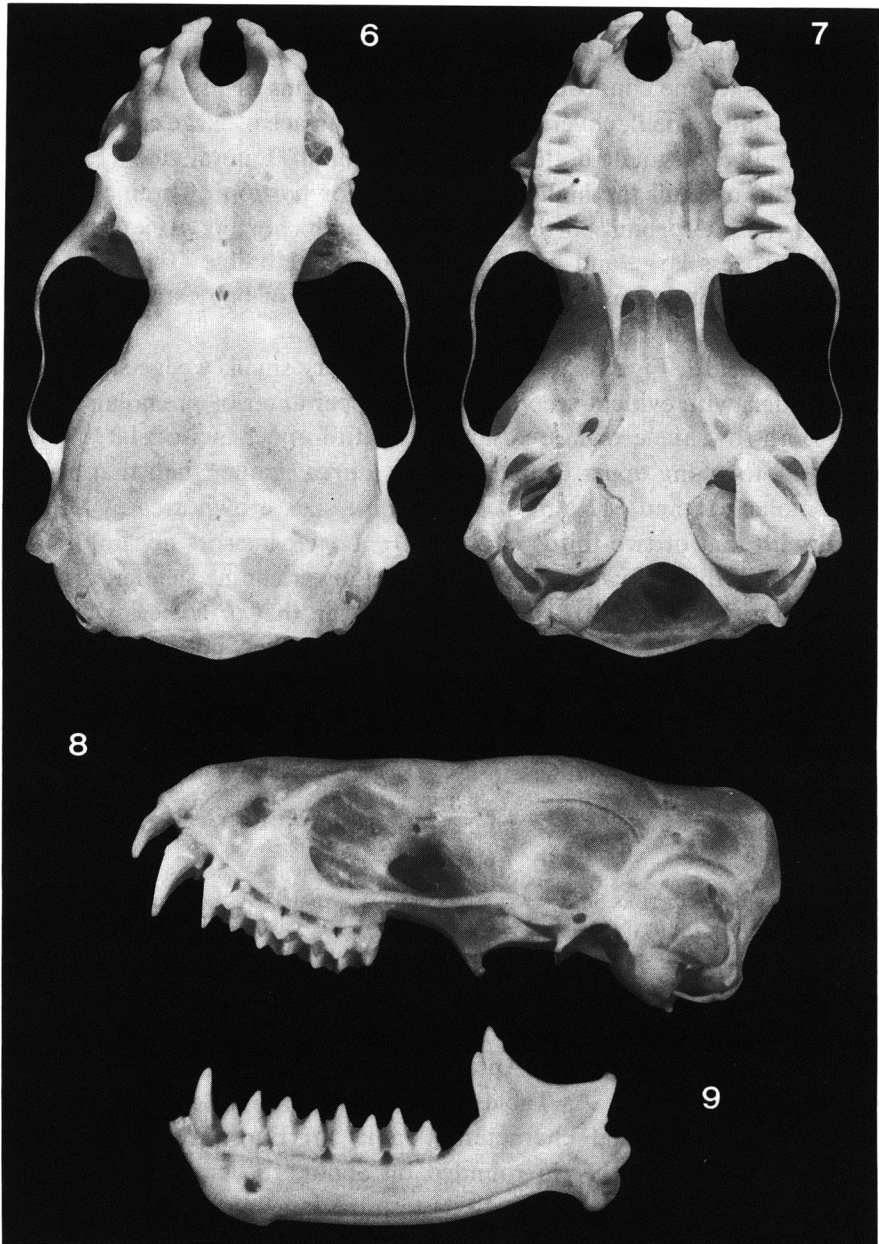
(Figs. 6–9)

Mormopterus jugularis PETERS in SCLATER, 1865, Proc. zool. Soc. London, **1865**, 468. — HAYMAN & HILL, 1971, Mamm. Africa, (2), 58. — CORBET & HILL, 1991, World List Mamm. Species, 89. — WILSON & REEDER, 1993, Mammal Species World, 237.
Nyctinomus acetablosus DOBSON, 1876, Proc. zool. Soc. London, **1876**, 734. — DOBSON, 1878, Cat. Chiroptera Coll. Brit. Mus., 440.

Type locality. Madagascar, Antananarivo.

Specimens examined. As Tables 1, 2.

Description. External characters (Table 1): Ear quite separate, upper margin almost straight, the tip rounded off about, the outer margin forming almost a straight line from the tip to its termination, tragus small, spatulate in general, the length of anterior border shorter than that of posterior border; antitragus low. Muzzle flat, extremity projecting considerably beyond the lower lip sides of the upper lip with short ill-defined vertical wrinkles, rhinarium well defined, wider, the extremity concave at middle, with horny excrescences about 20–26 in number, cheek cover with straight coarse hairs and curled brush-like hairs 28–34 in number.



Figs. 6-9. Skull of *M. jugularis*, 93.3.25-3, female from Madagascar. — 6, Dorsal view; 7, ventral view; 8, lateral view, 9, lateral view of mandible.

Wing membrane narrow and long, the wing span about 26 cm, translucent, blackish, nearly naked, but its narrow band of fur extends both surfaces of wing to line joining from middle humerus to knee, its membrane attached to the basal one third of tibia; plagiopatagium short and narrow, the under surface cover with short woolly hair, distal part of upper surface naked, without keel and terminal lobe; Tail about half as long as head and body, the terminal a half projecting beyond membrane. The fifth metacarpal the shortest, about 12 mm short from elbow. Hind foot cum unguis long, nearly same to length of tibia, outer and inner toe thickened, their outer surfaces densely covered with short stiffened hairs and a few long recurved hairs.

Fur and colour.-Fur dense and velvety in texture, chocolate brown or dark brown of back, at the basal portion whitish or beige, the remaining part dark brown; the greater part of the chest and abdomen beige, the sides brown.

Skull (Table 2, Figs. 6–9). Dorsal view (Fig. 6): Skull small and low, without sagittal crest, lambdoid crest distinct; zygomatic width slightly larger than mastoid width, zygomatic arch weak, without zygomatic process; rostrum flat, anterior and posterior lacrymal process developed, lacrymal foramen large, circular; anterior naris deep, its posterior margin lying at the level of the anterior border of anterior upper molar M1. Ventral view (Fig. 7): Anterior palatal emagination deep, its posterior margin lying almost on a line connecting the posterior margin of upper canine; palate wide and long, its posterior border W-shaped; auditory bullae small, covering a half of the surface of large cochlae; foramen magnum large and paroccipital process distinct. Lateral view (Fig. 8): The dorsal margin of skull high at the anterior portion of braincase. Mandible (Fig. 9) weak, mental protuberance incline to posterior, lower margin of the body of mandible straight, ramus of mandible higher than the body, coronoid, condyloid weak and acute, angular process protrude posterior; masseteric fossa shallow.

Teeth (Table 2, Figs. 7–9). Upper incisors conical, separate from upper canine; the latter separate from single upper premolar P4, without basal cusp; crown area of P4 equal to two thirds of anterior molar M1; anterior molar M1 and M2 almost of the same size, crown of M3 slightly smaller than that of P4. Lower incisors six, the first and second incisors subequally, not imbricated, the tip equally trifid, outer smaller than that of internal; lower anterior and posterior premolar same to each other, the last lower molar slightly smaller than that of other molars.

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