

FURTHER NEW RECORDS OF BATS FROM MIZORAM, INDIA

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INTRODUCTION

Faunistic surveys were conducted in Mizoram, specially for mammals during December, 1993 - January, 1994; March - May, 1995 and January - February, 1997 by scientists of the Zoological Survey of India. The collections thus obtained contain several species of bats, of which, fourteen, namely, *Rousettus leschenaulti leschenaulti* (Desmarest), *Cynopterus brachyotis* Müller, *Sphaerias blanfordi* (Thomas), *Eonycteris spelaea* (Dobson), *Rhinolophus pearsoni* Horsfield, *Rhinolophus rouxi rouxi* Temminck, *Myotis formosus formosus* (Hodgson), *Myotis montivagus montivagus* (Dobson), *Myotis muricola* (Gray), *Eptesicus pachyotis* (Dobson), *Pipistrellus circumdatus* (Temminck), *Scotozous dormeri* Dobson, *Muirna tubinaris* (Scully), *Murina cyclotis cyclotis* Dobson were found to be unrecorded from that state (Blanford 1891, Ellerman and Morrison-Scott 1966, Lekagul and McNeely 1977, Corbet and Hill 1992, Agrawal *et al.* 1992, Wilson and Reeder 1993, Das *et al.* 1995, Mandal *et al.* 1998, Sinha, Y. P. (in press). Since the finalisation of a detailed faunal account of mammals of Mizoram will take some more time, it was thought worthwhile to publish the new distributional records of these bats hereunder.

External measurements have been taken in the field and the skull-measurements in the laboratory. All measurements are in millimetre and have been taken after Khajuria (1953).

Following is a list of abbreviations used for various measurements :

c ¹ -c ¹	= distance between outer surface of upper canines;
cc1	= condylocanine length;
cw	= cranial width;
E	= length of ear;
Fa	= length of forearm;
F & c1	= length of foot and claw;
H & B	= length of head and body;
iw	= least interorbital width;
l	= greatest length of skull;
m ³ -m ³	= distance between outer surface of third upper molars;
ml	= mandibular length;
mtr	= length of maxillary tooth-row;
Tb	= length of tibia;
Tl	= length of tail;
zw	= zygomatic width.

SYSTEMATIC ACCOUNT

Order : CHIROPTERA

Family : PTEROPODIDAE

Rousettus leschenaulti leschenaulti (Desmarest, 1820)

Indian Fulvous Fruit Bat

1820. *Pteropus leschenaulti* Desmarest, *Encycl. Meth. Mammal.*, 1 : 100 (Environments of Pondicherry, India).

Material examined : Mizoram : Aizawl district : 1♂ : Aibawk (c 800m), 9.12.1993; 4♂, 2♀ : North Khawbung (c 1500m), 15-18.12.1993; Teirei (Dampa), (c 250m) 26.12.1993; coll. Ajoy Kumar Mandal.

Measurements : External : 2♂ : Fa 86.0, 84.3; E 19.0, 19.0; Tb 41.7, 38.3; F & cl 17.0, 21.0. Cranial : 2♂ : l 39.7, 36.8; mtr 14.0, 13.7; c^l-c^l 8.3, 7.7; iw 8.1, 6.7; cw 15.6, 15.2; zw 24.3, 22.8; m³-m³ 11.6, 10.7; ml 30.7, 29.2. 2♀ : l 36.2, 36.7; mtr 13.6, 13.7; c^l-c^l 7.1, 6.9; iw 7.7, 7.1; cw 15.2, 15.7; zw 22.3, 20.3; m³-m³ 10.8, 10.4; ml 29.1, 29.0.

Distribution : *Rousettus leschenaulti leschenaulti* is known within Indian limits from Jammu and Kashmir to Arunachal Pradesh and south to Kerala. The present specimens constitute the first authentic record of this species from Mizoram.

Cynopterus brachyotis (Müller, 1838)

Smaller short-nosed Fruit Bat

1838. *Pachysoma brachyotis* Müller, *Tijdschr. Natuur. Gesch.* 5, 1 : 146. (Borneo).

Material examined : Mizoram : Chintuipui district : 5♂, 2♀ : Ngengpui (c 200m), coll. T.P. Bhattacharyya, 8-10.4.1995.

Measurements : External : 2♂ : Fa 64.7, 64.4; E 17.5, 18.0; Tb 24.0, 24.2; F & cl 13.1, 12.5. 2♀ : Fa 63.3, 62.9; E 17.0, 16.6; Tb 25.0, 25.0; F & cl 11.3, 12.5. Cranial : 2♂ : l 31.0, 31.1; ccl 28.8, 28.9; mtr 10.7, 10.3; c^l-c^l 7.0, 6.6; cw 13.2, 13.4; iw 6.0, 5.7; m³-m³ 9.1, 9.0; zw 19.0, 18.4; ml 23.7, 23.8. 2♀ : l 30.9, 30.0; ccl 28.6, 28.0; mtr 10.0, 9.8; c^l-c^l 6.5, 6.3; cw 13.4, 13.3; iw 5.7, 5.8; m³-m³ 9.2, 8.5; zw 18.9, -; ml 23.3, 22.8.

Distribution : *Cynopterus brachyotis* is known within the Indian limits from Arunachal Pradesh, Assam, Bihar, Kerala and Andaman and Nicobar Islands. The present specimens constitute the first authentic record of this species from Mizoram.

Sphaerias blanfordi (Thomas, 1891)

Blanford's Fruit Bat

1891. *Cynopterus blanfordi* Thomas, *Ann. Mus. Civ. Stor. nat. Genova*, 2, 10 : 884, 921-922, pl. XI, figs. 1-2 (Leito, Cheba, Karen Hills, 1000m, Burma).

Material examined : Mizoram : Aizawl district : 1 ♀ : Tuikual Duty Post I (c 850m), Murlen National Park, coll. S.S. Saha, 18.12.1993. Lunglei district : 9 ♂, 7 ♀ : Sairep (c 1500m), coll. T.P. Bhattacharyya, 23-27.4.1995.

Measurements : External : 2 ♂ : Fa 51.1, 54.7; E 17.5, 16.6; Tb 19.7, 20.6; F & cl 11.9, 10.7. 2 ♀ : Fa 51.7, 51.9; E 17.5, 17.8; Tb 19.0, 20.6; F & cl 10.0, 11.9. Cranial : 2 ♂ : l 27.1, 27.8; ccl 24.8, 25.1; mtr 8.0, 8.2; c^l-c^l 6.3, 6.5; cw 12.3, 12.8; iw 5.2, 5.0; zw 17.4, 17.7; m³-m³ 8.1, 7.9; ml 20.2, 20.8. 2 ♀ : l 27.4, 27.0; ccl 25.1, 24.7; mtr 8.5, 7.8; c^l-c^l 6.5, 6.2; iw 4.9, 5.4; cw 11.5, 12.0; zw 16.4, 16.7; m³-m³ 7.5, 8.0; ml 20.4, 20.1.

Distribution : *Sphaerias blanfordi* is known from Arunachal Pradesh, West Bengal and Uttar Pradesh in India. The present specimens constitute the first authentic record of this species from Mizoram.

***Eonyctris spelaea* (Dobson, 1871)**
Dobson's, Long-tongued Fruit Bat

1871. *Macroglossus spelaea* Dobson, *Proc. Asiat. Soc. Beng.* : 105, 106 (Farm Caves, Moulmein, Tenasserim, Myanmar).

Material examined : Mizoram : Aizawl district : 8 ♂ : Teirei (c 250m), Dampa, coll. Ajoy Kumar Mandal, 26.12.1993. Lunglei district : 1 ♂, 4 ♀ : Lungsen (c 650m), coll. T.P. Bhattacharyya, 22-26.1.1997.

Measurements : External : 2 ♂ : Fa 74.0, 72.0; E 21.0, 19.5; Tb 33.0, 33.5; F & cl 19.0, 19.0. 2 ♀ : Fa 68.2, 67.5; E 19.5, 20.0; Tb 31.2, 32.7; F & cl 19.5, 20.0. Cranial : 2 ♂ : l 37.0, 36.0; mtr 13.1, 12.6; c^l-c^l 7.5, 7.4; iw 7.2, 6.7; cw 15.4, 14.9; zw 20.2, 21.7; m³-m³ 8.8, 9.4; ml 27.0, 27.7. 2 ♀ : l 34.4, 35.0; mtr 12.3, 12.5; c^l-c^l 6.4, 6.5; iw 6.2, 6.4; cw 14.4, 14.0; zw 18.5, 18.4; m³-m³ 8.5, 8.8; ml 26.2, 25.5.

Distribution : Within the Indian limits, *Eonycteris spelaea* is reported from Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Manipur, Meghalaya, West Bengal, Sikkim, Uttar Pradesh, Andhra Pradesh, Karnataka. The present specimens, thus, constitute the first authentic record of this species from Mizoram.

Family : RHINOLOPHIDAE
***Rhinolophus pearsoni* Horsfield, 1851**
Pearson's Horse-shoe Bat

1851. *Rhinolophus pearsoni* Horsfield, *Cat. Mammal. Mus. Hon. East-India Co.* : 33 (Darjiling, Darjiling district, West Bengal, India).

Material examined : Mizoram : Lunglei district : 1 ♂, 1 ♀ : Sairep (c 1500m), coll. T.P. Bhattacharyya, 17,26.4.1995.

Measurements : External : 1 ♂, 1 ♀ : Fa 52.7, 50.4; Tl 31.7, 33.6; E 20.8, 19.2; Tb 26.6, 21.1; F & cl 10.0, 9.4. Cranial : 1 ♀ : l 21.0; ccl 18.2; mtr 7.8; c^l-c^l 5.0; iw 2.7; cw 8.6; m³-m³ 7.8; zw 11.0; ml 13.9.

Distribution : *Rhinolophus pearsoni* is known within the Indian limits from Uttar Pradesh, West Bengal, Sikkim and Meghalaya. Hence, the present specimens constitute the first authentic record of this species from Mizoram.

***Rhinolophus rouxi rouxi* Temminck, 1835**
Rufous Horse-shoe Bat

1835. *Rhinolophus rouxi rouxi* Temminck, *Monogr. Mammal.*, 2 : 30b (Pondicherry and Calcutta, India).

Material examined : Mizoram : Aizawl district : 5♂, 7♀ : Teirei (c 250m) Dampa coll. Ajoy Kumar Mandal, 26.12.1993. Lunglei district : 5♂, 1♀ : Lungsen (c 650m), coll. T. P. Bhattacharyya, 26,27.1.1997.

Measurements : External : 2♂ : Fa 47.8, 47.8; E 17.5, 17.8; Tb 23.0, 24.0; F & cl 11.0, 10.5. 2♀ : Fa 51.0, 49.0; E 24.0, 19.0; Tb 25.0, 23.8; F & cl 11.5, 11.2. Cranial : 2♂ : l 21.5, 22.0; ccl 18.7, 19.0; mtr 8.5, 8.8; c^l-c^l 5.6, 5.9; zw 10.5, 10.9; iw 2.0, 2.4; cw 9.5, 10.0; m³-m³ 7.8, 8.1; ml 14.4, 14.7. 2♀ : l 22.5, 21.5; ccl 19.5, 18.8; mtr 8.6, 8.4; c^l-c^l 6.0, 5.8; zw 10.9, 10.6; iw 2.7, 2.5; cw 10.0, 9.3; m³-m³ 8.2, 8.1; ml 15.2, 14.3.

Distribution : *Rhinolophus rouxi rouxi* is known within the Indian limits from Andhra Pradesh; Arunachal Pradesh; Goa; Himachal Pradesh; Karnataka; Kerala; Madhya Pradesh; Maharashtra; Orissa; Pondicherry; Tamil Nadu; Uttar Pradesh and West Bengal. The present specimens constitute the first authentic record of this form from Mizoram.

Family : VESPERTILIONIDAE
***Myotis formosus formosus* (Hodgson, 1835)**
Hodgson's Bat

1835. *Vespertilio formosa* Hodgson, *J. Asiat. Soc. Beng.*, 4 : 700 (Nepal).

Material examined : Mizoram : Lunglei district 1♂, 1♀ : Sairep (c 1500m), coll. T.P. Bhattacharyya, 17,25.4.1995.

Measurements : External : 1♂, 1♀ : HB 54.1, 51.2; Tl 45.1, 39.2; F & cl 9.7, 8.5; E 14.3, 15.3; Tr 6.7, 7.3; Tb 20.7, 17.1; Fa 45.8, 44.4. Cranial : 1♂, 1♀ : l 17.3, 17.4; mtr 8.3, 7.0; c^l-c^l 4.8, 4.9; cw 7.9, 8.2; zw 11.1, 11.4; iw 4.2, 3.9; m³-m³ 7.3, 7.1; ml 13.2, 13.3.

Distribution : Within Indian limits, *Myotis formosus formosus* is known from Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Maharashtra, Meghalaya, Punjab, Sikkim, Uttar Pradesh and West Bengal. Hence, the present specimens constitute the first authentic record of this species from Mizoram.

***Myotis montivagus montivagus* (Dobson, 1874)**
Burmese Whiskered Bat

1874. *Vespertilio montivagus* Dobson, *J. Asiat. Soc. Beng.*, 43(2) : 237 (Hotha, Yunnan, China).

Material examined : Mizoram : Lunglei district : 2♂, 2♀ : Sairep (c 1500m), coll. T.P. Bhattacharyya, 26.4.1995.

Measurements : External : 2♂ : Fa 41.7, 40.6; Tl 40.5, 40.5; E 13.5, 13.3; Tr 6.3, 6.1; Tb 17.1, 17.0; F & cl 7.9, 7.6. 2♀ : Fa 40.7, 40.6; Tl 39.8, 40.1; E 13.2, 13.5; Tr 5.9, 6.2; Tb 16.9, 16.7; F & cl 7.3, 7.6. Cranial : 2♂ : l 15.7, 15.4; mtr 6.3, 6.1; c^l-c^l 4.2, 4.3; zw 10.5, 10.8; iw 3.9, 3.9; cw 7.0, 7.6; m³-m³ 6.7, 6.7; ml 11.5, 11.4. 1♀ : l 15.8; mtr 6.1; c^l-c^l 4.3; zw 10.6; iw 3.8; cw 7.3; m³-m³ 6.8; ml 11.7.

Distribution : *Myotis montivagus montivagus* is known from Myanmar, southern China and Thailand. The present specimens constitute the first authentic record of this species for India from Mizoram.

***Myotis muricola* (Gray, 1846)**
Whiskered Myotis

1846. *Vespertilio muricola* Gray, *Cat. Hodgson Coll. Br. Mus.*, : 4 (Nepal).

Material examined : Mizoram : Lunglei district : 1♂, 1♀ : Sairep (c 1500m), coll. T.P. Bhattacharyya, 16.4.1995, 14.1.1997. 1♀ : Lungsens (c 650m), coll. T.P. Bhattacharyya, 26.1.1997.

Measurements : External : 1♂ : Fa 36.6; Tl 38.4; E 11.3; Tr 5.4; Tb 17.7; F & cl 6.4. 2♀ : Fa 36.0, 37.8; Tl 42.0, 43.7; E 11.0, 12.8; Tr 5.4, 5.8; Tb 17.4, 17.8; F & cl 6.5, 6.4. Cranial : 1♂ : l 13.9; mtr 5.3; c^l-c^l 3.6; zw 8.7; iw 3.3; cw 6.6; m³-m³ 5.7; ml 9.9. 2♀ : l 13.9, 14.2; mtr 5.4, 5.4; c^l-c^l 3.7, 3.7; zw 9.2, 8.7; iw 3.2, 3.1; cw 6.7, 6.9; m³-m³ 6.0, 5.8; ml 10.1, 10.3.

Distribution : Corbet & Hill (1992) has mentioned the distributional range as 'N. Pakistan and Kashmir through N. India, Nepal and Burma to S. China.....' Hence, the present specimens constitute the basis for the first authentic record of *Myotis muricola* for India, from Mizoram.

***Eptesicus pachyotis* (Dobson, 1871)**
Thick-eared Bat

1871. *Vesperugo (Vesperus) pachyotis* Dobson, *Proc. Asiat. Soc. Beng.* : 211 (Khasi Hills, Meghalaya, India).

Material examined : Mizoram : Lunglei district : 1♂ : Sairep (c 1500m), coll. T.P. Bhattacharyya, 16.4.1995.

Measurements : External : 1♂ : HB 57.0; Tl 40.2; F & cl 6.9; E 14.1; Tr 4.9; Tb 16.5; Fa 39.2. Cranial : 1♂ : l 15.3; mtr 5.2; c^l-c^l 5.3; cw 8.0; zw 11.0; iw 4.5; m³-m³ 7.1; ml 10.9.

Distribution : *Eptesicus pachyotis* is known only from Khasi Hills, Meghalaya. The present specimen, thus, constitutes the first authentic record of this species from Mizoram.

Remarks : The specimen was collected by placing mistnets near a water source inside the forest and is the first collection beyond the type-series.

***Pipistrellus circumdatus* (Temminck, 1840)**
Large Black Pipistrelle

1840. *Vespertilio circumdatus* Temminck, *Monogr. Mammal.*, 2 : 214 (Tapos, Java).

Material examined : Mizoram : Lunglei district : 1 ♀ : Sairep (c 1500m), coll. T.P. Bhattacharyya, 25.4.1995.

Measurements : External : 1 ♀ : HB 51.6; Tl 41.4; F & cl 8.4; E 13.5; Tr 5.4; Tb 17.1; Fa 40.6. Cranial : 1 ♀ : *l* 16.0; *mtr* 5.9; *c^l-c^l* 5.0; *cw* 8.7; *zw* 16.2; *iw* 4.5; *m³-m³* 7.2; *ml* 11.4.

Distribution : Within the Indian limits, *Pipistrellus circumdatus* is known only from Meghalaya. The present specimen constitutes the first authentic record of this species from Mizoram.

Remarks : The specimen was collected by placing mistnet on the hill top near a water hole at the edge of the forest. The above specimen contained one foetus in the right horn of the uterus in early stage of development, measuring 15.0 mm.

***Scotozous dormeri* Dobson, 1875**
Dormer's Bat

1875. *Scotozous dormeri* Dobson, *Proc. zool. Soc. Lond.*, : 373 (Bellary Hills, Bellary district, Karnataka, India).

Material examined : Mizoram : Lunglei district : 1 ♂, 1 ♀ : Lungsen (c 650m), coll. T.P. Bhattacharyya, 28.1.1997.

Measurements : External : 1 ♂ : HB 41.7; Tl 39.1; F & cl 7.5; E 10.3; Tr 4.6; Tb 15.5; Fa 34.1; 1 ♀ : HB 46.5; Tl 43.1; F & cl 7.2; E 11.0; Tr 5.2; Tb 14.9; Fa 33.8. Cranial : 1 ♂ : *l* 12.7; *mtr* 4.7; *c^l-c^l* 4.0; *cw* 8.8; *zw* 8.8; *iw* 3.7; *m³-m³* 5.8; *c-m*, 5.1; *ml* 9.0. 1 ♀ : *l* 12.9; *mtr* 4.6; *c^l-c^l* 4.0; *cw* 6.6; *zw* 8.6; *iw* 3.5; *m³-m³* 5.7; *ml* 9.0.

Distribution : *Scotozous dormeri* is widely distributed in the Indian mainland from Jammu & Kashmir, south at least to Karnataka and from Gujarat east to West Bengal. The present specimens, thus, constitute the first authentic record of this species from Mizoram.

Remarks : The specimens were collected by placing mistnets near a water source down in the valley.

***Murina tubinaris* (Scully, 1881)**
Scully's Tube-nosed Bat

1881. *Harpiocephalus tubinaris* Scully, *Proc. zool. Soc. Lond.*, : 200 Fig. 1 (Gilgit, Gilgit district, Jammu & Kashmir, India).

Material examined : Mizoram : Lunglei district : 2 ♂, 2 ♀ : Sairep (c 1500m), coll. T.P. Bhattacharyya, 17-26.4.1995.

Measurements : External : 2♂ : Fa 31.2, 32.6; Tl 34.4, 36.0; E 14.1, 15.0; Tr 6.3, 6.5; Tb 17.2, 17.5; F & cl 7.4, 7.5. 2♀ : Fa 34.4, 34.6; Tl 39.6, 33.3; E 15.7, 14.2; Tr 6.3, 6.3; Tb 17.7, 17.5; F & cl 8.0, 7.5. Cranial : 2♂ : l 16.4, 16.6; mtr 5.3, 5.1; c'-c' 3.9, 3.8; m³-m³ 5.4, 5.4; zw 8.7, 8.5; cw 7.2, 7.2; ml 10.4, 10.1. 2♀ : l 16.3, 16.7; mtr 5.2, 5.0; c'-c' 3.8, 4.0; m³-m³ 5.6, 5.9; zw 8.8, 9.2; cw 7.2, 7.7; ml 10.7, 11.0.

Distribution : *Murina tubinaris* is known within the Indian limits from Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir, Meghalaya, Sikkim and West Bengal. The present specimens constitute the first authentic record of this species from Mizoram.

***Murina cyclotis cyclotis* Dobson, 1872**
Round-eared tube-nosed Bat

1872. *Murina cyclotis* Dobson, *Proc. Asiat. Soc. Beng.*, : 210 (Darjeeling = Darjiling, Darjiling district, West Bengal, India).

Material examined : Mizoram : Lunglei district : 2♂, 1♀ : Sairep (c 1500m), coll. T.P. Bhattacharyya 16-23.4.1995.

Measurements : External : 2♂ : Fa 28.7, 30.4; Tl 32.1, 33.9; E 12.8, 12.8; Tr 5.8, 6.0; Tb 16.6, 17.1; F & cl 6.6, 7.4. 1♀ : Fa 30.6; Tl 34.5; E 13.5; Tr 6.9; Tb 17.4; F & cl 7.4. Cranial : 2♂ : l 15.5, 16.1; mtr 4.9, 5.2; c'-c' 3.8, 3.8; m³-m³ 5.5, 5.5; zw 8.5, 8.9; cw 7.3, 7.7; ml 9.9, 10.3. 1♀ : l 16.1; mtr 5.2; c'-c' 4.0; m³-m³ 5.6; zw 9.0; cw 7.7; ml 10.4.

Distribution : *Murina cyclotis cyclotis* is known within Indian limits from Andhra Pradesh, Meghalaya, Sikkim and West Bengal. The present specimens constitute the first authentic record of this species from Mizoram.

SUMMARY

Fourteen species of bats namely, *Rousettus leschenaulti leschenaulti*, *Cynopterus brachyotis*, *Sphaerias blanfordi*, *Eonycteris spelaea*, *Rhinolophus pearsoni*, *Rhinolophus rouxi rouxi*, *Myotis formosus formosus*, *Myotis montivagus montivagus*, *Myotis muricola*, *Eptesicus pachyotis*, *Pipistrellus circumdatus*, *Scotozous dormeri*, *Murina tubinaris*, *Murina cyclotis cyclotis* have been recorded for the first time from Mizoram, India. Out of these, two species namely, *Myotis montivagus montivagus* and *Myotis muricola* have been recorded for the first time in India. Their collection locality, measurements and distribution in India have been given.

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