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A Record of the Tube-nosed Bat (*Murina florum*) from Western New Guinea (Irian Jaya) with Notes on Related Species (Chiroptera, Vespertilionidae)

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ABSTRACT

Murina florum is recorded from western New Guinea (Irian Jaya) for the first time, based on two skulls taken from owl pellets. This species is shown to be most closely related to *M. suilla* (including *balstoni*, *canescens*) and *M. tubinaris*, the three

species having a combined range from Pakistan to Australia. Within the subgenus *Murina*, these three species, along with five others, belong to the *suilla* group, which is distinguished from the five species of the *cyclotis* group.

INTRODUCTION

Van Deusen (1961) reported the first mainland New Guinea specimen of *Murina* (from Mt. Otto in the Eastern Highlands of Papua New Guinea) and reviewed all previously known specimens from east of Wallace's line. Although three species had been described from this area (regarded as subspecies by Laurie and Hill, 1954), Van Deusen also concluded that only a single species, *M. florum*, was present and declined to allocate the New Guinea specimen to any particular subspecies. Hill (1983) came to the same conclusions. The only important addition to the

range of *M. florum* since Van Deusen's (1961) paper is the record from northern Queensland, Australia (Richards et al., 1982). It should be noted that there is a wide hiatus between Mt. Otto and the nearest recorded localities to the west in the Moluccas.

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Besides the material in the American Museum of Natural History (AMNH), we have studied specimens either in museums or on loan from the Field Museum of Natural His-

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tory (FMNH) in Chicago, the National Museum of Natural History (USNM) in Washington, and the British Museum (Natural History) (BM) in London. We thank all the curators in these museums who made their collections available. Mr. John Hill of the British Museum (Natural History) has made useful comments on the manuscript.

MURINA IN IRIAN JAYA

In October and November of 1938, the Third Archbold Expedition to New Guinea, which worked in what is now northeastern Irian Jaya, camped 9 km northeast of Lake Habbema at an altitude of 2800 m. The camp was "situated high in the upper drainage basin of the Bele River . . . on a small stream, feeder of the Mon, called the Simo [4°8'S, 138°40'E]. It was in heavily forested country consisting of parallel spur ridges and very narrow valleys or ravines, rising rapidly towards the highlands . . . Rock exposures . . . showed the country rock to be chiefly limestone . . . Beech forest continuous with those of the Bele Camp area [2,200 meters] and equally tall in the valleys clothed the slopes up to 3,100 metres . . ." (Archbold et al., 1942: 263–264). At some uncertain time during his stay in this camp, W. B. Richardson, a mammalogist in the party, collected owl pellets, probably at no great distance from the camp.

Examination of this owl pellet material has revealed two skulls of *Murina* (now AMNH 238019, 238020), the second and third specimens known from mainland New Guinea. The new (Lake Habbema) locality lies within the large gap between the two easternmost localities (north of Australia), Mt. Otto and Umboi island, both in northwestern Papua New Guinea, and the Moluccas to the west. With the exception of the Australian specimen (which we have not seen), all other *Murina* localities (ranging to Pakistan and south-eastern Siberia) are still farther west.

Our skull measurements (in mm) of AMNH 238019 and 238020, respectively, are: greatest length of skull (15.5, 14.7); condylobasal length (14.1, 13.5); palatal length (7.0, 6.9); length, orbit-gnathion (3.3, 3.1); least "inter-orbital" (=postorbital) width (4.5, 4.3); width of braincase (7.5, 7.7); height of braincase (7.0, 6.7); mastoid width (broken, 7.5); C1–C1 (3.5, 3.3); M3–M3 (5.0, 5.0); C1–M3 (4.9,

4.9); horizontal length of upper canine (missing, 0.74); width of upper canine (missing, 0.88); length of P2 (missing, 0.78); width of P2 (missing, 0.83); length of P4 (1.01, 0.98); width of P4 (1.07, 1.09). Measurements of individual teeth were obtained with a digital micrometer taken at the extremes of the occlusal surfaces of the teeth indicated. While the number of specimens available is still rather small, comparison with the measurements given by Hill (1983: 193) and with those of other *Murina* from east of Wallace's line in the American Museum, supports allocation of these two Mt. Habbema specimens to *M. florium*. Further discussion is reserved until we consider other species of *Murina*.

RELATIONSHIPS OF MURINA FLORIUM

Tate (1941), Hill (1963), and Hill and Francis (1984) have discussed the species of the subgenus *Murina* and from these treatments, as well as our own observations, a division into two groups seems reasonably clear. In the first group, the upper tooth rows are nearly parallel (producing a rostrum that is broad anteriorly) and the anterior premolars are relatively large. To this, the *cyclotis* group, belong *huttoni*, *puta*, *cyclotis*, *rozendaali*, and *aenea*. The American Museum has specimens of *cyclotis* (from Hainan and Malaya) and *huttoni* from Burma (misidentified as *cyclotis* by Anthony, 1941: 83). We have also studied a specimen of *puta* from Taiwan (USNM 294176) and additional specimens of *cyclotis* from Borneo (USNM 292451–54).

In the second group, the upper tooth rows definitely converge anteriorly (tending to produce a rostrum that is narrow anteriorly) and the anterior premolars are definitely reduced. Hill and Francis (1984: 321) also refer to a difference in the relative placement of the two upper incisors, but we are unable to distinguish the two groups on the basis of this character. Eight species are currently recognized in what is here called the *suilla* group. This includes a large species (*leucogaster*), small species with shortened canines (*aurata*, *usuriensis*, *silvatica*, and probably *tenebrosa*), and small species with canines of normal length (*tubinaris*, *suilla*, and *florium*). Other

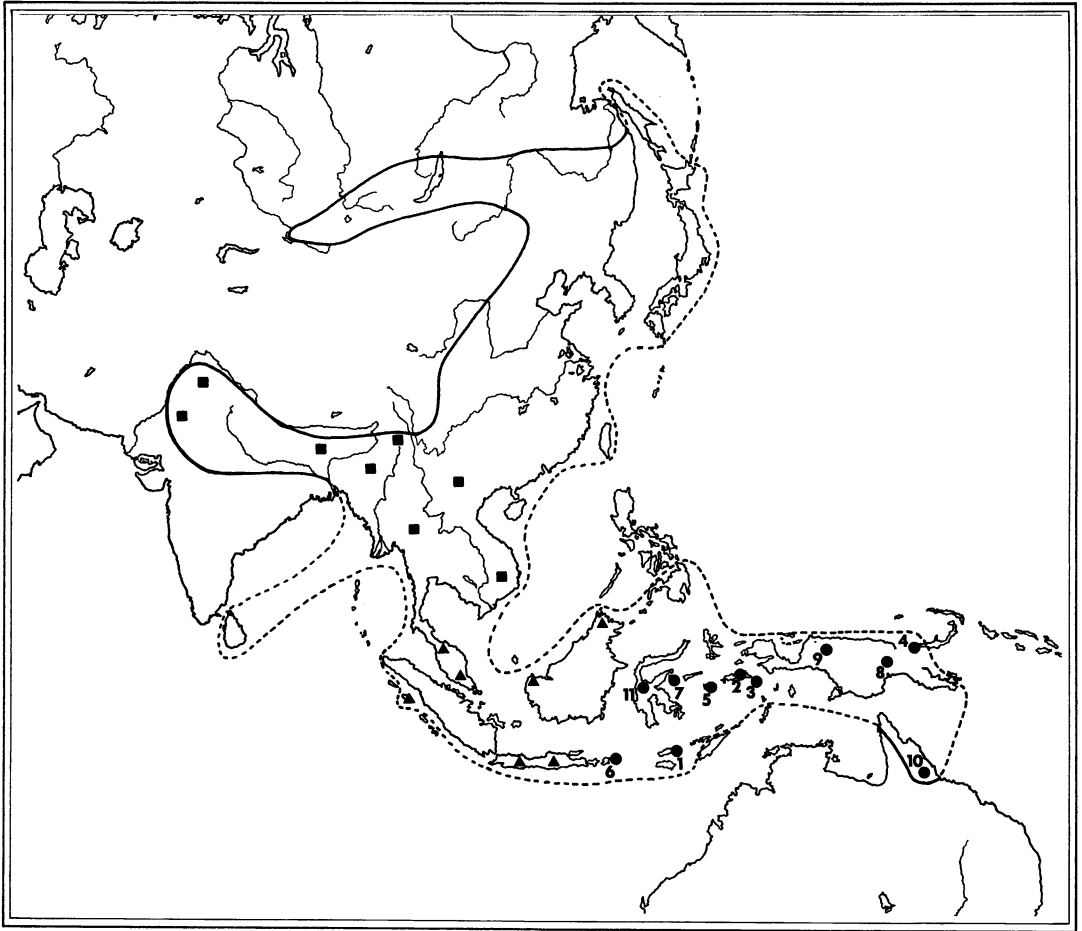


Fig. 1. Distribution of the three currently recognized species of the *Murina suilla* subgroup. Squares: *M. tubinaris*; triangles: *M. suilla*; circles: *M. florum*. The localities for *M. florum* are numbered as follows: 1. Flores; 2. Ceram; 3. Goram; 4. Umboi; 5. Buru; 6. Sumbawa; 7. Peleng; 8. Mt. Otto; 9. Lake Habbema; 10. Atherton; 11. Tomado. The solid and dashed line marks the approximate geographical limits of the genus *Murina*.

taxa which have, in recent years, been listed as separate species are *balstoni* and *canescens* (included in *suilla* by Hill and Francis, 1984: 321) and *fusca* (included in *leucogaster* by Corbet, 1978: 62).

The American Museum has specimens of *leucogaster* (from southeastern Siberia), *silvatica* (from Hokkaido in Japan), *tubinaris* (from India and Laos), *suilla* (from Malaya and Borneo), and *florum* (from Celebes, Peleng island, and New Guinea). We have also studied specimens of *aurata* from India (FMNH 76056) and Burma (USNM 143162); additional specimens of *tubinaris* from Pakistan (BM 65.1023); India (FMNH 35829,

75053, 54, 82775, 76; BM 23.5.25.26, 36.3.24.1–3); Burma (16.3.26.5–8, 88, 50.485–486); Thailand (USNM 259126; BM 82.163); Laos (FMNH 32197, 98, 32200); and Vietnam (FMNH 32202–04, 46626, 27); *suilla* from Malaya (BM 63.58); Borneo (BM 84.2014, 15, 17, 18); Java (BM 79.11.15.15, 16, 7.1.1.479, 9.1.5.354); and Nias (BM 23.1.2.228); and *florum* from Flores (BM 63.12.26.4); Ceram (BM 7.1.1.482, 10.3.4.24); Goram (BM 10.3.4.115); Buru (BM 23.1.2.27); and Umboi (BM 14.4.1.33). Clearly, the species with which *florum* should be compared are *tubinaris* and *suilla*.

The distributions of these three species of

the *suilla* subgroup (fig. 1) are all allopatric and differences among them are slight. *M. tubinaris* ranges from northern Pakistan across northern India, northern Burma, northern Thailand, and Laos, to Vietnam. *M. suilla* (including *balstoni* and *canescens*) is known from Malaya, Sumatra, Borneo, Nias island (west of Sumatra) and Java. *M. florum* is known from Celebes and Flores (in the Lesser Sundas) to New Guinea and Australia. What differences there are consist mostly of average size. A few measurements will illustrate this. Forearm length: *tubinaris* (28–35 mm), *suilla* (26–33 mm), *florum* (32–38 mm). Greatest length of skull: *tubinaris* (14.9–16.6), *suilla* (13.9–15.2), *florum* (14.7–17.3). Maxillary tooththrow length: *tubinaris* (4.8–5.2), *suilla* (4.7–5.1), *florum* (4.7–5.6). Width across last molars: *tubinaris* (4.9–5.5), *suilla* (4.7–5.2), *florum* (5.0–6.1). Width across canines: *tubinaris* (3.4–4.0), *suilla* (3.4–3.7), *florum* (3.3–4.0). While we believe that it would be premature to combine all three into one species (under the oldest name, *suilla*), we strongly suspect that a single species is represented, extending from Pakistan to Australia.

Mr. J. E. Hill has made the interesting suggestion (in litt.) that the two specimens from Irian Jaya are not *florum*, but rather *M. suilla*. He bases this conclusion on the smaller size of the two specimens in relation to *florum* and their better agreement with *suilla*. However, a careful comparison of the specimens of *suilla* and *florum* we have seen, the published literature, and unpublished measurements of a specimen from Bacan (= Batjan in the Moluccas) that Hill has very kindly given us leads us to somewhat different conclusions.

Taking the two measurements we have made that seem to give the best discrimination, namely the greatest length of skull and the width across the last molars (the two measurements in parentheses), we find the following. The two Lake Habbema skulls are indeed small (14.7–15.5; 5.0) but so also is the Mt. Otto skull from mainland Papua New Guinea (15.1; 5.1). The Umboi skull is large (17.0; 5.7) and so is the Australian one (16.9; 6.1). The specimens from the Moluccas (Ceram, Goram, Buru, Bacan) are also large (16.7–17.3; 5.4–5.6) as is the type of *florum*

from Flores. Its skull is somewhat broken and the greatest length cannot be taken, but width across the last molar is 5.6. On the other hand, skulls from the Celebesian region (Peleng, Tomado) are relatively small (14.9–15.6; 5.2–5.3). Specimens of *suilla* (including the types of *balstoni* and *canescens*) from the Sunda area (including Malaya, Borneo, Nias, and Java) are all small (13.9–15.2; 4.8–5.2).

What conclusions can be drawn from this confused patchwork of large and small population groups (recognizing that nowhere in this complex is there anything resembling an adequate series from a single locality)? On the Sunda shelf, *suilla* is small; Celebesian specimens tend to be larger; Moluccan (and probably Lesser Sunda) examples are large, but New Guinea mainland specimens are small, though tending to be larger than Sunda *suilla*. Finally, on both Umboi to the north and Australia to the south of New Guinea, individuals are as large as Moluccan *florum*. Hill would allocate the two Irian Jaya (and presumably the Mt. Otto) specimens to *suilla*, though they are separated from the main range of the species by all of Wallacea; he would identify all other specimens from west, north, and south of New Guinea as *florum*. While we find the pattern puzzling, we would point out that since the Celebesian specimens tend to cluster with those of the Sunda area and New Guinea, they too would have to be allocated to *suilla*, although they could also be regarded as intergrades between the larger Moluccan and the small Sunda and New Guinea populations.

In view of these uncertainties and inconsistencies, we are inclined, for the present, to retain the current geographical arrangement as shown in figure 1. However, the picture may change (and hopefully clarify) with additional material from Wallacea and the Australian region.

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