

# The first record of a rare murine rodent *Diomys* and further records of three shrew species from Nepal

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## Synopsis

The rare genus *Diomys* is recorded from Nepal for the first time. Ecological notes and histograms displaying measurements of all the specimens in the apparently unique collection of this rodent in the British Museum (Natural History) are given. Also listed are museum specimens of *Crocidura attenuata*, *Sorex minutus* and *Suncus etruscus* which extend the known range of each of these species. Fleas collected from *Diomys crumpi* and *Crocidura attenuata* are also recorded.

## Introduction

The study of material collected by the University of East Anglia Expedition to Nepal in 1978–1979 and the subsequent review of some of the collections from that country in the Mammal Section of the British Museum (Natural History) has shown the existence of specimens which extend the known ranges of three species of shrews, *Crocidura attenuata*, *Suncus etruscus* and *Sorex minutus* and a rare rodent *Diomys crumpi* last reported 33 years ago.

### *Diomys crumpi* Thomas, 1917

*Diomys crumpi* Thomas, 1917 : 203. Holotype B.M.(N.H.) No. 15.4.3.146. Presumed type locality: Mt. Paresnath, Hazaribagh, Bihar, India, 4300 ft. [23°56'N 86°07'E].

The holotype, an incomplete skull which lacks the bullae, the posterior part of the braincase and  $m_3$  on both sides was collected by Mr C. A. Crump, after whom it was named. It was mismatched with a skin of *Millardia meltada* collected on 13 June 1914 at the presumed type locality. For 29 years this was apparently the only recognized representative of the genus in any collection.

In February 1940 Wilfred J. C. Frost, collecting for Sir John Ellerman obtained a series of specimens from Bishenpur [24°40'N 93°45'E], Manipur, Assam at 3000 and 4000 ft. Although Ellerman had asked Frost to try to obtain some specimens of *Diomys* from Paresnath Hill, the supposed type locality, he was unable to do so because collecting was not allowed there (Ellerman, 1961 : 205).

In February 1946 additional specimens were obtained from Imphal [24°47'N 93°55'E] by Messrs J. Hake and T. J. Lawrence. These were registered in 1967 with material collected by the Scrub Typhus Research Team (see Roonwal, 1949) and do not appear to have been seen by Ellerman.



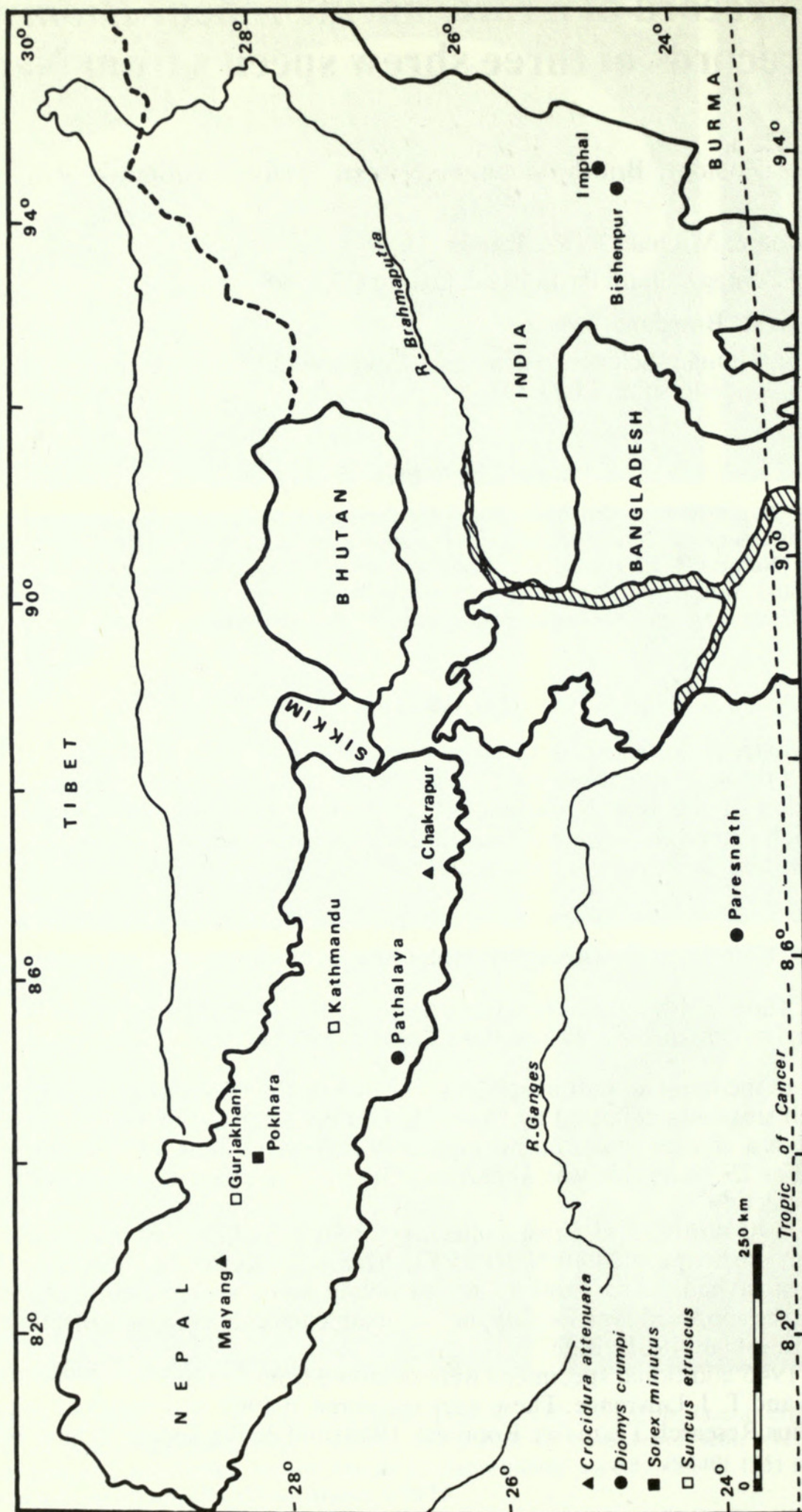


Fig. 1 The known distribution of *Diomys crumpi* together with hitherto unpublished localities for three species of shrews.



Until 1979 no further specimens had been received at the B.M.(N.H.), nor had any records been found in published literature. According to Walker (1975) the only recorded material for *Diomys* is in London and so it seems of interest to record now that two skins and four skulls, the first specimens received for more than 33 years, extend the known range for this genus by about 885 km to the west. They were collected by the University of East Anglia Expedition to Nepal (members M. R. W. Rands, leader, P. N. Newton, C. G. R. Bowden and P. W. Brown) on 9 December 1978, 3 km east of Pathalaya, Bara District, Narayani Zone (27°10'N 85°00'E) in the central terai of Nepal on the edge of the Indo-Gangetic Plain, some 200 m above sea level (see map). Here sandy loam soils overlie unmetamorphosed Quaternary sediments (Sharma, 1977) and are heavily reworked by termites (*Isoptera* sp.). Annual precipitation totals 2000 mm, of which 90% falls during the monsoon, usually from mid June until the end of August (Dobremez *et al.*, 1973).

The specimens were caught in break-back traps baited with peanut butter, in sal forest, a moist deciduous forest type dominated by sal (*Shorea robusta*) but containing a wide variety of other species including *Terminalia* sp., *Adina cordifolia*, *Dillenia pentagyna* and *Mitragyne parviflora* (Dobremez *et al.*, 1973). Saplings between 1 m and 2.25 m in height are abundant. The shaded forest floor is sparsely covered with grasses and a few herbs, but many bare patches of soil remain. The area is utilized for domestic timber and remains largely free of domestic stock. *Rattus rattus* and *Mus cervicolor* were also collected in sal forest at this locality, which contrasts markedly with the habitat of *Diomys crumpi* recorded at the type locality, a 'rocky mountain top'.

No ecological data is available for the Frost specimens although the four from Imphal collected by Hake and Lawrence, (B.M.(N.H.) Nos 67.180–183) were from dry scrub slopes: oak [*Quercus*] is mentioned on one of these labels.

**MEASUREMENTS.** The available samples, apart from a good series from Bishenpur consist of the holotype, an incomplete skull from Paresnath [?], 4 ♂♂ from Imphal and four from Nepal: one ♂ (tail amputated in life), 2 ♀♀, one very old and the other without a skin, and one skull of unknown sex.

The measurements published by Ellerman (1961) could not be matched when compared with those made by J. M. I. therefore all the skulls of the *Diomys* available, including the young, were re-measured. Since the collection is apparently unique (Walker, 1975) it seems of value to illustrate with histograms the range and number of some of the measurements taken (Fig. 2).

**NOTES.** Ellerman (1961) stated that 'the upper incisors tend to be faintly grooved' but it seems more accurate to describe them as Thomas (1917) did in his type description when he said 'their front surface unusually roughened', in fact the anterior surface bears irregular longitudinal striations which become less obvious towards the tip, which is usually a paler yellow than the upper part of the incisor.

Ellerman (1961) keyed out *Diomys* and *Zelotomys* (African) together because they both have proodont incisors, but in *Zelotomys* the incisors are far more forward projecting than in *Diomys* in which they are nearly at a right angle to the molar row.

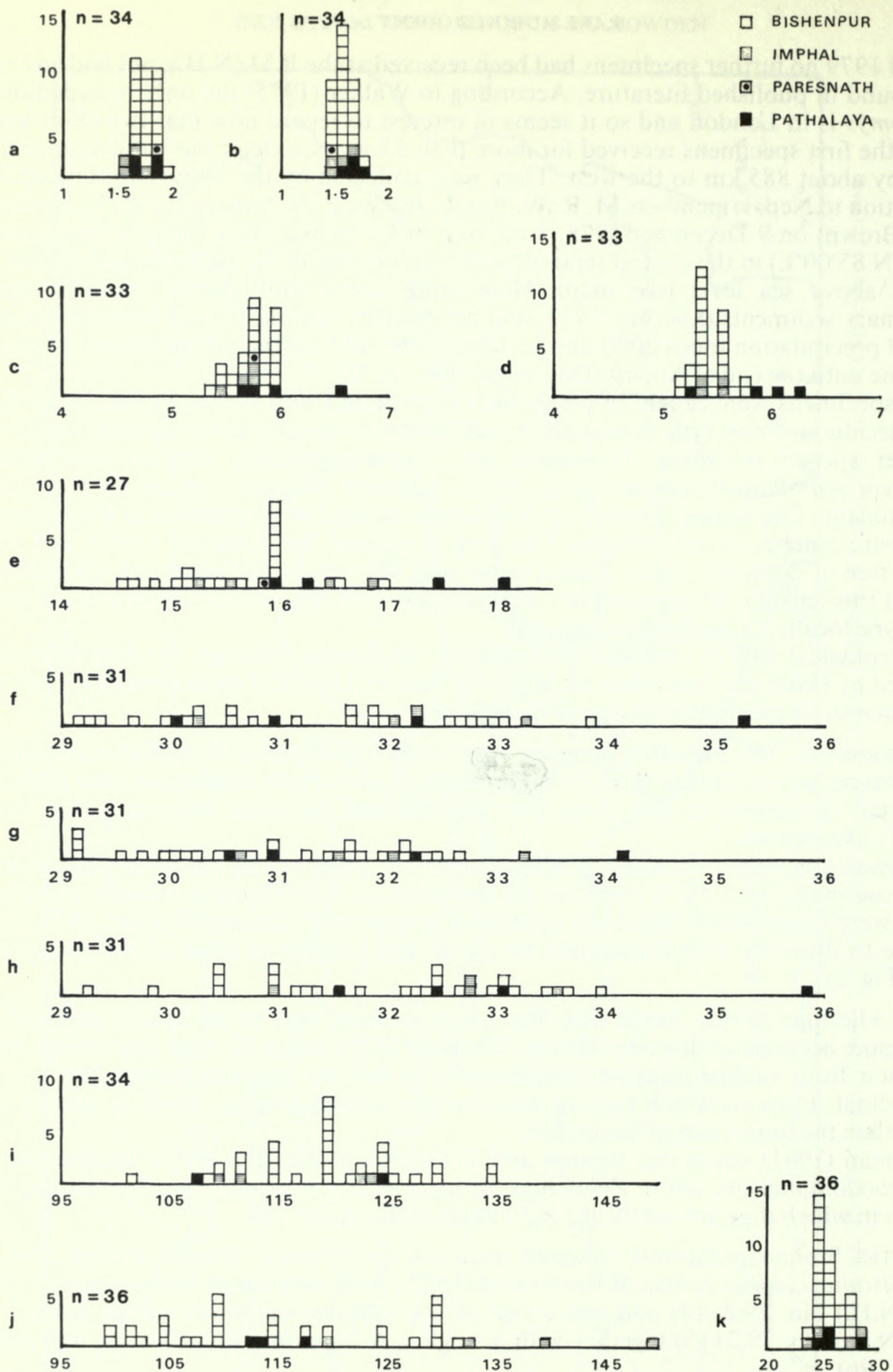
**PARASITES.** Siphonaptera were collected from two specimens of *Diomys crumpi*. One ♂ and one ♀ *Stivalius aporus* Jordan & Rothschild (1922 : 254) were taken from a young ♂ *Diomys* (B.M.(N.H.) No. 79.2114) and one ♀ flea of this species was found on an old ♀ *Diomys* (B.M.(N.H.) No. 79.2115) together with a single ♀ *Nosopsyllus simla* Jordan & Rothschild (1921 : 196).

Acarina were also collected from *Diomys* specimens B.M.(N.H.) Nos. 79.2114–2116 but identifications are not yet available.

### *Crocidura attenuata* Milne Edwards, 1872

*Crocidura attenuata* Milne Edwards, 1872 : 263, pl. 38B, fig. 1, pl. 39A, fig. 2. Moupin, Szechuan, China.





**Fig. 2** Histograms of some measurements of the B.M.(N.H.) collection of *Diomys crumpi* including young specimens ( $x$ =measurement in millimetres;  $y$ =frequency). Skull measurements: a) maximum width  $m_1$  b) maximum width  $m_2$  c) alveolar length of upper molar row d) alveolar length of lower molar row e) zygomatic breadth f) condylobasal length g) occipito-nasal length h) greatest length. Skin measurements: i) tail j) head & body k) hind foot.



*Crocidura grisea* Howell, 1926 : 137. Seventy-five miles south-west of Yenpingfu, 500 ft, Fukien, China.

The first authenticated record of the species from Nepal was published by Mitchell and Punzo in 1976. The University of East Anglia Expedition collected three specimens in alcohol allocated to this species (B.M.(N.H.) Nos 79.997–999) from 3 miles south of Chakrapur, north of Fatepur on the west bank of the River Kosi, Diapurgarmi District, 26°50'N 87°01'E at about 300 m altitude. This is about 200 km S.E. of the Mitchell and Punzo locality.

A further specimen from Nepal in the B.M.(N.H.) collection was trapped by Dr G. B. Corbet of this museum when he was a member of the Royal Air Force Expedition to Dhaulagiri. The skin and skull of this single ♂ specimen No. 75.108, were collected from 2 miles N.E. of Mayang, south side of Pelma Khola, W. of Dhaulagiri at 28°39'N 82°50'E at an altitude of 6500 ft. on 11 April 1974. This specimen, which has proved difficult to allocate with certainty has four upper unicuspid teeth on each side which cast some doubt on its true identity, but Miss P. D. Jenkins, who has worked extensively on Asiatic *Crocidura* (1976) identified the U.E.A. expedition material, re-examined the specimen and came to the conclusion that it is an aberrant *C. attenuata*.

**MEASUREMENTS.** The measurements (in millimetres) of all the specimens of *Crocidura attenuata* from Nepal in the B.M.(N.H.) collection are listed below: those of the U.E.A. expedition, B.M.(N.H.) Nos 79.997–999 respectively, are followed by those of the aberrant specimen No. 75.108 enclosed in brackets.

Head & body: 61, 60.5, 65, (70); Tail: 60, 67.5, 63, (56); Hind foot: 12.5, 14.5, 15, (14.6); Ear: 8, 9.5, 9.5, (—).

Skull. Condyllo-basal length: 18.6, 18.8, 18.1, (20.1); Greatest breadth across brain case: 8.4, 8.5, 8.3, (9.1); Least interorbital width: 4.0, 4.0, 3.9, (4.1); Length of upper tooth row: 8.0, 8.2, 7.9, (8.7); Width across m<sup>2</sup>–m<sup>2</sup>: 5.7, 5.9, 5.4, (5.9).

**HABITAT.** The single specimen collected by Dr Corbet was caught in dry scrub with *Berberis*, *Rhododendron* and *Quercus*.

The U.E.A. specimens were collected in an area of Recent sand and gravel deposits which is subject to regular flooding in the monsoon season and which receives an annual rainfall of 1500 mm (Sharma, 1977). The habitat is dominated by 'Elephant grass' but contains few other grass or herb species and no woody plants. The elephant grass varies in thickness and reaches a maximum height of 3 m. This riverine grassland, which is extensively grazed and trampled by domestic stock and in many areas frequently cut, is in danger of extinction in Nepal (Rands *et al.* 1980).

**PARASITES.** One ♂ and 2 ♀♀ fleas were collected from *Crocidura attenuata* specimens B.M.(N.H.) Nos. 79.997–999. They have been identified as *Acropsylla* ? *traubi* Lewis (1973 : 104).

No Acarina were collected from these specimens.

### *Suncus etruscus* (Savi, 1822)

The first substantiated records for this species were published by Mitchell and Punzo in 1976 when nine specimens were recorded from two localities. Two further locality records are now provided from specimens in the B.M.(N.H.). They are No. 90.1.1.56 collected on 15 September 1877 at the 'Residency', Kathmandu [c. 27°43'N 85°19'E] by J. Scully and presented by W. J. Blanford and No. 55.73, a female collected on 8 July 1954 at Gurjakhani, 54 miles N.W. of Pokhara at 8500 ft, 28°36.5'N 83°13.5'E by Mr K. H. Hyatt when on a British Museum expedition. See Fig. 1.

The older specimen was assigned by Thomas to the species *hodgsoni* (Blyth, 1855). However, there appears to be some doubt about the correct name for *hodgsoni*, see Lindsay (1929) and Corbet (1978). Because of this the specimen was re-examined by J. M. I. and



found to fit well within the range of measurements of specimens of *Suncus etruscus* from other regions and to key into the taxon according to the criteria used by Corbet, 1978. No attempt has been made to allocate to subspecies either of the specimens now listed.

No ecological details are available for these two specimens.

### *Sorex minutus* Linnaeus, 1766

A specimen in the B.M.(N.H.) was mentioned by Corbet (1978) when he listed the distribution of the species. Since this appears to be the first authenticated record for Nepal it seems of value to give the details. This young ♀ specimen is B.M.(N.H.) No. 55.74 and was collected by hand in grass by Mr Hyatt on 18 August 1954 on a ridge about 18 miles N.E. of Pokhara, 28°22'5"N 84°7'5"E between 13,000 and 14,000 ft. See Fig. 1.

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We are also indebted to Miss P. D. Jenkins for re-examining the *Crocidura attenuata* material included in this note and to Mr I. R. Bishop and Mr J. Edwards Hill for their advice on the preparation of this paper.

### References

- Anon. 1965. *The Times index gazetteer of the World*. London (Times Publishing Co. Ltd.).
- Corbet, G. B. 1978. *The mammals of the Palaearctic Region: a taxonomic review*. London & Ithaca (British Museum (Natural History) & Cornell University Press). 314 pp.
- Dobremez, J-F., Shrestha, B. K., Verniau, S., & Vigny, F. 1973. Carte écologique du Népal Terai central 1/250000. *Documents de cartographie écologique* 12 (5): 1-16.
- Ellerman, J. R. 1940-49. *The families and genera of living rodents*. London (British Museum (Natural History)) 3 vols. [1940, 1941, 1949].
- 1947. Further notes on two little known Indian murine genera, and preliminary diagnosis of a new species of *Rattus* (subgenus *Cremnomys*) from the Eastern Ghats. *Ann. Mag. nat. Hist. (Ser. 11)* 13: 204-208.
- 1961. *The fauna of India including Pakistan, Burma and Ceylon. Mammalia III Rodentia*. (2nd ed.). With an appendix by M. L. Roonwal and B. Biswas. Calcutta (Zoological Survey of India).
- & Morrison-Scott, T. C. S. 1966. *Checklist of Palaearctic and Indian mammals 1758-1946*. (2nd ed.). London (British Museum (Natural History)). 810 pp.
- Fons, R. 1975-1977 [?] *Contribution à la connaissance de la musaraigne etrusque Suncus etruscus (Savi, 1822)*. Doctoral thesis presented at the Université Pierre et Marie Curie, Paris VI. 189 pp.
- Howell, A. B. 1926. Three new mammals from China. *Proc. Biol. Soc. Wash.* 39: 137-140.
- Jenkins, P. D. 1976. Variation in Eurasian shrews of the genus *Crocidura* (Insectivora: Soricidae). *Bull. Brit. Mus. nat. Hist. (Zool.)* 30 (7): 271-309.
- Jordan, K. & Rothschild, N. C. 1921. On *Ceratophyllus fasciatus* and some allied Indian species of fleas. *Ectoparasites* 1: 178-198.
- 1922. On *Pygiopsylla* and the allied genera of Siphonaptera. *Ectoparasites*. 1: 231-265.
- Lewis, R. E. 1973. Siphonaptera collected during the 1965 Street Expedition to Afghanistan. *Fieldiana Zool.* 64: 1-161.
- Lindsay, H. M. 1929. Scientific results from the Mammal Survey No. XLVIII. Indian shrews. *J. Bombay nat. Hist. Soc.* 33 (1): 326-340.
- Linnaeus, C. 1766. *Systema Naturae* 12th ed., 1: 73.
- Milne Edwards, H. 1868-1874. *Recherches pour servir à l'histoire naturelle des mammifères... Des observations sur l'Hippopotame de Liberia et des études sur la faune de la Chine et du Tibet oriental* par A. Milne Edwards. 394 pp. Atlas 105 pls. Paris (G. Masson).



- Mitchell, R. & Punzo, F.** 1976. New mammal records from Nepal. *J. Bombay nat. Hist. Soc.* **73** : 54-58.
- Rands, M. R. W., Newton, P. N., Bowden, C. G. R. & Brown P. W.** 1980. *Report of the East Anglia University Nepal Expedition 1978-1979*. Norwich (University of East Anglia).
- Roonwal, M. L.** 1949. Systematics, ecology and bionomics of mammals studied in connection with Tsutsugamushi disease (scrub typhus) in the Assam-Burma war theatre during 1945. *Trans. natn. Inst. Sci. India* **3** (2) : 67-122.
- Savi, P.** 1822. Osservazioni sopra il mustietto o mustiolo, nuova specie di topo ragno Toscano *Sorex etruscus*. *Nuovo Giornale dei Litterati, Pisa.* **1** : 60-71 [N.V.].
- Sharma, C. K.** 1977. *Geology of Nepal*. Kathmandu, Nepal. (Educational Enterprises (P.) Ltd.).
- Stainton, J. D. A.** 1972. *Forests of Nepal*. London (John Murray). 181 pp..
- Thomas, O.** 1917. Scientific results from the Mammal Survey No. XVI (C). A new genus of Muridae. *J. Bombay nat. Hist. Soc.* **25** (2) : 203-204.
- United States Board on Geographic Names.** 1952. *Gazetteer. India Vol. 1.* [includes Nepal]. Washington, D. C. (Division of Geography, Department of the Interior).
- Walker, E. P.** 1975. *Mammals of the World*. (3rd ed.) Baltimore & London (John Hopkins University Press): 919.

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