

OCCURRENCE OF LONG-WINGED BAT *MINIOPTERUS SCHREIBERSI*
FULIGINOSUS (HODGSON, 1835) (CHIROPTERA : VESPERTILIONIDAE)
IN MEGHALAYA, WITH SOME OBSERVATIONS ON ITS ECOLOGY

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INTRODUCTION

In connection with the study of bats of Siju Cave, Garo Hills, Meghalaya, 31 males and 19 females of *Miniopterus schreibersi fuliginosus* (Hodgson) were collected from Siju Cave as per details given below. This species was hitherto not reported from Meghalaya (Blanford 1891, Wroughton 1918, Kemp 1924, Hinton & Lindsay 1926, Tate 1942, Ellerman and Morrison-Scott 1951, Brosset 1962 and Kurup 1968)

Material examined : Meghalaya : West Garo Hills : Siju Cave : 22 Nov. 1990, 2 ♂♂ ; 26-30 Jun. 1991, 15 ♂♂, 6 ♀♀ : 23-26 Oct. 1991, 8 ♂♂, 11 ♀♀ ; 17 Feb. 1992, 4 ♂♂ ; 3 Jun. 1992, 2 ♂♂, 2 ♀♀ ; coll. Y. P. Sinha.

All measurements are given in millimetres and the arithmetic means in parentheses.

Measurements (in mm) : *External* : 31 ♂♂ ; Head and body 50.0-62.0 (57.0) ; tail 55.0-67.0 (61.0) ; forearm 49.0-52.0 (51.0) ; first phalanx of third finger 11.0-13.5 (12.5) ; second phalanx of third finger 35.0-43.0 (39.0) ; ear 11.0-14.0 (12.0) ; tragus 5.0-7.0 (5.5) ; tibia 20.0-23.0 (22.0) ; foot and claw 10.0-12.0 (11.5) wing span 300.0-350.0 (330.0) ; wing width 52.0-61.0 (57.0) ; penis length 9.0-15.0 (12.0). 19 ♀♀ : Head and body 54.0-58.0 (57.0) ; tail 56.0-64.0 (58.0) ; forearm 47.0-53.0 (50.0) ; first phalanx of third finger 10.8-13.0 (12.0) ; second phalanx of third finger 37.0-41.0 (40.0) ; ear 11.0-12.0 (11.6) ; tragus 5.0-7.0 (6.0) ; tibia 21.0-22.0 (21.5) ; foot and claw 10.0-11.0 (10.5) ; wing span 310.0-340.0 (330.0) ; wing width 55.0-59.0 (57.0).

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Skull: 5♂♂: Total length 16.6-17.7 (17.1); zygomatic width 9.5-10.0 (9.9); cranial width 8.0-8.7 (8.4); maxillary width ($m^s - m^s$) 7.3-8.0 (7.6); length of upper tooth row ($c - m^s$) 7.0 (in all); length of lower tooth row ($c - m^s$) 7.3-7.6 (7.4); mandibular length 12.7-13.5 (13.1); height of brain case 9.0-10.0 (9.7); height of muzzle 5.5-6.2 (5.9). 5♀♀: Total length 16.3-17.1 (16.9); zygomatic width 9.4-10.0 (9.8); cranial width 8.2-9.0 (8.6); maxillary width ($m^s - m^s$) 7.5-8.3 (7.8) length of upper tooth row ($c - m^s$) 6.9-7.1 (7.0); length of lower tooth row ($c - m^s$) 7.1-7.3 (7.2); mandibular length 12.1-12.5 (12.3); height of brain case 9.0-10.5 (9.7); height of muzzle 5.0-6.1 (5.7).

Additional material examined: Maharashtra: Satara Dist: Mahabaleshwar: 4 Jan 1915, present in the National collection of India at ZSI., Calcutta, 7♂♂, 13♀♀; 10 Aug 1967 W R S., Z S I., Pune. 8♂♂, 10♀♀; Karnataka: Nadakalsi, 28 Aug 1967, present in the National Institute of Virology, Pune, 3 (unsexed); Uttar Pradesh: Uttar Kashi Dist: Nakuri, c. 13 km. S. of Uttar Kashi, 28 May, 1989, ZSI., Calcutta, 2♀♀

Measurements of additional material: External: 15♂♂: Head and body 57.0-61.2 (59.5); tail 51.2-55.5 (53.4); forearm 47.0-49.0 (48.5); first phalanx of third finger 10.0-13.0 (11.5); second phalanx of third finger 34.2-42.1 (38.2); ear 10.0-12.0 (11.1); tragus 5.0-6.1 (5.8); tibia 17.0-20.0 (19.0); foot and claw 8.0-11.0 (10.0); wing span (not taken); wing width (not taken); penis length (not taken). 18♀♀ and 3 (unsexed): Head and body 65.0-60.0 (57.0); tail 52.0-56.0 (54.0); forearm 45.0-50.0 (48.0); first phalanx of third finger 10.0-12.5 (11.0); second phalanx of third finger 34.0-37.3 (36.2); ear 9.0-11.0 (10.4); tragus 5.0-6.5 (5.8); tibia 17.8-20.0 (19.2); foot and claw 8.0-10.5 (9.5); wing span (not taken); wing width (not taken). *Skull*: 5♂♂: Total length 15.0-16.0 (15.8); zygomatic width 9.0 (in all); cranial width 8.0 (in all); maxillary width ($m^s - m^s$) 6.5-7.0 (6.8); length of upper tooth row ($c - m^s$) 5.6-6.0 (5.9); length of lower tooth row ($c - m^s$) 6.5-6.9 (6.7); mandibular length 11.0-11.4 (11.2); height of brain case 8.0-9.7 (8.7); height of muzzle 4.5-5.0 (4.7). 5♀♀: Total length 15.5-16.1 (16.0); zygomatic width 8.9 (8.7); cranial width 8.0 (in all); maxillary width ($m^s - m^s$) 6.5-6.9 (6.7); length of upper tooth row ($c - m^s$) 6.0 (in all); length of lower tooth row ($c - m^s$) 6.1-6.7 (6.3); mandibular length 11.0-11.7 (11.2); height of brain case 8.6-9.3 (8.9); height of muzzle 4.7-5.6 (5.1).

From earlier records and above additional collections examined, this subspecies occurs in Maharashtra, Karnataka, Uttar Pradesh and West Bengal (Allen, 1908) in India. Therefore, the present material forms the basis of Authentic record of *Miniopterus schreibersi fuliginosus* Hodgson from Meghalaya.

Morphometric variation: Forearm (47.0-53.0) and skull (16.5-17.6) of Meghalaya population is slightly longer than that of Uttar Pradesh, Maharashtra and Karnataka

(forearm 45.0-50.0 and skull 15.0-16.0). However, these differences in size could be related to the level of maturity of specimens. Penis is very long (9.0-16.0). Ear small, 11.0-14.0 in length ; tragus short, 5.0-7.0 in length.

The tip of the right tragus is one specimen and that of both tragi in other specimen are found abnormally white. The length of second phalanx of the third finger is more than three times of the first phalanx as was observed by other authors. Colour blackish brown throughout. In one specimen partial albinism is observed in right wing between lower portion of the third and fourth finger.

Observations on ecology : It was observed that the colony fluctuates seasonally. Only males were observed in November (2 ex.) and February (4 ex.) while both sexes were abundant in June and October. The males outnumbered the females.

The ecological condition of Siju Cave with a subterranean river rushing through it, is an ideal habitat for this bat. A similar observation was made by Brosset (1962) for Robber's cave which constituted a "mother house" with another cave at Panchgani within a radius of 70 km which served as secondary habitat for the bat. However, I did not get the opportunity to explore deep inside the cave to find out any such off shoots, or outlets.

The Long-winged Bat was observed together with *Econycteris spelaea* (Dobson), *Rousettus l. leschenaulti* (Desmarest) and *Hipposideros lankadiva* Kelaart at the time of their emergence and collected all together in the mist-net in June and October and only with *E. spelaea* (Dobson) and *R. l. leschenaulti* (Desmarest) in November and February. This type of association has not been mentioned by Brosset (1962) in Robber's cave near Mahabaleshwar in Maharashtra.

Miniopterus s. fuliginosus was the first to emerge from the cave in the evening. The long-winged bat was found to emerge from the cave 5 minutes after sun-set in October, 8-10 minutes in November, 25 minutes in February and 12-15 minutes in June. It emerges early in the evening in October and November and late in the evening in February and June. It was not found hanging from ceiling near the entrance of the cave prior to emergence but it suddenly dispersed in all directions among trees which formed its hunting territory. While flying individuals of this bat keep close to each other in many rows. It was observed living in big crevices in the side wall of the cave in many places.

The gut contents of this species contained small wings of dipterans ; portions of small coleopteran ; isopteran and hymenopteran insects. The dentition is sharp but weak for bigger insects. Huge quantity of very small dipteran flies were observed in and around the cave.

All the females collected in the first and last week of June had well developed mammae, although none was found pregnant or with young. Brosset (1962) observes that the birth of young takes place in June but the females did not carry them in flight. Instead the young ones were put together in an enormous swarm.

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