Bats of the Indian Sub-continent. P. J. J. Bates and David L. Harrison. Harrison Zoological Museum, Bowerwood House, St. Botolphs Road, Sevenoaks, Kent TN 13 3AQ. 1997. Price: £ 55. 258 pp.

An element of mystery has surrounded bats from times immemorial. People have often found it difficult to relate their movements to the *terra firma*, the unconscious reference point of human experiences. While they are in flight, the structure of their limbs embodies a sense of spatial freedom that is almost inconceivable to us. Thus, I have often felt humbled and awed by what Wordsworth called 'blank misgiving of a creature moving about in Worlds not realized'. Studying bats is not a mean affair and the recent book by Bates and Harrison will be considered important in this endeavour, being the first exhaustive treatise on the bats in the Indian subcontinent.

Renowned taxonomists, in particular, Corbet and Hill[1] and Honaki *et al.*[2] had systematically catalogued various mammalian species, including bats, from various parts of the world, covering the Indian subcontinent as well. The book by Bates and Harrison is a welcome addition, in terms of recent taxonomy and finer details of geographical distribution of bats. The book also provides a fairly comprehensive review of all the earlier works by various bat researchers in India.

The book has a very impressive cover adorned by an extremely absorbing photograph of the Indian false vampire bat (*Megaderma lyra*). The first few pages take us through exhaustive lists of museums and individuals who have contributed in publishing this book. A list of external measurements meant for an easier identification of bats in field is provided. This is followed by a very lucid description of how the bats have evolved. A note on the species diversity of bats in the globe has also been provided. What field biologists would find most useful is a matrix of distinguishing field morphological characters within each family. The species descriptions include the geographical location based on museum records that accompany the specimens collected. Amateur naturalists would be delighted to find towards the end of the book, a comprehensive glossary of terms, written in a simple fashion. A geographical gazetteer has also been provided.

The book describes 119 species from 37 genera and 8 families, with eight colour pages beautifully illustrating 47 species. Besides, 271 neatly drawn sketches cover all the species. Nearly 200 maps project the known geographical distribution of the species. The geographical gazetteer lists about 1150 localities, with a list of technical terminology.

The authors have surprisingly missed out certain people who have made a landmark in the Indian Chiropteran scenario, in particular Charles McCann[3] and P. A. Ramakrishna Iyer[4]. While McCann exhaustively studied the feeding and breeding behaviour of *Roussettus leshaultii* (Fulvus-fruit bat), Iyer was the first to record, as early as 1947, a post partum cycle and a quick succession of two pregnancies in *Cynopterus sphinx*. His famous paper described four adult specimens collected from Malleswaram and Hoskote in Karnataka, all of them pregnant, while still lactating phase and in fact, carrying their young ones still clinging to the nipples. The authors also seem to have overlooked some recent literature on geographical distribution of other fruit bats, such as the list of the common fruit bats found at the Kanha Tiger Reserve by Ghose and Bhatacharyya[5]. Also conspicuous is the absence of the fruit bat *Megaroph*s *niphane* which was sighted at Meghalaya by Mandal *et al.*[6].

In the case of insect-eating bats, a further review of their distribution is needed. In the case of the insectivorous bats, genus *Rhinopoma* from family *Rhinopomatidae*, the specimens collected from Kanha Tiger Reserve (Ghose and Bhattacharyya[5]) have not been cited. Also ignored is Rueben's[7] citation of this species at Vellore in Tamil Nadu. Faunistic surveys conducted in various parts of Karnataka, which were published in *Mammalia*[8] also do not figure in the book. Crucial distribution records by Nath[9] from Chota Nagpur area and Mandal *et al.*[6] from Mizoram and Manipur are also missing. It would have been exciting if the authors had mentioned the possible indentification of hairs[10] and the gut length in bats[11].

Disappointingly, the authors have not discussed about echo-location, the most fascinating aspect of bat biology, the technique that enables insect-eating bats to locate their prey. It would have been apt for the authors to acknowledge the commendable contribution to this topic for nearly two decades by the researchers at the Madurai Kamaraj University, Tamil Nadu. As M. K. Chandrashekaran aptly remarks 'the Madurai group are the first people to give a voice to these insectivorous bats'.

This book provides the most comprehensive bibliography available till date, including some of the classical works in the last century. It is essential for those willing to explore the mystery of Indian bats, researchers on bat habitats and those who need quick references. The book is priced rather high placing it beyond the buying power of any Indian naturalist. But looking at the wonderful pictures and the information content the cost is justified. I would strongly recommend this book for libraries in institutions and natural history museums.

1. Corbet, G. C. and Hill, J. E., *The Mammal of the Indo-Malayan Region: A Systematic Review*, Oxford University Press, 1992.
2. Honaki, J. H., Kinman, K. E. and Koeppl, J. W., *Mammal Species of the World*, Allen Press, Lawerence Kansus, USA, 1982.
3. Charles McCan, *J. Bom. Nat. Hist. Soc.*, 1940a, **40**, 805–816.
4. Ramakrishna, P. A., *Curr. Sci.*, 1947, **59**, 602–603.
5. Ghose, R. K. and Bhattacharyya, T. P., *Rec. Zool. Surv. India*, 1995, **7**, 93–117.
6. Mandal, Ajoy Kumar, Poddar, A. K. and Bhattacharyya, T. P., *Rec. Zool. Surv. India*, 1993, **93**, 355–359.
7. Reuben, R., *J. Bom. Nat. Hist. Soc.*, 1963, **60**(3), 722.
8. Bhat, H. R. and Sreenivasan, *Mammalia*, 1990, **54**, 69–107.
9. Nath, B., *Rec. Ind. Mus.*, 1950, **48**, 29–44.
10. Sabnis, J. H., *J. Bom. Nat. Hist. Soc.*, 1980, **77**, 425–443.
11. Sinha, Y. P., *Geobios News Rep.*, 1986, **5**, 87–88.

RIKI KRISHNAN

Centre for Ecological Sciences,
Indian Institute of Science,
Bangalore 560 012, India