

# Mammals in need of attention - Rodentia and Insectivora (Rats and Shrews (essentially) of India: Conservation status and needs -- Part VI of a series, Sally Walker

Rats, mice and shrews as well as other small furry, skittery creatures occupying the Orders Rodentia and Insectivora (e.g. marmots, squirrels, moles, voles, hedgehogs, porcupines, etc.) do not enjoy a very high degree of popularity in the world, except in Beatrix Potter's stories, Walt Disney Cartoons, and various religions, myths and stories popular throughout the world. A rat occupies pride of place in Indian religion, being the audacious companion of the beloved Lord Ganapathy, whether peeking out from behind Ganesh's seat or pulling his chariot. Some rodents perhaps deserve their bad reputation because they do indeed eat crops, nibble stores of grains, carry diseases, and even bite occasionally -- however, only 4 or 5 species are "destructive". However, even harmless and adorable hedgehogs which are so important in the United Kingdom that road signs warning drivers of their likely presence are erected do not get any share of attention -- particularly conservation attention -- that they deserve.

Why do they deserve this conservation attention? Because they exist. Because they are part of India's biodiversity. Because they have unique characters, any of which might hold the secret of a cure for AIDS, cancer ... even excessive aggression, the terrorist mind ... who knows? Nobody. And that's the point. Until we know that an organism is useless, we better keep it around.

We are not doing too well with the largest order of mammals. In the Conservation Assessment and Management Plan Workshops held throughout India in 1997, the exercise which focused on mammals revealed some very interesting facts.

Zoologists know, of course, that rodents make up an enormous percentage of mammalian diversity of the earth but many lay persons are not aware of this and perhaps would not understand the significance of it if they were. Tigers, elephants and rhinos are easy to look at and love -- they are big and powerful and important. They attract conservation dollars, pounds, pesos and rupees. Grand statements are made such as "Save the Tiger: save the ecosystem". It is not really so simple however. Small creatures such as invertebrates, amphibians, reptiles and small mammals often are quite complex and require very specialised habitats or niches. It is easy to overlook a species with a total range of just a few kilometres, or even metres as has been the case with some invertebrates and even small mammals!

Therefore, we have a sad state of conservation of smaller mammals, such as rodents and rodent like animals. Of 125 individuals of the Order Rodentia and Order Insectivora, there are 45 threatened species, or about 40% of the total.

There is already 1 extinct species. One species is Critically endangered, or having an extremely high risk of extinction in the very near future. Eleven species are Endangered, or having a very high risk of extinction in the near future. A

whopping 32 species are Vulnerable, or having a high risk of extinction in the medium term future. Seventeen species were assessed as Lower-risk near-threatened which means that there are chances of their coming into a threatened category. Only 33 were assessed as Lower risk least concern, or what we normally call "common". Perhaps the most dangerous category is Data Deficient which means that there was insufficient information to assign these species a category. For all we know, these species could be threatened or extinct.

Data Deficient is also the most important category -- it tells us what we need to do immediately. We need to study the Data Deficient species and assign them to a category so that their existence and survival can be managed. Perhaps their habitat needs legal protection, or just some cleaning and planting. Or perhaps they are so far gone and their habitat so vulnerable that they require intensive management, splitting a small population into two or more groups, or taking some of them into captivity to attempt rapid reproduction.

The information in the next section has been taken directly from the TAXON DATA SHEETS of the BCPP CAMP Workshops of 1977 compiled by CAMP participants S. Chakraborty, G. Christopher, G. K. Joseph, K. Mukherjee, K. Shankar, K. Srihari, K.A. Subramanian, K.K. Ramachandran, M. Muni, M.S. Pradhan, N.V.K. Ashraf, P. Padmanabhan, P.O. Nameer, P.S. Easa, R. Borges, S. Chattopadhyay, S. Paulraj, V. Menon, and W. Sunderraj who were members of the Rodentia and Insectivora Working Groups.

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Collaborating institutions were Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore and the Forest Department of Karnataka. The CAMP Workshop process was developed by the Conservation Breeding Specialist Group, SSC, IUCN, who provided advice, training, other technical support from time to time throughout the BCPP CAMP Workshops. The Species Survival Commission of the World Conservation Union developed the IUCN Red List Criteria, a sophisticated yet flexible system, providing a means of assessing the conservation status of all plant and

animal groups.

The species listed here are "Threatened" species, e.g. they fall into one of the threatened categories -- CR Critically endangered, EN Endangered, VU Vulnerable -- of the IUCN Red List criteria.

We have listed these species and some of the information compiled by the working groups to demonstrate how interesting these small mammals can be. As stated in Michael Jordan's article at the start of this issue, "small" doesn't make a species invulnerable to threat. He says "there are more Rodent species currently categorised as threatened by IUCN than for any other mammalian order, with a total of 330 species being classed as threatened (with 16 threatened species within one genus of gerbils (*Gerbillus*) alone (IUCN 1996). Within the Insectivores there are 152 threatened species, including 66 species among the White-toothed Shrews (*Crocidura* spp.) alone. This is more threatened species within this one genus than for the entire order Carnivora!"

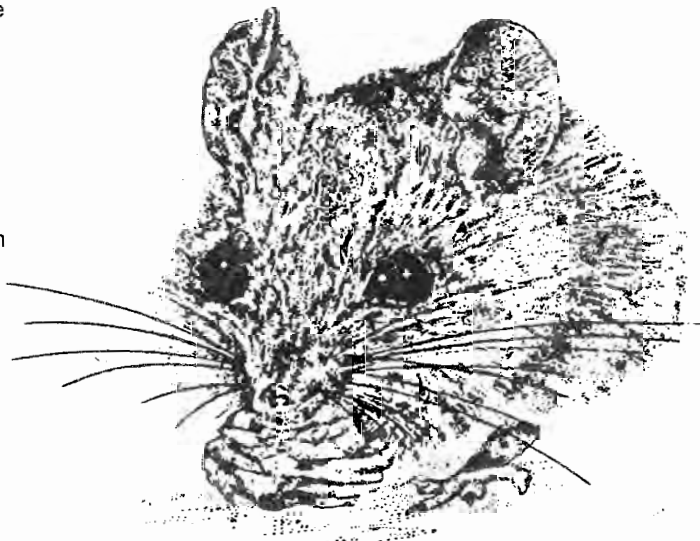
As related earlier, when we speak of biodiversity conservation, a mouse or shrew or beetle is as important as a tiger or an elephant, not because of its impact on the ecosystem (although we don't know precisely what effect the disappearance of even one such creatures would have) but because it is a completely different organism, containing genes, DNA, characteristics different from any other ... and therefore potentially useful for medicine or other useful material.

Therefore a small and/or underfunded zoo could contribute meaningfully to biodiversity conservation by keeping,

breeding and possibly restoring threatened species and populations of rodents and insectivores.

However, small also doesn't mean easy. Some of the smaller animals are among the more delicate. A fine tuned husbandry protocol is required to look after them, just as much as for larger and even more complex organisms.

In the group of mammals Rodentia, Scandentia and Insectivora are Mice, Rats, Shrews, Moles, Voles, Squirrels, Porcupines, Marmots, Hamsters and Hedgehogs. For this issue we will give basic conservation information for mice, rats and shrews only and leave moles, voles, squirrels, porcupines, marmots, hamsters and hedgehogs for another issue.



|                          | <u>Commonly known as</u> | <u>Total No.</u> | <u>Endemic</u> | <u>Threatened</u> | <u>Endemic &amp; Threatened</u> | <u>Sp. In zoos (on exhibit)*</u> |
|--------------------------|--------------------------|------------------|----------------|-------------------|---------------------------------|----------------------------------|
| <u>Order Rodentia</u>    |                          |                  |                |                   |                                 |                                  |
| Family Sciuridae         | (Flying & giant)         |                  |                |                   |                                 |                                  |
|                          | Squirrels                | 23               | 7              | 10                | 6                               | 2                                |
|                          | Marmots                  | 2                | -              | 2                 | -                               | 0                                |
| Family Muridae           | Mice                     | 18               | 4              | 5                 | 1                               | 0                                |
|                          | Rats                     | 34               | 5              | 8                 | 3                               | 0                                |
|                          | Hamsters                 | 2                | -              | 2                 | -                               | 0                                |
|                          | Gerbill                  | 4                | -              | -                 | -                               | 0                                |
|                          | Voles                    | 9                | 1              | 1                 | -                               | 0                                |
| Family Hystricidae       | Porcupines               | 3                | 1              | 2                 | 1                               | 1                                |
| <u>Order Insectivora</u> |                          |                  |                |                   |                                 |                                  |
| Family Erinaceidae       | Hedgehogs                | 3                | 1              | 1                 | 1                               | 0                                |
| Family Talipidae         | Moles                    | 1                | -              | 1                 | -                               | 0                                |
| Family Soricidae         | Shrews                   | 23               | 4              | 12                | 2                               | 0                                |
| <u>Order Scandentia</u>  |                          |                  |                |                   |                                 |                                  |
| Family Tupaiidae         | Tree shrews              | 3                | -              | 1                 | -                               | 0                                |
|                          |                          | <b>125</b>       | <b>24</b>      | <b>45</b>         | <b>14</b>                       | <b>3</b>                         |

\* Does not apply to free-living or white rats or mice, or domesticated hamsters

# Indian Rodents (in the larger sense)

List of Species evaluated in Conservation Assessment and Management Plan Workshop for Indian Mammals, August 1997

| Scientific Name  | Common Name                                      | IUCN RLC<br>1997 CAMP | IWPA<br>1972 & 91 | NRDB<br>1994 | IRDB<br>1996 |
|--|--|-----------------------|-------------------|--------------|--------------|
| 1. <i>Alticola albicauda</i> (True) *                            | Baltistan Mountain vole                          | DD                    | No                | No           | LR-nt        |
| 2. <i>Alticola montosa</i> (True)                                | Kashmir Mountain vole                            | DD                    | No                | No           | VU           |
| 3. <i>Alticola roylei</i> (Royle's vole)                         | Royle's mountain vole                            | DD                    | No                | No           | LR-nt        |
| 4. <i>Alticola stoliczkanus</i> (Blanford)                       | Stoliczka's mountain vole                        | DD                    | No                | No           | No           |
| 5. <i>Anathana ellioti</i>                                       | South Indian (Madras) tree shrew                 | LRnt                  | No                | No           | No           |
| 6. <i>Anourosorex squamipes</i> Milne-Edwards                    | Mole Shrew                                       | VU                    | No                | No           | No           |
| 7. <i>Apodemus draco</i> (Berrett-Hamilton)                      | Fukien wood mouse                                | VU                    | Sch. V            | No           | No           |
| 8. <i>Apodemus sylvaticus</i> (Linnaeus)                         | Thomas Wood mouse                                | DD                    | Sch. V            | No           | LR-nt        |
| 9. <i>Atherurus macrourus assamensis</i> Thomas *                | Thomas Brush-tailed porcupine                    | EN                    | Sch. II, Part I   | No           | No           |
| 10. <i>Bandicota bengalensis</i> (Gray & Hardwicke)              | Lesser-Bandicoot rat<br>(Indian mole rat)        | LR-ic                 | Sch. V            | No           | No           |
| 11. <i>Bandicota indica</i> (Bechstein, 1800)                    | Large (Greater) Bandicoot rat.                   | LR-nt                 | Sch. V            | No           | No           |
| 12. <i>Belomys pearsoni</i> (Gray, 1842)                         | Hairy footed flying squirrel                     | LR-nt                 | No                | No           | LR-nt        |
| 13. <i>Berylmys bowersi</i> (Anderson, 1879)                     | Bower's rat                                      | EN                    | Sch. V            | No           | No           |
| 14. <i>Berylmys mackenziei</i> (Thomas, 1916)                    | Kenneth's rat<br>(White-toothed rat)             | LR-ic                 | Sch. V            | No           | No           |
| 15. <i>Berylmys manipulus</i> (Thomas, 1916)                     | Manipur rat                                      | DD                    | Sch. V            | No           | No           |
| 16. <i>Biswamoyopterus biswasi</i> (Saha, 1981) *                | Namdapha flying squirrel.                        | CR                    | No                | No           | CR           |
| 17. <i>Callosciurus erythraeus</i> (Pallas, 1779)                | Pallas squirrel.                                 | LR-nt                 | No                | No           | No           |
| 18. <i>Callosciurus pygerythrus</i> (Geoffroy St. Hilaire, 1831) | Hoary-bellied Himalayan<br>(Irrawaddy) squirrel. | LR-nt                 | No                | No           | VU           |
| 19. <i>Cannomys badius</i> (Hodgson, 1841)                       | Bay/Lesser bamboo rat.                           | LR-ic                 | Sch. V            | No           | No           |
| 20. <i>Chimarrogale himalayica</i> (Gray, 1842)                  | Himalayan water shrew                            | LR-nt                 | No                | No           | No           |
| 21. <i>Chiropodomys gliroides</i> (Blyth, 1856)                  | Pencil-tailed tree mouse                         | VU                    | Sch. V            | No           | No           |
| 22. <i>Cremnomys blanfordi</i> (Thomas, 1881)                    | White-tailed wood<br>(Blanford's) rat            | LR-nt                 | Sch. V            | No           | No           |
| 23. <i>Cremnomys cutchicus</i> Wroughton, 1912 *                 | Cutch rat.                                       | LR-ic                 | Sch. V            | No           | No           |
| 24. <i>Cremnomys elvira</i> (Ellerman, 1946) *                   | Ellerman's rat                                   | VU                    | Sch. V            | No           | VU           |
| 25. <i>Cricetulus alticola</i> (Thomas, 1917)                    | Ladakh hamster.                                  | VU                    | —                 | No           | No           |
| 26. <i>Cricetulus migratorius</i> (Pallas, 1773)                 | Gray hamster.                                    | EN                    | —                 | No           | LR-nt        |
| 27. <i>Crociodura andamanensis</i> Miller, 1902 *                | Miller's Andaman spiny shrew                     | DD                    | No                | No           | EN           |
| 28. <i>Crociodura attenuata</i> Milne-Edwards, 1872              | Gray (Woodland) shrew                            | LR-ic                 | No                | No           | No           |
| 29. <i>Crociodura fuliginosa</i> (Blyth, 1856)                   | South-east Asian white-<br>toothed shrew         | DD                    | No                | No           | No           |
| 30. <i>Crociodura hispida</i> Thomas, 1913 *                     | Andaman spiny shrew.                             | EN                    | No                | No           | EN           |
| 31. <i>Crociodura horsfieldi</i> (Tomes, 1856)                   | Horsfield's shrew                                | DD                    | No                | No           | No           |
| 32. <i>Crociodura jenkinsi</i> Chakraborty, 1973 *               | Jenkin's Andaman spiny shrew                     | DD                    | No                | No           | CR           |
| 33. <i>Crociodura leucodon</i> (Hermann, 1780)                   | Bicoloured white-toothed shrew                   | DD                    | No                | No           | No           |
| 34. <i>Crociodura nicobarica</i> Miller, 1902 *                  | Nicobar spiny shrew.                             | DD                    | No                | No           | EN           |
| 35. <i>Crociodura pergrisea</i> Miller, 1913                     | Pale gray shrew                                  | EN                    | No                | No           | VU           |
| 36. <i>Crociodura pullata</i> Miller, 1911                       | Kashmir white-toothed shrew                      | DD                    | No                | No           | No           |
| 37. <i>Dacnomys millardi</i> (Thomas, 1916)                      | Millard's (Large-toothed) rat                    | VU                    | Sch. V            | No           | No           |
| 38. <i>Diomys crumpi</i> Thomas, 1917                            | Crump's (Manipur) mouse                          | EN                    | Sch. V            | No           | LR-nt        |
| 39. <i>Dremomys lokriah</i> (Hodgson, 1863)                      | Orange-bellied Himalayan squirrel                | LR-nt                 | No                | No           | No           |
| 40. <i>Eothenomys melanogastor</i> (Milne Edwards, 1871)         | Pere David's vole                                | DD                    | —                 | No           | No           |
| 41. <i>Eupetaurus cinereus</i> Thomas, 1888                      | Woolly flying squirrel.                          | LR-nt                 | Sch. II, Part II  | No           | EN           |
| 42. <i>Feroculus feroculus</i> (Kelaart, 1850)                   | Kelart's long clawed shrew.                      | VU                    | No                | No           | No           |
| 43. <i>Funambulus layardi</i> (Blyth, 1849)                      | Layard's striped squirrel.                       | DD                    | No                | No           | No           |
| 44. <i>Funambulus palmarum</i> (Linnaeus, 1766)                  | Indian (Three-striped) palm squirrel.            | LR-ic                 | No                | No           | No           |
| 45. <i>Funambulus pennantii</i> (Wroughton, 1905)                | Northern (Five -striped) palm squirrel.          | LR-ic                 | Sch. IV           | No           | No           |
| 46. <i>Funambulus sublineatus</i> (Waterhouse, 1838)             | Dusky striped squirrel.                          | DD                    | No                | No           | No           |
| 47. <i>Funambulus tristriatus</i> (Waterhouse, 1837) *           | Jungle striped squirrel                          | LR-nt                 | No                | No           | No           |
| 48. <i>Gerbillus gleadowi</i> Murray, 1886                       | Indian hairy footed gerbil.                      | LR-ic                 | —                 | No           | No           |
| 49. <i>Gerbillus nanus</i> Blanford (1875)                       | Baluchistan gerbill                              | LR-nt                 | —                 | No           | No           |
| 50. <i>Golunda ellioti</i> Gray, 1837                            | Indian bush rat.                                 | LR-ic                 | Sch. V            | No           | No           |
| 51. <i>Hadromys humei</i> (Thomas, 1886)                         | Hume's (Manipur bush) rat.                       | DD                    | Sch. V            | No           | No           |
| 52. <i>Hemiechinus collaris</i> (Gray, 1830)                     | Long-eared hedgehog                              | LR-ic                 | Sch. IV           | No           | No           |
| 53. <i>Hylopetes alboniger</i> (Hodgson, 1836)                   | Parti-coloured flying squirrel.                  | VU                    | No                | No           | EN           |
| 54. <i>Hylopetes barberi</i> (Blyth, 1847)                       | Kashmir flying squirrel                          | LR-nt                 | No                | No           | LR-nt        |
| 55. <i>Hylopetes fimbriatus</i> (Gray, 1837)                     | Small Kashmir flying squirrel.                   | DD                    | No                | No           | No           |
| 56. <i>Hyperacrius fertilis</i> (True, 1894)                     | True's vole.                                     | VU                    | —                 | No           | No           |
| 57. <i>Hyperacrius wyneei</i> (Blanford, 1881)                   | Murree vole.                                     | DD                    | —                 | No           | No           |

\* - Endemic; IUCN RLC 1997 CAMP = Assessment as per 1994 IUCN Red List Criteria;; IWPA - Indian Wildlife Protection Act; NRDB - National Red Data Book, ZSI, 1994; IRDB - Red list of threatened animals

|      |   |  |       |                  |    |       |
|------|---|--|-------|------------------|----|-------|
| 58.  | <i>Hystrix brachyura</i> Linnaeus, 1758                       | Malayan porcupine                            | VU    | No               | No | VU    |
| 59.  | <i>Hystrix indica</i> Kerr, 1792                              | Malayan porcupine                            | LR-ic | Sch. IV          | No | No    |
| 60.  | <i>Leopoldamys edwardsi</i> (Thomas, 1882)                    | Edward's Rat                                 | DD    | Sch. V           | No | No    |
| 61.  | <i>Marmota bobak</i>  | Himalayan marmot.                            | EN    | Sch. II, Part II | No | No    |
| 62.  | <i>Marmota caudata</i> (Geoffroy, 1844)                       | Long-tailed marmot                           | VU    | Sch. II, Part II | No | LR-nt |
| 63.  | <i>Meriones hurriane</i> Jerdon, 1867                         | Indian desert gerbil<br>(Indian desert jird) | LR-ic | —                | No | No    |
| 64.  | <i>Micromys minutus</i> (Pallas, 1771)                        | Harvest mouse.                               | VU    | Sch. V           | No | LR-nt |
| 65.  | <i>Microtus leurus</i> (Blyth, 1863)                          | Blyth's vole                                 | DD    | —                | No | No    |
| 66.  | <i>Microtus sikimensis</i> (Hodgson, 1849)                    | Sikkim vole                                  | LR-ic | —                | No | No    |
| 67.  | <i>Millardia gleadowi</i> (Murray, 1886)                      | Sand coloured rat                            | LR-nt | Sch. V           | No | No    |
| 68.  | <i>Millardia kondana</i> Mishra and Dhanda, 1975              | Kondana rat (Kondana metad)                  | VU    | Sch. V           | No | EN    |
| 69.  | <i>Millardia meltada</i> (Gray, 1837)                         | Soft furred field rat (Metad)                | LR-ic | Sch. V           | No | No    |
| 70.  | <i>Mus booduga</i> (Gray, 1837)                               | Little Indian field mouse.                   | LR-ic | Sch. V           | No | No    |
| 71.  | <i>Mus cervicolor</i> Hodgson, 1845                           | Fawn-coloured mouse                          | LR-ic | Sch. V           | No | No    |
| 72.  | <i>Mus cookii</i> (Ryley, 1914)                               | Cook's mouse.                                | LR-nt | Sch. V           | No | No    |
| 73.  | <i>Mus famulus</i> (Bonhote, 1898) *                          | Bonhote's mouse                              | EN    | Sch. V           | No | EN    |
| 74.  | <i>Mus musculus</i> (Linnaeus, 1758)                          | House mouse.                                 | LR-ic | Sch. V           | No | No    |
| 75.  | <i>Mus pahari</i> Thomas, 1916                                | Gardner's shrew mouse.<br>(Sikkim mouse)     | DD    | Sch. V           | No | No    |
| 76.  | <i>Mus phillipsi</i> (Wroughton, 1912) *                      | Fawn-coloured spiny mouse                    | LR-ic | Sch. V           | No | No    |
| 77.  | <i>Mus platythrix</i> Bennett, 1832 *                         | Spiny field mouse                            |       |                  |    |       |
| 78.  | <i>Mus saxicola</i> (Elliot, 1839)                            | Indian Brown spiny mouse                     | LR-ic | Sch. V           | No | No    |
| 79.  | <i>Nectogale elegans</i> Milne - Edwards, 1870                | Elliot's Brown spiny mouse                   | LR-ic | Sch. V           | No | No    |
| 80.  | <i>Nesokia indica</i> (Grey and Hardwicke, 1830)              | Elegant water shrew<br>(Tibetan water)       | VU    | No               | No | No    |
| 81.  | <i>Niviventer brahma</i> (Thomas, 1914)                       | Short tailed bandicoot rat                   | LR-ic | Sch. V           | No | No    |
| 82.  | <i>Niviventer eha</i> (Wroughton, 1916)                       | Mishmi rat                                   | EN    | Sch. V           | No | No    |
| 83.  | <i>Niviventer fulvescens</i> (Gray, 1847)                     | Smoke bellied rat                            | VU    | Sch. V           | No | No    |
| 84.  | <i>Niviventer langbianis</i> (Robinson and Kloss, 1922)       | Chestnut rat                                 | LR-ic | Sch. V           | No | No    |
| 85.  | <i>Niviventer niviventer</i> (Hodgson, 1836)                  | Langbian rat                                 | DD    | Sch. V           | No | No    |
| 86.  | <i>Niviventer tenaster</i> (Thomas, 1916)                     | White bellied rat                            | DD    | Sch. V           | No | No    |
| 87.  | <i>Paraechinus micropus</i> (Blyth)                           | Tenasserim rat                               | DD    | Sch. V           | No | No    |
| 88.  | <i>Paraechinus micropus nudirentis</i> (Horsfield) *          | Indian hedgehog                              | LR-ic | No               | No | No    |
| 89.  | <i>Petaurista philippensis</i> (Elliot, 1842)                 | Pale Hedgehog                                | VU    | No               | No | No    |
| 90.  | <i>Petinomys fuscocapillus fuscocapillus</i> (Jerdon, 1847) * | Short eared hedgehog                         | VU    | No               | No | No    |
| 91.  | <i>Plantacanthomys lasiurus</i> Blyth *                       | Elliot's giant flying squirrel.              | LR-nt | Sch. II, Part II | No | No    |
| 92.  | <i>Rattus nitidus</i> (Hodgson, 1845)                         | Travancore flying squirrel                   | VU    | Sch. I, Part I   | EN | No    |
| 93.  | <i>Rattus norvegicus</i> (Berkenhout, 1769)                   | Malabar spiny mouse                          | LR-ic | Sch. IV          | No | No    |
| 94.  | <i>Rattus palmarum</i> (Zelebor, 1869) *                      | Himalayan rat                                | DD    | Sch. V           | No | No    |
| 95.  | <i>Rattus ranjinae</i> Agarwal & Ghosal *                     | Brown/Norway rat                             | LR-ic | Sch. V           | No | No    |
| 96.  | <i>Rattus rattus</i> (Linnaeus, 1758)                         | Nicobar rat                                  | DD    | Sch. V           | No | VU    |
| 97.  | <i>Rattus sikkimensis</i> Hinton, 1919                        | Ranjini's rat                                | VU    | Sch. V           | No | VU    |
| 98.  | <i>Rattus stoicus</i> (Miller, 1902) *                        | House (Black) rat                            | LR-ic | Sch. V           | No | No    |
| 99.  | <i>Rattus tiomanicus</i> (Miller, 1900)                       | Sikkim rat                                   | DD    | Sch. V           | No | VU    |
| 100. | <i>Rattus turkestanicus</i> (Satunin, 1903)                   | Andaman rat                                  | VU    | Sch. V           | No | No    |
| 101. | <i>Ratufa bicolor gigantea</i> (Sparman, 1778)                | Malaysian wood rat                           | VU    | Sch. V           | No | No    |
| 102. | <i>Ratufa indica centralis</i> (Erxleben, 1777) *             | Turkestan rat                                | DD    | Sch. V           | No | No    |
| 103. | <i>Ratufa indica dealbata</i> (Erxleben, 1777) *              | Black (Malayan) giant squirrel.              | VU    | Sch. II, Part II | No | No    |
| 104. | <i>Ratufa indica indica</i> (Erxleben, 1777) *                | Indian (Malabar) giant squirrel.             | VU    | Sch. II, Part II | No | No    |
| 105. | <i>Ratufa indica maxima</i> (Erxleben, 1777) *                | Indian (Malabar) giant squirrel.             | VU    | Sch. II, Part II | No | NE    |
| 106. | <i>Ratufa macroura dandolena</i> (Pennant, 1769)              | Indian (Malabar) giant squirrel              | VU    | Sch. II, Part II | No | No    |
| 107. | <i>Rhizomys pruinosus</i> Blyth, 1851                         | Grizzled giant squirrel                      |       |                  |    |       |
| 108. | <i>Sicista concolor</i> (Buchner, 1892)                       | Sri Lankan giant squirrel                    | EN    | Sch. II, Part II | EN | No    |
| 109. | <i>Sorex minutus</i> (Linnaeus, 1766)                         | Hoary bamboo rat.                            | LR-nt | Sch. V           | No | No    |
| 110. | <i>Soriculus caudatus</i> (Horsfield, 1851)                   | Chinese birch mouse.                         | DD    | No               | No | No    |
| 111. | <i>Soriculus leucops</i> (Horsfield, 1851)                    | Tiny shrew                                   | VU    | No               | No | No    |
| 112. | <i>Soriculus macrurus</i> Blandford, 1888                     | Hodgson's brown-toothed shrew                | VU    | No               | No | No    |
| 113. | <i>Soriculus nigrescens</i> (Gray, 1842)                      | Indian long-tailed shrew.                    | VU    | No               | No | No    |
| 114. | <i>Suncus dayi</i> (Dobson, 1888) *                           | Blandford's long-tailed shrew                | VU    | No               | No | No    |
| 115. | <i>Suncus etrusus</i> (Savi, 1822)                            | Sikkim large clawed shrew                    |       |                  |    |       |
| 116. | <i>Suncus montanus</i> (Kelaart, 1850)                        | Himalayan shrew                              | VU    | No               | No | No    |
| 117. | <i>Suncus murinus</i> (Linnaeus, 1766)                        | Day's shrew                                  | VU    | No               | No | EN    |
| 118. | <i>Suncus stoliczkanus</i> (Anderson, 1877)                   | Pygmy white toothed shrew                    | LR-ic | No               | No | No    |
|      |   | Mountain shrew                               | VU    | No               | No | VU    |
|      |   | House shrew                                  |       |                  |    |       |
|      |   | Grey musk shrew                              | LR-ic | No               | No | No    |
|      |   | Anderson's shrew                             |       |                  |    |       |
|      |   | Yellow throated shrew                        | LR-ic | No               | No | No    |

|  |                               |       |        |    |    |
|--|-------------------------------|-------|--------|----|----|
| 119. <i>Talpa leucura</i> Blyth, 1850            | Eastern mole                  | VU    | No     | No | No |
| 120. <i>Talpa micrura</i> (Hodgson, 1841)        | Short-tailed mole             | LR-lc | No     | No | No |
| 121. <i>Tamias maclellandi</i> (Horsfield, 1840) | Himalayan striped squirrel    | LR-nt | No     | No | No |
| 122. <i>Tatera indica</i> (Hardwicke, 1807)      | Indian gerbil or antelope rat | LR-lc | Sch. V | No | No |
| 123. <i>Tupaia belangeri</i> (Wagner, 1841)      | Northern tree shrew           | LR-lc | No     | No | No |
| 124. <i>Tupaia nicobarica</i> (Zelevor, 1869)    | Nicobar tree shrew            | EN    | No     | No | EN |
| 125. <i>Vandeleuria oleracea</i> (Bennett, 1832) | Palm mouse                    |       |        |    |    |
|  | Indian long tailed tree-mouse | LR-lc | Sch. V | No | No |

| Status                           | Total |
|----------------------------------|-------|
| EX Extinct                       | 1     |
| CR Critically endangered         | 1     |
| EN Endangered                    | 11    |
| VU Vulnerable                    | 32    |
| LR-nt Lower risk near threatened | 17    |
| LR-lc Lower risk least concern   | 33    |
| DD Data Deficient                | 30    |
| Total                            | 125   |



### List of Threatened and endemic Rodentia and Insectivora

| Species   | Common Name  | Status | Endemic status |
|---|--|--------|----------------|
| 1. <i>Anourosorex sq.jamipes</i> Milne-Edwards                  | Mole Shrew   | VU     |                |
| 2. <i>Apodemus draco</i> (Berrett-Hamilton)                     | Fukien wood mouse                                    | VU     |                |
| 3. <i>Atherurus macrourus assamensis</i> Thomas                 | Thomas Brush-tailed porcupine                        | EN     | Endemic        |
| 4. <i>Berymys bowersi</i> (Anderson, 1879)                      | Bower's rat  | EN     |                |
| 5. <i>Biswamoyopterus biswasi</i> (Saha, 1981)                  | Namdapha flying squirrel.                            | CR     | Endemic        |
| 6. <i>Chiropodomys gliroides</i> (Blyth, 1856)                  | Pencil-tailed tree mouse                             | VU     |                |
| 7. <i>Cremnomys elvira</i> (Ellerman, 1946)                     | Ellerman's rat                                       | VU     | Endemic        |
| 8. <i>Cricetulus alticola</i> (Thomas, 1917)                    | Ladakh hamster.                                      | VU     |                |
| 9. <i>Cricetulus migratorius</i> (Pallas, 1773)                 | Gray hamster.  | EN     |                |
| 10. <i>Crocidura hispida</i> Thomas, 1913                       | Andaman spiny shrew.                                 | EN     | Endemic        |
| 11. <i>Crocidura pergrisea</i> Miller, 1913                     | Pale gray shrew                                      | EN     |                |
| 12. <i>Dacnomys millardi</i> (Thomas, 1916)                     | Millard's (Large-toothed) rat                        | VU     |                |
| 13. <i>Diomys crumpi</i> Thomas, 1917                           | Crump's (Manipur) mouse                              | EN     |                |
| 14. <i>Feroculus feroculus</i> (Kelaart, 1850)                  | Kelart's long clawed shrew.                          | VU     |                |
| 15. <i>Hylopetes alboniger</i> (Hodgson, 1836)                  | Parti-coloured flying squirrel.                      | VU     |                |
| 16. <i>Hyperacrius fertilis</i> (True, 1894)                    | True's vole.   | VU     |                |
| 17. <i>Hystrix brachyura</i> Linnaeus, 1758                     | Malayan porcupine                                    | VU     |                |
| 18. <i>Marmota bobak</i>  | Himalayan marmot.                                    | EN     |                |
| 19. <i>Marmota caudata</i> (Geoffroy, 1844)                     | Long-tailed marmot                                   | VU     |                |
| 20. <i>Micromys minutus</i> (Pallas, 1771)                      | Harvest mouse.                                       | VU     |                |
| 21. <i>Millardia kondana</i> Mishra and Dhand, 1975             | Kondana rat (Kondana metad)                          | VU     |                |
| 22. <i>Mus famulus</i> (Bonhote, 1898)                          | Bonhote's mouse                                      | EN     | Endemic        |
| 23. <i>Nectogale elegans</i> Milne - Edwards, 1870              | Elegant water shrew<br>(Tibetan water)               | VU     |                |
| 24. <i>Niviventer brahma</i> (Thomas, 1914)                     | Mishmi rat   | EN     |                |
| 25. <i>Niviventer eha</i> (Wroughton, 1916)                     | Smoke bellied rat                                    | VU     |                |
| 26. <i>Paraechinus micropus nudirentis</i> (Horsfield)          | Short eared hedgehog                                 | VU     | Endemic        |
| 27. <i>Petinomys fuscocapillus fuscocapillus</i> (Jerdon, 1847) | Travancore flying squirrel                           | VU     | Endemic        |
| 28. <i>Rattus ranjinae</i> Agarwal & Ghosal                     | Ranjini's rat  | VU     | Endemic        |
| 29. <i>Rattus stoicus</i> (Miller, 1902)                        | Andaman rat  | VU     | Endemic        |
| 30. <i>Rattus tiomanicus</i> (Miller, 1900)                     | Malaysian wood rat                                   | VU     |                |
| 31. <i>Ratufa bicolor gigantea</i> (Sparman, 1778)              | Black (Malayan) giant squirrel.                      | VU     |                |
| 32. <i>Ratufa indica centralis</i> (Erxleben, 1777)             | Indian (Malabar) giant squirrel                      | VU     | Endemic        |
| 33. <i>Ratufa indica dealbata</i> (Erxleben, 1777)              | Indian (Malabar) giant Squirrel                      | EX     | Endemic        |
| 34. <i>Ratufa indica indica</i> (Erxleben, 1777)                | Indian (Malabar) giant squirrel.                     | VU     | Endemic        |
| 35. <i>Ratufa indica maxima</i> (Erxleben, 1777)                | Indian (Malabar) giant squirrel                      | VU     | Endemic        |
| 36. <i>Ratufa macroura dandolena</i> (Pennant, 1769)            | Grizzled giant squirrel<br>Sri Lankan giant squirrel | EN     |                |
| 37. <i>Sorex minutus</i> (Linnaeus, 1766)                       | Tiny shre  | VU     |                |
| 38. <i>Soriculus caudatus</i> (Horsfield, 1851)                 | Hodgson's brown-toothed shrew                        | VU     |                |
| 39. <i>Soriculus leucops</i> (Horsfield, 1851)                  | Indian long-tailed shrew.                            | VU     |                |
| 40. <i>Soriculus macrurus</i> Blanford, 1888                    | Blandford's long-tailed shrew                        | VU     |                |
| 41. <i>Soriculus nigrescens</i> (Gray, 1842)                    | Sikkim large clawed shrew<br>Himalayan shrew         | VU     |                |
| 42. <i>Suncus dayi</i> (Dobson, 1888)                           | Day's shrew  | VU     | Endemic        |
| 43. <i>Suncus montanus</i> (Kelaart, 1850)                      | Mountain shrew                                       | VU     |                |
| 44. <i>Talpa leucura</i> Blyth, 1850                            | Eastern mole   | VU     |                |
| 45. <i>Tupaia nicobarica</i> (Zelevor, 1869)                    | Nicobar tree shrew                                   | EN     |                |

# Conservation Status of some Threatened and/or Endemic Mammals with special reference to Indian Zoological Gardens -- Rodentia, Scandentia and Insectivora -- Part VI of a series, Sally Walker

## MICE (Muridae)

### Fukien Wood Mouse

VU/N (D2)

*Apodemus draco* (Berrett-Hamilton) covers a range that includes China and Myanmar as well as India. In India it is limited to Arunachal Pradesh in and around human dwellings. Its habit is not known. Its range is less than 100 sq. km and area occupied less than 10 sq. km. in one location, the Mighmi Hills. Its population trends and numbers or threats are not known either regionally or globally but it is not in trade in India.

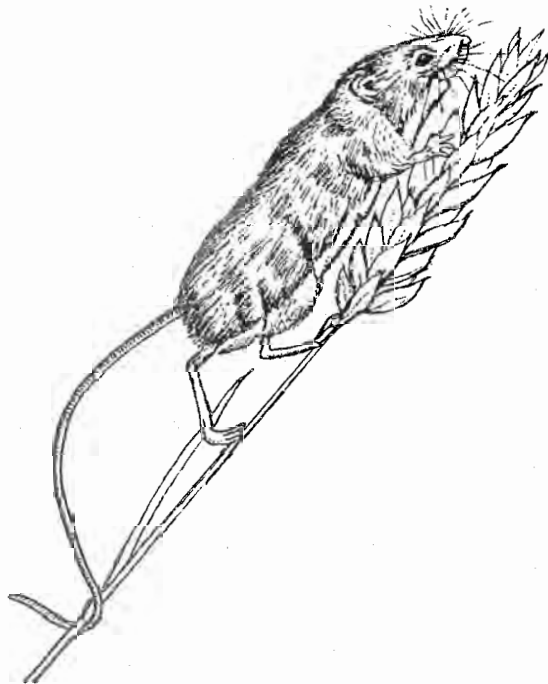
This species could be assessed as Vulnerable (Nationally) based on IUCN Criteria D2 (Population restricted to a single location and area less than 100 sq. km.) Despite the fact that it has been assessed as threatened, it is not listed on CITES or either National (1994) or International (1996) Red Data Books. It is, however, listed on the Indian Wildlife Protection Act -IWPA (1972;91) under Schedule V! It is a mouse and all rats, mice and fruit bats are listed as vermin in the Indian Wildlife Act!

Since this species was assessed as threatened, a recommendation for conservation breeding was made. There are none in captivity in the world so far as known and the level of difficulty is not known.

### Harvest Mouse

VU/N (D2)

*Micromys minutus* (Pallas, 1771) is an arboreal mouse inhabiting both primary and secondary forests. Its range covers India, Myanmar, Vietnam, China and much of palearctic region from Japan to Britain.



Its distribution within India is Meghalaya and Nagaland. Its range is less than 20,000 sq. km and area occupied less than 500 sq. km in

two specific locations. Nothing is known of population status, numbers or trends. However it could be given a conservation status of Vulnerable (Nationally) based on IUCN Criteria, D2 (Population restricted to only two locations).

It is not listed in CITES or RDB National but it is listed as Lower-risk near threatened in the RDB International (1996). Its listing in the Indian Wildlife Protection Act, as other mice, is Schedule V, or vermin, despite its threatened status.

It was recommended for conservation breeding but there are none known in Indian zoos. However the United Kingdom zoos have a coordinated conservation programme for this species with systematic zoo breeding and reintroduction programmes!

### Bemiate's mouse

EN (B1, 2c)

*Mus famulus* (Bonhote, 1898) is endemic to India. It is terrestrial and fossorial, inhabiting high altitude grassland, sholas and montane forests in southern India and Andaman and Nicobar Islands. Its range is less than 5,000 sq km and area occupied is less than 500 sq km in four specific locations (Kannur, Nilgiris, Palani Hills and Andaman Hills). Nothing is known of population status, trends, numbers.

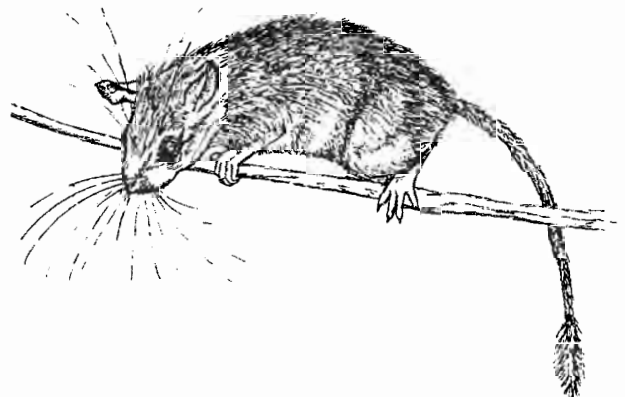
M. S. Pradhan of ZSI has done field study from 1994-97 in Eravikulam National Park; and Shankar, 1994-96 in Nilgiri Biosphere Reserve. Threats to this species are loss of habitat, loss of habitat due to fragmentation, human interference.

This species was categorised as Endangered based on IUCN criteria B1, 2c (Restricted distribution, limited location, severely fragmented, continuing decline observed in extent of occurrence, area of occupancy and/or quality of habitat).

Despite being both Endangered and Endemic, it is listed as vermin on the Indian Wildlife Protection Act, Schedule V. It was recommended for research management, survey, monitoring, life history studies and conservation breeding. There are none in captivity in India or the world so far and the level of difficulty is not known.

### Pencil tailed tree mouse

VU/N (D2)



*Chiropodomys gliroides* (Blyth, 1856) Family: Muridae. The Pencil-tailed tree mouse is, as its name suggests, arboreal. It inhabits primary and secondary forests, especially where there is bamboo. It can be found in India, China, Malaysia, Sumatra, Java, Bali, and

Borneo. In India it lives only in the state of Meghalaya in two locations. Its range is less than 5000 sq. km. and area occupied is less than 500 sq km. Population status, numbers and trends are not known. Its status according to IUCN criteria was assessed as Vulnerable (Nationally) based on D2 (Population restricted to less than 5 locations).

It is not listed in CITES or RDB national or international. It is, according to the IWPA, Schedule V, a vermin. Recommendations were for research management, survey, monitoring, limiting factor research and conservation breeding. There are none in captivity in India or the world so far as known.

## RATS (Muridae)



Bandicoot

### Bowers Rat

EN/N (B1, 2c)

*Berylmys bowersi* (Anderson, 1879). Bower's Rat is fossorial and also arboreal; it lives in rain forests in hilly regions in India, China, Indochina, Malaya, Sumatra and Vietnam. In India it is found in Meghalaya. Its range is less than 5,000 sq. km. and area occupied less than 500 sq. km in 5 locations. Population status, numbers trends are not known. Threats are human interference.

Based on IUCN criteria B1, 2c (Restricted distribution, limited location, continuing decline observed in extent of occurrence, area of occupancy and/or quality of habitat) the species was categorised as Endangered (Nationally) The species is not listed in CITES, RDB, National (1994) or RDB, International (1996) but is listed in IWPA (1972;91) as Schedule V or vermin. Recommendations are for research management, survey, monitoring and conservation breeding. There are none in captivity in India or the world so far as known.

### Kondana rat (Kondana metad)

VU (D2)

*Millardia kondana* Mishra and Dhand, 1975. Kondana rat is a fossorial species which inhabits areas of scrub and bushes, forest, marshes, in rocky areas, near human dwellings. It is ENDEMIC to India distributed in Sinhga in Pune, Maharashtra with a range of less than 5,000 sq km and an area occupied of less than 500 sq km in two locations. Population status, numbers trends are not known. Recent field studies done by Pradhan, 1991-92 in and around Sinhgal Fort. IUCN status as given by the CAMP workshop is Vulnerable (Nationally) based on D2 (Population restricted to only two locations).

The species is not listed in CITES, or RDB, National (1994). It is listed as Endangered in RDB, International (1996) and in the IWPA (1972;91) as Schedule V or vermin. Recommendations are for research management, survey, monitoring and conservation breeding. There are none in captivity in India or the world so far.

### Ellerman's rat

VU (D2)

*Cremnomys elvira* (Ellerman, 1946). Ellerman's rat lives in semi arid with thorny scrub but its habits are not known. It is ENDEMIC to

India, to a single location of Kurumbapatti, Salem District) Tamil Nadu, making its range less than 100 sq km and area occupied less than 10 sq. km. Population status, numbers trends are not known. It is reported only from type locality. Its status according to the CAMP workshop is Vulnerable with criteria based on D2 (Population restricted to single location and area less than 10 sq. km).

The species is not listed in CITES, RDB, National (1994) or RDB, International (1996) but is listed in IWPA (1972;91) as Schedule V or vermin despite being threatened and endemic. Recommendations are for research management, survey, monitoring and conservation breeding. There are none in captivity in India or the world so far as known.

### Millard's (Large-toothed) rat

VU/N (D2)

*Dacnomys millardi* (Thomas, 1916). Family: Muridae. The habit of Millard's rat is not known but it inhabits forested tracts of Hilly region of India and Nepal. In India it is distributed in Darjeeling, West Bengal, and Arunchal Pradesh. Its range is less than 20,000 sq km and area occupied is less than 500 sq km. Population status, numbers trends are not known.

Its IUCN status as assessed by the CAMP workshop is Vulnerable (Nationally) according to criteria based on D2 (Population restricted to only 2 locations). The species is not listed in CITES, RDB, National (1994) or RDB, International (1996) but is listed in IWPA (1972;91) as Schedule V or vermin. Recommendations are for research management, survey, monitoring and conservation breeding. There are none in captivity in India or the world so far as known.

### Smoke Bellied rat

VU/N (B1, 2c; D2)

*Niviventer eha* (Wroughton, 1916). The Smoke bellied rat is fossorial occupying wet forests at higher altitude in India (Sikkim and West Bengal), Nepal, Myanmar and China. Its range is less than 20,000 sq km and area occupied less than 2000 sq km. Population status, numbers trends are not known. Recent Field studies done by Chakraborty, 1994 in Lachen & Thangu (Sikkim). Threats are human interference and loss of habitat. Other Comments: Population is stable at Lachen-Thangu in Sikkim.

It was assessed as Vulnerable (Nationally) based on: B1, 2c (Restricted distribution, limited location, continuing decline observed in extent of occurrence, area of occupancy and/or quality of habitat) and D2 (Population restricted to only 4 locations).

The species is not listed in CITES, RDB, National (1994) or RDB, International (1996) but is listed in IWPA (1972;91) as Schedule V or vermin. Recommendations are for research management, survey, monitoring and conservation breeding. There are none in captivity in India or the world so far as known.

### Nicobar rat

VU (D2)

*Rattus palmarum* (Zelebor, 1869). Family: Muridae. Nicobar rat inhabits mangroves and tropical rain forests. It is Endemic to India, found only in Andaman & Nicobar Islands. Its range is 5,000 sq. km) and area occupied is less than 500 sq km in one location, the Nicobar Islands. Population status, numbers trends are not known.

Its IUCN status according to the CAMP workshop is Vulnerable based on D2 (Population restricted to only 1 location).

The species is not listed in CITES, RDB, National (1994). It is Vulnerable in the RDB, International (1996) and, despite this, is listed in IWPA (1972;91) as Schedule V or vermin. Recommendations are for research management, survey, taxonomic and morphological genetic studies, life history studies, monitoring and conservation breeding. There are none in captivity in India or the world so far.

### Ranjini's rat

VU (D2)

*Rattus ranjinae* Agarwal & Ghosal. Ranjini's rat is terrestrial/ arboreal in fields and water logged areas. It is Endemic to India located only in Kerala. Its range and population status, numbers trends are not known.

Its IUCN status is Vulnerable with criteria based on: D2 (Population restricted to a single location). The species is not listed in CITES, RDB, National (1994) or RDB, International (1996) but is listed in IWPA (1972;91) as Schedule V or vermin despite its vulnerable and endemic status. Recommendations are for research management, survey, monitoring and conservation breeding. There are none in captivity in India or the world so far.

### Andaman rat

VU (D2)

*Rattus stoicus* (Miller, 1902). Habit and habitat of the Andaman rat is not known. It is endemic to India located in Andamans' Henry Lawrence Islands. Its range is less than 20,000 sq km. Area occupied is not known. It is found in less than 5 locations. Population status, numbers trends are not known.

Status is Vulnerable with criteria based on: D2 (Population restricted to less than 5 locations). The species is not listed in CITES, RDB, National (1994) or RDB, International (1996) but is listed in IWPA (1972;91) as Schedule V or vermin. Recommendations are for research management, survey, monitoring and conservation breeding. There are none in captivity in India or the world so far.

### Malaysian wood rat

VU/N (D2)

*Rattus tiomanicus* (Miller, 1900). The Malaysian wood rat is arboreal inhabiting scrub areas, gardens, plantation, secondary forest, frequently entering house and from undistributed land; forests. It is found in India in the Andaman & Nicobar Islands and in Southeast Asia. Its range is less than 5,000 sq km and area occupied less than 2000 sq km in three locations in the Nicobar group of islands. Population status, numbers trends are not known.

IUCN status is Vulnerable (Nationally) based on D2 (Population restricted to less than 5 locations. It is not listed in CITES, RDB, National (1994) or RDB, International (1996) but is listed in IWPA (1972;91) as Schedule V or vermin. Recommendations are for research management, survey, monitoring and conservation breeding. There are none in captivity in India or the world so far.

### Crump's rat

EN/N (B1, 2c)

*Diomys crumpi* Thomas, 1917. Crump's rat occupies forest tracts in hilly regions although its habit is not known. It is found in India (in Manipur) and in Nepal. Its range is less than 5,000 sq km and area occupied less than 500 sq km. in one location. Threats are human interference. The type locality of this species is recorded as Bihar, however it appears that type locality was not correctly recorded. Population status, numbers trends are not known.

Its IUCN status as assessed by the CAMP workshop is Endangered (Nationally) based on criteria B1, 2c (Restricted distribution, single location, continuing decline observed in extent of occurrence, area of occupancy and/or quality of habitat).

The species is not listed in CITES, RDB, National (1994). It is listed as Lower Risk near threatened in the RDB, International (1996) but is listed in IWPA (1972;91) as Schedule V or vermin. Recommendations are for research management, survey, monitoring and conservation breeding. There are none in captivity in India or the world so far.

### Mishmi rat

EN/N (B1, 2c)

*Niviventer brahma* (Thomas, 1914). The Mishmi rat is fossorial, inhabiting the rain forests of India (Arunachal Pradesh), Myanmar,

China. Its range is less than 5,000 sq km and area occupied is less than 500 sq km. Population status, numbers trends are not known. Threats are human interference and loss of habitat.

IUCN status as derived by the CAMP workshop is Endangered, criteria based on: B1, 2c (Restricted distribution, single location, continuing decline observed in extent of occurrence, area of occupancy and/or quality of habitat). The species is not listed in CITES, RDB, National (1994) or RDB, International (1996) but is listed in IWPA (1972;91) as Schedule V or vermin. Recommendations are for research management, survey, monitoring and conservation breeding. There are none in captivity in India or the world so far.

## SHREWS (Soricidae)

### Mole shrew

VU/N (B1, 2c)

*Anourosorex squamipes* Milne-Edwards, 1872. Mole shrew is terrestrial, and fossorial. It lives mainly in forest, burrowing in leaf-litter and topsoil in India, Bhutan, China, Taiwan, Thailand, Vietnam. In India its distribution is Assam, Meghalaya, Arunachal Pradesh, and Manipur. Its range is more than 20,000 sq. km. and area occupied less than < 2,000 in more than 5 fragmented locations. Population trends, status, numbers are not known. Threats are loss of habitat generally, human interference and loss of habitat because of fragmentation. It was given a status of Vulnerable (Nationally) with IUCN criteria based on: B1, 2c (Restricted distribution, limited location, severely fragmented, continuing decline observed in extent of occurrence, area of occupancy and/or quality of habitat).

Not listed in CITES or either Red Data Book or Wildlife Protection Act. Recommended for research management, taxonomic and morphological genetic studies, survey, monitoring and conservation breeding. There are none in captivity in India or the world so far as known.

### Andaman spiny shrew

EN (B1, 2c)

*Crociodura hispida* Thomas, 1913. This species is terrestrial and its habitat is fossorial or underground. It is Endemic to India with a distribution of Andaman & Nicobar Islands. Its range is less than 5000 sq km and area occupied less than 2000 sq km. in a single location, the Middle Andaman Island. Population trends, status, numbers are not known. Threats are loss of habitat due to fragmentation. Its status was assessed as Endangered based on B1, 2c (Restricted distribution, single location, continuing decline observed in extent of occurrence, area of occupancy and/or quality of habitat).

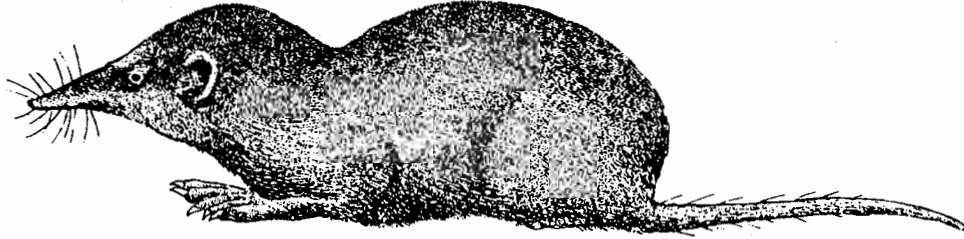
It is listed as Endangered in the International Red Data Book (1996) but not in the National RDB -CITES: No. -IWPA (1972;91): No. -RDB, National (1994): No. -RDB, International (1996): Endangered

Research management, taxonomic and morphological genetic studies, survey, monitoring and conservation breeding were recommended for this species. There are none in captivity in India or the world so far.

### Pale Grey Shrew

EN/N (B1, 2c)

*Crociodura pergrisea* Miller, 1913. This species of shrew is terrestrial from the drier parts of mountain and hilly tracts from Asia Minor to India. In India it is found in Jammu & Kashmir with a range of less than 5,000 sq km and area occupied of less than 2,000 sq km. in one location, that is Kashmir. Population trends, status, numbers are not known. Chakraborty has conducted recent field studies in Kashmir. Threats are loss of habitat generally and loss of habitat because of fragmentation.



The species has been categorised as Endangered (Nationally) based on: B1, 2c (Restricted distribution, single location, continuing decline observed in extent of occurrence, area of occupancy and/or quality of habitat. It is not listed in CITES, IWPA (1972;91) or RDB, National (1994). However it is listed as Vulnerable in the RDB, International (1996). Recommendations were made for research management, taxonomic and morphological genetic studies, survey; monitoring and conservation breeding. There are none in captivity in India or the world so far.

Kelaart's long clawed shrew VU/N (B1, 2c; D2)

*Feroculus feroculus* (Kelaart, 1850). Kelaart's long-clawed shrew is fossorial, inhabiting montane swamps and marshes above 2000 m in India and Sri Lanka. In India it is found in Nilgiri hills and further south in Western Ghats. Its range is less than 20,000 sq km and area occupied less than 2,000 sq km in four isolated locations.

Population status, numbers trends are not known. Recent field studies were done by M.S. Pradhan, 1994-96 in Eravikulam; K. Shankar, 1996 in Upper Bhavani. Threats are loss of habitat because of fragmentation. It was recorded in India for the first time; the species was originally described from Sri Lanka. It was assessed as Vulnerable (Nationally) based on: B1, 2c (Restricted distribution, limited location, continuing decline observed in extent of occurrence, area of occupancy and/or quality of habitat) and D2 (Population restricted to only four locations).

It is not listed in CITES, IWPA (1972;91), RDB, National (1994), or RDB, International (1996). Recommendations were for research management including monitoring, survey and conservation breeding. There are none in captivity in India or the world so far.

Elegant water shrew VU/N (D2)

*Nectogale elegans* Milne - Edwards, 1870. The Elegant water shrew is aquatic found in mountain rivers and streams of India, China, Nepal, Myanmar. In India it is found in Northeastern Himalaya, West Bengal, Sikkim. Its range is more than 20,000 sq km and area occupies less than 2000 sq km. Population information is not known. Threats are loss of habitat and human interference. The status accorded is Vulnerable (Nationally) based on: D2 (Population restricted to less than 5 locations). It is not listed in any legal document. Recommendations are for research management (survey, monitoring) and conservation breeding. There are none in captivity in India or the world so far.

Tiny Shrew VU/N (D2)

*Sorex minutus* (Linnaeus, 1766) or (Tiny Shrew). It is a terrestrial species frequenting Ipine rocky slopes covered with snow lives at high altitude in India, Pakistan, Iran, China, Europe. In India it lives only in Jammu & Kashmir. Its range is less than 5000 sq km and area occupied less than 2000 sq km. Population information not known.

A status of Vulnerable (Nationally) was given based on: D2 (Population restricted to only 2 locations). It is not "listed" in any previous document. Recommendations are for research management and conservation breeding. There are none in captivity in India or the world so far.

Hodgson's brown-toothed shrew VU/N (B1, 2c)

*Soriculus caudatus* (Horsfield, 1851). Family: Soricidae. This species is terrestrial, fossorial and a forest dwelling form living along river side at higher altitudes in Nepal, India, Myanmar, Yunnan and Sichuan. In India it lives in Jammu & Kashmir, Sikkim, West Bengal, Manipur and Uttar Pradesh. Range is more than 20,000 sq.km. and area occupied is less than 2000 sq. km. Threats are loss of habitat and human interference.

The species was categorised as Vulnerable (Nationally) based on IUCN criteria B1, 2c (Restricted distribution, limited location, severely fragmented, continuing decline observed in extent of occurrence, area of occupancy and/or quality of habitat). The species is not listed in CITES, IWPA (1972;91), RDB, National (1994) or RDB, International (1996). Recommendations are for research management, survey, monitoring and conservation breeding. There are none in captivity in India or the world so far.

Indian long-tailed shrew VU/N (B1, 2c; D2)

*Soriculus leucops* (Horsfield, 1851). The Indian long-tailed shrew is a terrestrial and fossorial species from high altitude forests along the riverside. It ranges throughout Nepal, India, Yunnan, Vietnam, Myanmar. In India it is restricted to northeastern India. Its range is more than 20,000 sq. km. and area occupied is less than 2,000 sq. km. in 3 fragmented locations (Manipur, Mishmi Hills, Sikkim, Darjeeling Dist.). Population status, numbers and trends are not known. Threats are loss of habitat generally and loss of habitat because of fragmentation. It was given a status of Vulnerable (Nationally) based on B1, 2c (Restricted distribution, limited location, severely fragmented, continuing decline observed in extent of occurrence, area of occupancy and/or quality of habitat) and D2 (Population restricted to only 3 locations).

The species is not listed in CITES, IWPA (1972;91), RDB, National (1994) or RDB, International (1996). Recommendations were for research management, taxonomic and morphological genetic studies, survey, monitoring and conservation breeding. There are none in captivity in India or the world so far.

Hodgson's shrew VU/N (B1, 2c; D2)

*Soriculus macrurus* Blanford, 1888. This species is terrestrial and fossorial. Its habitat is along river sides forests at higher altitudes in India, Nepal, Myanmar, Vietnam (isolated distribution). In India its distribution is in Sikkim and West Bengal. Its range is less than 5,000 sq. km and area occupied is less than 2,000 sq km. in 2 locations (Sikkim and Darjeeling). Population status, numbers trends are not known. Threats are loss of habitat, loss of habitat because of fragmentation.

The species was categorised as Vulnerable (Nationally) based on B1, 2c (Restricted distribution, limited location, severely fragmented, continuing decline observed in extent of occurrence, area of occupancy and/or quality of habitat); D2 (Population restricted to only 2 locations).

This species is not listed in CITES, IWPA (1972;91), RDB, National (1994) or RDB, International (1996). Recommendations are for research management, survey, monitoring and conservation breeding. There are none in captivity in India or the world so far.

### Himalayan shrew

VU/N (B1, 2c)

*Soriculus nigrescens* (Gray, 1842). The species is terrestrial and fossorial and lives in damp water places in broad leaved coniferous forest at higher altitude. It ranges through India, Nepal, Bhutan, Myanmar. In Indian it is found in the Himalaya. Its range is more than 20,000 sq.km. and area occupied is less than 2,000 sq km. in 5 isolated locations Darjeeling, Sikkim, Kumaon, Mishmi Hills in Arunachal Pradesh. Population status, numbers trends are not known.

It was assessed as Vulnerable (Nationally) based on: B1, 2c (Restricted distribution, limited location, severely fragmented, continuing decline observed in extent of occurrence, area of occupancy and/or quality of habitat). The species is not listed in CITES, IWPA (1972;91), RDB, National (1994) or RDB, International (1996). Recommendations are for research management, survey, monitoring, life history studies.

### Day's shrew

VU (B1, 2b)

*Suncus dayi* (Dobson, 1888). Day's shrew is fossorial in montane humid forests at high altitudes. It is Endemic to India from the Western Ghats. Its range is less than 20,000 sq km. and area occupied is less than 2,000 in 5 locations (Thrissur, Palani, Nilgiris, Anamalai Hills). Population status, numbers trends are not known. Recent Field Studies are by M.S. Pradhan, 1994-96 in Eravikulam; K. Shankar, 1996 in Upper Bhavani. Threats are loss of habitat.

It was assessed as Vulnerable based on IUCN criteria B1, 2b (Restricted distribution, limited location, severely fragmented, continuing decline observed in area of occupancy). The species is not listed in CITES, IWPA (1972;91), RDB, National (1994) but is listed as Endangered in the RDB, International (1996). Recommendations are for research management, survey, monitoring and conservation breeding. There are none in captivity in India or the world so far.

### Mountain shrew

VU/N (B1,2b)

*Suncus montanus* (Kelaart, 1850). The Mountain shrew is fossorial inhabiting montane humid forests above 150 m. in India and Sri Lanka. In India its distribution is in the Western Ghats. Range is less than 20,000 sq. km. and area occupied is less than 2,000 in 5 locations (South of Coorg, Nilgiri and Palani Hills). Population status, numbers trends are not known. Recent field studies have been done by M.S. Pradhan, 1994-95 in Melghat Tiger Project, ZSI, Calcutta. Threats are human interference, loss of habitat and human interference, possibly in Coorg.

*Suncus montanus* was categorised as Vulnerable (Nationally) based on criteria based on B1, 2b (Restricted distribution, limited location, severely fragmented, continuing decline observed in area of occupancy). It is not listed in CITES, IWPA (1972;91), RDB, National (1994) or RDB, International (1996). Recommendations are for research management, survey, monitoring and conservation breeding. There are none in captivity in India or the world so far.

