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THE STATUS OF *VESPERTILIO BRACHYPTERUS* TEMMINCK, 1840 (CHIROPTERA: VESPERTILIONIDAE)

by

J. E. HILL

Department of Zoology,
British Museum (Natural History)

Although described one hundred and thirty years ago, *Vespertilio brachypterus* Temminck remains a relatively poorly known species, such references as there are deriving for the most part from the original description or from specimens referred to *V. brachypterus* without direct comparison with the holotype. Described from Sumatra, the species was subsequently reported from Java by Fitzinger (1861: 390) from the collection made during the exploratory voyage of the Austrian frigate "Novara", a report later repeated by Zelebor (1869: 17). Fitzinger (1870: 24) gave a further description, as did Dobson (1876: 92, 1878: 223), who extended the range of the species to the island of Banka, apparently without reference to a specimen or published record. There have been few further references to the species other than those including it in faunal lists or similar accounts. Sody (1929a: 58) included it in the Javan list with some reservation and later (1937: 227) questioned its reported occurrence on Banka. Chasen (1940: 50) listed it from Sumatra, Java and questionably from Banka, referring (p. 50, footnote) a Javan specimen in the Bartels collection to *V. brachypterus* without direct comparison. Tate (1942: 253) based a brief description on a "co-type" in the Rijksmuseum van Natuurlijke Historie, Leiden, putting *V. brachypterus* into his *joffrei* group of *Pipistrellus* with *P. joffrei, P. stenopterus* (both formerly referred to *Nyctalus*) and *P. anthonyi*. In a recent study of the genus *Philetor*, Hill (1966: 386) suggested that from Tate and from the earlier description of a specimen in the Zoologisches Museum, Berlin by Dobson (1876: 92, 1878: 223) it seemed possible that *V. brachypterus* and *P. stenopterus* might be conspecific or consubspecific.

Through the courtesy of the authorities of the Rijksmuseum van Natuur-

lijke Historie I have been able to examine the skull of the holotype of *Vespertilio brachypterus*. This shows conclusively that *V. brachypterus* should be referred to the genus *Philetor* and is furthermore conspecific with its sole included species, *P. rohui* Thomas, 1902, which name it antedates by many years.

Temminck (1840: 215, pl. 53 figs. 5, 6) described *Vespertilio brachypterus* from "un sujet unique, vieux mâle conservé a l'esprit de vin", collected by S. Müller in the Padang District, Sumatra. It is specimen "a" of Jentink (1877: 277, 1888: 178), now a mounted specimen, with only the damaged rostrum and mandible remaining of the skull. The rostrum has been broken from the cranium at a point just posterior to the interorbital constriction and most of the cranium is lost. Both upper toothrows remain, the left complete but with the incisors missing from the right. The mandible is complete but has lost the left ascending ramus and the left coronoid and angular processes; the outer cusp of the left first incisor (i_1) is missing but apart from this the lower toothrows are intact. In every respect the rostrum and mandible agree precisely with *Philetor:* the rostrum is short, deep and wide, its slight supraorbital ridges having clearly terminated in prominent tubercles, now lost, the narial emargination extending posteriorly almost halfway to the interorbital constriction and the anterior palatal emargination wide, its posterior margin with a median projection. There is exact agreement dentally: the inner upper incisor (i^2) is elongate as in *Philetor*, its length about twice its width, narrow, bicuspid, the anterior or inner cusp directed slightly anteriorly, pointed, supported by a poorly defined posterior cusp a little more than one half the height of the anterior cusp to give the tooth a sloped, chisel-edged appearance. The outer upper incisor (i^3) is small, spicular, slightly wider than i^2, its length and width equal, with a narrow cingulum and a conical cusp, basically more or less circular, its outer face slightly hollow, the tooth separated from i^2 by a narrow diastema and more widely separated from the canine. The upper canine is rather premolariform at the base with a narrow lingual shelf and a prominent secondary posterior cusp extending for nearly one half the height of the tooth. The upper premolar (pm^4) is short, its length about one half its width, compressed between the canine and the first upper molar, the lingual shelves of pm^4 and m^1 separated by a wide interspace. The lower incisors are much worn, not imbricated, the third (i_3) slightly wider than i_1 or i_2 but with no posterior cusp. The lower canine has a small anterior cingulum cusp and its base is prolonged posteriorly to form a small posterior cusp. The lower premolars (pm_2, pm_4) are of equal height, pm_2 not reduced, its length and width equal, pm_4 much reduced, its length a little less than

one half its width, its crown area barely equal to that of pm_2 and its posterior face hollowed through engagement with pm^4. The features of the holotype of *Vespertilio brachypterus* refer it undeniably to the genus *Philetor,* and, indeed, it agrees so closely with the sole species included hitherto in that genus, *P. rohui,* that the two must be considered conspecific: since *brachypterus* is by far the earliest name in the genus a change of name is unavoidable. In size the holotype agrees exactly with *P. brachypterus rohui* from New Guinea and *P. b. verecundus* from Malaya. The narial emargination of the holotype is damaged but apparently is not abruptly widened just above the roots of $i^{2\cdot2}$, in this respect resembling *P. b. rohui* rather than *P. b. verecundus.*

The genus as a whole is known from few specimens, there being a relatively large series only of *P. b. rohui* from New Guinea while *P. b. verecundus* from Malaya is known only from the holotype and one other specimen. The occurrence of *brachypterus* in Java must also remain in doubt. Dr. K. Bauer of the Naturhistorisches Museum, Vienna, says (in litt.) of

TABLE 1

Measurements (in mm) of *Philetor brachypterus* (Temminck)

	P. b. brachypterus Holotype. ♂. Leiden "a"	*P. b. verecundus* Holotype. ♀. B.M. 47.1437	*P. r. rohui*		
			Number of specimens	Range	Mean
Length of forearm	35 *	34.0	(20)	31.3-35.5	(33.4)
Greatest length of skull	—	—	(14)	13.4-14.8	(14.3)
Condylobasal length	—	14.5	(13)	12.9-14.0	(13.6)
Lachrimal width	6.5	6.6	(14)	6.2- 6.8	(6.5)
Least interorbital width	4.6	4.7	(14)	4.3- 4.8	(4.6)
Zygomatic width	—	—	(4)	10.3-10.7	(10.5)
Width of braincase	—	7.9	(14)	7.3- 8.2	(7.8)
c^1-c^1	5.1	5.0	(14)	4.6- 5.3	(5.0)
m^3-m^3	7.2	7.0	(14)	6.6- 7.1	(6.8)
c-m^3	4.7	4.7	(14)	4.4- 4.9	(4.7)
i^2-m^3	5.3	5.6	(14)	5.3- 5.7	(5.5)
c-m^3	5.0	5.0	(14)	4.6- 5.0	(4.9)

* From Tate (1942: 253).

the specimen obtained by the "Novara" Expedition: "The specimen mentioned by Fitzinger and Zelebor is still available, but is a male *Pipistrellus* of the *abramus/javanicus* group with the long penis of Japanese *abramus*. I did not make an attempt at closer identification but it certainly is not *Philetor* as described in your revision of 1966". Dr. A. M. Husson has searched without success in the large part of the Bartels Collection now in the Rijksmuseum van Natuurlijke Historie, Leiden for the specimen from Java identified by Chasen. It is possible that the specimen has not been labelled as *V. brachypterus* as Dr. Husson (in litt.) points out: it may be still in Bogor or may have been lost during the Second World War. In any event, the occurrence of *P. brachypterus* in Java as yet lacks confirmation. In these circumstances, no attempt can be made to establish subspecific validities and at the present time it seems possible only to suggest a provisional arrangement of the genus. Measurements of the available specimens of *P. brachypterus* are summarized in Table 1.

Philetor Thomas, 1902

Philetor Thomass, 1922: 220. Type species *Philetor rohui* Thomas, 1902, = *Vespertilio brachypterus* Temminck, 1840.

Philetor brachypterus (Temminck, 1840)

Philetor brachypterus brachypterus (Temminck, 1840)

Vespertilio brachypterus Temminck, 1840:215, pl. 53, figs. 5, 6 (Padang District, Sumatra); Wagner, 1840: 519 (Sumatra); Wagner, 1855: 744 (Sumatra); Giebel, 1855:938, footnote (Sumatra); Trouessart, 1904:91 (Sumatra, Java, Banka); Tjeenk Willink, 1805:288 (Sumatra, Java, Banka).

Vespertilio (Vesperus) brachypterus, Zelebor, 1869:17 (Java).

Vesperugo brachypteris, Keyserling & Blasius, 1840: 3 (Asia).

Vesperugo brachypterus, Fitzinger, 1861: 390 (Java); Dobson, 1876: 92 (Sumatra, Java, Banka); Dobson, 1878: 223 (Sumatra, Java, Banka); Jentink, 1887: 277 (Sumatra); Jentink, 1888: 178 (Sumatra); Trouessart, 1897: 113 (Sumatra, Java, Banka); Sody, 1937: 227 ((?) Banka).

Noctulinia brachyptera, Fitzinger, 1870: 234 (Sumatra, Java).

Pipistrellus brachypterus, Sody, 1929a: 58 (Sumatra, Java); Sody, 1929b: 157 (Sumatra, Java); Dammerman, 1929: 39 (Sumatra); Sody, 1930: 278 (Java); Chasen, 1940: 50, footnote (Sumatra, Java, (?) Banka); Tate, 1942: 253 (Sumatra); Hill, 1966: 383, 386 (Sumatra).

Distribution: Sumatra (only from the type locality), (?) Java, (?) Banka.

Only the rostrum and mandible of the holotype have been examined. Jentink (1888: 178) records a second Sumatran specimen (Leiden "b", in alcohol, reputedly adult) but this is in fact a young example of *Pipistrellus*, its reduced wing no doubt leading Jentink to associate it with *V. brachypterus*. Records from Java have already been discussed: the specimen reported by Fitzinger and subsequently by Zelebor is a *Pipistrellus*, while

the identification of a second Javan example as *Pipistrellus brachypterus* by Chasen cannot be confirmed. There seems to be no authentic record of *Philetor brachypterus* from the island of Banka.

Philetor brachypterus rohui Thomas, 1902

Philteor rohui Thomas, 1902: 220 (Albert Edwards Mountains, Papua, 6,000 feet); Troughton, 1926: 72 (Papua); Tate, 1942: 265 (Papua, West Irian); Laurie, 1952: 313 (Papua); Laurie & Hill, 1954: 70 (New Guinea); Brass, 1956: 136 (Papua); 1964: 180, 204 (Territory of New Guinea).

Distribution: New Guinea.

Philetor brachypterus verecundus (Chasen, 1940)

Eptesicus verecundus Chasen, 1940: 53 (Mount Kladang, Perak, Federation of Malaya, 2,646 feet; a second specimen also from Perak); Tate, 1942: 279 (Malaya); Gibson-Hill, 1949: 171 (Malaya).

Philetor rohui verecundus, Hill, 1966: 379 (Malaya); Medway, 1969: 35 (Malaya).

Distribution: Malaya (only from Perak).

AFFINITIES

There is no close connection between *V. brachypterus* and *Pipistrellus stenopterus* as might be inferred from the descriptions by Dobson (1876: 92, 1878: 223) and Tate (1942: 253). In *P. stenopterus* the supraorbital tubercles are not greatly developed; the anterior palatal emargination lacks a median anterior projection but instead is shallowly U-chaped; i^2 is higher less elongate, does not project forward and does not present a chisel-like cutting edge; i^3 is wider and tends to be hollowed posteriorly; the posterior cusp of c^1 is less developed; pm^2 is present, large, intruded from the tooth-row but separating c^1 and pm^4; the latter tooth is much larger, its lingual shelf not narrowed, almost touching the lingual shelf of m^1, not separated by a wide interspace; i_{1-2} are linear but i_3 is relatively bulky, with small posterior supporting cusp; pm_2 is not at all reduced, its outline rather square and its crown area almost double that of pm_4, the latter tooth not shortened antero-posteriorly, its length only slightly less than its width. It is not unlikely that the specimen described by Dobson (1876: 92, 1878: 223) from the Zoologisches Museum, Berlin as *Vesperugo brachypterus* is in fact *Pipistrellus stenopterus* since Dobson notes explicitly "... first lower premolar slightly longer than, and in transverse diameter nearly double the second, also nearly equal to the lower canine in vertical extent; second upper premolar separated from the canine by a rather wide space, through which the small internal first premolar is distinctly visible." Although Tate (1942: 253) remarked that it was open to question whether the measurements given for *V. brachypterus* by Dobson were reliable, he evidently did not compare the dentition of the holotype (if indeed this was

the specimen he examined in Leiden) with the description by Dobson of the teeth of the Berlin specimen. Apart from the absence of pm^2 in the holotype of *V. brachypterus,* the proportions of the lower premolars in the two specimens differ widely.

Further study confirms the view previously advanced (Hill, 1966: 383) that the nearest relatives of *Philetor* are *Pipistrellus joffrei* and *P. anthonyi.* In *P. joffrei* the rostrum is less elevated and rather longer than in *Philetor*; supraorbital tubercles are less developed, sometimes considerably so; the narial emargination extends posteriorly as in *Philetor* but is more acute at its apex; the anterior palatal emargination is similar to that of *Philetor,* chordate, with a median anterior projection; i^2 is strong, bicuspid, the outer cusp nearly as high as the inner cusp, but is less elongate and narrower than in *Philetor*; i^3 has a large central cusp flanked by smaller lateral cusps, the postero-external cusp obsolescent, the antero-internal cusp with a small subsidiary cusp beneath it, in contrast to the spicular i^3 of *Philetor*; c^1 has a prominent secondary cusp extending for one third of its height; pm^2 is present, minute, standing in an internal recess between c^1 and pm^4 which are in contact; pm^4 is slightly shortened antero-posteriorly, its length a little more than one half its width, its lingual shelf shortened, separated from the lingual shelf of m^1 by a narrow interspace, the tooth longer and wider than in *Philetor,* its lingual shelf less reduced than in that genus; i_3 has a very small posterior cusp; pm_2 is not reduced, its length and width almost equal; pm_4 is only slightly shortened antero-posteriorly, its length more than one half its width, its crown area equal to that of pm_2, the tooth slightly hollowed posteriorly; both pm_2 and pm_4 are relatively less shortened than in *Philetor,* pm_4 especially so. *Pipistrellus anthonyi* is known only from the holotype, the skull of which is damaged and which has lost the upper incisors. From the description it is evidently very close to *P. joffrei,* of which only four examples are available, two with incomplete dentition. In many respects both species are very similar to *Philetor,* differing in the structure of the external genitalia and upper incisors (features which in the case of *P. anthonyi* must be assumed), in the presence of pm^2 (a tooth sometimes evanescent in vespertilionid bats) and in the lesser degree of reduction displayed by pm^4, pm_2 and pm_4, the latter especially not reduced to a platelet-like tooth as it is in *Philetor.* In view of the indifferent representation of both species no attempt has been made at this stage to transfer them to *Philetor* or to reduce *Philetor* to a subgenus of *Pipistrellus.* There seems no doubt, however, that *Pipistrellus joffrei* and *P. anthonyi* represent a trend of which *Philetor* is the culmination: *Pipistrellus stenopterus,* less modified towards *Philetor,* displays fewer of the features of this trend.

Summary

The cranial remains of the holotype of *Vespertilio brachypterus* Temminck, 1840 have been examined and found to represent *Philetor* rather than *Pipistrellus* to which hitherto *V. brachypterus* has been assigned. A consequence of this transfer is that *brachypterus* must replace *rohui* as the valid specific name for the sole species recognised in *Philetor*; three subspecies are listed provisionally and distributional records are reviewed. Comparison with *Pipistrellus joffrei* and *P. anthonyi* confirms the view that these species are the nearest relatives of *Philetor*.

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