Validation of
THREATENED MAMMALS
of India

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Zoological Survey of India

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Threatened Mammals
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PREAMBLE

The Zoological Survey of India (ZSI) on the basis of initial IUCN categories of rare animals published its first account in 1983 : Threatened Animals of India by B.K. Tikader. The book covers a species-wise account on 81 mammals, 45 birds, 15 reptiles and 3 amphibian species. Further, ZSI has also initiated status survey of endangered species, the first being published in 1994 on Golden langur, Phayre's leaf monkey and Hispid hare. With the introduction of number of amendments since 1972 in Indian Wildlife (Protection) Act and also with major revisions in IUCN Criteria in 1993, a need was felt by ZSI to bring out its first Red Data Book on Indian animals presenting a species-wise account on 77 mammals, 55 birds, 20 reptiles and 1 amphibian species falling under various schedules of Indian Wildlife (Protection) Act. First volume of "The Red Data Book on Indian Animals (Part 1): Vertebrata (Mammalia, Aves, Reptilia and Amphibia)" was published in 1994, by the Director, ZSI, Kolkata.

The recent amendments at national and international levels resulted in exhaustive list of animal species under higher conservation status. List of mammal species/ subspecies alone with higher conservation status touched the figure of 144. The list included many of the less-charismatic species with highest conservation status. For example, Wroughton's free-tailed bat, Salimali's fruit bat, Dang's giant squirrel and many more. With further major sea of amendments, from time to time, in Indian Wildlife (Protection) Act, IUCN Red List based on new guidelines and in CITES regulations; it was felt absolutely necessary to revise first Red Data Book on Indian Animals published in 1994.

Therefore, an attempt has been made here to revise the Red Data Book produced earlier by ZSI as per IUCN's 2003 guidelines and update maximum information alongwith photographs and distribution maps. First step in this direction is, obviously, to focus on 144 Indian mammalian species-subspecies. The present work is the result of sustained efforts of number of scientists and naturalists. We relied heavily on the assistance and support of not only on ZSI experts but also on a number of outside associates to ensure that the level of the data presented here is of the highest quality.

I take this opportunity to express my grateful thanks to all those who have contributed towards this work.

December, 2005
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CONTENTS

INTRODUCTION 1

BACKGROUND 4

SCOPE 6

IUCN Red List Categories and Criteria 7

IUCN RED LIST CATEGORIES 7

IUCN RED LIST CRITERIA 8

METHODOLOGY ADOPTED 16

RECOMMENDATIONS 18

ANALYTICAL SUMMARY 22

LIST OF ENDEMIC MAMMALS 43

CHECKLIST OF MAMMALS OF INDIA 45

SELECTED REFERENCES 77

Order INSECTIVORA

1. *Crocidura hispida* Thomas 93
2. *Crocidura pergrisea* Miller 95

Order SCANDENTIA

3. *Anathana ellioti* (Waterhouse) 97

Order CHIROPTERA

4. *Ia io* Thomas 100
5. *Otomops wroughtoni* (Thomas) 103
6. *Latidens salimalli* Thonglongya 107

Order PRIMATES

7. *Loris tardigradus* (Linnaeus) 110
8. *Nycticebus coucang* (Boddaert) 113
9. *Macaca arctioides* (Geoffroy) 116
10. *Macaca fascicularis umbrosa* (Miller) 119
11. *Macaca nemestrina* (Linnaeus) 122
12. *Macaca silenus* (Linn.) 125
13. *Macaca assamensis* (M'clelland) 128
14. *Trachypithecus geei* (Khajuria) 131
15. *Trachypithecus phayrei* (Blyth) 135
16. *Trachypithecus pileatus* (Blyth) 138

17. *Semnopithecus johnii* (Fischer) 141
18. *Bunopithecus hoolock hoolock* Harlan 144

Order CARNIVORA

19. *Canis lupus pallipes* Sykes 147
20. *Canis lupus chanco* Gray 151
21. *Canis aureus* Linnaeus 154
22. *Cuon alpinus dukhunensis* (Sykes) 158
23. *Cuon alpinus laniger* Pallas 162
24. *Cuon alpinus primaevus* (Hodgson) 165
25. *Vulpes vulpes pusilla* Blyth 168
26. *Vulpes vulpes montanna* Linnaeus 171
27. *Vulpes bengalensis* (Shaw) 174
28. *Herpestes urva* (Hodgson) 178
29. *Helarctos malayanus malayanus* (Raffles) 181
30. *Ursus arctos isabellinus* Horsfield 184
31. *Ursus thibetanus* Cuvier 188
32. *Melursus ursinus ursinus* (Shaw) 192
33. *Ailurus fulgens fulgens* F. Cuvier 195
34. *Amblonyx cinereus* (Illiger) 198
35. *Lutra lutra* (Linnaeus) 202
36. *Lutrogale perspicillata* (I. Geoffroy Saint Hillaire) 206
37. *Arctonyx collaris* Cuvier 210
38. *Mellivora capensis* (Schreber) 213
39. *Melogale moschata* (Gray) 217
40. *Melogale personata* I. Geoffroy Saint Hilaire 220
41. *Mustela erminea ferghanae* Thomas 223
42. *Mustela altaica temon* Hodgson 227
43. *Mustela kathiah* Hodgson 230
44. *Mustela sibirica* Pallas 233
45. *Martes flavigula flavigula* (Boddaert) 237
46. *Martes foina intermedia* Severtzow 241
47. *Martes gwatkinsii* Horsfield 245
48. *Viverra civettina* Blyth 248
49. *Viverrra zibetha* Linnaeus 251
50. *Viverricula indica* (Desmarest) 254
51. *Prionodon pardicolor pardicolor* Hodgson 258
52. *Paradoxurus hermaphroditus* (Pallas) 261
53. *Paradoxurus jerdoni* Blanford 265

54. *Arctogalidia trivirgata millsi* (Wroughton) 268
55. *Paguma larvata* (Hamilton-Smith) 271
56. *Arctictis binturong* (Raffles) 274
57. *Prionailurus bengalensis* (Kerr) 278
58. *Prionailurus rubiginosus rubiginosus* I. Geoffroy Saint Hilaire 281
59. *Prionailurus viverrinus* Bennett 285
60. *Otocolobus manul nigripectus* (Hodgson) 288
61. *Pardofelis marmorata charltoni* (Gray) 291
62. *Felis silvestris ornata* Gray 294
63. *Felis chaus* Schreber 298
64. *Catopuma temminckii temminckii* (Vigors and Horsefield) 302
65. *Caracal caracal schmitzi* Matschiie 305
66. *Lynx lynx isabellina* Blyth 309
67. *Neofelis nebulosa* Griffith 312
68. *Acinonyx jubatus* (Schreber) 315
69. *Panthera leo persica* (Meyer) 319
70. *Panthera pardus* (Linnaeus) 323
71. *Panthera tigris tigris* (Linnaeus) 327
72. *Uncia uncia* (Schreber) 332

Order CETACEA

73. *Platanista gangetica* (Roxburgh) 336
74. *Orcaella brevirostris* (Gray) 339
75. *Delphinus delphis Linneaus* 342
76. *Peponocephala electra* (Gray) 345
77. *Stenella attenuata* (Gray) 348
78. *Stenella longirostris* (Gray) 351
79. *Sousa chinensis* (Osbeck) 354
80. *Tursiops truncatus* (Montagu) 357
81. *Neophocaena phocaenoides* (Cuvier) 360
82. *Balaenoptera acutorostrata* Lace'pe'de 363
83. *Balaenoptera edeni* Aderson 366
84. *Balaenoptera borealis* Lesson 369
85. *Balaenoptera musculus* (Linneaeus) 372
86. *Balaenoptera physalus* (Linnaeus) 375
87. *Mesoplodon densirostris* (Blainville) 378
88. *Kogia breviceps* (Blainville) 381
89. *Kogia simus* (Owen) 384
90. *Physeter macrocephalus* Linnaeus 387

91. *Pseudorca crassidens* (Owen) 390
Order SIRENIA
92. *Dugong dugon* (Muller) 393
Order PROBOSCIDEA
93. *Elephas maximus* Linnaeus 396
Order PERISSODACTYLA
94. *Equus kiang* Moorcroft 400
95. *Equus onager khur* Lesson 403
96. *Rhinocerous unicornis* Linnaeus 407
97. *Dicerorhinus sumatrensis* (Fischer) 411
Order ARTIODACTYLA
98. *Sus scrofa andamanensis* Blyth 414
99. *Sus salvanius* (Hodgson) 417
100. *Moschiola meminna* (Erxleben) 420
101. *Cervus duvaucelii* (Cuvier) 423
102. *Cervus elaphus hanglu* (Wagner) 426
103. *Cervus eldii eldii* (McClelland) 429
104. *Moschus chrysogaster* (Hodgson) 432
105. *Antilope cervicapra* (Linnaeus) 436
106. *Gazella bennettii* (Sykes) 440
107. *Procapra picticaudata* (Hodgson) 444
108. *Pantholops hodgsonii* (Abel) 447
109. *Tetracerus quadricornis* (Blainville) 450
110. *Bos grunniens* Linnaeus 453
111. *Bos gaurus* Smith 456
112. *Bubalus bubalis* (Linnaeus) 460
113. *Budorcas taxicolor* (Hodgson) 464
114. *Capra falconeri* (Wagner) 467
115. *Capra ibex* (Linnaeus) 471
116. *Naemorhedus goral* (Hardwicke) 475
117. *Naemorhedus sumatraensis* (Bechstein) 479
118. *Hemitragus hylocrius* (Ogilby) 483
119. *Hemitragus jemlahicus* (H. Smith) 487
120. *Ovis ammon hodgsoni* Blyth 491
121. *Ovis vignei vignei* Blyth 494
122. *Pseudois nayaur* (Hodgson) 497
Order PHOLIDOTA
123. *Manis crassicaudata* Gray 500

124. *Manis pentadactyla* Linnaeus 503
Order RODENTIA
125. *Atherurus macrourus* (Lin.) 506
126. *Ratufa bicolor gigantea* (M'clelland) 509
127. *Ratufa indica dealbata* (Blandford) 512
128. *Ratufa macroura dandolena* Thomas & Wroughton 515
129. *Petinomys fuscocapillus* (Jerdon) 518
130. *Biswamoypteras biswasi* Saha 521
131. *Petaurista petaurista* (Pallas) 524
132. *Petaurista magnificus* (Hodgson) 527
133. *Petaurista nobilis* (Gray) 530
134. *Petaurista phillippensis* (Elliot) 533
135. *Hylopetes alboniger* (Hodson) 536
136. *Hylopetes baberi* (Blyth) 539
137. *Hylopetes fimbriatus* (Gray) 542
138. *Eupetaurus cinereus* Thomas 545
139. *Marmota himalayana* (Hodgson) 548
140. *Marmota caudata* (Geoffroy) 552
141. *Niviventer brahma* (Thomas) 555
142. *Berylmys bowersii* (Anderson) 558
143. *Mus famulus* Bonhote 561
Order LAGOMORPHA
144. *Caprolagus hispidus* (Pearson) 564

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INTRODUCTION

The Indian Wildlife (Protection) Act, 1972 intended to provide a comprehensive National legal framework for wildlife protection, with conservation of species as the main criteria. The strategy includes total environmental protection and conservation with the assumption that all such areas should be free from human activities. The act prohibits hunting of wildlife, protects their habitats, and restrains trade in wild animals, trophies etc. The two-pronged approaches of this act are :

- Specified endangered species are protected regardless of its location and
- All species are protected in specified areas

The scope of this act was slightly ambiguous in the initial stages, as the definition of wildlife included only selected wild animals and birds. However, the scope was broadened in Wildlife Protection Amendment Act 1991 to include flora as well as fauna.

Today, the protection of environment is a global concern, as evinced by the numerous International Conventions in this area. The objectives of these International Conventions are :

- ➤ Establish uniform conservation rules;
- ➤ Express the commitment of the contracting parties to conserve species and their habitats; and
- ➤ Organise effective international cooperation

Some such scientific conventions include: International. Biological Programme (World Conservation Union), MAB Programme (UNESCO), and The World Conservation Strategy (IUCN, UNEP & WWF) for which the Government of India is a signatory. The most important convention on the preservation of wildlife is the Convention on International Trade in Endangered Species of Wild Fauna and Flora, CITES (also known as Washington Convention) signed on 3rd March 1973, which was subsequently amended at Bonn on 22nd June 1979. The Convention's goals are to monitor and stop commercial international trade in endangered species, maintain those species under international commercial exploitation as an ecological balance and assist countries enabling a sustainable use of the species through international trade. The draft policy of the CITES includes 25 articles, highlighting definitions, fundamental principles, regulation of trade of animals in Appendix I– III, international measures, legislation, amendments and resolution of disputes.

CITES parties regulate wildlife trade through controls, regulations and certifications on the species listed in three appendices. The Ministry of Environment

& Forests, Government of India adopts a national legislation to provide official designation of a Management Authority for issuing the permits and certificates based on the advice of a designated Scientific Authority (Zoological Survey of India for faunal matters). These two designated national authorities also enhance the CITES enforcement through cooperation with customs, police or appropriate authorities.

Appendix–I, II and III of CITES includes articles related to trade and export of any specimen of a species that require prior grant and presentation of an export permit issued by scientific and management authority. Similarly, such authorities also regulate the import. The scientific authorities' permits only after satisfying that such export-imports will not be detrimental to the survival of the species. The principle of such export-import policy is to determine, that the species in question have a consistent level throughout its range/ecosystem.

Appendix-I include all species threatened with extinction, which are or may be affected by trade. Trade in specimens of these species must be subject to particularly strict regulation in order not to endanger further their survival and must only be authorized in exceptional circumstances.

Appendix-II includes i. all species which although not necessarily now threatened with extinction may become so unless trade in specimens of such species is subject to strict regulation in order to avoid utilization in compatible with their survival and ii. other species which must be subject to regulation in order that trade in specimens referred to in above subparagraph (i) may be brought under effective control.

Appendix-III shall include all species, which any party identifies as being subject to the regulation within its jurisdiction for the purpose of preventing or restricting exploitation, and needing the cooperation of other parties in the control of trade.

The first Red Data Book on Indian Animals containing data in the 1993 IUCN format on vertebrate species (except fishes) threatened with extinction was published by Zoological Survey of India in 1994. The categorization in this book was according to 1993 IUCN Criteria. They were Extinct, Critical, Endangered, Vulnerable, Rare and Insufficiently Known (Fig. 1). It was based generally on the updated information on population size and degree of threat to the population and habitat. The species account followed the standard IUCN Red Data Book format. The Red Data Book on Indian Animals (Part-1) Vertebrates includes an updated data on 77 mammals, 55 birds, 20 reptilian and 1 amphibian species. Similar attempt was done earlier in 1983, when a species-wise account was published on threatened animals of India (Tikader, 1983) on the basis of the then IUCN Criteria (Fig. 1). The account covered data on 81 mammal, 47 birds, 15 reptiles and 3 amphibian rare species.

Fig. 1. Changes in IUCN categories

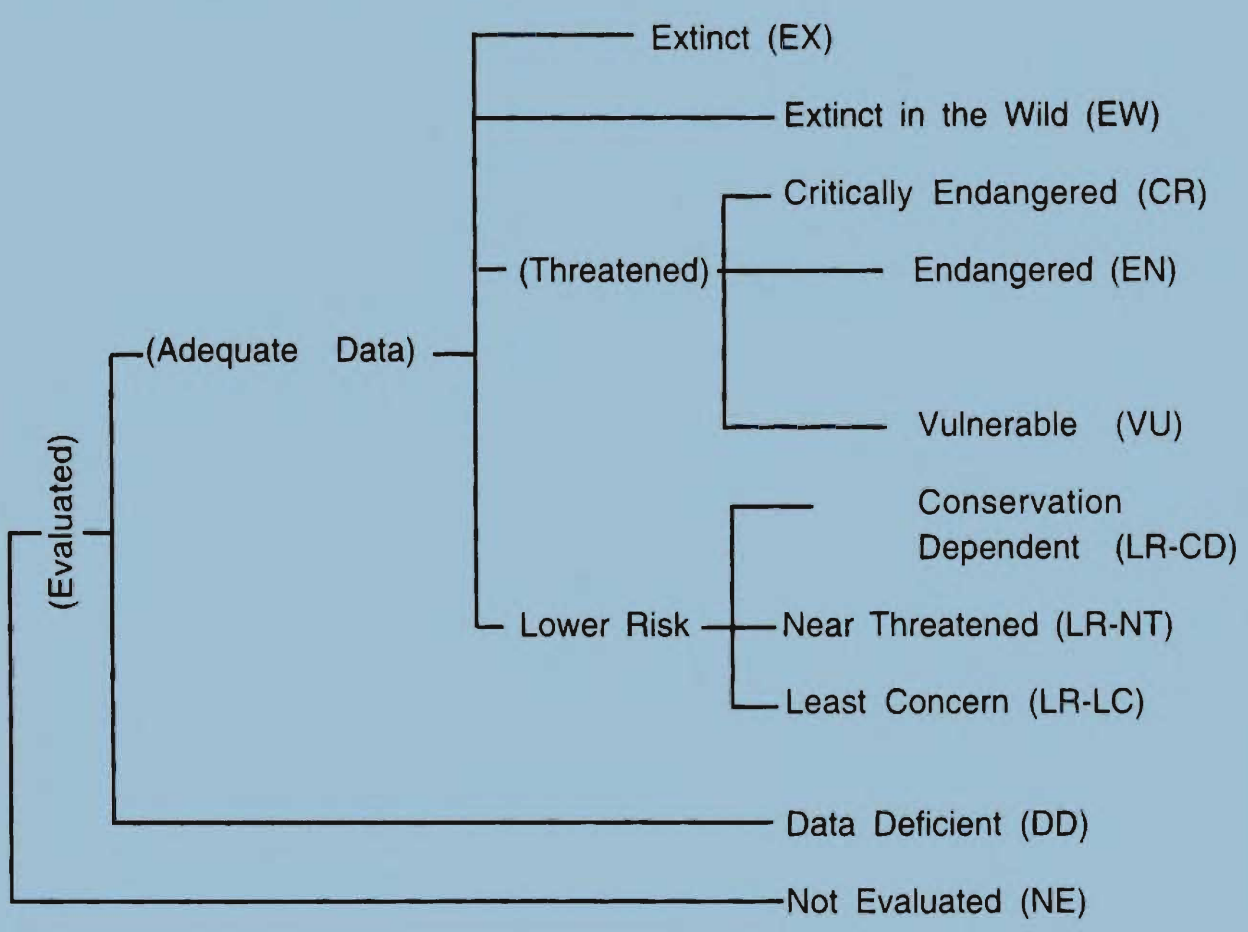
A) The structure of the previous IUCN Categories (1983) :

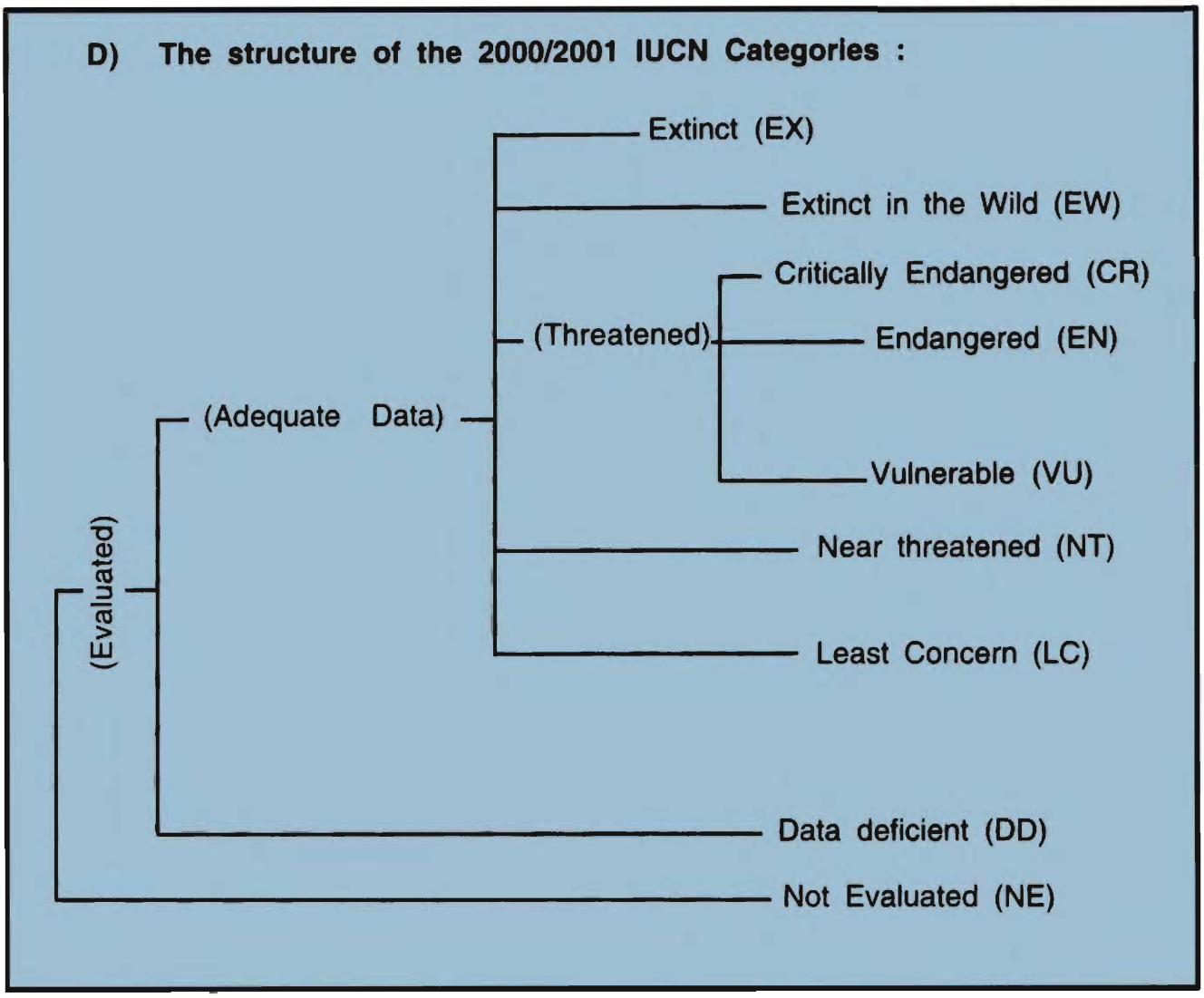
1. Endangered (E)
2. Vulnerable (V)
3. Rare (R)
4. Threatened (T)
5. Out of danger (O)
6. Indeterminate (I)

B) The structure of 1993 IUCN Categories :

1. Extinct (Ex)
2. Critical (CR)
3. Endangered (EN)
4. Vulnerable (VU)
5. Rare (R)
6. Insufficiently Known (IK)

C) The structure of 1994 IUCN Categories





BACKGROUND

Biological diversity is the central tenet of nature, one of its key defining features. Evolution has produced an amazing variety of plants, animals, and micro-organisms, and the ecosystems of which they are a part, all intricately linked. Humans are one amongst these millions of species. The survival of human societies and cultures is dependent on biological diversity. It provides the essential ecosystem services including hydrological and geochemical cycles and climatic regulation that form the basis for human survival. This wonderful diversity and each of its components are worthy of highest respect and conservation in their own right. Most importantly biodiversity is the basis for the continuous evolution of species and ecosystems.

The two pre-requisites that emanated from National Biodiversity Strategy and Action Plan of the Ministry of Environment and Forests, Government of India are: Ecological Security of the country or of any region within it, and Livelihood Security of those most critically dependent on biodiversity and its components :

- Ecological security refers to the maintenance of: the diversity of ecosystems and habitats; the diversity of species, subspecies/varieties, populations and communities; the interactions between species, populations, communities and their habitats and ecosystem; their integrity including biological productivity

of ecosystems and taxa; the evolutionary potential of natural and agricultural systems; and critical ecosystem services. This refers to both wild and domesticated biodiversity.

- Livelihood security refers to the security of human communities and individuals critically dependent on biological resources, including guaranteed access to, and control over such biological resources and related knowledge.

Both ecological and livelihood security have been severely eroded, and continue to be threatened. Therefore, there is a need to take urgent and comprehensive measures to reverse this trend. Two basic goals need to be achieved to reverse this trend :

- Conservation of biodiversity, including the integrity and diversity of genes, species and ecosystems and their evolutionary potential;
- Sustainable use of biological resources, referring to the use of components of biological diversity in such a manner and at such rates that does not lead to the long-term decline of the biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.

India is very rich in terms of biological diversity due to its unique biogeographical location, diversified climatic conditions and enormous eco- and geo-diversities. India lies at the confluence of three major biological realms. They are Indo-Malayan, Eurasian and Afro-tropical realms. Within Indian boundaries, they are further divided into 10 biogeographic zones and 26 biotic provinces respectively (Map 2&3). It will be noticed that India has a rich and diversified heritage of biodiversity, which encompasses a wide spectrum of habitats from tropical rainforests in Andaman and Nicobar Islands to alpine vegetation and dry alpine scrub high in the Himalayas and from temperate forests to coastal wetlands. Between them lies semi-evergreen to dry deciduous forests, thorn forests, scrub forests, lower and temperate montane forest zones, grasslands, desert and semi arid and vast marine habitats. Uniqueness lies in possession of diversified ecosystems ranging from snow-clad high mountain ranges to sea coasts of all types, through deserts, semi-arid regions, lakes, rivers, estuaries, lagoons, islands, oceans and man-made huge water bodies. One experiences climatic extremes also on this land from arctic in the Himalayas to extreme hot in Thar Desert of Rajasthan. The annual rainfall for India varies from 100 mm in deserts to 5000 mm in the Cherrapunji hills in Meghalaya.

Therefore, it is not surprising that only 2 per cent of the global land mass harbours little over 7 per cent of the world's known biological living species. Based on the information available, the Indian fauna comprises 89,459 species (Protista+Animalia) (Alfred *et al.* 2004). Out of these insects alone takes major share of 68.32 per cent, while chordates forms a meagre share of 5.7 per cent only. However, share of Indian chordates in the global chordate perspective is over 10% (Alfred *et al.* 2004). Thus 4,860 Indian chordates are included in world's 48,451 chordate species. Table-1 gives class-wise split up of chordate species (excluding Protochordata). Under the Indian scenario there are 4860 vertebrate

species occurring within Indian limits (Alfred & Ramakrishna, 2004) (Table-1). Incidentally, these include 153 vertebrate species (Excluding fishes) described in the first Red Data Book published by Zoological Survey of India (Table-2).

Table 1. Class-wise vertebrate species
(Source : Alfred & Ramakrishna, 2004)

Sl. No.	Taxonimic groups	No. of species		Per cent in India
		World	India	
1.	PISCES	21,723	2,546	11.72 %
2.	AMPHIBIA	5,150	229	4.45 %
3.	REPTILIA	5,817	456	7.84 %
4.	AVES	9,026	1,232	13.66 %
5.	MAMMALIA	4,629	397	8.58 %
	Grand total	46,345	4,860	10.49 %

Table 2. ZSI's Contribution towards some of the threatened mammal species

Sl. No.	Name	Author	Year	No. of threatened mammal species
1.	*Endangered Animals of India*	A.K. Mukherjee	1982	44
2.	*Threatened Animals of India* (Based on IUCN earlier Guidelines)	B. K. Tikader	1983	81
3.	*Red Data Book on Indian Animals* (Part I) : Vertebrates (Based on IUCN 1993 Guidelines)	Anonymous	1994	77
4.	*Present Volume* (Based on IUCN 2000 Guidelines)	–	–	144

SCOPE

In the years 2000, 2001 and 2003, IUCN made major changes in the IUCN criteria for the threatened species listed under the Red List (Fig.1). The changes were major like inclusion of criteria like Critically Endangered, Near Threatened and Least Concern, while exclusion of Criteria like Rare, Lower risk-least concern, Lower risk-Near threatened and Insufficiently known. Similarly, there has been a remarkable change in the IUCN 2000 guidelines as well. Taking into consideration the major sea of changes occurred in the IUCN Red List Criteria and IUCN guidelines in the year 2000, it was felt absolutely necessary to revise the Red Data

Book of 1994 published by ZSI. The definitions of the latest IUCN Categories based on version 3.1 are given below :

IUCN RED LIST CATEGORIES AND CRITERIA

Prepared by the IUCN Species Survival Commission. As approved by the 51st meeting of the IUCN Council Gland, Switzerland, 9 February 2000, IUCN–The World Conservation Union, 2001

IUCN RED LIST CATEGORIES

EXTINCT (EX)

A taxon is Extinct when there is no reasonable doubt that the last individual has died. A taxon is presumed Extinct when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.

EXTINCT IN THE WILD (EW)

A taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity or as a naturalized population (or populations) well outside the past range. A taxon is presumed Extinct in the Wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal annual), throughout its historic range have failed to record an individual. Surveys should be over a period appropriate to the taxon's life cycle and life form.

CRITICALLY EXDANGERED (CR)

A taxon is Critically Endangered when the best available evidence indicates that it is not Extinct and it is considered to be facing an extremely high risk of extinction in the wild. Survey should be over a time appropriate to the taxon's life cycle and life form.

ENDANGERED (EN)

A taxon is Endangered when the best available evidence indicates that it is not Critically Endangered but is considered to be facing a very high risk of extinction in the wild in the near future, as defined by any of the criteria.

VULNERABLE (VU)

A taxon is Vulnerable when the best available evidence indicates that it is not Critically Endangered or Endangered but is therefore considered to be facing a high risk of extinction in the wild in the medium-term future, as defined by any of the criteria.

NEAR THREATEATENED (NT)

A taxon is Near Threatened when it has evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

LEAST CONCERN (LC)

A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

DATA DEFICIENT (DD)

A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available.

In many cases great care should be exercised in choosing between DD and a threatened status. If the range of a taxon is suspected to be relatively circumscribed, and a considerable period of time has elapsed since the last record of the taxon, threatened status may well be justified.

NOT EVALUATED (NE)

A taxon is Not Evaluated when it is has not yet been evaluated against the criteria.

IUCN RED LIST CRITERIA

CRITICALLY ENDANGERED (CR)

A taxon is Critically Endangered when the best available evidence indicates that it meets any of the following criteria (A to E), and it is therefore considered to be facing an extremely high risk of extinction in the wild :

A. Reduction in population size based on any of the following :

1. An observed, estimated, inferred or suspected population size reduction of > or =90% over the 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible AND understood AND ceased, based on (and specifying) any of the following :

   (a) direct observation

   (b) an index of abundance appropriate to the taxon

(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat

(d) actual or potential levels of exploitation

(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.

2. An observed, estimated, inferred or suspected population size reduction of > or = 80% over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (b) to (e) under A1.

3. A population size reduction of > or = 80%, projected or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) any of (b) to (e) under A1.

4. An observed, estimated, inferred, projected or suspected population size reduction of > or = 80% over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, and where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.

B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both :

1. Extent of occurrence estimated to be less than 100 km^2, and estimates including at least two of a-c :

   a. Severely fragmented or known to exist at only a single location.

   b. Continuing decline, observed, inferred or projected, in any of the following

      (i) extent of occurrence
      (ii) area of occupancy
      (iii) area, extent and/or quality of habitat
      (iv) number of locations or subpopulations
      (v) number of mature individuals.

   c. Extreme fluctuations in any of the following:

      (i) extent of occurrence
      (ii) area occupancy
      (iii) number of locations or subpopulations
      (iv) number of mature individuals.

2. Area of occupancy estimated to be less than 10 km², and estimates indicating at least two of a-c;
   a. Severely fragmented or known to exist at only a single location.
   b. Continuing decline, observed, inferred or projected, in any if the following :
      (i) extent of occurrence
      (ii) area of occupancy
      (iii) area, extent and/or quality of habitat
      (iv) number of locations or subpopulations
      (v) number of mature individuals.
   c. Extreme fluctuations in any of the following :
      (i) extent of occurrence
      (ii) area of occupancy
      (iii) number of locations or subpopulations
      (iv) number of mature individuals.

C. Population size estimated to number fewer than 250 mature individuals and either :

1. An estimated continuing decline of at least 25% within three years or one generation, whichever is longer, (up to a maximum of 100 years in the future)

   OR

2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a-b) :
   a. Population structure in the form of one of the following :
      (i) no subpopulation estimated to contain more than 50 mature individuals,

      OR

      (ii) at least 90% of mature individuals in one subpopulation.
   b. Extreme fluctuations in number of mature fewer than 50 mature individuals.

D. Population size estimated to number fewer than 50 mature individuals.

E. Quantitative analysis showing the probability of extinction in the wild is at least 50% within 10 years or extinction in the wild is at least 50% within 10 years or three generations, whichever is the longer (up to a maximum of 100 years).

ENDANGERED (EN)

A Taxon is endangered when the best available evidence indicates that it meets any of the following criteria (A to E), and it is therefore considered to be facing a very high risk of extinction in the wild :

A. Reduction in population size based on any of the following :

1. An observed, estimated, inferred or suspected population size reduction of > or = 70% over the last 10 years or three generation, whichever is the longer, where the causes of the reduction are clearly reversible AND understood AND ceased, based on (and specifying) any of the following:

   (a) direct observation

   (b) an index of abundance appropriate to the taxon

   (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat

   (d) actual or potential levels of exploitation

   (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.

2. An observed, estimated, inferred or suspected population size reduction of > or = 50% over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.

3. A population size reduction of > or = 50%, projected or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) any of (b) to (e) under A1.

4. An observed, estimated, inferred, projected or suspected population size reduction size reduction of > or = 50% over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, and where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.

B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both :

1. Extent of occurrence estimated to be less than 5000 km², and estimates indicating at least two of a-c :

   a. Severely fragmented or known to exist at no more than five locations.

   b. Continuing decline, observed, inferred or projected, in any of the following

      (i) extent of occurrence

      (ii) area of occupancy

      (iii) area, extent and/or quality of habitat

      (iv) number of locations or subpopulations

      (v) number of mature individuals.

c. Extreme fluctuations in any of the following:

(i) extent of occurrence

(ii) area of occupancy

(iii) number of locations or subpopulations

(iv) number of mature individuals.

2. Area of occupancy estimated to be less than 500 km², and estimates indicating at least two of a-c :

a. Severely fragmented or known to exist at no more than five locations.

b. Continuing decline, observed, inferred or projected, in any of the following:

(i) extent of occurrence

(ii) area of occupancy

(iii) area, extent and/or quality of habitat

(iv) number of locations or subpopulations

(v) number of mature individuals.

c. Extreme fluctuations in any of the following :

(i) extent of occurrence

(ii) area of occupancy

(iii) number of locations or subpopulations

(iv) number of mature individuals.

C. Population size estimated to number fewer than 2500 mature individuals and either :

1. An estimated continuing decline of at least 20% within five years or two generations, whichever is longer, (up to a maximum of 100 years in the future)

OR

2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a-b) :

a. Population structure in the form of one of the following :

(i) no subpopulation estimated to contain more than 250 mature individuals,

OR

(ii) at least 95% of mature individuals in one subpopulation.

b. Extreme fluctuations in number of mature individuals.

D. Population size estimated to number fewer than 250 mature individuals.

Quantitative analysis showing the probability of extinction in the wild is at least 20% within 20 years or five generations, whichever is the longer (up to a maximum of 100 years).

VULNERABLE (VU)

A taxon is Vulnerable when the best available evidence indicates that it meets any of the following criteria (A to E), and it is therefore considered to be facing a high risk of extinction in the wild :

A. Reduction in population size based on any of the following :

1. An observed, estimated, inferred or suspected population size reduction of > or = 50% over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are : clearly reversible AND understood AND ceased, based on (and specifying) any of the following :

   (a) direct observation

   (b) an index of abundance appropriate to the taxon

   (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat

   (d) actual or potential levels of exploitation

   (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.

2. An observed, estimated, inferred or suspected population size reduction of > or = 30% over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.

3. An population size reduction of > or = 30%, projected or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years 0, based on (and specifying) any of (b) to (e) under A1.

4. An observed, estimated, inferred, projected or suspected population size reduction of > or = 30% over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years in the future), where the time period must include both the past and the future, and where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.

B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both :

1. Extent of occurrence estimated to be less than 20,000 km², and estimates indicating at least two of a-c :

   a. Severely fragmented or known to exist at no more than 10 locations.

   b. Continuing decline, observed, inferred or projected, in any of the following:

      (i) extent of occurrence

      (ii) area of occupancy

      (iii) area, extent and/or quality of habitat

      (iv) number of locations or subpopulations

      (v) number of mature individuals.

   c. Extreme fluctuations in any of the following:

      (i) extent of occurrence

      (ii) area of occupancy

      (iii) number of locations or subpopulations

      (iv) number of mature individuals.

2. Area of occupancy estimated to be less than 2000 km², and estimates indicating at least two of a-c:

   a. Severely fragmented or known to exist at no more than 10 locations.

   b. Continuing decline, observed, inferred or projected, in any of the following:

      (i) extent of occurrence

      (ii) area of occupancy

      (iii) area, extent and/or quality of habitat

      (iv) number of locations or subpopulations

      (v) number of mature individuals.

   c. Extreme fluctuations in any of the following:

      (i) extent of occurrence

      (ii) area of occupancy

      (iii) number of locations or subpopulations

      (iv) number of mature individuals.

C. Population size estimated to number fewer than 10,000 mature individuals and either :

1. An estimated containing decline of at least 10% within 10 years or three generations, whichever is longer, (up to a maximum of 100 years in the future)

   OR

2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a-b):

   a. Population structure in the form of one of the following :

      (i) no subpopulation estimated to contain more than 1000 mature individuals, OR

      (ii) all mature individuals are in one subpopulation.

   b. Extreme fluctuations in number of mature individuals.

D. Population very small or restricted in the form of either of the following:

1. Population size estimated to number fever than 1000 mature individuals.
2. Population with a very restricted area of occupancy (typically less than 20 km^2) or number of locations (typically five or fewer) such that it is prone to the effects of human activities or stochastic events within a very short time period in an uncertain future, and is thus capable of becoming Critically Endangered or even Extinct in a very short time period.

E. Quantitative analysis showing the probability of extinction in the wild is at least 10% within 100 years.

As per the above IUCN 3.1 version of 2002, there are 366 Indian species of animals categorized as "Threatened" These include 148 species of mammals, 138 species of birds, 32 species of reptiles, 3 species of amphibians, 17 species of pisces and 28 species of invertebrates (Arun Kumar and Vinod Khanna, 2003).

The Red Data Book of Indian animal species published in 1994, dealt primarily with the animal species included in Schedule I of the Indian Wildlife (Protection) Act 1972 and its subsequent amendments till that date. Subsequently, the Act was further amended from time to time resulting in further major changes in the Wildlife Act schedules, which cannot be ignored. Because, more and more animal species have been brought under schedule I and II to offer protection, which are on the verge of extinction in wild for some or other reasons, the present review was undertaken.

Furthermore, there is another list of endangered animal species, which requires protection from illegal international trade. Such species have been brought under the various appendices of the international convention treaty: CITES. It was felt that the endangered species under CITES Appendix I should also be not left out.

Hence, list of Indian animal species/subspecies with higher conservation status was prepared. The categories of higher conservation status selected for this purpose are given in Fig. 2. It was observed that the list turned out to be most exhaustive. Mammal species alone with higher conservation status as per the criteria given in Fig. 2 reached the figure of 144. That means almost 50% of Indian mammal species have been offered full protection under some or other criteria of higher conservation status.

Fig. 2. Categories of higher conservation status selected (species with atleast one of the following categories)

A) Indian Wildlife (Protection) Act (1972, as amended up to Dec. 2002) :

I. Schedule : I (Part I)

II. Schedule : II (part II)

B) IUCN Categories (1993) :

I. Extinct

II. Critical

III. Endangered

C) IUCN Categories (1994, 2000 & 2001) :

I. Extinct

II. Critically endangered

III. Endangered

D) CITES Appendix :

I. Appendix : I

Out of these 144 species/subspecies information on only 77 mammal species is available in the earlier Red Data Book. The list of 144 mammal species includes many of the less charismatic and totally unknown species, which are of great importance from biodiversity point of view and are badly in need of protection for their survival. For example species like Wroughton's free tailed bat, Salimali's fruit bat, Indian flying squirrels, Civet cats etc. Hence, attempt has been made here to focus on these Indian 144 mammalian species/subspecies only and provide maximum species/ subspecies-wise updated information as per IUCN's 2000 guidelines. Wherever possible, the species-wise account is supplemented by photographs, line drawings and maps showing distribution within Indian limits. This is a first attempt to provide photographs and distribution maps of every species/subspecies for the benefit of the users.

METHODOLOGY ADOPTED

The species/subspecies account, forming the main text is based on compilation, selection and editing of published and unpublished written information, verbal from variety of authentic sources and the observation of the scientists in the field. A variety of workers including field and museum scientists, wildlife and forest personnel and naturalists assisted in providing valuable information.

As for as possible each account is self-explanatory and based on IUCN 2000 guidelines with suitable additions and modifications. Care has been taken to arrange information in such a manner that each data sheet is self-sufficient. However, repetitions of some information are essential and unavoidable. About more than 40 mammal experts were approached for collecting updated information on these species. Some twenty experts responded and contributed the information available with them. Their names have been included in the list of evaluators.

The IUCN Red List Categories provides a methodology for assessment and categorization, which can be applied, to any faunal group (except microorganisms). The revised Red List Criteria (1994) based on Version 2.3 is being used now all over the world and is considered the best possible method available even today for assessing the conservation status of a species. Key factors involved for assessment are changes in geographical distribution, population numbers, degree, and type of threats at national and global levels. Categorization of Indian mammalian species/ subspecies was done according to the 1994 IUCN Red List Categories during CAMP Workshop held at Bangalore in 1997 by assessing their status in wild on the basis of IUCN guidelines (Version 2.3). The CAMP Report (1998) is a base ideal report for Indian Mammal species. Subsequently two more CAMP Workshops were conducted to assess in detail the conservation status of Indian Chiropteran and Primate species on the basis of latest IUCN 2001 guidelines. CAMP Workshop Reports for South Asian Chiroptera (2002) and South Asian Primates (2003) provide latest categorizations (Version 3.1) of the Chiropteran and Primate species and subspecies, which have been included in the present work. For the remaining mammal species, IUCN categorizations (National) assessed on the basis of guidelines of 1994 (Version 2.3) have been accepted (IUCN,2003). As stated above, these categorizations are already available in CAMP Workshop Report (1998).

In general, Red List Categorization is carried out at National and Global levels. Both are equally essential. Since geographical distribution of hunting Leopard is extralimital in number of countries, its IUCN Category at Global level is Vulnerable, while at Indian National level it is Extinct. But in case of Indian endemic subspecies, like *Ratufa indica dealbata,* the categorization remains same at both the levels i.e. Extinct. Same case applies to another Indian Endemic species with extremely restricted distribution, *Otomops wroughtoni,* the IUCN category for which will remain Critically Endangered at both the levels. Therefore, it is always better to assess IUCN Categories at both the levels for any species for proper insight. However, priority should always be given to the National assessment only. Same practice has been adopted here in this volume. Though various IUCN categorizations at all the levels have been mentioned separately under conservation status column for each species, the latest IUCN category at national level has been highlighted at the beginning of the account for every species.

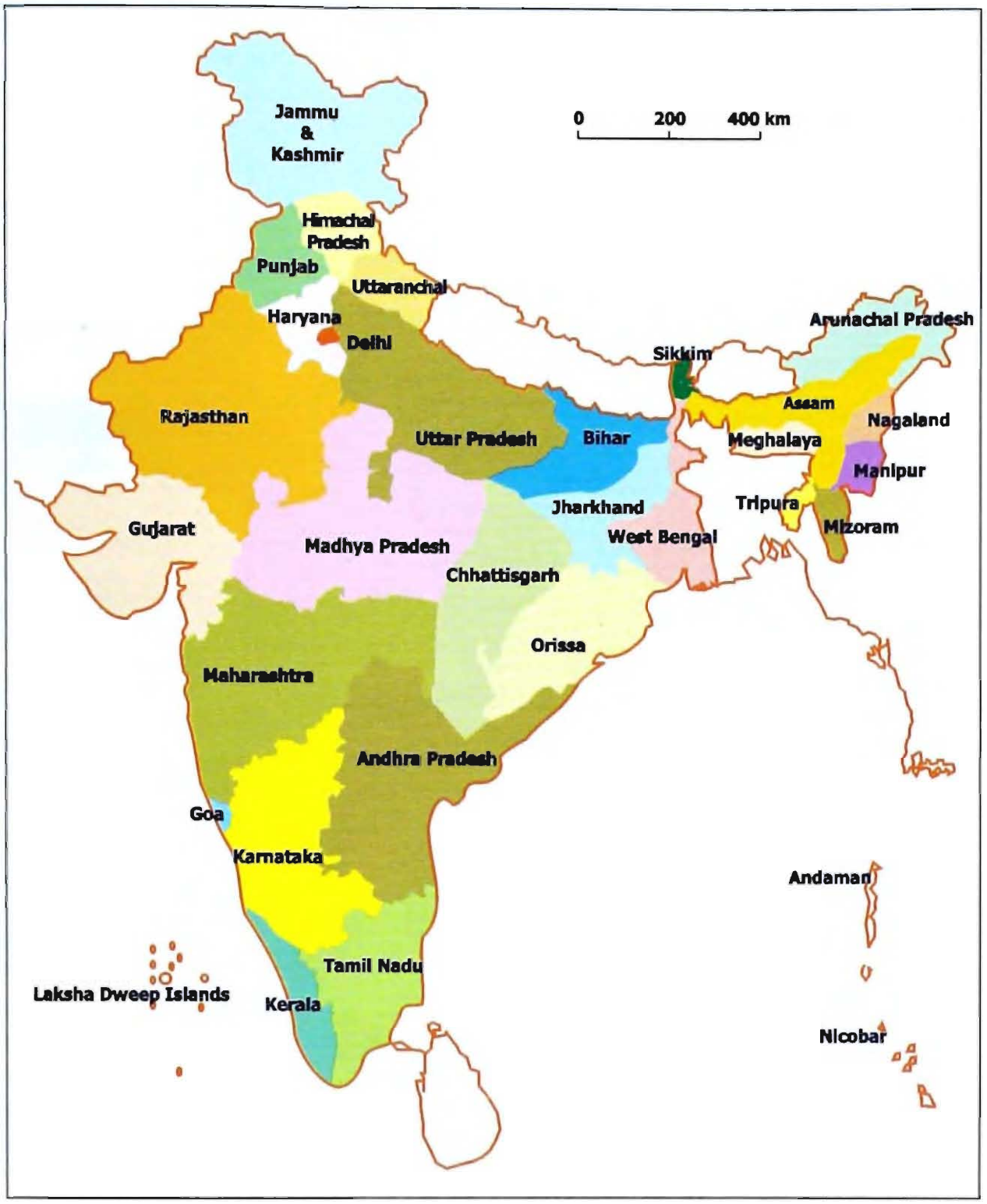
160 mammal species/subspecies out of 397 Indian species have been allotted some or other higher conservation status under national legislation and international treaties (Table 4). The list includes *Crocidura* spp., *Pteropus* spp. etc. some of which are not endangered species at all. Similarly majority of *Herpestes* spp. mentioned in the same list have been recently included in Schedule II Part II of

Indian Wildlife (protection) Act. However, their IUCN status needs to be verified again in light of such important changes. These species have not been included in the present volume, since their conservation, status needs to be verified again based on the recent amendments in the national legislation and the international guidelines and treaties. Therefore, only 144 mammal species/subspecies under 13 orders (Table: 3) out of 160 listed in Table 4 have been considered for their inclusion in the present volume. The selected 144 species/subspecies have been shown in bold in Table-4.

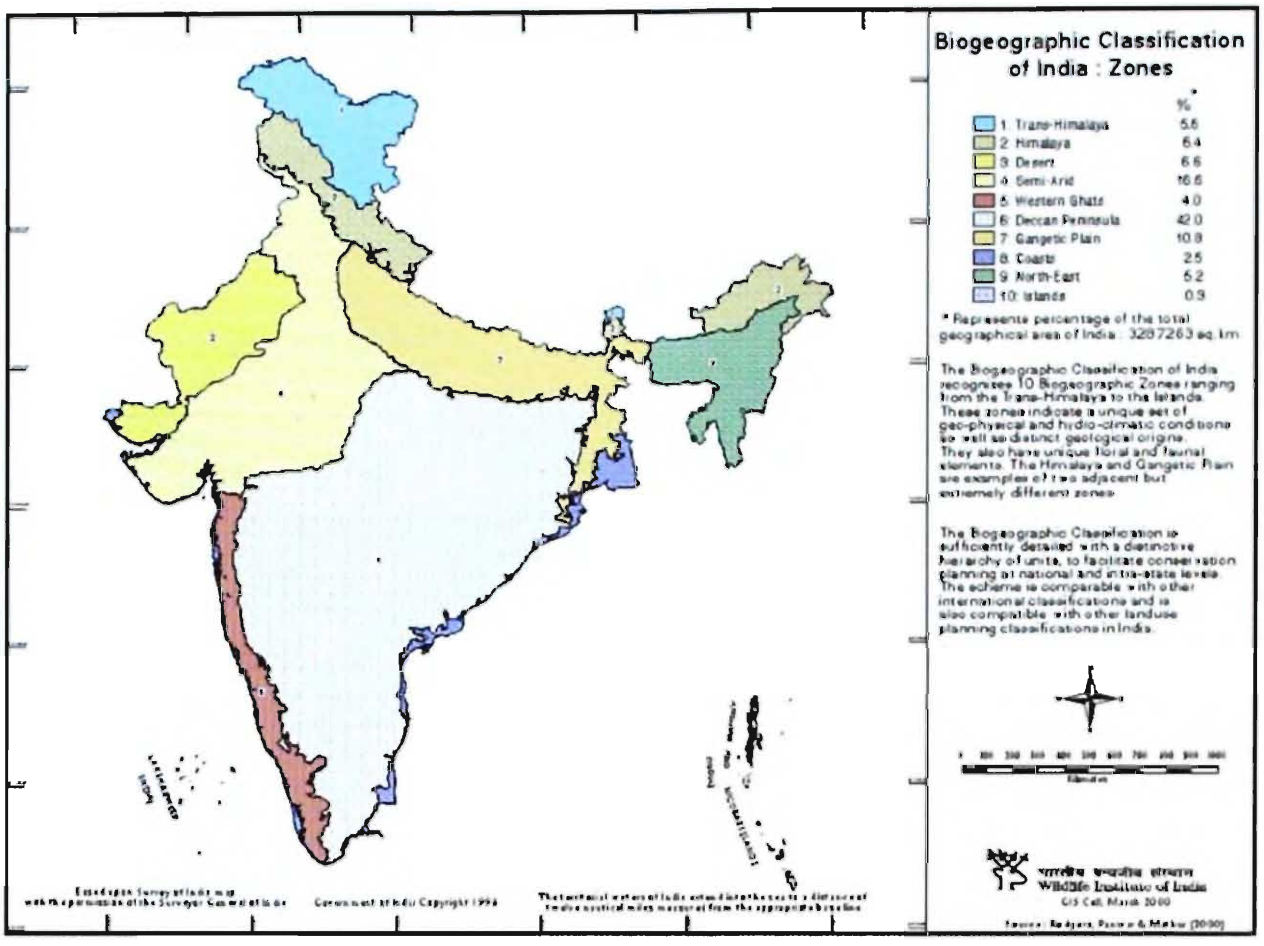
Table 4. Order-wise additions in Mammal species reported in Red Data Book, 1994 (ZSI).

Sl. No.	Order	No. of Species (Red Data Book, 1994)	No. of Species Reported in this volume
1.	INSECTIVORA	NIL	2
2.	SCANDENTIA	NIL	1
3.	CHIROPTERA	NIL	3
4.	PRIMATES	11	12
5.	CARNIVORA	29	55
6.	CETACEA	3	1
7.	SIRENIA	1	1
8.	PROBOSCIDEA	1	1
9.	PERISSODACTYLA	3	4
10.	ARTIODACTYLA	24	25
11.	PHOLIDOTA	1	2
12.	RODENTIA	2	19
13.	LAGOMORPHA	1	1
Total no. of Mammal species with higher conservation status		**77**	**144**

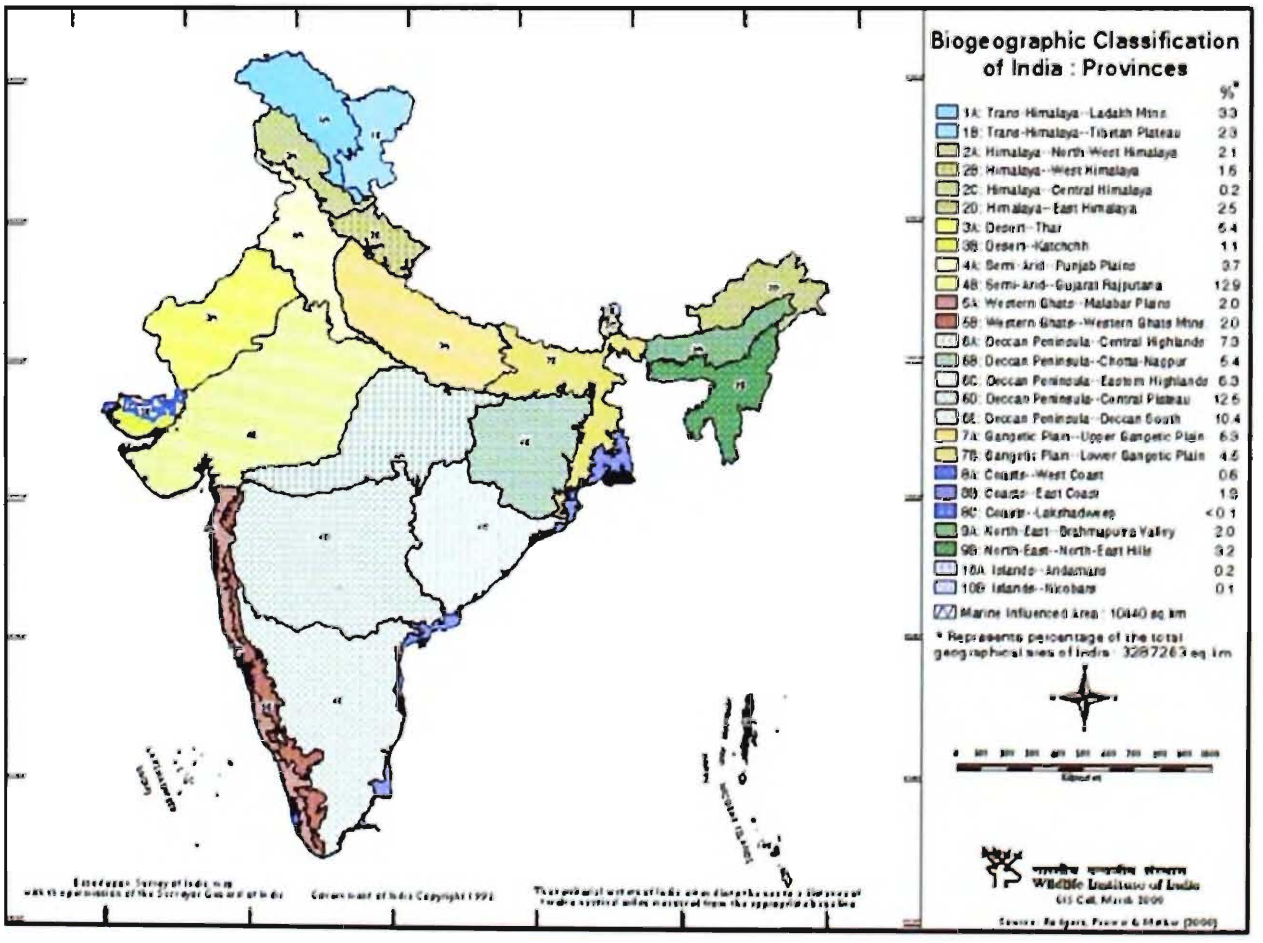
Each species-account in this revised Red Data Book includes two sections. (i) Research Recommended : Keeping in view the protection of the species and its habitats and elimination of threats to its survival, focus on some kind of suggestive research has been given. (ii) Remarks : Wherever required, some suggestions have been given from conservation status point of view to improve the taxon's prospects of survival.



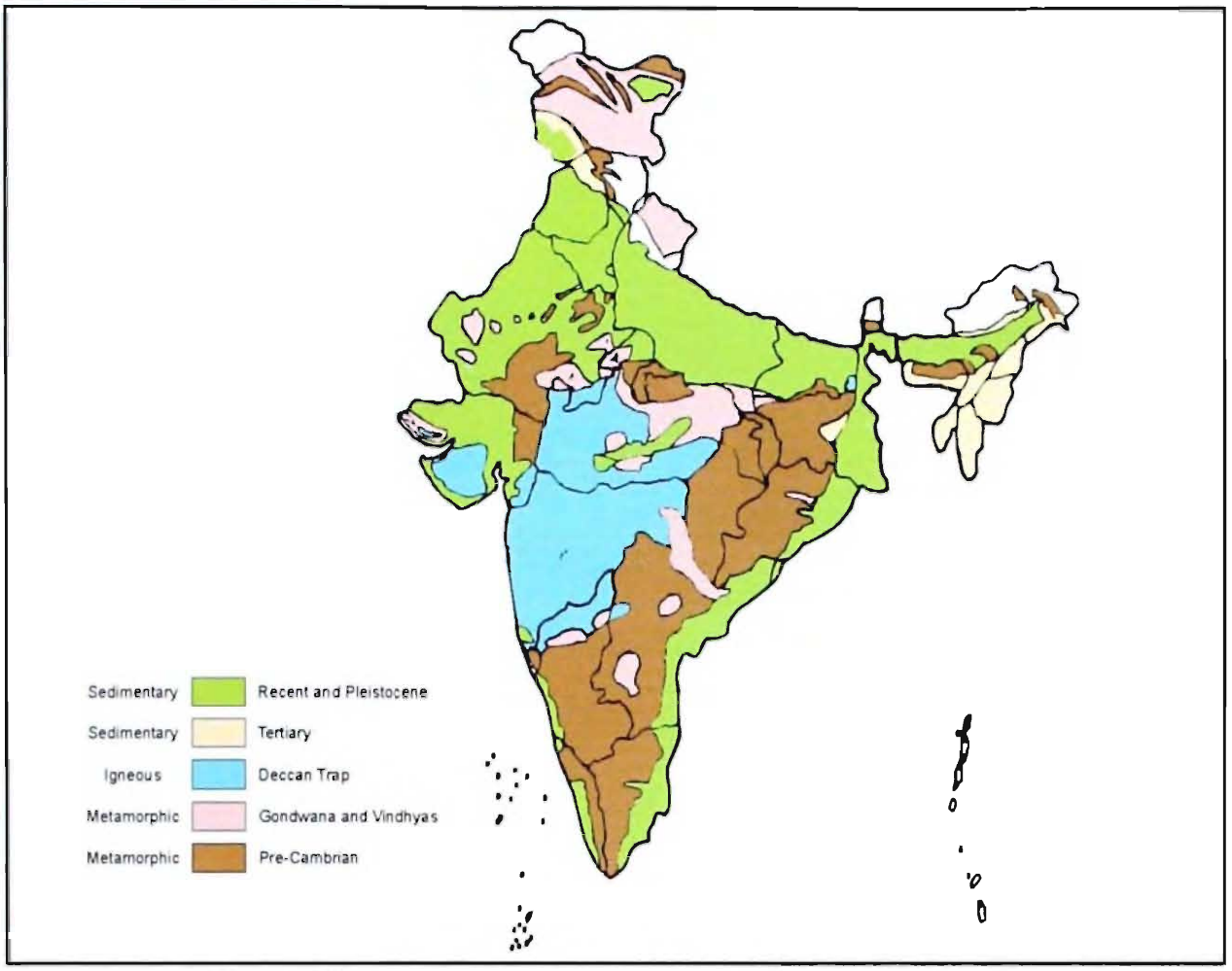
Map 1. Political Map of India (*Source* : Kumar *et al.*, 2005)



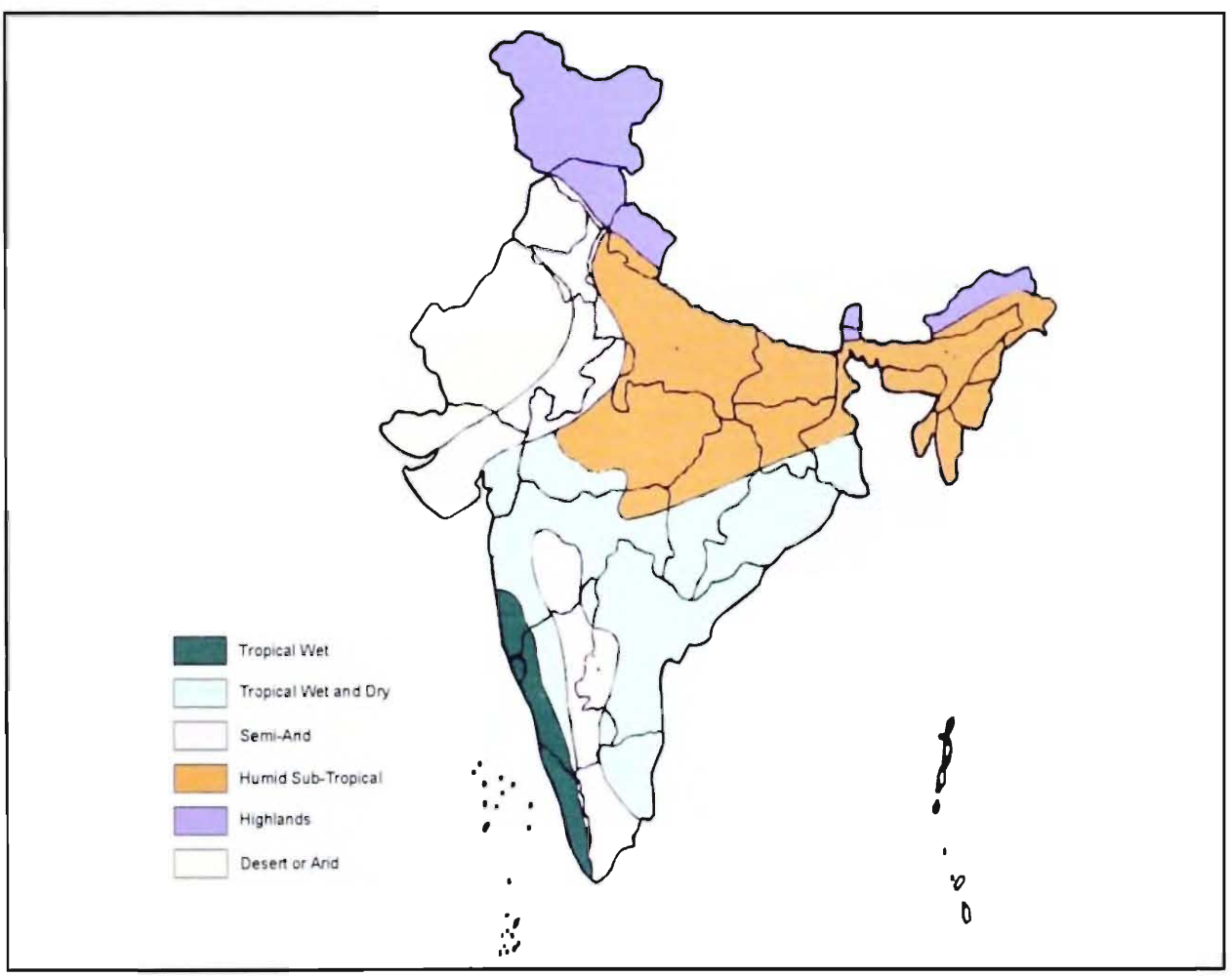
Map 2. Biogeographic Classification of India : Zones (*Source* : Rodgers *et al.*, 2002)



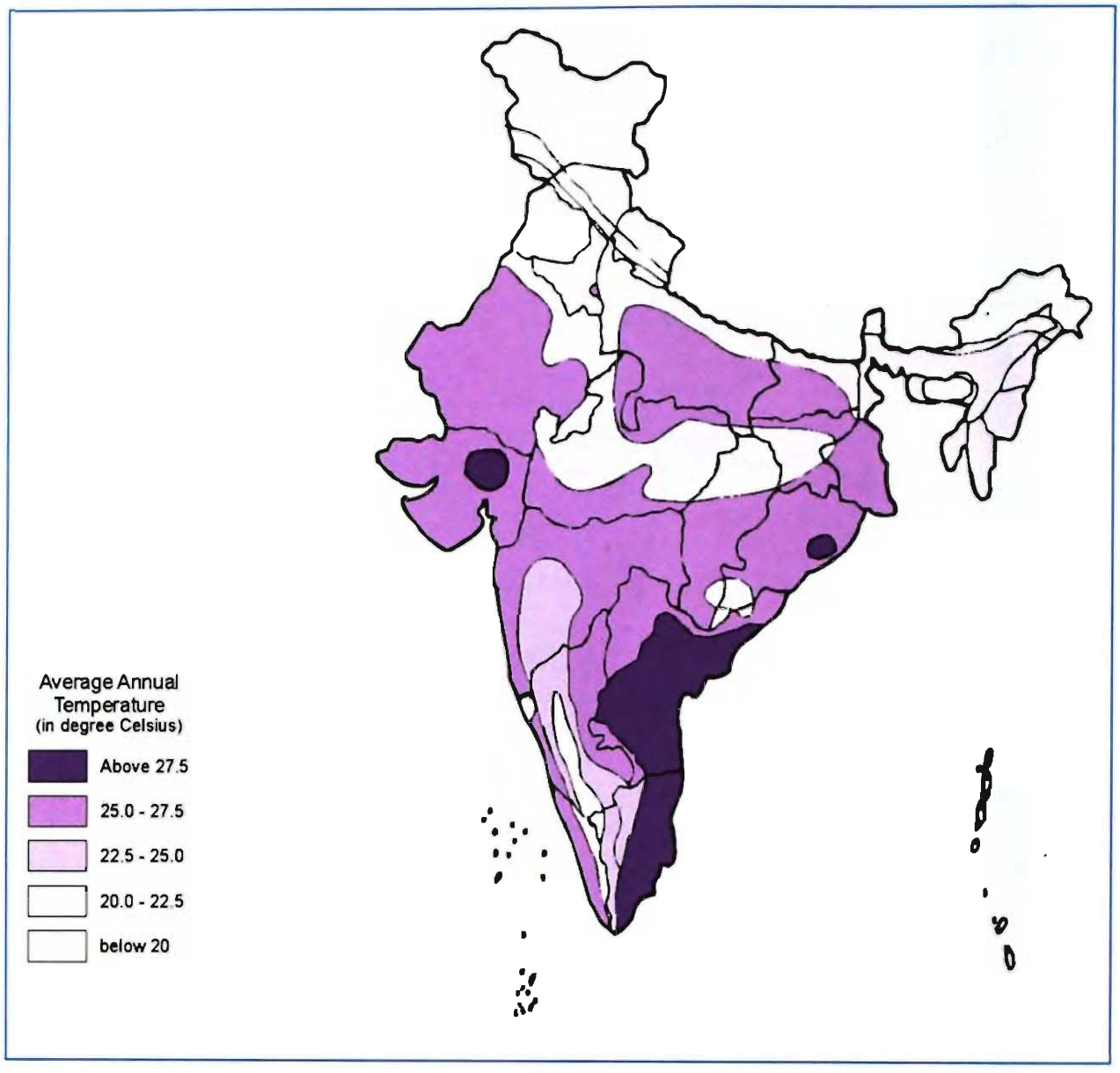
Map 3. Biogeographic Classification of India : Provinces (*Source* : Rodgers *et al.*, 2002)



Map 4. Geological map of India (*Source* : Kumar *et al.*, 2005)



Map 5. Climatical Regions of India (*Source* : Kumar *et al.*, 2005)



Map 6. Mean Annual Temperature of range in India (*Source* : Kumar *et al.*, 2005)

ANALYTICAL SUMMARY

The updated list of mammal species/subspecies shown in Table 5 and Fig. 3 reflects a shocking picture of extinction of three species/subspecies from the entire territory of India. One-third of the total is on the threshold of extinction (Critically Endangered+Endangered : 42 out of 144) and further another set of about 42 (30%) species/subspecies figuring in Near Threatened/Lower Risk-Near Threatened IUCN category, which are knocking on the door of threatened species. Interestingly, there is a noticeable number of species, which could not be assessed due to poor quality of data (Data Deficient+Not Evaluated : 10+12=22 out of 144) (Fig. 4). Data Deficient or Not Evaluated species are equally important, since they also fall under the category of conservation status at either National level (Indian Wildlife (Protection) Act Schedule I or Schedule II Part II) or International level (CITES Appendices I or II). Attention must be given to such species to gather maximum input to formulate appropriate corrective measures for the protection of these species. There are about 34 species/subspecies like *Otomops wroughtoni*, which were not

Table : 4. Conservation Status of Mammals of India

Sl. No.	Species Name	Common Name	Wildlife Act Schedule	Red Data Book IUCN, (1994)	Threat Category IUCN, (2002)	Threat Category (Camp, 1998)	CITES (16th Oct. 2003)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Class MAMMALIA Order INSECTIVORA							
1.	*Crocidura hispida* Thomas	Andaman Spiny Shrew	None	None	Endangered EN B1, 2c	EN B1 2c	None
2.	*Crocidura peregrisea* Miller	Pale Grey Shrew	None	None	Vulnerable VU B1+2c	EN B1, 2C	None
3.	*Crocidura andamanensis* Miller	Andaman White-Toothed Shrew	None	None	Data Deficient	Data Deficient	None
4.	*Crocidura jenkensi* Chakraborty	Jenkin's Shrew	None	None	Data Deficient	Data Deficient	None
5.	*Crocidura nicobarica* Miller	Nicobar Shrew	None	None	Data Deficient	Data Deficient	None
Order SCANDENTIA							
6.	*Anathana ellioti* (Waterhouse)	Indian Tree Shrew	None	None	LR/nt	LR/nt	None
Order CHIROPTERA							
7.	*Pteropus* spp.	None	None	None	None	None	Appendices-II
8.	*Ia io* Thomas	Great Evening Bat	None	None	LR/nt	En, B1, 2C	None
9.	*Otomops wroughtoni* Thomas	Wroughton's Free- tailed Bat	Schedule-I : Part-1	None	Critically Endangered CR b1+2c	CR, B1,	None
10.	*Latidens salimali* Thonglongya	Fruit Bat	Schedule-I	None	Critically Endangered CR b1+2c, D	En, B1, 2a, C2a	None

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Order PRIMATES							
11.	*Loris tardigradus* Linnaeus	Slender Loris	Schedule-I Part-1	Vulnerable	Vulnerable VU A1cd	LR/nt	Appendices-II
12.	*Nycticebus coucang* (Boddaert)	Slow Loris	Schedule-I : Part-I	Insufficiently Known	Data Deficient	Lr/nt	Appendices-II
13.	*Macaca arctoides* Geoffroy	Stump-tailed Macaque	Schedule-II Part-1	Vulnerable	Vulnerable VU A1cd	LR/nt	Appendices-II
14.	*Macaca fascicularis umbrosa* (Miller)	Crab eating Macaque	Schedule-I Part-1	None	LR/nt	CR,C2a	Appendices-II
15.	*Macaca nemestrina* (Linnaeus)	Pig tailed Macaque	Schedule-II Part-1	Vulnerable	None	Data Deficient	Appendices-II
16.	*Macaca silenus* (Linnaeus)	Lion tailed Macaque	Schedule-I Part-1	Endangered	Endangered EN B1+2c,C2a	EN B1,2c, C2a	Appendices -I
17.	*Macaca assamensis* M'Clelland	Assamese Macaque	Schedule-II Part-I	None	Vulnerable VU A1cd	LR/nt	Appendices-II
18.	*Macaca mulatta* Zimmermann	Rhesus Macaque	None	None	Lr/nt	Lr/lc	Appendices -II
19.	*Trachypithecus geei* (Khajuria)	Golden Langur	Schedule-I Part-1	Vulnerable EN A1acd,C2a	Endangered Endangered	Critically EN CR, C2a	Appendices -I
20.	*Trachypithecus johnii* (Fischer) =*Semnopithecus johnii*	Nilgiri Langur	Schedule-I Part-1	Vulnerable VU A1cd, B1, 2c, C2a	Vulnerable	VU, B1, B2, C1a	Appendices -II
21.	*Trachypithecus pileatus* (Blyth)	Capped Langur	Schedule-I Part-I	Vulnerable	Endangered EN A1,Cd C2a	Lower Risk Near Threatened	Appendices -I
22.	*Trachypithecus phayrei* Blyth	Phayre's Leaf monkey	Schedule-I Part-I	Vulnerable	Endangered C1+2a(i)	Endangered C1+2a	Appendices -II

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
23.	*Bunopithecus hoolock hoolock* (Harlan)	Hoolock Gibbon	Schedule-I Part-I	Endangered	Endangered EN A1cd	Vulnerable C2a	Appendices-I
Order CARNIVORA							
24.	*Canis lupus palipes* Sykes	Indian Wolf	Schedule-I Part-I	Vulnerable	Data Deficient	Lr/nt	Appendices-I
25.	*Canis lupus chanco* Gray	Tibetan Wolf	Schedule-I Part-1	Insufficiently Known	Data Deficient	Not Evaluated	Appendices-I
26.	*Cuon alpinus adjustes* Pallas Currently Extra limital subspecies	Dhole, Asiatic Wild dog	Schedule-II Part-I	None	Data Deficient	Critically Endangered C2b	Appendices-II
27.	*Cuon alpinus* Pallas	Indian Wild dog	Schedule-II Part-I	None	Vulnerable VU C2a	C2b	Appendices-II
28.	*Cuon alpinus dukhunensis* Pallas	Asiatic Wild dog/Dhole	Schedule-II Part-I	None	Not listed	Lr/nt	Appendices-II
29.	*Cuon alpinus laniger* Pallas	Ladakh Dhole	Schedule-II Part-I	None	Not listed	Critically Endnagered C2b	Appendices-II
30.	*Cuon alpinus primaevus* Hodgson	Himalayan Red Dog	Schedule-II Part-I	None	Data Deficient	Vulnerable D1	Appendices-II
31.	*Vulpes ferrilata* Hodgson Currently Extra limital	Tibetan Sand Fox	Schedule-I Part : I	Insufficiently Known	Distribution not in India	Distribution not in India	None
32.	*Vulpes vulpes pusila* Blyth	Desert Fox	Schedule-II Part-II	Vulnerable	Data Deficient	Lr/nt	Appendices-III

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
33.	*Vulpes vulpes montana* Linnaeus	Red Fox/Hill Fox	Schedule-II Part-II	None	Data Deficient	Lr/nt	Appendices-III
34.	*Vulpes bengalensis* (Shaw)	Bengal Fox	Schedule-II Part-II	None	Data Deficient	Lr/nt	Appendices-III
35.	*Vulpes vulpes griffithi*	***Synonymised in*** *Vulpes vulpes*	Schedule-II Part-II	None	None	None	Appendices-III
36.	*Herpestes palustris* Ghose =*Herpestes javanicus* (Geoffroy)	Marsh Mongoose	Schedule-II Part-II	None	Endangered ENB1+2abcd	ENB1, 2abcd	Appendices-III
37.	*Herpestes urva* Hodgson	Crab eating Mangoose	Schedule-II Part-II	None	None	Vulnerable B1 2a 2c	Appendices-III
38.	*Ursus malayanus* Raffles =*Helaractos malayanus* (Raffles)	Malayan Sun Bear	Schedule-I Part-I	Endangered	Data Deficient	Data Deficient	Appendices-I
39.	*Herpestes brachyurus fuscus* (Geoffroy St. Hillaire, 1818)	Brown mongoose	Schedule-II Part-II	None	Vulnerable	Vulnerable B1 2a 2b 2c	Appendices-III
40.	*Herpestes edwardsii* Gray, 1817	Grey mongoose	Schedule-II Part-II	None	Lc	Lr/lc	Appendices-III
41.	*Herpestes smithii* (Bennet, 1835)	Ruddy mongoose	Schedule-II Part-II	None	Lc	Lr/lc	Appendices-III
42.	*Herpestes vitticollis* Horsfield	Striped-necked mongoose	Schedule-II Part-II	None	Lr/nt	Lr/nt	Appendices-III

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
43.	*Ursus arctos isabellinus* Horsfield	Himalayan Brown Bear	Schedule-I Part-I	Endangered	None	Lr/nt	Appendices–II
44.	*Ursus thibetanus* Baron,Cuvier	Asiatic Black Bear	None	None	Vulnerable VU A1cd	LR 1c	Appendices -II
45.	*Ailurus fulgens fulgens* Cuvier	Red Panda	Schedule-I Part-I	Endangered	Endangered EN C2a	VU B1,2abc	Appendices -I
46.	*Aonyx cinera* (Illiger) =*Amblonyx cinereus*	Oriented small clawed Otter	Schedule-I Part-I	Vulnerable	None	None	Appendices–II
47.	*Lutra perspicillata* Geoffroy St. Hilare =*Lutragale perspicillata*	Smooth Indian Common Otter (*Lutra lutra* of IUCN)	Schedule-II Part-II	None	Vulnerable A2cde	Not evaluated	Appendices-I
48.	*Arctonyx collaris* Cuvier	Hog Badger	Schedule-I Part-I	Insufficiently Known	Data Deficient	Data Deficient	None
49.	*Mellivora capensis* (Schreber)	Honey Badger or Ratel	Schedule-I Part-I	Insufficiently Known	Lr/nt	Lr/nt	None
50.	*Melogale moschata* Gray	Small toothed ferret	Schedule-II Part-I	None	Data Deficient	Endnagered B1 B2 C	None
51.	*Melogale personata* Geoffroy St. Hilare	Large toothed Ferret Badger	Schedule-II Part-I	None	Data Deficient	Vulnerable B1 2C	None
52.	*Mustela erminea ferghanae* Thomas	Ermine or Stoat	Schedule-I Part-I	Insufficiently Known	Data Deficient	Data Deficient	Appendices-III
53.	*Mustela altaica temon* Hodgson	Pale Weasel	Schedule-II Part-I	None	Data Deficient	Data Deficient	Appendices-III

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
54.	*Mustela kathiah* Hodgson	Yellow bellied Weasel	Schedule-II Part-II	None	Data Deficient	Data Deficient	Appendices-III
55.	*Mustela sibirica* Pallas	Siberian Wolf Weasel	Schedule-II Part-II	None	Data Deficient	Lr/nt	Appendices-III
56.	*Mustela strigidorsa* Gray, 1855	Black striped Weasel	None	None	Vulnerable C2a	Data Deficient	None
57.	*Martes flavigula flavigula* Boddaert	Himalayan Marten	Schedule-II Part-II	None	Data Deficient	Lr/lc	Appendices-III
58.	*Martes foina intermedia* Severtszov	Beech Marten	Schedule-II Part-II	None	Data Deficient	Data Deficient	Appendices-III
59.	*Martes flavigula gwatkinsi* Horsfield	Nilgiri Marten	Schedule-II Part-II	None	Vulnerable VU B1 + 2abc	Vu, B1+ 2bc	Appendices-III
60.	*Arctictis binturong* (Raffles)	Binturong	Schedule-I Part-I	Endangered	Data Deficient	Data Deficient	Appendices-III
61.	*Viverra megaspila* Blyth =*Viverra civettina* Blyth	Malabar Civet	Schedule-I Part-I	Endangered Endangered CR C2a	Critically Endangered CR A1bc	Critically	Appendices-III
62.	*Viverra zibetha* Linnaeus =*Viverra civettina* Blyth	Large Indian Civet	Schedule-II Part-II	None	Data Deficient A 1C 2d	Vulnerable	Appendices-III
63.	*Viverra indica* Hodgson	Spotted Linsang	None	None	None	None	Appendices-III
64.	*Prinodon pardicolor* Hodgson	Spotted Linsang	Schedule-I Part-I	Endangered	Data Deficient	Vulnerable B1 2a 2c	Appendices-I
65.	*Acinonyx jubatus venaticus* (Griffith)	Asiatic Cheetah or Hunting Leopard	Schedule-I Part-I	Extinct	Vulnerable C2a(i)	Extinct	Appendices-I

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
66.	*Felis bengalensis* (Kerr) = *Prionaliurus bengalensis* (Kerr)	Leopard Cat	Schedule-I Part-I	Vulnerable	Data Deficient	Lr/nt	Appendices-I
67.	*Felis manul* Pallas =*Otocolobus manul*	Pallas Cat	Schedule-I Part-I	Insufficiently known	None	None	Appendices-II
68.	*Felis marmorata* (Martin) =*Pardofelis marmorata* Martin	Marbled Cat	Schedule-I Part-I	Endangered	Vulnerable VU C2a(i)	LR/nt	Appendices-I
69.	*Felis rubiginosa* Geoffroy =*Prionaliurus rubiginosa*	Rusty Spotted Cat	Schedule-I Part-I	Insufficiently Known	Data Deficient	Lr/nt	Appendices-II
70.	*Felis silvestris ornata* Schreber	Desert Cat	Schedule-I Part-I	Endangered	Data Deficient	Lr/nt	Appendices-II
71.	*Felis temminckii* (Vigors & Horsfield) =*Catopuma temminckii*	Golden Cat	Schedule-I Part-I	Endangered	Vulnerable C2a(i)	Not evaluated	Appendices-I
72.	*Felis viverrina* Bennett = *Prionailurus viverrinus* (Bennet)	Fishing Cat	Schedule-I Part-I	Vulnerable	Vulnerable VUC2a(i)	Vulnerable B1 2a 2b 2c	Appendices-II
73.	*Felis caracal schmitzi* Matschie =*Caracal caracal schmitzi* (Schreber)	Caracal	Schedule-I Part-I	Endangered	Data Deficient	Lr/nt	Appendices-I
74.	*Felis chaus* Guldenstaedt	Jungle Cat	Schedule-II Part-II	None	Data Deficient	Lr/nt	Appendices-II
75.	*Lynx lynx isabellina* Blyth	Himalayan Lynx	Schedule-I Part-I	Endangered	Data Deficient	Endangered B1 2b 2c	None

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
76.	*Arctogalidia trivarigata millsi* (Wroughton)	Small toothed Palm Civet	Schedule-II Part-II	None	Data Deficient	Vulnerable B1 2c D2	None
77.	*Neofelis nebulosa* (Griffith) =*Pardofelis nebulosa* (Griffith)	Clouded Leopard	Schedule-I Part-I	Endangered	Vulnerable VUC2a(i)	LR/nt	Appendices-I
78.	*Panthera leo persica* (Meyer)	Asiatic Lion	Schedule-I Part-I	Endangered	Vulnerable VU C2a(i)	Critically Endangered CR, C2 d	Appendices-I
79.	*Panthera pardus* (Linnaeus)	Leopard/Panther	Schedule-I Part-I	Vulnerable	Data Deficient	Vulnerable C2 a	Appendices -I
80.	*Panthera tigris tigris* (Linnaeus)	Tiger	Schedule-I Part-I	Vulnerable	Endangered ENC2a(i)	ENC2a	Appendices-I
81.	*Panthera uncia* (Schreber) = *Uncia uncia*	Snow Leopard	Schedule-I Part-I	Endangered	Endangered ENC2a(i)	ENC2a	Appendices-I
82.	*Vulpes bengalensis* (Shaw)	Bengal Fox	Schedule-II Part-II	None	Data Deficient	LR/nt	Appendices-III
83.	*Canis aurens* Linnaeus	Jackal	Schedule-II Part-II	None	Data Deficient	Lr/lc	Appendices-III
84.	*Viverricula indica* (Desmarest)	Small Indian Civet	Schedule-II Part-II	None	Data Deficient	Lr/nt	Appendices-III
85.	*Paradoxurus hermaphroditus* (Pallas)	Common Palm Civet or Toddy Cat	Schedule-II Part-II	None	Data Deficient	Lr/lc	Appendices-III
86.	*Paradoxurus jerdoni* Blanford	Brown/Jerdon Palm Civet	Schedule-II Part-II	None	Endemic species	Vulnerable B1 2b 2c	Appendices-III

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
87.	*Paguma larvata* (Hamilton Smith)	Himalayan Masked Palm Civet	Schedule-II Part-II	None	Data Deficient	Lr/lc	Appendices-III
88.	*Melursus ursinus* (Shaw) =*Ursus ursinus* (Shaw)	Sloth Bear	Schedule-I Part-I	None	LR/nt	VU C2a	Appendices-I
89.	*Ursus arctos isabellinus* Horsfield	Himalayan Brown Bear	Schedule-I Part-I	Endangered	-	Lr/nt	Appendices-I
Order CETACEA							
90.	*Platinista gangetica* (Roxburgh)	Gangetic Dolphin	Schedule-I Part-I	Vulnerable	Endangered	Critically Endangered CR A1acd A1a 1c 1d C1 C2a	Appendices-I
91.	*Orcaella brevirostris* (Gray)	Irrawady Dolphin/ Snub nosed Dolphin	Schedule-I Part-I	Insufficiently known	DD	EN B1,2c	Appendices-II
92.	*Delphinus delphis* Linnaeus	Common Dolphin	Schedule-II Part-I	None	Data Deficient	Lr/nt	Appendices-II
93.	*Peponocephala electra* Gray	Melon Heater Dolphin	Schedule-II Part-I	None	Data Deficient	Lr/nt	Appendices-II
94.	*Stenella attenuata* (Gray)	Pan tropical Spotted Dolphin	Schedule-II Part-I	None	None	None	Appendices-II
95.	*Stenella longirostris* Gray	Spinner Dolphin/ Long beaked Dolphin	Schedule-II Part-I	None	LR/cd	LR/nt	Appendices-II
96.	*Sousa chinensis* (Osbeck)	Indo-Pacific Hump backed Dolphin	Schedule-I Part-I	None	Data Deficient	En A1acd,2b	Appendices-I

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
97.	*Tursiops truncatus* Montagu	Bottle Nosed Dolphin	Schedule-II Part-I	None	Data Deficient	LR/nt	Appendices-II
98.	*Neophocaena phocaenoides* (Cuvier)	Little Indian Porpoise /Finless Porpoise	Schedule-I Part-I	Insufficiently known	Data Deficient	LR/nt	Appendices-I
99.	*Balaenoptera acutorostrata* Lacepede	Mink Whale	Schedule-II Part-I	None	LR/nt	LR/nt	Appendices-I
100.	*Balaenoptera edeni* Anderson	Bryde Whale	Schedule-II Part-I	None	Data Deficient	Lr/nt	Appendices-I
101.	*Balaenoptera musculus* (Linnaeus)	Blue Whale	Schedule-II Part-I	None	Endangered E1 A1abd	Critically Endangered CR A1bd	Appendices-I
102.	*Balaenoptera physalus* (Linnaeus)	Fin Whale/ Common Rorqual	Schedule-II Part-I	None	Endangered EN A1abd	LR/nt	Appendices-I
103.	*Balaenoptera borealis* Lesson	Coalfish Whale Sie Whale	Schedule-I Part-I	None	Endangered EN A1abd	LR/nt	Appendices-I
104.	*Mesoplodon densirostris* (Blainville)	Blainbille Beaked Whale	Schedule-II Part-I	None	Data Deficient	Endangered	None
105.	*Kogia breviceps* (Blainvile)	Pigmy Sperm Whale	Schedule-II	None	Data Deficient	Lr/nt	None
106.	*Kogia simus* (Owen)	Dwarf sperm whale	Schedule-II Part-I	None	Data Deficient	Lr/nt	None
107.	*Physeter catodon* Linnaeus =*Physeter macrocephalus* Linnaeus	Sperm Whale	Schedule-II Part-I	None	Data Deficient	Lr/nt	Appendices-I

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
108.	*Pseudorca crassidens* (Owen)	False Killer Whale	Schedule-II Part-I	None	Data Deficient	Lr/nt	None
Order SERENIA							
109.	*Dugong dugon* (Muller)	Dugong	Schedule-I Part-I	Vulnerable	Vulnerable A1cd	CR A1cd	Appendices-I
Order PROBOCIDEA							
110.	*Elephas maximus* Linnaeus	Asian Elephant	Schedule-I Part-I	Vulnerable	Endangered A1cd	Vu A1acd	Appendices-I
Order PERISSODACTYLA							
111.	*Eqqus kiang* Moorcroft	Tibetan Wild Ass /Kiang	Schedule-I Part-I	Endangered	Data Deficient	Vulnerable B1 2c b2	Appendices-II
112.	*Eqqus onager khur* Lesson =*Equus hemionus khur* Lesson	Indian Wild Ass	Schedule-I Part-I	Endangered	Not Evaluated	Not Evaluated	Appendices-I
113.	*Rhinoceros unicornis* Linnaeus	Great One Horned Rhinoceros	Schedule-I Part-I	Endangered	Endangered ENB! = 2cde	EN B1 2d	Appendices-I
114.	*Dicerorhinus sumatrensis* Lasiotis G Fischer	Sumatran Rhinoceros	None	None	Data Deficient	Critically Endangered D	None
Order ARTIODACTYLA							
115.	*Sus scrofa andamanensis* Blyth	Andaman Wild Pig	Schedule-I Part-I	Insufficiently Known	None	None	None
116.	*Sus salvanius* Hodgson	Pigmy Hog	Schedule-I Part-I	Endangered	Critically Endangered CR A1c, B1+2cd, E	CR C2a	Appendices-I
117.	*Moschiola meminna* (Erxleben) =*Tragulus meminna*	Mouse Deer	Schedule-I Part-I	Vulnerable	Data Deficient	Lr/nt	None

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
118.	*Cervus duvaucelii* G. Cuvier	Swamp Deer	Schedule-I Part-I	Vulnerable	Vulnerable VU C1	EN C2a	Appendices-I
119.	*Cervus elaphus hanglu* Wagner	Kashmir Stag/Hangul	Schedule-I Part-I	Endangered	Endangered D	Endangered D	Appendices -I
120.	*Cervus eldii eldii* Mc Clelland	Manipur Brow-antlered Deer/Sangai	Schedule-I Part-I	Critical	Vulnerable VU A2c	CR B1,2c,C2b	Appendices-I
121.	*Moschus chrysogaster* (Hodgson)	Himalayan Musk Deer	Schedule-I Part-I	Vulnerable	LR/nt	CRA1d	Appendices-I
122.	*Antilope cervicapra* (Linnaeus)	Blackbuck/ Indian Antelope	Schedule-I Part-I	Vulnerable	Vulnerable VU A1c	LR/1c	None (Species from Nepal is included under Appendices-III
123.	*Gazella dorcas bennetti* (Sykes)	Chinkara/Indian Gazelle	Schedule-I Part-I	Vulnerable	Lower Risk LR/cd	LR 1c	None
124.	*Procapra picticaudata* Hodgson	Tibetan Gazelle	Schedule-I Part-I	Insufficiently Known	Lower Risk LR/nt	Not Listed	None
125.	*Tetracerus quadricornis* Blainville	Four Horned Antelope	Schedule-I Part-I	Vulnerable	Vulnerable VU C2a	LR/nt	None (Species from Nepal is included under Appendices-III)
126.	*Pantholops hodgsoni* (Abel)	Tibetan Antelope /Chiru	Schedule-I Part-I	Insufficiently Known	Endangered ENA2d	CR C2b	Appendices-I

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
127.	*Bos grunniens* Lin =*Bos mutus* Przewalski	Wild Yak	Schedule-I Part-I	Critical	Vulnerable VUA1cd+2cd, C1+2a	Endangered C2a	Appendices-I (Excludes the domesticated form, which is referenced as *Bos grunniens* and is not subject to the provisions of the Convention)
128.	*Bos gaurus* H. Smith	Gaur/Indian Bison	Schedule-I Part-I	Vulnerable	None	Vulnerable C2a	Appendices-I (Excludes the domesticated form, which is referenced as *Bos frontalis* and is not subject to the provisions of the Convention)
129.	*Bubalus bubalis* (Linnaeus) =*Bubalus arnee* Kerr	Wild Buffalo	Schedule-I Part-I	Endangered	Endangered ENA2e,C1	Endangered B1 2C	None
130.	*Budorcas taxicolor* Hodgson	Takin	Schedule-I Part-I	Insufficiently Known	Vulnerable VU A2cd	Not evaluated	None

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
131.	*Capra falconeri* (Wagner)	Markhor	Schedule-I Part-I	Endangered	Endangered ENA2cde	CR C2b	Appendices-I
132.	*Capra ibex* Linnaeus	Himalayan Ibex	Schedule-I Part-I	Endangered	Data Deficient	Vulnerable B1 2C	None
133.	*Capra falconeri kashmeriensis* Wagnser =*Naemorhedus goral* (Hardwicke)	Himalayan Ghoral	Schedule-III	Not Listed	LR/nt	Not evaluated	Appendices-I
134.	*Capricornis sumatransis* (Bechstein) =*Naemorhedus sumatransis*	Serow	Schedule-I Part-I	Vulnerable	Vulnerable VU A2 cd	Not evaluated	Appendices-I
135.	*Hemitragus hyloricus* (Ogilby)	Nilgiri Tahr	Schedule-I Part-I	Vulnerable	Endangered ENB1+2acd,C2a	EN B12acd, C2a	None
136.	*Hemitragus jemlahicus* (Smith)	Himalayan Tahr	Schedule-I Part-I	Endangered	Vulnerable	LR/nt	None
137.	*Ovis ammon hodgsoni* Blyth	Great Tibetan Sheep/ Nayan/Argali	Schedule-I Part-I	Vulnerable	Vulnerable VU 2cde	EN 2Ca	Appendices-I
138.	*Ovis vignei* Blyth	Urial/Shapu	Schedule-I Part-I	Endangered	Endangered EN C2a	Endangered EN C2a	Appendices-I
139.	*Pseudois nayaur* (Hodgson)	Blue sheep/Bharal	Schedule-I Part-I	Vulnerable	LR/nt	LR 1c	None

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Order PHOLIDATA							
140.	*Manis crassicaudata* Gray	Indian Pangolin	Schedule-I Part-I	Vulnerable	LR/nt	LR/nt	Appendices-II (A zero annual export quota has been established for specimens removed from the wild and traded for primarily commercial purposes)
141.	*Manis pentadactyla* Linnaeus	Chinese Pangolin	Schedule-I Part-I	Insufficiently Known	LR/nt	LR/nt	As above
Order RODENTIA							
142.	*Atherurus macrourus* (Lin)	Asiatic Brush tailed porcupine	Schedule-II Part-I	None	Endangered B1 2bcd	Endangered B1 2bcd	None
143.	*Petinomys fuscocapillus* (Jerdon)	Small Travancore Flying Squirrel	Schedule-I Part-I	Endangered	Vulnerable B1 2bc	Vulnerable B1 2bc	None
144.	*Biswamoyopterus biswasi* Saha	Namdapha Flying Squirrel	None	None	Critically CR B1=2c	CR, B1, 2c Endangered	None
145.	*Ratufa bicolor gigantia* M'clelland	Malayan Giant Squirrel	Schedule-II Part-II	None	Data Deficient	Vulnerable	Appendices-II

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
146.	*Ratufa indica dalbata* Blandford	Indian Giant Squirrel	Schedule-II Part-II	None	Vulnerable VU B1+2c	Extinct	Appendices-II
147.	*Ratufa macroura dandolena* Thomas & Wroughton	Grizzled Giant Squirrel	Schedule-I	Endangered	Vulnerable VU A1c	EN B1,2c,C1	Appendices-II
148.	*Petaurista petaurista albiventer* (Gray)	Himalayan Giant Flying Squirrel	Schedule-II Part-II	None	None	None	None
149.	*Petaurista magnificus* (Hodgson)	Himalayan Flying Squirrel	Schedule-II Part-II	None	LR/nt	LR/nt	None
150.	*Petaurista phillippensis* (Elliot)	Large Brown Flying Squirrel	Schedule-II Part-II	None	Data Deficient	Lr/nt	None
151.	*Petaurista nobilis* (Gray)		Schedule-II Part-II	None	Lower Risk LR/nt	Not evaluated	None
152.	*Hystrix brachyura* Linnaeus =*Acantion hodgsoni*	Himalayan Crestless Porcupine	None	None	Vulnerable VU A1d	VU B1, 2bd. D2	None
153.	*Marmota bobak himalayana* (Hodgson) =*Marmota himalayana himalyana*	Himalayan Marmot Part-II	Schedule-II	None	Data Deficient 2c 2d 3b	Endangered B1 2a 2b	Appendices-III
154.	*Marmota caudata* (Geoffroy)	Long tailed Marmot	Schedule-II Part-II	None	LR/nt	Vu B1, 2abc	Appendices-III
155.	*Niviventer brahma* Thomas	Thomas Chestnut Rat	Schedule-V	None	None	Endangered B1 2c	None
156.	Be*rylmys bowersi* Anderson	Bower's Rat	Schedule V	None	Data Deficient	Endangered B1 2c	None

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
157.	*Mus famulus* Bonhote	Bonhote's Mouse	Schedule-V	None	Endangered EN B1+2c	EN,B1,2c	None
158.	*Hylopetes alboniger* (Hodgson)	Parti coloured Flying Squirrel	Schedule-II Part-II	Endangered	Endangered EN A1c	VU B1, 2bd,D2	None
159.	*Hylopetes fimbriatus* (Gray)	Small Kashmiri Flying Squirrel	Schedule-II Part-II	None	Data Deficient	Lr/nt	None
159.	*Eupetaurus cinereus* Thomas	Wooly Flying Squirrel	Schedule-II Part-II	None	Endangered EN A2ce, B1+2cd, C2a	LR/nt Lr/lc	None
Order LAGOMORPHA							
160.	*Caprolagus hispidus* (Pearson)	Hispid Hare	Schedule-I Part-I	Critical	Endangered EN A1c+2c, B1+2abcde,C1	Not evaluated	Appendices-I

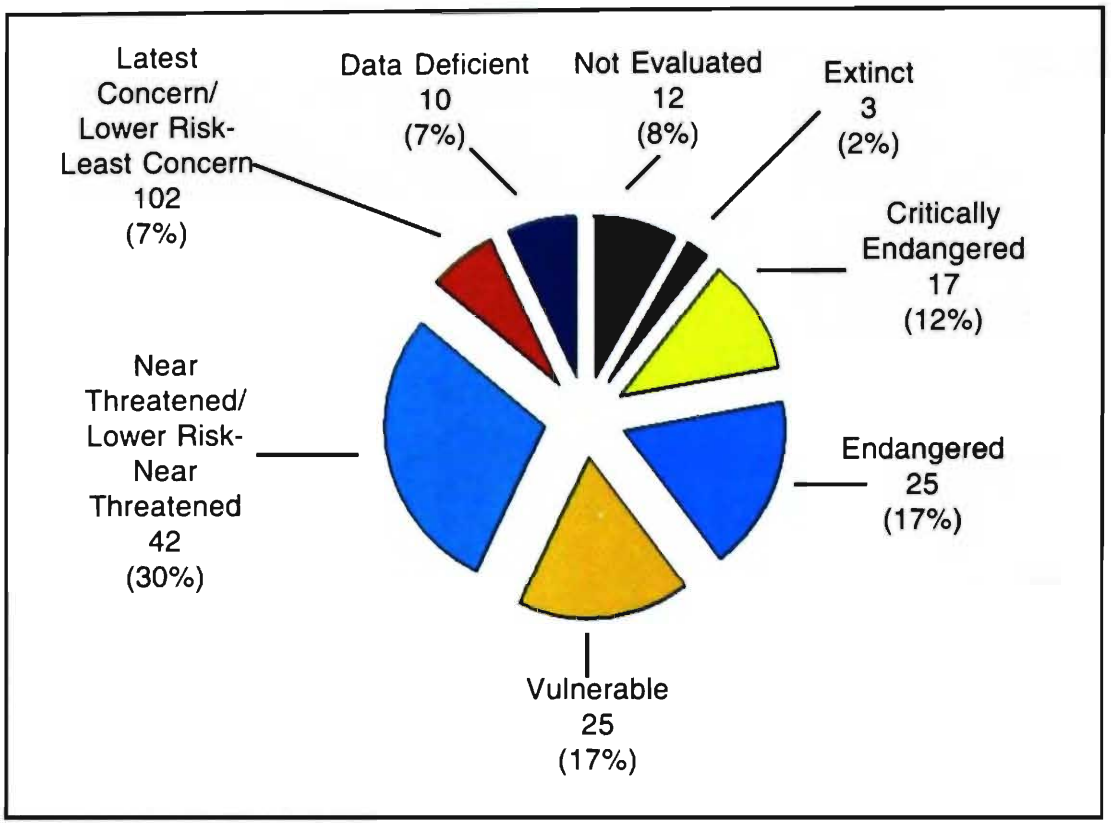
LR/nt = Lower Risk Near Threatened; VU = Vulnerable, EN = Endangered; CR = Critically Endangered

Tibetan Polecat, *Mustela potorius* has been deleted since it is extralimital (Tibet) (Alfred, *et al.*, 2002).

Eubalena glacialis=Balena glacialis Muller was last recorded off Gujarat coast 1944. The species has been deleted by Alfred and Agrawal (1999).

included in the previous Red Data Book. But as on today they have been brought under higher conservation status of IUCN and as well as on the Indian Wildlife (Protection) Act as amended up to Dec. 2002.

Fig. 3 : IUCN categorization of Indian mammalian species with higher conservation status



Species-wise account, when studied carefully, reveals that almost half of the mammal species/subspecies are known to occur in Himalayan and North-Eastern part of India (Fig. 4). This clearly shows enriched mammalian diversity in the region stretching from Himalaya to North-Eastern regions of India. However, overall picture of endemicity within mammalian species with higher conservation status is not very noteworthy. Only 22 species out of 144 are Indian Endemic forms (Fig. 5). Although mammalian diversity is very rich in Himalayan and North-Eastern

Fig. 4 : Distribution of Mammal species with higher Conservation status within India

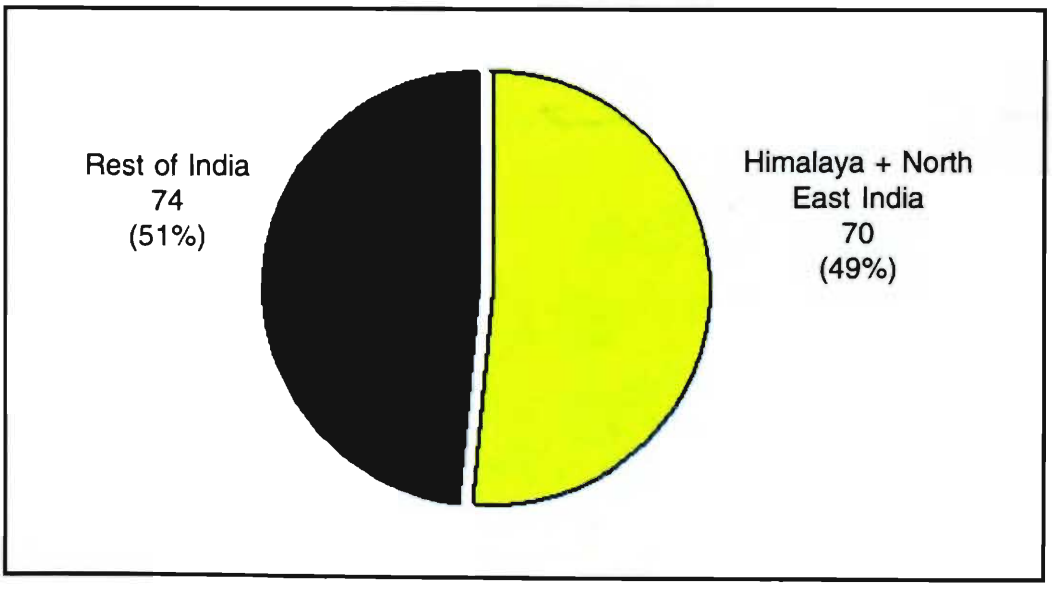
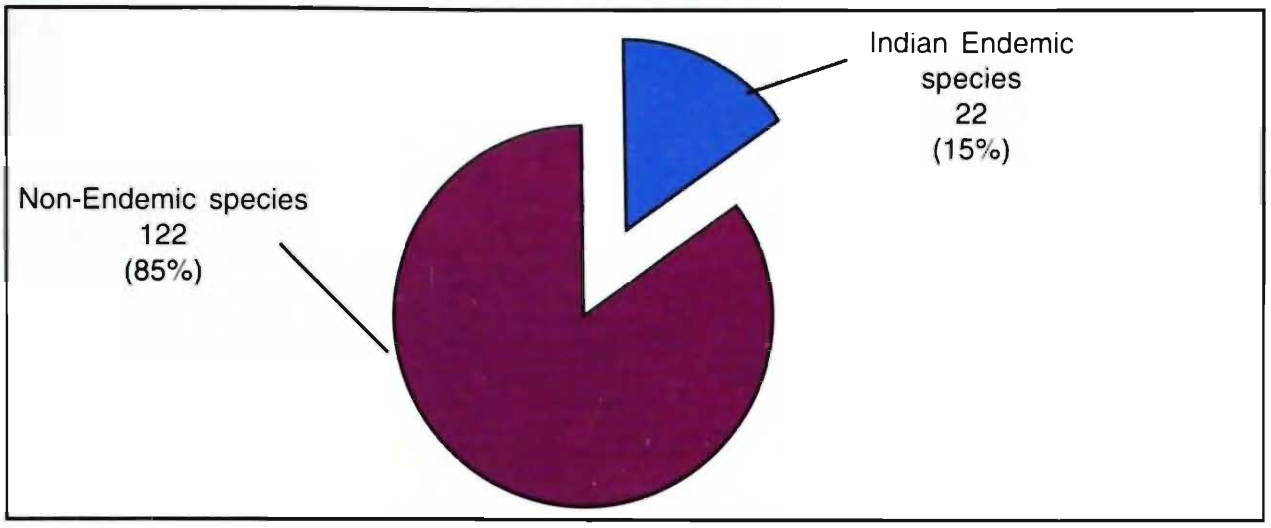


Fig. 5 : Indian endemic species within mammalian species with higher conservation status



Indian belt, the Indian endemicity presents poor representation of mammals in this region. Western Ghats, in that case, projects encouraging picture. It shows highest Indian endemicity when compared to other Indian regions (Fig. 6).

Fig. 6: Region-wise distribution of Indian endemic mammalian species with higher conservation status

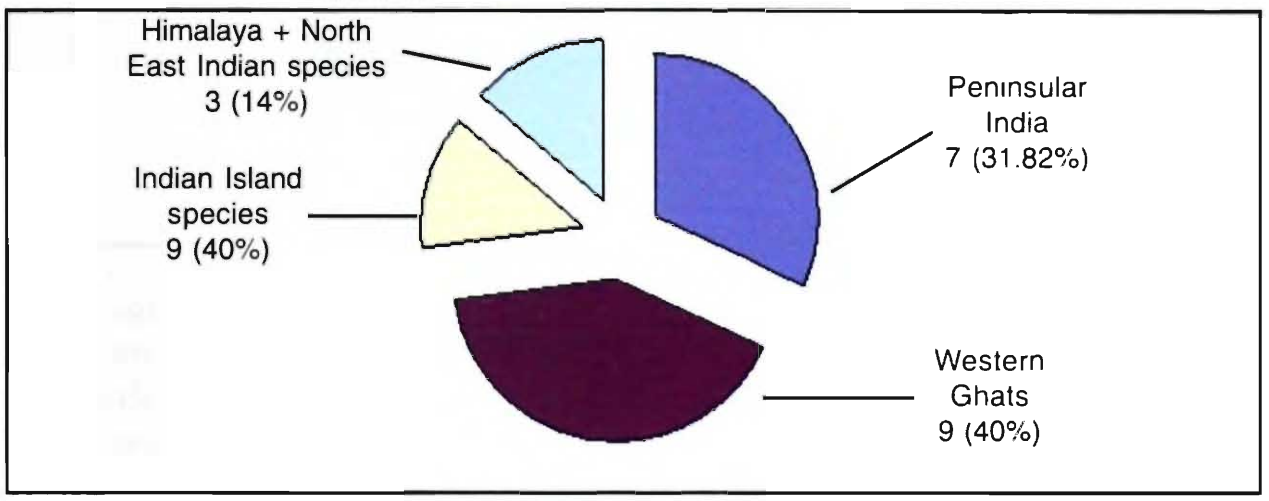
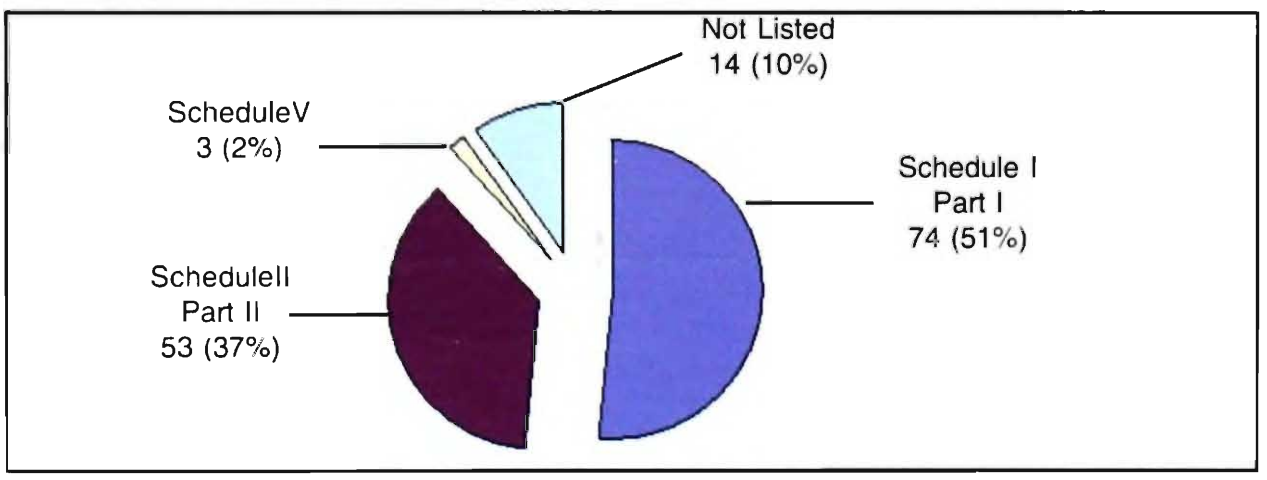


Fig. 7 shows Indian mammal species/subspecies with higher conservation status listed under Indian Wildlife (Protection) Act Schedules 127 (about 88%) out of 144 listed species have been offered full protection under Schedule I Part I and Schedule II Part II of Indian Wildlife (Protection) Act and any kind of offense carries capital

Fig. 7 : Indian mammal species with higher conservation status listed in Indian Wildlife (Protection) Act schedule



punishment. However, there are 14 species (about 10%) not featuring in the Wildlife Act Schedules, but they do carry higher conservation status of IUCN and/or CITES. Efforts should be made to assess these species critically in light of the provisions under the Act, which has been amended from time to time.

Careful study of the list of mammals listed below also shows that there are 15 species/subspecies which are possessing highest conservation status at both the levels, National as well as International. They are listed below :

1.	Lion-tailed macaque	*Macaca silenus* (Linnaeus)
2.	Malabar Civet	*Viverra megaspils* Blyth =*Vivera civettina* Blyth
*3.	Asiatic Cheetah or Hunting Leopard	*Acinoyx jubatus venaticus* (Griffith)
4.	Himalayan Lynx	*Lynx lynx isabellinus* Blyth
5.	Asiatic Lion	*Panthera leo persica* (Meyer)
6.	Snow Leopard	*Uncia uncia* (Schreber)
*7.	Asian Two Horned or Sumatran Rhinoceros	*Dicerorhinus sumatrensis* (Fischer)
8.	Pigmy Hog	*Sus salvanius* Hodgson
9.	Kashmir stag or Hangul	*Cervus elephus hanglu* Wagner
10.	Manipur Brow-antlered Deer or Sangai	*Cervus eldi eldi* McClelland
11.	Wild Yak	*Bos grunniens* Linnaeus =*Bos muthus* Prezewalszi
12.	Wild Buffalo	*Bubalus bubalis* (Linnaeus) =*Bubalus aree* Kerr
13.	Himalayan Goral	*Capra falconeri kashmeriensis* Wagner =*Naemorhedus goral* (Hardwicke)
14.	Urial or Shapu	*Ovis vignei* Blyth
*15.	Indian giant squirrel	*Ratufa indica dealbata* Erxleben

*Extint within Indian limits

These species definitely deserve extra care and need special attention towards their conservation. Need of the hour is the long-term programme on scientific evaluation and careful reintroduction, initially in captivity and later in wild, to make maximum possible efforts for survival of the species.

Similar programmes need to be formulated and implemented for protection of the remaining 12 species mentioned in the list above. These species are on the verge of extinction within Indian territory. Population of Indian endemics is likely to be wiped out without our knowledge as happened in the case of Indian Giant squirrel, *Ratufa indica dealbata* (IUCN status is Extinct), if no serious attempts are made for its conservation.

LIST OF ENDEMIC MAMMALS

Order	INSECTIVORA
Family	ERINACEIDAE
1. *Hemiechinus nudiventris* (Horsfield)	
Family	SORICIDAE
2. *Crocidura andamanensis* Miller	
3. *Crocidura nicobarica* Miller	
4. *Crocidura jenkinsi* Chakraborty	
5. *Crocidura hispida* Thomas	
6. *Suncus dayi* (Dobson)	
Order	SCANDENTIA
Family	TUPAIIDAE
7. *Anathana ellioti* (Waterhouse)	
8. *Tupaia nicobarica* (Zelebor)	
9. *Latidens salimali* Thonglongya	
10. *Pteropus faunulus* Miller	
Family	RHINOLOPHIDAE
11. *Rhinolophus mitratus* Blyth	
12. *Rhinolophus cognatus* Andersen	
13. *Hipposideros schistaceus* Andersen	
14. *Hipposideros durgadasi* Khajuria	
15. *Hipposideros hypophyllus* Kock and Bhat	
Family	MOLOSSIDAE
16. *Otomops wroughtoni* (Thomas)	
Family	VESPERTILIONIDAE
17. *Eptesicus tatei* Ellerman and Morrison-Scott	
18. *Murina grisea* Peters	
19. *Scotomanes emarginatus* (Dobson)	
Order	PRIMATES
Family	CERCOPITHECIDAE
20. *Macaca silenus* (Linnaeus)	
21. *Macaca radiata* (Geoffroy)	
22. *Macaca fascicularis umbrosa* (Miller)	
23. *Semnopithecus johnii* (Fischer)	
Order	CARNIVORA
Family	VIVERRIDAE
24. *Paradoxurus jerdoni* Blanford	
25. *Viverra civettina* Blyth	

Family	HERPESTIDAE
24. *Herpestes palustris* Ghose	
Family	MUSTELIDAE
25. *Martes gwatkinsii* Horsfield	
Order	ARTIODACTYLA
Family	BOVIDAE
26. *Hemitragus hylocrius* (Ogilby)	
Order	RODENTIA
Family	SCIURIDAE
27. *Ratufa indica* (Erxleben)	
28. *Funambulus tristriatus* (Waterhouse)	
29. *Biswamoypterus biswasi* Saha	
Family	MURIDAE
30. *Cremnomys elvira* (Ellerman)	
31. *Cremnomys cutchicus* Wroughton	
32. *Alticola roylei* (Gray)	
33. *Millardia kondana* Mishra and Dhanda	
34. *Rattus palmarum* (Zelebor)	
35. *Rattus ranjiniae* Agrawal and Ghosal	
36. *Rattus stoicus* (Miller)	
37. *Rattus burrus* (Miller)	
38. *Mus famulus* Bonhote	
39. *Mus phillipsi* Wroughton	
40. *Mus platythrix* Bennett	
41. *Platacanthomys lasiurus* Blyth	

From the above account, it is obvious that about 11% of the Indian mammalian species are endemic to the country. However, for majority of the endemic mammalian species very little information is available as regard to their biology and population status. Many of the species are known only by the type series or even by single type specimen and not been recorded since the original description. Further, taxonomic status of some of the species are still controversial and requires detail study with fresh series of specimens.

It has been found that Western Ghats harbour maximum number of endemic species followed by Deccan Peninsula and Islands. It is important to mention that Western Ghats and Islands are only 4.03% and 0.25% respectively of the total area of country. Thus, two biogeographic zones deserve high priority from the conservation point of view. As such, while 4.66% of the country's total geographical area have been brought under protected area network, for Western Ghats and Islands this figure becomes 10.12% and 18.54% respectively.

Sl. No. (1)	Species (2)	Common English Name (3)	Type Locality Reference (4)
	Order INSECTIVORA Family ERINACEIDAE Subfamily ERINACEINAE Genus ***Hemiechinus*** Fitzinger, 1866		
1.	*Hemiechinus collaris* (Gray, 1830)	Indian Long eared Hedgehog	"Doab" Between Ganga & Jamuna River/1830. *Erinaceus collaris* Gray in *Illust. Indian Zool.*, 1, pl. 8.
2.	*Hemiechinus micropus* (Blyth, 1846)	Indian Hedgehog	Bhawalpur, Pakisthan; /1846. *Erinaceus micropus* Blyth, *J. Asia. Soc. Bengal*, **15** : 170.
3.	*Hemiechinus nudiventris* (Horsfield, 1851)	South Indian Hedgehog	Madras city (TN)/*Erinaceus nudiventris* Horsfield, *Cat. Mamm. Mus. E. India Co.*, p.136
	Family SORICIDAE Subfamily CROCIDURINAE Genus ***Crocidura*** Wagler, 1832		
4.	*Crocidura andamanensis* Miller, 1902	Andaman White toothed Shrew	Mac Pherson Strait, S. Andaman Isl./1902. *Crocidura andmanensis* Miller, *Proc. U.S. Natl. Mus.*, **24** : 777
5.	*Crocidura attenuata* Milne Edwards, 1872	Gray Shrew	Moupin, Szechwan Province, China/1972. *Crocidura attenuate* Milne-Edwards, *Rech. Hist. Nat. Mamm.* p. 263
6.	*Crocidura hispida* Thomas, 1913	Andaman Island	Northern end of Middle Andaman Isl. 1913. *Crocidura hispida* Thomas, *Ann. Mag. nat. Hist.* (ser. 8). **11** : 468
7.	*Crocidura horsfieldii* (Tomes, 1856)	Horsfield's	Srilanka/1856. Sorex Shrew horsefieldi Tomes *Ann. Mag. nat. Hist.* (ser. 2). **17** : 23
8.	*Crocidura jenkinsi* Chakraborty, 1978	Jenkin's Shrew	Wright Myo, S. Andaman Isl. 1978. *Crocidura jenkensi* Chakraborty. *Bull. Zool. surv. India*, **1** : 303
9.	*Crocidura nicobarica* Miller, 1902	Nicobar Spiny Shrew	Great Nicobar Isl. 1902. *Crocidura nicobarica* Miller, *Proc. U.S. Natl. Mus.*, **24** : 776
10.	*Crocidura pergrisea* Miller, 1913	Pale Gray Shrew	Skoro Loomba, C 2900 m. M. Baltistan, J & K, 1913. *Crocidura perigrisea* Miller, *Proc. Biol. Soc. Washington*, **26** : 113
11.	*Crocidura pullata* Miller, 1911	None	Kotihar, J & K/1911. *Crocidura pullata* Miller, *Proc. Biol. Soc. Washington.* **24** : 241

(1)	(2)	(3)	(4)
12.	*Crocidura fuliginosa* (Blyth, 1855)	South Asian White toothed	Schwegyin, Near Pegu, Myanmar. /1855. *Sorex* Shrew *fuliginosa* Blyth, *J.Asiat. Soc. Bengal*, **24** : 362
	Genus ***Feroculus*** Kelaart, 1852		
13.	*Feroculus feroculus* (Kelaart, 1852)	Kelaart's Long Clawed Shrew	Cental Mts. 1828 m. Mt. Nuwara Eliya, Srilanka/1850. *Sorex feroculus* Kelaart. *J. Ceylon Branch Asiat. Soc.*, **2**(5) : 211
	Genus ***Suncus*** Ehrenberg, 1832		
14.	*Suncus dayi* (Dobson, 1888)	Day's Shrew	Trichur, Kochin, Kerala/1888. *Crocidura dayi* Dobson. *Ann. Mag. nat. hist., (ser. 6)*, **1** : 428
15.	*Suncus montanus* (Kelaart, 1850)	Hill Shrew	Nuwara Eliya, Srilanka/ 1850. *Sorex montanus* Kelaart, *J. Ceylon Br. Asiat. Soc.*, **2** : 211
16.	*Suncus etruscus* (Savi, 1822)	Savis's	Pisa Italy/1822. *Sorex etrusus* Savi, *Nuovo Giorn de Letterati, Pisa.* **1** : 60
17.	*Suncus murinus* (Linnaeus, 1766)	House Shrew	Java, Indonesia/1766. *Sorex murinus* Linnaeus, *Syst. Nat.* 12th Edn. **1** : 74
18.	*Suncus stoliczkanus* (Anderson,1877)	Anderson's Shrew	Bombay/1877. *Crocidura (Pachyura) stoliczkana Anderson. J. Asiat. Soc. Bengal*, **46** : 270
	Subfamily Soricinae Genus ***Anourosorex*** Milne-Edwards, 1872		
19.	*Anourosorex squamipes* Milne-Edwrds, 1872	Mole Shrew/ Szechuan Burrowing Shrew	Sichuan, China/1872. *Anourosorex squamipes* Milne Edwrds, *Rech. Hist. Nat. Mamm.* p. 264
	Genus ***Chimarrogale*** Anderson, 1877		
20.	*Chimmarrogale himalayica* (Gray, 1842)	Himalayan	Chamba, H.P./1842. *Crossopus himalayica* gray. *Ann. Mag. net. Hist. (ser.1)* **10** : 261
	Genus ***Nyctogale*** Milne- Edwards, 1870		
21.	*Nyctogale elegans* Milne Edwards, 1870	Elegant Water Shrew	Moupin, Sichuan, China/1870. *Nyctogale elegans* Milne Edwards,*C.R. Acad. Sci. Paris*, **70** : 341
	Genus ***Sorex*** Linnaeus, 1758		
22.	*Sorex minutus* Linnaeus,1766	Lesser Shrew	Barnaul Russia/1766. *Sorex minutus* Linnaeus, *Syst,. Nat., 12th* edn. **1** : 73.
	Genus ***Soriculus*** Blyth, 1854		
23.	*Soriculus caudatus* (Horsfield,1851)	Hodgsons Brown toothed shrew	Sikkim/ 1851. *Sorex caudatus* Horsfield, *Cat, Mamm. Mus. E. India co.*, p. 135

(1)	(2)	(3)	(4)
24.	*Soriculus leucops* (Horsfield,1855)	Indian Long	Nepal/1855. *Sorex leucops* Horsfield, *Ann Mag. nat. Hist.* (ser.2), **16** : 111.
25.	*Soriculus macrurus* Blanford, 1888	Arboreal Brown	Darjeeling, WB/1888. *Soriculus macrurus* Blanford. *Fauna of British India,* **1** : 231
26.	*Soriculus nigriscens* (Gray, 1842)	Sikkim Large	*Darjeeling, WB/1842.* Corsira nigriscens *Gray*, Ann.Mag. nat. Hist. (ser. 1), **10** : 261
	Family TALPIDAE Subfamily TALPINAE Genus ***Euroscaptor*** Miller, 1940		
27.	*Euroscaptor micrura* (Hodgson, 1841)	Himalayan mole	Central, N Hills, Nepal/1841. *Talpa micrurus* Hodgson, *Calcutta J. nat. Hist.*, **2** : 221
	Genus ***Parascaptor*** Gill, 1875		
28.	*Parascaptor leucura* (Blyth, 1850)	Eastern Mole	Cherrapunjhi, Meghalaya/ 1850. *Talpa leucura* Blyth. *J. Asiat. Soc. Bengal*, **19** : 215
	Order SCANDENTIA Family TUPAIIDAE Subfamily TUPAIINAE Genus ***Anathana*** Lyon, 1913		
29.	*Anathana ellioti* Waterhouse, 1850	Madras Tree Shrew	Hills near Cudappah & Nellore, Andhra Pradesh/1850. *Tupaia ellioti* Waterhouse, *Proc. Zool. Soc. Lond.* : 107
	Genus ***Tupaia*** Raffles, 1821		
30.	*Tupaia belangeri* (Wagner, 1841)	Common Tree Shrew	Siriam Near Rangoon, Myanmar/ 1841. *Cladobates belangeri* Wagner, *Schrebers Die Saugthiere Supp.*, **2** : 42
31.	*Tupaia nicobarica* (Zelbor, 1869)	Nicobar Tree Shrew	Great Nicobar Isl./1869. *Cladobates nicobarica* Zelbor, *Reise oesterr, Fregatte Novara Zool.* **1** : 17
	Order CHIROPTERA Suborder MEGACHIROPTERA Family PTEROPODIDAE Genus ***Cynopterus*** Cuvier, 1824		
32.	*Cynopterus brachyotis* (Mueller, 1838)	Lesser Dogfaced Fruit Bat	Dewei River, Indonesia/1838. *Cynopterus brachyotis* Muller, *Tijdschr. Nat. Gesch. Physiol.*, **5** : 146

(1)	(2)	(3)	(4)
33.	*Cynopterus sphinx* (Vahl, 1797)	Short nosed Fruit Bat	Travancore, Kerala/1797. *Vespertillo sphinx* Vahl, *Skr. Nat. Seosk, Copenhagen,* **4**(1) : 123
	Genus ***Latidens*** Thonglongya, 1972		
34.	*Latidens salimalii* Thonglongya, 1972	Fruit Bat	Mt. in Madurai Dist. T.N. (762 m.0/1972. *Latidens salimali* Thonglongya , *J. Bombay nat. Hist. Soc.*, **69** : 153
	Genus ***Megarops*** Peters, 1865		
35.	*Megarops niphanae* Yenbutra & Felton, 1983	Niphan's Tailes Fruit Bat	Amphoe Park, Thnog Chai, Nakhon, Thailand/1983. Megarops niphanae Yenbutra & Felton, *Senckenberg Biol.* **64**: 2
	Genus ***Pteropus*** Erxleben, 1777		
36.	*Pteropus faunulus* Miller, 1902	Nicobar Flying Fox	Car Nicobar Isl./1902. Pteropus faunulus Miller, *Proc. Nat. Mus.*, **24** : 785
37.	*Pteropus giganteus* (Brunnich, 1782)	Indian Flying Fox	West Bengal/1782. *Vespertillo gigantia* Brunnich *Dyrenes Historie.*, **1** : 45
38.	*Pteropus melanotus* Blyth, 1863	Nicobar Flying Fox	Nicobar Isl./1863.*Pteropus melanotus* Blyth, *Cat.Mamm. Mus. Asiatic Soc. Calcutta,* pp. 20.
39.	*Pteropus vampyrus* (Linnaeus, 1758)	Malayan Large Flying Fox	Java Indonesia/1758. *Vespertilla vampyrus* Linnaeus, *Syst. Nat., 10th Edn.* **1** : 31
	Genus ***Rousettus*** Gray, 1821		
40.	*Rousettus leschenaulti* (Desmarest, 1821)	Fulvus Fruit Bat	Pondicherry/ 1820. *Pteropus leschenaulti* Desmarest,*Encycl. Meth. Mamm.*, **1** ; 110
	Genus ***Sphaerias*** Miller, 1906		
41.	*Sphaerias blanfordi* (Thomas, 1891)	Blanford's Fruit Bat	Karin Hills, Myanmar/1891. *Cynopterus blanfordi* Thomas, *Ann. Civ. Stor. Nat. Genova,* Ser.**2, 10** : 884, 921-922.
	Subfamily MACROGLOSSINAE Genus ***Eonycterias*** Dobson, 1873		
42.	*Eonycterias spelaea* (Dobson, 1871)	Long tongued Fruit Bat	Moulmein, Tenasserim, Myanmar/1871. *Macroglossus spelaeus* Dobson, *Asiatic Soc., Bengal,* : 105-106
	Genus ***Macroglossus*** Cuvier, 1824		
43.	*Macroglossus sobrinus* Anderson, 1911	Hill Long tongued Fruit Bat	Gunong Igari, 610m, Malaysia/ 1911. *Macroglossus minimus sobrinus* Andersen, *Ann. Mag. Nat. Hist.* (7) : 642

(1)	(2)	(3)	(4)
	Suborder MICROCHIROPTERA Family RHINOPOMATIDAE Genus ***Rhinopoma*** Geoffroy, 1818		
44.	*Rhinopoma hardwickei* Gray, 1831	Lesser Mouse Tailed Bat	India/1831. *Rhinopoma hardwickei* Gray, *Zool. Misc.*, **1** : 37
45.	*Rhinopoma microphyllum* (Brunnich,1782)	Greater Mouse Tailed Bat	Giza, Egypt/1782. *Vespertillo microphyllum* Brunnich, *Dyrenes Historie*, **1** : 50
	Family EMBALLONURIDAE Genus ***Saccolaimus*** (Temminck, 1838)		
46.	*Saccolaimus saccolaimus* (Temminck, 1831)	Pouch bearing Bat	Java, Indoneysia/1838. *Taphozous saccolaimus* Temminck, *Tijdschr. Nat. Gesch. Physiol.*, **5** : 14
	Genus ***Taphozous*** Geoffroy, 1818		
47.	*Taphozous longimanus* Hardwicke, 1825	Long winged Tomb bat	Calcutta/1825. *Taphozous longimanus* Harwicke, *Trans. Linn. Soc. London*, **14** : 525
48.	*Taphozous melanopogon* Temminck, 1841	Black bearded Tomb Bat	Bantam, W. Jawa, Indoneysia/ 1841. *Taphozous melanopogon* Temminck, *Monogr. Mamm.*, **2** : 287
49.	*Taphozous nudiventris* Cretzschmar, 1830	Naked Rumped Tomb Bat	Giza, Egypt/1830. *Taphozous nudiventris* Cretzschmar, In *Ruppell, Atlas Reise Nordl. Afr., Zool. Sugeth*,**1** : 70
50.	*Taphozous perforatus* Geoffroy, 1818	Egyptian Tomb Bat	Kom, Ombo, Egypt/1818. *Taphozous perofratus* Geoffroy, *Descrip. De L'Egypte*, **2** : 126
51.	*Taphozous theobaldi* Dobson, 1872	Theobald's Tomb Bat	Tenasserim, Myanmar/1872. *Taphozous theobaldi* Dobson, *Proc. Asiat. Soc. Bengal*, p. 152
	Family MEGADERMATIDAE Genus ***Megaderma*** Geoffroy, 1810		
52.	*Megaderma lyra* Geoffroy, 1810	Indian/ Greater False Vampire	Madras (Chennai), T.N./ 1810. *Megaderma lyra* Geoffroy, *Ann. Mus. Hist. Nat. Paris*, **15** : 197.
53.	*Megaderma spasma* (Linnaeus, 1758)	Lesser False Vampire	Ternate, Indoneysia/1758. *Vespertillo spasma* Linnaeus, *Syst. Nat., 10th Edn.* **1** : 32
	Family RHINOLOPHIDAE Subfamily RHINOLOPHINAE Genus ***Rhinolophus*** Lacepede, 1799		
54.	*Rhinolophus affinis* Horsfield, 1823	Intermediate Horseshoe Bat	Java. Indoneysia/1823. *Rhinolophus affinis* Horsfield, *Zool. Res.Java*, 6, Pl. 1, fig. a & b

(1)	(2)	(3)	(4)
55.	*Rhinolophus cognatus* Andersen, 1906	Little Andaman Horseshoe Bat	Port Blair,S. Andaman Isl. /1906. *Rhinolophus cognatus* Andersen, *Ann. Mus. Civ. Stor. Nat. Genova*, (ser.3), **2** : 181
56.	*Rhinolophus ferrumequinum* (Schreber, 1774)	Greater Horseshoe Bat	France/1774. *Vespertillo ferrumequinum* Schreber, *Die Saugethiere*, **1** : 174. pl. 62.
57.	*Rhinolophus hipposideros* (Bechstein, 1800)	Lesser Horseshoe Bat	France./1800. *Vespertillo hipposideros* Beschstein. In Pennant *Allgemeine Ueber. Vierfuss. Thiere.*, **2** : 629.
58.	*Rhinolophus lepidus* Blyth, 1844	Blyth's Horseshoe Bat	Calcutta, WB/1844. *Rhinolophus lepidus* Blyth, *J. Asiatic Soc. Bengal*, **13** : 486
59.	*Rhinolophus luctus* Temminck, 1835	Great Eastern Horseshoe Bat	Java, Indonesia/ 1835. *Rhinolophus luctus* Temmnick, *Monogr. Mamm.*, **2** : 24
60.	*Rhinolophus macrotis* Blyth, 1844	Largeared Horseshoe Bat	Nepal,/1844. *Rhinolophus macrotis* Blyth, *J. Asiat. Soc. Bengal*, **13** : 485.
61.	*Rhinolophus mitratus* Blyth, 1844	Blyths' Horseshoe Bat	*Chaibasa, Bihar/ 1844. Rhinolophus mitratus Blyth, J. Aist. Soc. Bengal.*, **13** : 483
62.	*Rhinolophus pearsonii* Horsfield, 1851	Pearson's Horseshoe Bat	Darjeeling, WB/1851. *Rhinolophus pearsonii* Horsfield, *Cat. Mamm. Mus. E. India Co.*, p. 53
63.	*Rhinolophus rouxii* Temminck, 1855	Peninsular Horseshoe Bat	Pondicherry & Calcutta/ 1835. *Rhinolophus rouxii* Temminck, *Mongr. Mamm.*, **2** : 306
64.	*Rhinolophus pusillus* Temminck, 1834	Least Horseshoe Bat	Java, Indonesia/1834. *Rhinolophus pusillus* Temminck, *Tijdschr. Nat. Gersch. Physiol.*, **1** : 29
65.	*Rhinolophus subbadius* Blyth, 1844	Nepal Horseshoe Bat	Nepal/1844. *Rhinolophus subbadius* Blyth, *J. Asiat. Soc. Bengal*, **13** : 486
66.	*Rhinolophus trifoliatus* Temminck, 1834	Trefoil Horseshoe Bat	Java, Indonesia/1834. *Rhinolophus trifoliatus* Temminck, *Tijdschr. Nat. Gersch. Physiol.*, **1** : 24
67.	*Rhinolophus yunanensis* Dobson, 1872	Dobson's Horseshoe Bat	Hotha, Yunan, China/1872. *Rhinolophus yunanensis* Dobson, *J. Asiat. Soc. Bengal*, **41** : 336
	Subfamily HIPPOSIDERINAE Genus ***Coelops*** Blyth, 1848		
68.	*Coelops frithi* Blyth, 1848	Tail less leaf Nosed Bat	Sunderban, WB/ 1848. *Coelops frithi* Blyth, *J.Asiatic. Soc. Bengal*, **17** : 251
	Genus ***Hipposideros*** Gray, 1831		
69.	*Hipposideros armiger* (Hodgson, 1835)	Himalyan Leaf Nosed Bat	Nepal/1835. *Rhinolophus armiger* Hodgson, *J. Asiatic Soc. Bengal*, **4** : 699.

(1)	(2)	(3)	(4)
70.	*Hipposideros ater* (Templeton, 1848)	Dusky Leaf nosed Bat	Colombo, Srilanka/1848. *Hipposideros ater* Templeton, *J. Asiat. Soc. Bengal*, **17** : 252
71.	*Hipposideros cineraceus* Blyth, 1853	Least Leaf nosed Bat	Pind dadan Khan, Salt Range, Pakisthan/ 1853. *Hipposideros cineraeceus* Blyth, *J. Asiat. Soc. Bengal*, **22** : 410
72.	*Hipposideros diadema* Geoffroy, 1813	Large Malay Leafnosed Bat	Timer & Sunda Isls. Indonesia/ 1813. *Rhinolophus diadema* Geoffroy, *Ann. Mus. Hist. Nat. Paris*, **20** : 263
73.	*Hipposideros durgadasi* Khajuria, 1970	None	Katungi, Jabalpur M.P./1970. *Hipposideros cineraceus durgadasi* Khajuria, Mammalia, **34** : 623
74.	*Hipposideros fulvus* Gray, 1838	Fulvus Leaf	Dharwar, Karnataka/1838. *Hipposideros fulvus* Gray, *Mag. Zool. Biol.*, **2** : 492
75.	*Hipposideros galeritus* Cantor, 1846	Cantor's	Penang, Malaysia/1946. *Hipposideros galeritus* Cantor, *J. Asiatic Soc., Bengal*, **15** : 183
76.	*Hipposideros hypophyllus* Kock & Bhat 1994	None	Hanumanahalli, Kolar, Karnataka,/1994. *Hipposideros hypophyllus* Kock and Bhat, Senckenberg. Biol., **73** : 25
77.	*Hipposideros lankadiva* Kelaart, 1850	None	Kandy, Srilanka/1850. *Hipposidereos lankadiva* Kellart, *J. Sri Lanka Br. Asiatic Soc.*, **2** : 216
78.	*Hipposideros larvatus* (Horsfield, 1823)	Horsfield's Leaf nosed Bat	Java, Indonesia/1823. *Rhinolophus larvatus* Horsfield, *Zool. Res. Java*, **6** : pl. 9
79.	*Hipposideros pomona* Anderson 1918	Anderson's Leaf nosed Bat	Haleri, coorg, Karnataka/1918. *Hipposideros pomona* Andersen, *Ann. Mag. nat. Hist.* (ser. 9), **2** : 380-381.
80.	*Hipposideros schistaceus* Anderson 1918	None	Bellary, Karnataka/1918. *Hipposideros schistaceus* Anderson, *Ann. Mag. nat. Hist.* (ser. 9), **2** : 382
81.	*Hipposideros speoris* (Schneider, 1800)	Schneider's Leaf nosed Bat	Tranquebar, N/1800. *Vespertillo sperios* Schneider, Die Saugehiere, pl. 59
	Family VESPERTILLIONIDAE Subfamily KERIVOULINAE Genus ***Kerivoula*** Gray, 1842		
82.	*Kerivoula hardwickii* (Horsfield, 1824)	Hardwicke's Forest Bat	Java, Indonesia/1824. *Vespertillo hardwickii* Horsfield, *Zool. Res. Java. Part*, **8** : 28
83.	*Kerivoula papillosa* (Temminck,1840)	Papillose Bat	Bantom, Java, Indonesia/1840. *Vespertillo papillosa* Temminck, *Monogr. Mamm*, **2** : 220
84.	*Kerivoula picta* (Pallas, 1767)	Painted Bat	Ternate Isl. Molucca, Indonesia/ 1767. *Vespertillo pictus* Pallas, *Spicil. Zool.*, **3** : 7

(1)	(2)	(3)	(4)
	Subfamily VESPERTILLIONINAE		
	Genus ***Barbastella*** Gray, 1821		
85.	*Barbastella leucomelas* Cretzschmar, 1826	Eastern Barbastella	Sinai, Egypt/ 1826. *Vespertillo leucomonas* Cretzschmar, In Ruppell, *Atlas Reise, Nordl. Afr. Zool. Saugeth.*, p. 73
	Genus ***Eptesicus*** Rafinisque, 1820		
86.	*Eptesicus nilssoni* (Keyserling & Blasius, 1839)	Northern Bat	Sweden/1839. *Vespertillo nilssoni* Keyserling & Blasius, *Arch. Naturgesch.*, **5** : 315
87.	*Eptesicus pachyotis* (Dobson, 1871)	Thick eared Bat	Khasi hills, Megalaya/1871. *Vesperugo (Vesperus) pachyotis* Dobson, *Proc. Asiatic Soc. Bengal.*, p. 221
88.	*Eptesicus serotinus* (Schreber, 1774)	Serotine Barbastella	France/1774. *Vespertillo serotinus* Schreber, *Die Saugethiere*, **1** : 167
89.	*Eptesicus tatei* (Ellerman & Morrison,1951)	None	Darjeeling W B/1863. *Nycticeius atratus* Blyth, *Cat. Mamm. Mus. Asiatic Soc. Bengal.*, p. 31. & 1951. *Episticus tatei* Ellerman & Morrison, Checklist Palaearctic and Indian Mammals, p. 158
	Genus ***Hesperoptenus*** Peters, 1868		
90.	*Hesperostenus tickIli* (Blyth, 1851)	Tickell's Bat	Chaibasa, Bihar/1851. *Nycticejus tickelli* Blyth, *J. Asiatic Soc. Bengal*, **20** : 157
	Genus ***Ia*** Thomas, 1902		
91.	*Ia io* Thomas, 1902	Great Evening Bat	Chungyang, china/ 1902. *Ia io* Thomas, *Ann. Mag. nat. Hist* (*ser. 7*), **10** : 164
	Genus ***Myotis*** Kaup, 1829		
92.	*Myotis annectans* (Dobson, 1871)	Intermediate Bat	Naga Hills, Nagaland/1871. *Pipistrellus annectans* Dobson, *Proc. Asiatic Soc. Bengal*, p. 213
93.	*Myotis blythii* (Tomes, 1857)	Lesser Mouse eared Bat	Nasirbad, Rajasthan/1857. *Vespertillo blythii* Tomes, *Proc. Zool. Soc.* London, **1857** : 53
94.	*Myotis daubentoni* (Kuhl, 1817)	Daubenton's Bat /Water Bat	Hanau, Hessen, Germany/ 1817. *Vespertillo daubentonii* Kuhl. *Die. Deutschen Fledermause. Hanau*, p. 14
95.	*Myotis formosus* (Hodgson, 1835)	Hodgson's Bat	Nepal/ 1835. *Vespertillo formosa* Hodgson, *J. Asiatic Soc. Bengal*, **4** : 700
96.	*Myotis hasseltii* (Temminck, 1840)	Lesser Large toothed Bat	Bantam, Java, Indonesia/1840. *Vespertillo hasseliti* Temminck, *Monogr. Mamm.*, **2** : 225
97.	*Myotis horsfieldii* (Temminck, 1840)	Lesser Large toothed Bat	Mt. Ged. Java, Indonesia/ 1840. *Vespertillo forsfieldi* Temminck, Monogr. Mamm., **2** : 226

(1)	(2)	(3)	(4)
98.	*Myotis longipes* (Dobson, 1873)	None	Bhima Devi Caves, J & K/1873. *Vespertillo longipes* Dobson, *Proc. Asiatic Soc. Bengal.* P. 110
99.	*Myotis montivagus* (Dobson, 1874)	Burmese Whiskered Bat	Hotha, Yunann, china/ 1874. *Vespertillo montivagus* Dobson, *J. Asiatic Soc. Bengal.* **43** : 237
100.	*Myotis muricola* (Gray, 1846)	None	Nepal/ 1846. *Vespertillo muricola* Gray, *Cat. Hodgson Coll. Brit. Mus.*, p. 4
101.	*Myotis mystacinus* (Kuhl, 1817)	Whiskered Bat	Germany/1817. *Vespertillo mystacinus* Kuhl. *Die Deutschen Fledermause, Hanau,* p. 15
102.	*Myotis sicarius* (Thomas, 1915)	None	North Sikkin/1915. *Myotis sicarius* Thomas, *J. Bombay, nat. Hist. Soc.*, **23** : 608
103.	*Myotis silligorensis* (Horsfield, 1855)	Himalyan Whiskered Bat	Silliguri, WB/1855. *Vespertillo silligorensis* Horsfiel, *Ann. Mag. nat. Hist. (ser. 2)* **16** : 102
	Genus ***Nyctalus*** Bowdich, 1825		
104.	*Nyctalus leisleri* (Kuhl, 1817)	Liesler's Bat	Hanau, Hessen, Germany/ 1817. *Vespertillo leisleri* Kuhl, *Die Deutschen Fledermause, Hanau.*, p. 14
105.	*Nyctalus montanus* (Barrett-Hamilton, 1906)	None	Mussoorie, U.P./1906. *Pterygistes montanus* Barret – Hamilton, *Ann. Mag. nat. Hist. Ser.*, 7 , **17** : 99
106.	*Nyctalus noctula* (Schreber, 1774)	Common Noctule	France/1774. *Vespertillo noctula* Schreber, *Die Saugehiere*, **1** : 166
	Genus ***Otonycteris*** Peters, 1859		
107.	*Otonycteris hemprichii* Peters, 1859	Hemprich's Long eared Bat	Nile Valleyt, S. Ansuan, Egypt/ 1859. *Otonycteris hemprichii* Peters, *Monatsb. K.Ppreuss. Acad. Wiss. Berlin,: 223*
	Genus ***Pipistrellus*** Kaup, 1829		
108.	*Pipistrellus affinis* (Dobson, 1871)	Chocolate Bat	Bhamo, Myanmar/1871. *Vesperugo (Pipistrelllus) affinis* Dobson, *Proc. Asiatic Soc. Bengal,* p. 213
109.	*Pipistrellus babu* Thomas, 1915	Babu's Pipistrelle	Murree, Rawalpindi, Pakistan/ 1915. *Pipistrellus babu* Thomas, *J. Bombay nat. Hist. Soc.*, **24** : 30
110.	*Pipistrellus cadornae* Thomas, 1916	Thomas's Pipistrelle	Pashok, 1067m. Darjeeling, WB/ 1916. *Pipistrelluys cadornae* Thomas, *J B N H S.*, **24** : 416
111.	*Pipistrellus ceylonicus* (Kelaart, 1852)	Kelaart's Pipistrelle	Trincomalee, Sri Lanka/ 1852. *Scotophilus ceylonicus* Kelaart, *Proc. Fauna Zeylanica,* p. 22

(1)	(2)	(3)	(4)
112.	*Pipistrellus circumdatus* Temninck, 1840	Large Black Pipistrelle	Topos, Jawa, Indonesia/ 1840. *Vespertillo circumdatus* Temmminck, *Mongr. Mamm,* **2** : 214
113.	*Pipistrellus coromandra* (Gray, 1838)	Indian Pipistrelle	Pondicherry/1838. *Scotophilus coromandra* Gray, *Mag. Zool. Bot. 2*, 498
114.	*Pipistrellus dormeri* (Dobson, 1875)	Dormer's Bat	Bellary hills, Karnataka/1857. *Scotozous dormeri* Dobson, *Proc. zool, Soc. London,* : 337
115.	*Pipistrellus javanicus* (Gray, 1838)	Javan's Pipistrelle	Java, Inbdonesia/ 1838. *Scotophilus javanicus* Gray, *Mag. Zool. Bot.*, **2** : 498
116.	*Pipistrellus kuhlii* (Kuhl,1817)	Kuhl's Pipistrelle	Trieste, Italy/ 1817. *Vespertillo kuhlii* Kuhl, *Die Deutschen, Fledermause, Hanau.*, p. 14
117.	*Pipistrellus mimus* Wroughton, 1899	Indian Pygmy Pipistrelle	Mheskatri, Dangs, Gujarat/1899. *Pipistrellus mimus* Wroughton, *J. B. N. H. S.*, **12** : 722
118.	*Pipistrellus paterculus* Thomas,1915	Paternal Pipistrelle	Mt. Popa Myanmar/1915. *Pipistrellus paterculus* Thomas, *J.B.N.H.S.*, **24** : 32
119.	*Pipistrellus pipistrellus* (Schreber, 1774)	Common pipistrelle	France/1774. *Vespertilo pipistrellus* Schreber, *Die. Saugetheiere,* **1** : 167
120.	*Pipistrellus peguensis* Sinha, 1969	None	Pegu, Myanmar/ *Pipistrellus peguensis* Sinha, *Proc. Zool. Soc. Calcutta,* **22** : 83
121.	*Pipistrellus savi* (Bonapaerte,1837)	Savi's Pipistrelle	Pisa, italy/1837. *Vespertillo savii* Bonaparte, de l' Egypte, **2** : 112
	Genus ***Plecotus*** Geoffroy, 1818		
122.	*Plecotus auritus* Linaneus, 1758	Brown Big eared Bat	Sweden/1758. *Vespertillo auritus* Linnaeus, *Syst. Nat. 10th Ed.* **1** : 32
123.	*Plecotus austriacus* Fischer,1829	Common Long eared Bat	Vienna, Austria/ 1829. *Vespertillo auritus austriacus* Fischer, *Synopsis Mamm.*, p. 117
	Genus ***Scotoecus*** Thomas 1901		
124.	*Scotoecus pallidus* (Dobson, 1876)	Yellow Desert Bat	Mian Mir, Lahore, Pakisthan/ 1876. *Scotophilus pallidus* Dobson, *Monogr. Asiat. Chiroptera, App.* D. 186
	Genus ***Scotomanes*** Dobson, 1875		
125.	*Scotomanes emarginatus* (Dobson, 1871)	Large eared Yellow Bat	India/1871. *Nycticegus emarginatus* Dobson, *Proc. Asiatic Soc. Bengal,* p. 211
126.	*Scotomanes ornatus* (Blyth, 1851)	Harlafuin Bat	Cherrapunji, Khasi Hills, Megahalaya/ 1851. *Nycticegus ornatus* Blyth, *J. Asiatic Soc. Bengal,* **20** : 517

(1)	(2)	(3)	(4)
	Genus ***Scotophilus*** Leach, 1821		
127.	*Scotophilus heathi* Horsfield, 1831		Madras, T N/1831. *Nyctecejus heathi* Horsfield, *Proc. zool. Soc. London,* **13** : 69, 71
128.	*Scotophilus kuhli* Leach, 1821		India/ 1821. *Scotophilus kuhlii* Leach, *Trans. Linn. Soc. London,* **13** : 71
	Genus ***Tylonyceris*** Peters, 1872		
129.	*Tylonycteris pachypus* (Temminck, 1840)	Bamboo Bat, Club footed Bat	Bantam, jawa, Indonesia/1840. *Tylonycteris pachypus* Temminck, *Monogr. Mamm.,* **2** : 217.
	Subfamily MURININAE Genus ***Harpiocephalus*** Gray, 1842		
130.	*Harpiocephalus harpia* (Temminck, 1840)	Hairy winged Bat	Mt. Gede. Jawa/1840. *Vespertilo harpia* Temminck, *Monogr. Mamm,* **2** : 219
	Genus ***Murina*** Gray, 1842		
131.	*Murina aurata* Milne-Edwards, 1872	Little tubenosed Bat	Moupin, China/1872. *Murina aurata* Milne-Edwards, *Rech. Hist. Nat. Mammiferes.* P. 250
132.	*Murina cyclotis* Dobson,1872	Round Eared Tubenosed Bat	Darjeeling, W B/1872. *Murina cyclotis* Dobson, *Proc. Asiatic. Bengal, p. 210*
133.	*Murina grisea* Peters, 1872	Peters Tube nosed Bat	Jaripanee, Mussorie, Dehradun/ 1872. *Murina grisea* Peters *Monstab, K. Preuss. Akad. Wiss. Berlin,* : 258
134.	*Murina huttoni* (Peters, 1872)	Hutton's Tube nosed Bat	Dehradun, U.P./1872. *Harpyiocephalus huttoni* Peters, *Monatsb. K. Akad Wiss. Berlin.,* 257.
135.	*Murina leucogaster* Milne-Edwards,1872	Greater Tube nosed Bat	Moupin, China/1872. *Murina aurata* Milne-Edwards, Rech. His. Nat. Mammiferes. P. 252
136.	*Murina tubinaris* (Scully, 1881)	Scully's Tube nosed Bat	Gilgit, J&K/1881. *Harpiocephalus* tubinaris Scully, *Proc. zool. Soc. London, :* 200.
	Subfamily MINIOPTIRINAE Genus ***Miniopterus*** Bonaparte, 1837		
137.	*Miniopterus magnater* Sanborn,1931	None	Marienberg, Papua, New Guinea/1931. *Miniopterus magnater* Sanborn,1931, Field. Mus. Nat. Hist. Publ. Zool, Ser., **18** : 26
138.	*Miniopterus pusillus* Dobson, 1876	None	Nicobar Islands/1876. *Minioptreus pusillus* Dobson, *Monogr. Asiatic Chiroptera* p. 162

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139.	*Miniopterus schreibersi* (Kuhl,1817)	Schreiber's Bat	Kolumbacs cave, Rumania/ 1817. *Vespertillo schreibersi* Kuhl, *Die Deutschen, Fledermaus. Hanau*, p. 14
	Family MOLOSSIDAE Genus ***Chaerophon***		
140.	*Chaerophon plicata* (Buchanan,1800)	Wrinkle lipped Bat	WB, India/1800. *Vespertillo plicatus* Buchnan, *Trans. Linn. Soc. London*, **5** : 261
	Genus ***Otomops*** (Thomas, 1913)		
141.	Otomops wroughtoni (Thomas,1913)	Wroughton's Freetailed Bat	Talewadi, Karnataka/1913. *Nyctinomus wroughtoni* Thomas *J.B.N.H.S.*, **22** : 87
	Genus ***Tadarida*** Rafinisque, 1814		
142.	*Tadarida aegyptiaca* (Geoffroy, 1818)	Egyptian Freetailed Bat	Giza, Egypt/1818. *Nyctinomus aegyptiacus* Geoffroy, *Descrip. De L'Egypte*, **2** : 128
143.	*Tadarida teniotis* Rafinisque,1814	European Freetailed Bat	Sicily, Italy/ 1814. *Cephalotes teniotis* Rafinesque, *Precis Som.*, p. 12.
	Order PRIMATES Family LORIDAE Genus ***Loris***		
144.	*Loris tardigradus* Linnaeus, 1758	Slender Loris	Sri Lanka/1758. Lemur tardigradus Linnaeus, *Syst. Nat. 10th ed.* **1** : 29
	Genus ***Nycticebus*** Geofroy, 1812		
145.	*Nycticebus coucang* Boddaert,1785	Slow Loris	Malacca, Malaysia/1785. *Tardigradus coucang* Boddaert, Elench. Anim. P. 67
	Family CERCOPITHECIDAE Subfamily CERCOPITHICINAE Genus ***Macaca*** Lacepede, 1799		
146.	*Macaca arctoides* (Geoffroy, 1831)	Stump tailed Macaque	Cochin, China/1831. Macacus arctoides Geoffroy, In Belangir (ed.) Voy. Inbdes, Orient, mamm., **3** (zool) : 61
147.	*Macaca assamensis* (M'Clelland,1840)	Assamese Macaque	Assam/1840. *Macacus assemensis* M'Clelland, *Proc. zool. Soc. London*, **1839** : 148
148.	*Macaca fuscicularis* (Raffles,1821)	Crab eating Macaque	Bengkulen, Indonesia/1821. *Simia fascicularis* Raffles, *Trans. Linn. Soc. London*, **13** : 246
149.	*Macaca mulatta* (Zimmermann,1870)	Rhesus Macaque	Nepal Terai (= U P Terai/1780. *Cercopithecus mulatta* Zimmermann, *Geogr. Gesch. Mensch, Verf. Thiere*, **2** : 195
150.	*Macaca nemestrina* (Linaneus,1766)	Pig tailed Macaque	India/1812. *Cercocebus radiatus* Geofroy, *Ann. Mus. Hist. Nat. Paris*, **19** : 98

(1)	(2)	(3)	(4)
151.	*Macaca radiata* (Geoffroy, 1812)	Bonet Monkey	
152.	*Macaca silenus* (Linaneus,1758)	Lion tailed Macaque	Western Ghats/1758. *Simia Silenus* Linnaeus, *Syst. Nat. 10th edn.* **1** : 26
	Sufamily COLOBINAE Genus ***Semnopithecus*** Desmarest, 1822		
153.	*Semnopithecus entellus* (Duffresne,1797)	Langur	West Bengal/1797. *Simia entellus* Derfresne, *Bull.Sci.Soc. Philom,Paris* Ser. **1** : **7** : 49
	Genus ***Trachypithecus*** Reichenbach, 1862		
154.	*Trachypithecus geei* (Khajuria,1956)	Golden/Golden Leaf Langur	Golpara, Assam/1956. *Presbytes geei* Khajuria, *Ann. Mag. nat. Hist.*, (12) **9** : 86
155.	*Trachypithecus johni* (Fischer,1829)	Nilgiri Langur	Tellichery, Kerala/1829. *Cercopithecus johnii* Fischer, *Synopsis. Mamm.* P. 25
156.	*Trachypithecus pharyei* (Blyth,1847)	Phayre's Leaf Monkey	Arakan, Myanmar/ 1847. *Presbytis phayrei* Blyth, *J. Asiatic Soc. Bengal.*, **16** : 733
157.	*Trachypithecus pileatus* (Blyth, 1843)	Capped Langur	Assam, India/1843. *Semnopithecus pileatus* Blyth. J. *Asiat. Soc. Bengal*, **12** : 174
	Family HYLOBATIDAE Genus ***Hylobates*** (Harlan, 1834)		
158.	*Bunopithecus hoolock* (Harlan, 1834) (Hyalobates hoolock)	Holock Gibbon	Garo Hills, Meghalaya/1834. Simia hoolock Harlam, *Trans Am. Philos. Soc.*, **4** : 52
	Order CARNIVORA Family CANIDAE Genus ***Canis*** Linnaeus, 1758		
159.	Canis aureus Linnaeus, 1758	Asiatic Jackal	"Oriente" Southern Persia/1758. *Canis aureus* Linnaeus, Syst. Nat. 10th edn. **1** : 40
160.	*Canis lupus* Linnaeus, 1758	Wolf	Sweden/1758. *Canis lupus* Linnaeus, *Syst. Nat. 10th edn.* **1** : 39.
	Genus ***Cuon*** Hodgson, 1838		
161.	*Cuon alpinus* (Pallas, 1811)	Wild Dog, Dhole, Red Dog	USSR/1811. *Cuon alpinus* pallas, *Zoogr. Rosso- Aisat.*, **1** : 34
	Genus ***Vulpes*** Frisch, 1775		
162.	*Vulpes bengalensis* (Shaw,1800)	Indian Fox	Bengal/1800.*Canis bengalensis* Shaw, Gen. Zool. *Syst. Nat. Hist.*, **1**(2), *Mammalia* p. 330
163.	*Vulpes cana* Blanford, 1877	Blanfofrd's Fox	Gwadar, Pakisthan/1877. *Vulpes cana* Blanford, *J. Asiatic Soc. Bengal*, **2** : 321

(1)	(2)	(3)	(4)
164.	*Vulpes ferrilata* Hodgson,1842	Small Tibetan Fox	Lassa, Tibet/1842. *Vulpes ferrilata* Hodgson, J. *Asiatic Soc. Bengal,* **11** : 278
165.	*Vulpes vulpes* (Linnaeus,1758)	Common Red Fox	Europa, Asia, Africa to Sweden (Thomas)/ 1758. *Canis vulpes* Linnaeus, *Syst. Nat. 10th ed.* **1** : 40
	Family FELIDAE Subfamily ACIONONYCHINAE Genus ***Acinonyx*** Brookes, 1828		
166.	*Acinonyx jubatus* (Schreber, 1775)	Cheetah	Cape of Goodhope, S. Africa/ 1775. *Felis jubatus* Schreber, *Die Saugethiere,* **2**(15) : pl. 105.
	Subfamily Felinae Genus ***Caracal*** Gray, 1843		
167.	*Caracal caracal* (Schreber, 1776)	Caracal, Lynx	Cape town, S. Africa/ 1776. *Felis caracal* Schreber, *Die Saugethiere,* **3**(16) : pl. 110.
	Genus ***Felis*** Linnaeus, 1758		
168.	*Felis chaus* Schreber, 1777	Jungle Cat	Terek River, CIS Country/1777. *Felis chaus* Schreber, *Die Saugethiere,* **2**(13) : pl. 110 B.
169.	*Felis silvestris*, Schreber, 1775	Wild Cat, Desert Cat	Germany (?)/ 1775. *Felis sylvestris* Shreber, *Die Saugethiere,* **2**(15) : pl. 107.
	Genus ***Catopuma*** Severtzov, 1858		
170.	*Catopuma temminckii* (Vigors&Horsfield,1827)	Asiatic Golden Cat	Sumatra, Indonesia/1827. *Felis temminckii* Vigors and Horsfield, *Zool. J.*, **3** : 451
	Genus ***Lynx*** Kerr, 1792		
171.	*Lynx lynx* (Linnaeus, 1758)		S Sweden/1758. *Felis lynx* Linnaeus, *Syst. Nat. 10th edn.* **1** : 43
	Genus ***Otocolobus*** Brandst, 1842		
172.	*Otocolobus manul* (Pallas, 1776)	Palla's Cat	Lake Baikal, USSR/1776. *Felis manul* Pallas, *Reise Prov. Russ. Reichs.* **3** : 692
	Genus ***Prionailurus*** Severtzov, 1858		
173.	*Prionailurus bengalensis* (Kerr, 1792)	Leopard Cat	West Bengal/1792. Felis bengalensis Kerr. In Linnaeus, Anim. Kingdon., **1** : 151
174.	*Prionailurus rubiginosus* (Geoffroy &St. Hilaire, 1831)	Rusty Spotted Cat	Pondicherry,/1831. *Felis rubiginosus* Geoffroy Saint – Hailaire, *In Belenger (Ed) Voy. Indes Orient. Mamm.* **3** : 140
175.	*Prionailurus viverrinus* (Bennett,1833)	Fishing Cat	Malabaar Coast, kerala/1833. *Felis viverinus* Benett, *Proc. zool. Soc. London,* : 68

(1)	(2)	(3)	(4)
	Subfamily PANTHERINAE		
	Genus ***Neofelis*** Gray, 1867		
176.	*Neofelis nebulosa* (Griffith,1821)	Clouded Leopard	Canton, China/1821. *Felis nebulosa* Griffith, *Gen Particular description Vert. Anim. (Carn.).* p. 37.
	Genus ***Panthera*** Oken, 1816		
177.	*Panthera leo* (Linnaeus, 1758)	Lion	Algeria/1758. *Felis leo* Linnaeus,*Syst. Nat. 10ed.* **1** : 41
178.	*Panthera pardus* (Linnaeus, 1758)	Leopard	"Indiis", Egypt./1758. *Felis pardus* Linnaeus, *Syst. Nat. 10th ed.* **1** : 41
179.	*Panthera tigris* Linnaeus, 1758	Tiger	Asia, Bengal (?)/ 1758. *Felis tigris* Linnaeus *Syst. Nat. 10th ed.* **1** : 41
	Genus ***Pardofelis*** Severtzov,1858		
180.	*Pardofelis marmorata* (Martin, 1837)	Marbled Cat	Java, Indonesia/1837. F*elis marmorata* Martin, *Proc. zool. Soc. London,* : 108
	Genus ***Uncia*** Gray, 1854		
181.	*Uncia uncia* (Schreber, 1775)	Snow Leopard, Ounce	Kopet-daugh Mts. Iran/1775. *Felis uncial* Schreber, *Die Saugethiere* **2** (14) : Pl. 100.
	Family HERPESTRIDAE Subfamily HERPESTINAE Genus ***Herpestes*** Illiger, 1811		
182.	*Herpestes brachyurus* Gray, 1837	None	Indian Islands /1837. *Herpestes brachyurus* Gray, P*roc. zool. Soc. London,* : 88
183.	*Herpestes edwardsii* (Geoffroy St. Hillaire,1818)	Indian Gray Mangoose	Indes Orientalis (Madras)/ 1818. *Ichnemon edwardsii* E Geoffroy Saithnt – Hilaire *Descrip de L'Egypte* **2** : 139.
184.	*Herpestes javanicus* (Geoffroy St. Hillaire,1818)	Small Indian Mongoose	Jawa Indonesia/ 1818. *Ichnemon javanicus* geoffroy Saint – Hilaire *Descrip de L'Egypte* **2** : 138.
185.	*Herpestes palustris* Ghose, 1965	Marsh Mongoose	West Bengal/1965. *Herpestes palustris* Ghose, *Proc. zool. Soc. Calcutta,* **18**. : 174
186.	*Herpestes smithii* Gray, 1837	Indian Ruddy Mongoose	Bombay (?)/1837. *Herpestes smithii* Gray, *Mag. Nat. Hist.* **1** : 578.
187.	*Herpestes vitticollis* (Bennet, 1835)	Crab eating Mongoose	Nepal/1836. *Gulo urva* Hodgson, *J. Asiat. Soc. Bengal,* **5** : 238
188.	*Herpestes urva* (Hodgson, 1836)	Stripe nacked Mongoose	Tiruvananthapuram,Kerala/ 1835. *Herpestes vitticollis* Benett, *Proc. zool. Soc. London,* **1835**. : 65

(1)	(2)	(3)	(4)
	Family HYANIDAE Subfamily HYANINAE Genus ***Hyaena*** Brunnich, 1771		
189.	*Hyaena hyaena* Linnaeus, 1758	Striped Hyaena	India/1758. *Canis hyaena* Linnaeus *Syst. Nat. 10th ed.* **1** : 40
	Family MUSTELLIDAE Subfamily LUTRINAE Genus ***Lutra*** Brunnich, 1771		
190.	*Lutra lutra* Linnaeus, 1758	Common Otter	Sweden/1758. *Mustela lutra* Linnaeus, *Syst. Nat. 10th ed.* : 45
	Genus ***Lutrogae*** Gray, 1865		
191.	*Lutrogale perspicillata* (Geoffroy St. Hillaire,1826)	Smooth coated Otter	Sumatra, Indonesia/ 1826. *Lutra perspillata* Geoffroy Siant Hilaire, *Hist. Nat. Paris,* **9** : 519.
	Genus ***Amblonyx*** Rafinesque, 1832		
192.	Amblonyx cinereus (Illiger, 1815)	Small Clawed Otter	Jakarta, Jawa, Indonesia/ 1815. *Lutra cinereus* Illiger. *Abh. Phy. Klasse K. Preuss. Akad. Wiss.* 99:
	Subfamily MELINAE Genus ***Arctonyx*** Cuvier, 1825		
193.	*Arctonyx collaris* Cuvier, 1825	Hog Badger	Bhutan, Duars, E. Himalaya/ 1825. *Arctonyx collaris* Cuvier *Hist. nat. Manniferes Pt.* **3** : 5(51)
	Genus ***Melogale*** (Geoffroy St. Hillaire,1831)		
194.	*Melogale moschata* Gray, 1831	Chinese Ferret Badger	Canton, China/1831. *Helictis moschata* Gray, *Proc. zool. Soc. London*, 94
195.	*Melogale personata* (Geoffroy St. Hillaire,1831)	Burmese Ferret Badger	Rangoon, Myanmar/1831. *Melogale personata* Geoffroy St. Hilaire *Voyage Indes Orient.,* **3** (zoologie) : 137.
	Subfamily MELLIVORINAE Genus ***Mellivora*** Storr, 1780		
196.	*Mellivora capensis* (Schreber, 1776)	Ratel, Honey Badger	Cape of Good Hope/1776. *Viverra capensis* Schreber, *Die Saugethiere* **3** (18) : pl. 125
	Subfamily MUSTELINAE Genus ***Martes*** Pinel, 1792		
197.	*Martes flavigula* (Boddaert, 1785)	Yellow throated Marten, Indian Marten	Nepal/1785. *Mustela flavigula* Boddaert, *Elench Anim.* **1** : 88
198.	*Martes foina* (Erxleben,1777)	Beech Marten, Stone Marten	Germany/1777. *Mustela foina Erxleben Syst. Regni. Anim.,* **1** : 458

(1)	(2)	(3)	(4)
199.	*Martes gwatekinsii* Horfsfield, 1851	South Indian Yellow throated Marten	Madra ? 1851. *Martes gwatkinsii* Horsfield, *Cat. Mamm. Mus. E. India co.* p. 90
	Genus ***Mustella*** Linnaeus, 1758		
200.	*Mustella altaica* Pallas, 1811	Mountain Weasel, Alpine Weasel	Altai Mts./1811. *Mustela altaica* Pallas *Zoogrr. Rosso – Asiat.* **1** : 98.
201.	*Mustella erminea* Linnaues, 1758	Stoat, Ermine	Sweden/1758. *Mustela erminea* Linnaeus *Syst. Nat 10th ed.* **1** : 46
202.	*Mustella kathaiah* Hodgson, 1835	Yellow bellied Weasel	Kachar, Nepal/ 1835. *Mustela kathaiah* Hodgson, *J Asiatic Soc. Bengal*, **4** : 702
203.	*Mustella siberica* Pallas, 1773	Siberian Weasel	Siberian Mts. USSR/1773. *Mustela siberica* Pallas, *Reise Russ. Reichs.*, **2** : 701
204.	*Mustella strigidorsa* Gray, 1855	Black Striped Weasel	Sikkim/1855. *Mustela strigidorsa* Gray, *zool. Soc. London*, **1853** : 191
	Family URSIDAE Subfamily AILURINAE Genus ***Ailurus*** Cuvier, 1825		
205.	*Ailurus fulgens* Cuvier, 1825	Red Panda	"Indes Orientalis" Ailurus fulgens Cuvier, In Geofroy Saitht – Halaire and F.G. Cuvier, *Hist. Nat. Mammeferes* **3**, **5**(50).
	Subfamily URSINAE Genus ***Helarctos*** Horsfield, 1825		
206.	*Helarctos malayanus* (Raffles,1821)	Malayan Sun Bear	Sumatra, Indonesia/1821. *Melursus malayanus* Raffles, Trans. Linn. Soc. London, **13** : 254
	Genus ***Melursus*** Meyer, 1793		
207.	*Melursus ursinus* (Shaw, 1791)	Sloth Bear	Patna, N Bihar/1791. Bradypus ursinus, Nat. Misc. **2** : 18.
	Genus ***Ursus*** Linnaeus, 1758		
208.	*Ursus arctos* Linaeus, 1758	Brown Bear, Grizzly Bear	Sweden/1758. Ursus arctos Linnaeus, *Syst. Nat, 10th ed.* **1** : 47
209.	*Ursus thibetanus* Cuvier, 1823	Asiatic Black Bear	Silhet, Bangladesh/*Ursus thibetanus* Cuvier, *Rech. Oss. Foss. Nouv. Ed.*, **4** : 325
	Family VIVERRIDAE Subfamily PARADOXURINAE Genus ***Arctictis*** Temminck, 1824		
210.	*Arctictis binturong* (Raffles, 1821)	Binturong, Bear Cat	Malacca, Malaysia/1821. Viverra binturong Raffles, Trans. Linn. Soc. London, **13** : 253

(1)	(2)	(3)	(4)
	Genus ***Arctogalidia*** Merriam, 1897		
211.	*Arctogalidea trivirgata* (Gray, 1832)	Three striped Palm civet/ small toothed palm civet	Bogor, Jawa, Indoneysia/1832. *Pardoxurus trivarigatus* Gray, *Proc. zool. Soc. London*, : 68
	Genus ***Paguma*** Gray, 1831		
212.	*Paguma larvata* (Hamilton-Smith, 1827)	Masked Palm Civet	Unknown/ 1827. *Gulo larvatus* Hamilton-smith in Griffith *et al. Anim. Kingdon*, **2** : 281
	Genus ***Paradoxurus*** Cuvier, 1821		
213.	*Paradoxurus hermophroditus* (Pallas, 1777)	Common Palm Civet, Tiger Civet	Uncertain/1777. *Viverra hermophroditus* Pallas, In Schreber, *Die Saugehtiere*, **3**(25) : 426.
214.	*Paradoxurus jerdoni* Blanford, 1885	Jerdon's Palm Civet Palni Hills,	Tamil Nadu/1885. *Pardoxurus jerdoni* Blanbford, *Proc. zool. Soc. London*, : 613
	Subfamily VIVERRINAE Genus ***Prionodon*** Horfsfield, 1821		
215.	*Prionodon pardicolor* Hodgson, 1842	Spotted Linsang, Tiger Civet	Sikkim,/1842. *Prionodon pardicolor* Hodgson, *Calcutta J. Nat. Hist.*, **2** : 57
	Genus ***Viverra*** Linnaeus, 1758		
216.	*Viverra civettina* Blyth, 1862	Malabar Civet	Travancore/1862. *Viverra civettina* Blyth, J. Asiatic Soc. Bengal, **31** : 332
217.	*Viverra zibetha* Linnaeus, 1758	Large Indian Civet	Bengal/1758. *Viverra zibetha* Linnaeus, *Syst. Nat. 10th ed.* **1** : 44
	Genus ***Vivericula*** Hodgson, 1838		
218.	*Vivericula indica* (Desmarest, 1804)	Small Indian Civet,	India/1804. *Viverra indica* Desmarert, *Tabl, Meth. Hist. Nat. In Nouv. Dict. Hist. Nat.* **24** : 9
	Order CETACEA Family BALANIDAE Genus ***Balaena*** (Linnaeus, 1758)		
219.	*Balaena mysticetus* (Linnaeus, 1758)	Greenland right Whale	Greenland Ocean/1758. *Balaena mystecius* Linnaeus, *Syst. Nat., 10th ed.* **1** : 75
	Family BALANOPTERIDAE Genus ***Balanoptera*** Lacepede, 1804		
220.	*Balanoptera acutorostrata* Lacepede, 1804	Finner Whale, Little Pinked Whale	France/1804. Lacepede, 1804 *Balaenoptera acutorostrata* Lacepede, *Hist. Nat. Cetaces, p. 134*
221.	*Balanoptera borealis* Lesson, 1828	Sei Whale	Germany/1828. *Balaenoptera borealis* Lesson, *Hist. Nat. Gen. Mamm. Oiseaux*, **1** : 342

(1)	(2)	(3)	(4)
222.	*Balanoptera edeni* Anderson, 1879	Bryde Whale, Lesser Rorgul	Myanmar/1879. *Balaenoptera edeni* Anderson, *Anat. Zool. Res. Yunnan,* 551, pl. 44
223.	*Balanoptera musculus* (Linnaeus, 1758)	Blue Whale Lesser Rorgul	Scotland, UK/1758. *Balaena musculus* Linnaeus, *Syst. Nat. 10th ed.* **1** : 76
224.	*Balanoptera physalus* (Linnaeus, 1758)	Common Rorgul, Fin Whale	Norway/*Balaena physalus* Linnaeus, Syst. Nat. 10th ed. 1 : 75
	Genus ***Megaptera*** Gray, 1846		
225.	*Megaptera novaengliae* (Borowski, 1781)	Hump-backed Whale	Coast of New England, USA/ 1781. *Balaena novaengliae* Borowski, *Gemein Naturgesch Thiere.,* **2**(1) : 21
	Family DELPHINIDAE Genus ***Delphinus*** Linnaeus, 1758		
226.	*Delphinus delphis* Linnaeus, 1758	Common Dolphin, Tropical Dolphin	North Atlantaic/1758. *Delhinus delphis* Linnaeus, *Syst. Nat. 10th ed.* **1** : 77
	Genus ***Globicephala*** Lesson, 1828		
227.	*Globicephala macrorhynchus* Gray, 1846	Short finned/ Indian Pilot Whale	South Seas/ 1846. Globicephala macrorhynchus Gray, *Zool. Voy. H.M.S. "Erebus and Terror",* **1** : 33
	Genus ***Lagenodelphis*** Fraser, 1956		
228.	*Lagenodelphis hosei* Fraser, 1956	Fraser's Dolhin	Borneo Indonesia/ 1956. *Lagenodelhis hosei* Fraser, *Sarawak Mus., J. n.s.,* **8**(7) : 496
	Genus ***Orcaella*** Gray, 1866		
229.	*Orcaella brevirostris* (Gray, 1866)	Irrawady Dolphin	Vishakapatnam,A.P./ *Phoecaena (Orca) brevirostris* Gray, *Cat. Seals Whales, Brit. Mus.,* p. 285.
	Genus ***Orcinus*** Fitzinger, 1860		
230.	*Orcinus orca* (Linnaeus, 1758)	Killer Whale	North Atlantic/ 1758. *Delhinus orca* Linnaeus, *Syst. Nat, 10th ed.* **1** : 77
	Genus ***Poponocephala*** Nishiwaki and Norris, 1966		
231.	*Poponocephala electra* Gray, 1846	Indian Broad beaked Dolphin	Unknown/1846. Lagenorhynchus electra Gray, *Zool. Voy. H.M.S. "Erebus and Terror",* **1** : 35
	Genus ***Pseudorca*** Reinhardt, 1862		
232.	*Pseudorca crassidens* (Owen, 1846)	False Killer Whale	England, UK/1846. *Phocaena crassidens* Owen, *Hist. Brit. Foss. Mamm. Birds,* p. 516
	Genus ***Sousa*** Gray,1866		
233.	*Sousa chinensis* (Osbeck, 1765)	Indo-Pacific Hump backed Whale	Mouth of Cnaston river, China/ 1765. *Sousa chinensis* Osbeck, *Reise nach Ostind. China Rostock,* **1** : 7

(1)	(2)	(3)	(4)
	Genus ***Stenella*** Gray, 1866		
234.	*Stenella attenuata* (Gray, 1846)	Malay dolphin	India/1846. *Steno attenuatus* Gray, *Zool. Voy. H.M.S. "Erebus and Terror"*, **1** : 44
235.	*Stenella coeruleoalba* (Meyen,1833)	Blue white Dolphin	Near Argentina & Uruguay/ 1833. *Delphinus coeruleoalba* Meyen, *Nova Acta Acad Caes Nat. Curios.*, **16**(2) : 609
236.	*Stenella longirostris* (Gray, 1828)	Gray's Dolphin, Spinner Dolphin	Unknown/1828. *Delphinus longirostris* Gray, *Specil. Zool.*, **1** : 1
	Genus ***Steno*** Gray, 1846		
237.	*Steno bredanensis* (Lesson, 1828)	Rough toothed Dolphin	Coast of Frnace/1828. *Delphinus breddanensis* Lesson, *Hist. Nat. Gen. Part. Mamm. Oiseausx*, **1** : 206
	Genus ***Tursiops*** Gervais, 1855		
238.	*Tursiops truncatus* (Montagu, 1821)	Bottle noosed Dolphin	Divonshire, England, UK/1821. *Delphinus truncates* Montagu *Mem Warnerian Nat. Hist. Soc.*, **3** : 75. pl. 3
	Family PHOCOENIDAE Genus ***Neophocaena*** Palmer, 1899		
239.	*Neophocaena phocaenoides* (Cuvier, 1829)	Black Finless Porpoise	Cape, South Africa/1829. *Delphinus phocaenoides* Cuvier, *Regne, Anim. Nouv. Ed.* **1** : 291
	Family PHYSESTERIDAE Genus ***Koiga*** Gray, 1846		
240.	*Koiga breviceps* (Blainville,1838)	Pygmy Sperm Whale	Cape, S. Africa/1838. *Physester breviceps* Blainville, *Ann. Fran. Etr. Anat. Phys.*, **2** : 337
241.	*Koiga simus* (Owen,1866)	Pigmy Sperm Whale	Waltair, Andhra/ *Physester (Euphysester) simus* Owen, *Trans. Zool. Soc. London*, **6**(1) : 30.
	Genus ***Physeter*** Linneus, 1758		
242.	*Physeter macrocephalus* Linneus, 1758	Sperm Whale	Netherlands/1758. *Physestrer catodon* Linnaeus, *Syst. Nat. 10th ed.* **1** : 76
	Family PLATANISTIDAE Genus ***Platanesta*** Wagler, 1830		
243.	*Platanesta gangetica* (Roxburgh,1801)	Ganges Dolphin	Hoogly river, WB/1801. *Delphinus gangetica* Roxburgh, *Aisat. Res. Soc. (Calcutta).*, **7** : 170
	Family ZIPHIIDAE Genus ***Ziphius*** Cviefr, 1823		
244.	*Ziphius cavirostris* Cuvier,1823	Cuvier's Beaked Whale	France/ 1823. *Ziphus cavirostris* G. Cuvier, *Rech. Oss. Foss. Nouv. Ed.* **5**(1) : 350

(1)	(2)	(3)	(4)
	Order SIRENIA Family DUGONGIDAE Genus ***Dogong*** Lacepede,1799		
245.	*Dugong dogon* (Muller, 1776)	Dugong	Cape, S. Africa/ 1776. *Trichechus dugon* Muller, *Linne's Bollstand Natursysyt., Suppl.*, p. 21
	Order PROBOSCIDEA Family ELEPHANTIDAE Genus ***Elephas*** Linnaeus, 1758		
246.	*Elephas maximus* Linnaeus, 1758	Indian Elephant	Sri Lanka/1758. *Elephas maximus* Linnaeus, *Syst. Nat., 10th ed.* **1** : 33
	Family PERISSODACTYLA Family EQUIDAE Genus ***Equus*** Linnaeus, 1758		
247.	*Equus kiang* Moorcroft, 1841	Kiang, Tibetan Wild Ass	Ladakh, J & K/1841. *Equus kiang* Moorcroft, *Travels in the Himalayan Provinces,* **1** : 312
248.	*Equus onager* Boddaert, 1785	Wild Ass	Iran/1785. *Equus onager* Boddaert, *Elench. Anim.*, p. 160
	Family RHINOCEROTIDAE Genus ***Rhinoceros*** Linnaeus, 1758		
249.	*Rhinoceros unicornis* Linnaeus, 1758	Indian/One horned Rhinoceros	Assam Terai/1758. *Rhinoceros unicornis* Linnaeus, *Syst. Nat. 10th ed.* **1** : 56.
	Order ARTIODACTYLA Family SUIDAE Subfamily SUINAE		
	Genus ***Sus*** Linneus, 1758		
250.	*Sus salvanius* (Hodgson,1847)	Pignmy Hog	Sikkim Terai/1847. *Porcula salvania* Hodgson, *J. Asiat. Soc. Bengal,* **16** : 423
251.	*Sus scrofa* Linnaeus,1758	Wild Boar	Germany/1758. *Sus scrofa* Linnaeus, *Syst. Nat. 10th ed.* **1** : 49
	Family TRAGULIDAE Genus ***Moschiola*** Hodgson, 1843		
252.	*Moschiola meminna* (Erxleben, 1777)	Mouse Deer, Indian Spotted Chevrotain	Sri Lanka/1777. *Moschus meminna* Erxlegen, *Syst. Regn. Anim.*, **1** : 322
	Family MOSCHIDAE Genus ***Moschus*** Lineus, 1758		
253.	*Moschus chrysogaster* Hodgson, 1839	Forest Musk Deer	Nepal/1839. *Moschus chrysogaster* Hodgson, *J. Asiat. Soc. Bengal,* **8** : 203
254.	*Moschus fuscus* Li, 1981	Alpine Musk Deer	Yunnan, China/1981. *Moschus fuscus* Li, *Zool. Res.*, **2** : 159.

(1)	(2)	(3)	(4)
	Family CERVIDAE Subfamily CERVINAE Genus ***Axis*** H. Smith, 1827		
255.	*Axis axis* (Erxleben, 1777)	Spotted Deer	Bihar/1777. *Cervus axis* Erxlegen, *Syst. Regn. Anim.*, **1** : 312
256.	*Axis porcinus* (Zimmermann, 1780)	Hog Deer	Bengal/1780. *Cervus porcinus* Zimmermann, *Geogr. Gesch. Mensch. Vierf. Thiere.*, **2** : 131
	Genus ***Cervus*** Linnaeus, 1758		
257.	*Cervus duvaucelii* Cuvier, 1823	Swamp Deer	N India/ 1823. *Cervus duvaucelii* Cuvier, *Rech. Oss. Foss. Nouv. Ed.* **4** : 505
258.	*Cervus elaphus* Linneus, 1758	Kashmir Stag	Sweden/ 1758. *Cervus elaphus* Linnaeus, *Syst. Nat. 10th ed.*, **1** : 67
259.	*Cervus eldii* Mc Clelland, 1842	Brown Antlered Deer,	Manipur/ 1842. *Cervus eldii* Mc Clelland, Calcutta *J. Nat. Hist.*, **2** : 417
260.	*Cervus unicolor* Kerr, 1792	Sambar Antlered Deer,	Sri Lanka/ 1792. *Cervus unicolor* Kerr, In *Linneus Anim. Kindom*, p. 30
	Family MUNTIACINAE Genus ***Muntiacus*** Rafinsique,1815		
261.	*Muntiacus muntjak* (Zimmermann,1780)	Barking Deer, Indian Muntjak	Jawa, Indonesia/ 1780. *Cervus muntjak* Zimmermann, *Geogr. Gesch. Mensch, Vierf. Thiere.*, **2** : 131
	Family BOVIDAE Subfamily ANTILOPINAE Genus ***Antilope*** Pallas, 1766		
262.	*Antilope cervicapra* (Linneus, 1758)	Blackbuck, Indian Antelope	Trivendrum, Kerala/ 1758. *Capra cervicapra* Linnaeus, *Syst. Nat. ed., 10th ed.*, 69.
	Genus ***Gazella*** Blainville, 1816		
263.	*Gazella benetti* (Sykes, 1831)	Indian Gazelle	Deccan plateau, India/ 1831. *Antilope bennettii* Sykes, *Proc. Zool. Soc. London*, **104** :
	Genus ***Panthelops*** Hodgson, 1834		
264.	*Panthelops hodgsonii* (Abel, 1826)	Tibetan Antelope	Tibet/ 1826. *Antilope hodgsonii* Abel, *Calcutta Govt. Gazette., see. Phi., Mag.*, **68** : 234
	Genus ***Procapra*** Hodgson, 1846		
265.	*Procapra picticaudata* Hodgson, 1846	Tibetan Gazelle	Sikkim/Tibet/1846. *Procapra picticaudata* Hodgson, *J. Asiat. Soc. Bengal*, **15** : 334.
	Subfamily BOVINAE Genus ***Bos*** Linnaeus, 1758		
266.	*Bos gaurus* H. Smith, 1827	Indian Bison	Chittagong, Bangladesh/ 1804. *Bos frontalis* Lambert, *Trans. Linn. Soc. London*, **7** : 57.

(1)	(2)	(3)	(4)
267.	*Bos grunniens* Linneus, 1766	Yak	Asia/ 1766. *Bos grunneus* Linnaeus, *Syst. Nat. 10th ed.*, **1** : 99.
	Genus ***Boselaphus*** Blainvile,1816		
268.	*Boselaphus tragocemalus* (Pallas, 1766)	Blue Bull	Peninsular India/ 1766. *Antilope tragocemelus* Palls, *Misc. Zool.*, p. 5
	Genus ***Bubalus*** Smith, 1827		
269.	*Bubalis bubalus* (Linneus, 1758)	Water/Indian Buffalo	Asia/ 1758. *Bos bubalis* Linnaeus, *Syst. Nat., 10th ed.*, **1** : 72.
	Genus ***Tetracerus*** Leach,1825		
270.	*Tetracerus quadricornis* (Blainvile,1816)	Four horned Antelope	Peninsular India/ 1816. *Cerophorus quadricornis* Blainville, *Bull. Sci. Soc. Philom, paris* p. 75
	Subfamily CAPRINAE Genus ***Budorcus*** Hodgson, 1850		
271.	*Budorcas taxicolor* Hodgson, 1850	Takin	Arunachal Pradesh/ 1850. *Budorcas taxicolor* Hodgson, 1850. *J. Asiatic Soc. Bengal*, **19** : 65
	Genus ***Capra*** Linnaeus, 1758		
272.	*Capra falconeri* (Wagner, 1839)	Markhor, Punj	Kashmir/1839. *Agoceros (Capra) falconeri* Wagner, *Gelehrt. Anz. I. K. Bayer Akad. Wiss., Munchen*, **9** : 430
273.	*Capra siberica* (Pallas, 1776)	Siberian Ibex	Russia/1776. *Ibex sibericus* Pallas, *Spic. Zool.*, **11** : 52.
	Genus ***Hemitragus*** Hodgson, 1841		
274.	*Hemitragus hylocris* (Ogilby,1838)	Nilgiri Thar	Nilgiri hills, T.N./1838. *Kemas hylocris* Ogilby, *Proc. zool. Soc. London*, 81
275.	*Hemitragus jemlahicus* (Smith,1826)	Himalayun Thar, Thar	Nepal/1826. *Capra jemlachicus* Smith, *In Griffith et al., Anim. Kingdom. Vol.* **4** : 308
	Genus ***Naemorhedus*** Smith, 1827		
276.	*Naemorhedus goral* (Hardwick,1825)	Goral	Himalaya, Nepal/ 1825. *Antilope goral* Harwicke, *Trans. Linn. Soc. London*, **14** : 518.
277.	*Naemorhedus sumatraensis* (Bechstein,1799)	Mainland Serow, Serow	Sumatra, Indonesia/ 1799. *Antilope sumatrensis* Bechstein, In *Pennant, Allgemeine, Ueber, Vierfuss, Thiere*, **1** : 98
	Genus ***Ovis*** Linnaeus, 1758		
278.	*Ovis ammon* (Linnaeus, 1758)	Argali, Great Tibetan Sheep	Kazakasthan/1758. *Capra ammon* Linnaeus, *Syst. Nat. 10th ed.*, **1** : 70
279.	*Ovis vignei* Blyth, 1841	Urial, Shapu, Punj	Kashmir/ 1841. *Ovis vignei* Blyth, *Proc. zool. Soc. London*, : 70

(1)	(2)	(3)	(4)
	Genus ***Pseudois*** Hodgson,1846		
280.	*Pseudois nayaur* (Hodgson,1833)	Blue Sheep, Bharal	Nepal/1833. *Ovos nayaur* Hodgson, *Asiat Res.*, **18**(2) : 135
	Order PHOLIDOTA Family MANIDAE Genus ***Manis*** Linaeus, 1758		
281.	*Manis crassicaudata* (Gray, 1827)	Indian Pangolin	India/ 1827. *Manis crassicaudata* Gray, *In Griffith et.al. Anim. Kingdom*, **5** : 282
282.	*Manis Pentadactyla* Linnaeus, 1758	Chinese Pangolin	Taiwan, China/ 1758. *Manis pentadactyla* Linnaeus, *Syst. Nat., 10th ed.*, **1** : 36.
	Order RODENTIA Suborder SCIUROGNATHI Family SCIURIDAE Subfamily SCIURINAE Genus ***Callosciurus*** Gray, 1867		
283.	*Callosciurus erythraeus* (Pallas, 1799)	Pallas Squirrel	Myanmar/1842. *Sciurus canniceps* Gray, *Ann. Mag. nat. Hist.* (ser.)**1 : 10** : 263.
284.	*Callosciurus canipes* (Gray, 1842)	Golden Backed/ Gray billed Squirrel,	Assam/ 1779. *Siurus erythraeus* Pallas, *Nova. Quad. Gli. Ord.*, p. 337
285.	*Callosciurus pygerythrus* (I. geoffroy Saint Hilaire, 1831)	Irrawady Squirrel	Pegu, Myanmar/1831. *Sciurus pyrgerythrus* I. geoffroy Saint Hilaire, *Mag. Zool. Paris.*, p. 5.
	Genus ***Dremomys*** Heude, 1898		
286.	*Dremomys lokriah* (Hodgson,1836)	Orange billed Himalayan Squirrel	Nepal/ 1836. *Sciurus lokriah* Hodgson, *J. Asiat. Soc. Bengal*, **5** : 232
287.	*Dremomys pernyi* (Milne-Edwards,1867)	Perny's Long nosed Squirrel	Sichaun, China/ 1867. *Sciurus pernyi* Milne-Edwards, *Rev. Mag. Zool. (Paris)* : 19
288.	*Dremomys rufiqueris* (Blanford, 1878)	Red Cheeked Squirrel	Myanmar/1878. *Sciurus rufigens* Blanford, *J. Asiat. Soc. Bengal.*, **47**(2) : 156
	Genus ***Funambulus*** Lesson, 1835		
289.	*Funambulus layardi* (Blyth, 1849)	Layard's Striped Squirrel	Sri Lanka/ 1849. *Sciurus layardi* Blyth, *J. Asiatic. Soc. Bengal*, **18** : 602.
290.	*Funambulus palmarum* (Linnaeus,1766)	Indian/Three striped Palm Squirrel	Tamil Nadu/ 1766. *Sciurus palmarum* Linnaeus, *Syst. Nat., 12th ed.* **1** : 86
291.	*Funambulus pennantii* Wroughton, 1905	Northern Palm Squirrel	Surat, Gujarat/ 1905. *Funambulus pennanti* Wroughton, *J.B.N.H.S.*, **16** : 411.
292.	*Funambulus sublineatus* (Waterhouse, 1838)	Dusky striped squirrel	Nilgiri hIlls/ 1838. *Sciurus sublineatus* Waterhouse, *Proc. zool. Soc. London*, : 19.

(1)	(2)	(3)	(4)
293.	*Funambulus tristriatus* (Waterhouse, 1837)	Western Ghats Strriped Squirrel	Western Ghats(12^0 N)/1837. *Sciurus tristriatus* Waterhouse, *Mag.Nat. Hist. (Charlesworth),* **1** : 499.
	Genus ***Marmota*** Blumenbach, 1779		
294.	*Marmota caudata* (Geoffroy, 1844)	Long tailed Marmot	Kashmir/ 1844. *Arctomys caudata* In Jacquemont. *Voy. Dans. l'nde,* **4** : zool., p. 66.
295.	*Marmota himalayana* (Hodgson, 1841)	Himalayan Marmot	Nepal/1841. *Arctomys himalayana* Hodgson, J. *Asiat. Soc. Bengal,* **10** : 777
	Genus ***Ratufa*** Gray, 1867		
296.	*Ratufa bicolor* (Sparman, 1778)	Large Malayan Squirrel	Jawa, Indonesia/ 1778. *Sciurus bicolor* Sparrman, *Samhelle Hand (Wet. Afd.) :* **1** : 70
297.	*Ratufa indica* (Erxleben, 1777)	Indian Giant Squirrel	Bombay/ 1777. *Sciurus indica* Erxleben, *Syst. Regn. Anim.*, **1** : 420
298.	*Ratufa macroura* (Pennant, 1769)	Grizzled Indian Squirrel	Sri Lanka/1769. *Sciurus macrourus* Pennant, *Indian Zool.*, 1
	Genus ***Tamiops*** Allen, 1906		
299.	*Tamiops macclellandi* (Horfsfield, 1840)	Himalyan Striped Squirrel	Assam/1840. *Sciurus macclellandi* Horsfield, *Proc. zool. Soc. London,* 152.
	Subfamily PETAURISTINAE Genus ***Belomys*** Thomas, 1908		
300.	*Belomys pearsonii* (Gray, 1842)	Hairy footed Flying Squirrel	Darjeeling, WB/1842. *Sciuropterus pearsonii* Gray, *Ann. Mag. nat. Hist. Soc.,* **10** : 263.
	Genus ***Biswamyopterus*** Saha,1981		
301.	*Biswamyopterus biswasi* Saha,1981	Namdapha Flying Squirrel	Arunachal Pradesh/ 1981. *Biswamyopterus biswasi* Saha, *Bull. Zool. Surv. India,* **4** : 331
	Genus ***Eupetaurus*** Thomas, 1888		
302.	*Eupetaurus cinereus* Thomas, 1888	Wooly Flying Squirrel	Kaahmir/ 1888. *Eupetaurus cinereus* Thomas, *J. Asiatic Soc. Bengal,* **57** : 258.
	Genus ***Hylopetes*** Thomas 1908		
303.	*Hylopetes alboniger* (Hodgson, 1836)	Particoloured Flying Squirrel	Nepal/1836. *Sciuropterus alboniger* Hodgson, *J. Asiatic Soc. Bengal,* **5** : 231
304.	*Hylopetes baberi* (Blyth, 1847)	None	Afganis=than/ 1847. *Sciuroptrus baberi* Blyth, *J. Asiactic Soc. Bengal,* **16** : 866.
305.	*Hylopetes fimbriatus* (Gray,1837)	Small Kashmir Flying Squirrel	Himachal Pradesh/ 1837. *Sciuroterus fimbriatus* Gray, *Ann. Mag. nat. Hist.,* **1** : 584

(1)	(2)	(3)	(4)
306.	*Hylopetes phayrei* (Blyth, 1859)	Phayre's Flying Squirrel	Myanmar/ 1859. *Sciuropterus phayrei* Blyth, *J. Asiaatic Soc. Bengal*, **28** : 278.
	Genus ***Petaurista*** Link, 1895		
307.	*Petaurista elegans* (Muller, 1840)	Lesser Giant Flying Squirrel	Indonesia/ 1840. *Pteropmys elegans* Muller, *In Temmninck, Verhandl. Nat. Gesch. Nederland Overz. Bezit. Zool., Zoolgd. Indisch. Archipel* : 35, 37
308.	*Petaurista magnificus* (Hodgson,1836)	Hodgosn's Flying Squirrel	Nepal / 1836. *Pteromys magnificus* Hodgson, *J. Asiatic. Soc. Bengal*, **5** : 231
309.	*Petaurista nobilis* (Gray, 1842)	None	Darjeeling, West Bengal/ 1842. *Pteromys nobilis* Gray, *Ann. Mag. Nat. Hist.*, **10** : 263
310.	*Petaurista petaurista* (Pallas, 1766)	Red /Common Giant Flying Squirrel	Indonesia/ 1766. *Sciurus petarista* Pallas, *Misc. Zool.*, p. 54.
311.	*Petaurista phillippensis* (Elliot, 1839)	Indian Giant Flying Squirrel	Madras, TN/ 1839. *Pteromys philippensis* Eliot, *Madras, J. Litt. Sci.*, **10** : 217.
	Genus ***Petinomys*** Thomas, 1908		
312.	*Petinomys fuscocapillus* Jerdon 1847	Small Travancore Flying Giant Squirrel	Travancore, Kerala/ 1847. *Sciuropterus fuscocapillus* Jerdon, *J. Asiatic Soc. Bengal.*, **16** : 867
	Family DIPODIDAE Subfamily SICISTINAE Genus ***Sicista*** *Gray, 1827*		
313.	*Sicista concolor* Buchner, 1892	Chinese Birch Mouse	China/ 1892. *Sminthus concolor*, Buchner, *Bull. Sci. Imp. St. Petersburg*, **35**(3) : 107
	Family MURIDAE Subfamily ARVICOLINAE Genus ***Alticola*** Blanford, 1881		
314.	*Alticola albicauda* (True,1894)	White-tiled Mountain Vole	J & K/ 1894. *Arvicola alticauda* Ture, *Proc. U.S. Natl. Mus.* **17** : 12
315.	*Alticola argentatus* (Servertzov,1879)	Silver Mountain Vole	Kazakstahan/ 1879. *Arvicola argentatus* Severtzov, *Izv. Soc. Nat. Anthrop. Etnogr.*, **8, 2** : 82
316.	*Alticola montosa* (True,1894)	True Vole	Kashmir/1894. *Arvicola montosa* Ture, *Proc. U.S. Natl. Mus.*, **17** : 11
317.	*Alticola roylei* (Gray, 1842)	Royle's Vole	Uttar Pradesh/ 1842. *Arvicola roylei* Gray, *Ann. Mag. nat. Hist.(ser.1)*, **10** : 265

(1)	(2)	(3)	(4)
318.	*Alticola stoliczkanus* (Blanford,1875)	Stoliczkaa's Vole	J & K/1875. *Arvicola stoliczkanus* Blanford. *J. Asiat. Soc. Bengal*, **44** : 107.
319.	*Alticola stracheyi* (Thomas, 1880)	Thomas' Short tailed Vole	J & K/ 1880. *Arvicola stracheyi* Thomas, *Ann. Mag. nat. hist. (ser. 5)*, **6** : 332
	Genus ***Eothenomys*** Miller, 1896		
320.	*Eothenomys melanogaster* Milne- Edwards, 1867	Pere Davids Vole	China/ 1871. *Arvicola melanogaster* Milne – Edwards, *Nouv. Arch. Mus. Hist. Nat. paris, Bull*, **7** : 93
	Genus ***Hyperacrius*** Miller, 1896		
321.	*Hyperacrius fertilis* (True, 1894)	Trues Vole	Kashmir/ 1894. *Arvicola fertilis* True, *Proc. U.S. Natl. Mus.*, **17**. 10.
322.	*Hyperacrius wynnei* (Blanford,1881)	Murree's Vole	Pakisthan/ 1881. *Arvicola wynnei* Blandford, *J. Asiatic Soc. Bengal*, **49** : 244.
	Genus ***Microtus*** Schrank, 1798		
323.	*Microtus leucurus* (Blyth,1863)	Blyth's Vole	J & K / 1863. *Phaiomys leucurus* Blyth, *J. Asiatc Soc. Bengal*, **32** : 89
324.	*Microtus sikkimensis* (Hodgson,1849)	Sikkim Vole	Sikkim/1849. *Neodon sikkkimensis* Hodgson, *Ann. Mag. nat. Hist. (Ser. 2)*, **3** : 203
	Subfamily CRICETINAE Genus ***Cricetulus*** Milne- Edwards, 1867		
325.	*Cricetulus alticola* Thomas,1917	Ladakh Hamster	J&K/ 1917. *Cricetulus alticola* Thomas, *Ann. Mag. nat. Hist. (ser. 8)*, **19** : 455
326.	*Cricetulus migratorius* (Pallas,1773)	Little Grey hamster	Kazakathan, 1773. *Mus migratorius* Pallas, *Reise, Prov. Russ. Reichs.*, **2** : 703
	Subfamily GERBILLINAE Genus ***Gerbillus*** Desmarest, 1804		
327.	*Gerbillus gleadowi* Murray,1886	Little Hairy-footed Gerbil	Pakisthan/ 1886. *Gerbillus gleadowi* Murrey, *Ann. Nat. Hist. (ser. 5)*, **17** : 246
328.	*Gerbillus nanus* Blanford,1875	Baluchisthan Gerbil	Pakistham/ 1875. *Gerbillus nanus* Blanford, *Ann. Mag. nat. Hist., (ser. 4)* **16** : 312
	Genus ***Meriones*** Illiger, 1811		
329.	*Meriones hurrianae* (Jerdon, 1867)	Indian Desert Gerbil	Haryana/ 1867. *Gerbillus hurricane* Jordon, *Mamm. India*, p. 186.
	Genus ***Tatera*** Lataste, 1882		
330.	*Tatera indica* (Hardwicke,1807)	Indian Gerbil (Antelope rat)	Uttar Pradesh/ 1807. *Dipus indcus* Hardwicke, *Trans. Linn. Soc. London*, **8** : 279.

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	Subfamily MURINAE		
	Genus ***Apodemus*** Kaup, 1829		
331.	*Apodemus draco* (Berrett-Hamilton,1900)	South China Wood mouse	China/1900. *Mus sylvaticus drac,* Barrett – Hamilton, *Proc. zool. Soc. London* : 418.
332.	*Apodemus rusiges* (Miller, 1913)	Kashmir Field Mouse	Kashmir/ 1913. *Apodemes rusiges* Miller, *Proc. Biol. Soc. Washington,* **26** : 81
333.	*Apodemus wardi* (Wroughton, 1908)	Yellow nacked Field Mouse	J & K/ 1908. *Micromys sylvaticus wardi* Wroughton, *J. Bombay nat. Hist. Soc.,* **18** : 282
	Genus ***Bandicota*** Gray, 1873		
334.	*Bandicota bengalensis*	Lesser Bandicot rat	Bengal/1833. *Arvicola bengalensis* Gray and Hardwicke, *Illustr. Indian Zool,* pl. 21.
335.	*Bandicota indica* (Bechstein,1800)	Large Bandicot rat	Pondicherry/ 1800. *Mus indicus* Beechstein, In Pennant, *Allgemeine Ueber Vierfuss. Thiere,* **2** : 497
	Genus ***Berylmys*** Ellerman, 1947		
336.	*Berylmys bowersi* (Anderson, 1879)	Bower's Rat	China / 1879. *Berylmys bowersi* Anderson, *Anat. zool. Res., Yunnan* : 304
337.	*Berylmys mackenziei* (Thomas, 1916)	Mackenzie's Rat	Myanmar/ *Epimys mackenziei* tghomas, *J B N H S.,* **24** : 410
338.	*Berylmys manipulus* (Thomas, 1916)	Manipur Rat	Myanmar/1916. *Epimys manipulus* Thomas, *J B N H S.,* **24** : 413
	Genus ***Chiropodomys*** Peters, 1869		
339.	*Chiropodmys gliroides* (Blyth,1856)	Pencillate Tailed Tree Mouse	Meghalaya/ 1856. *Mus gliroides* Blyth, J. *Asiat. Soc. Bengal.,* **24** : 721
	Genus ***Cremnomys*** Wroughton 1912		
340.	*Cremnomys blanfordi* (Thomas, 1881)	Blanford's Rat Tree Mouse	Andhra Pradesh/ 1881. *Cremnomys (Rattus) blanfordi* Thomas, *Ann. Mag. nat. Hist. (Ser. 5)* **7** : 24.
341.	*Cremnomys cutchicus* Wroughton, 1912	Cutch Rock Rat	Gujarat/ 1912. *Cremnomys cutchicus* wroughton, *J.Bombay nat. Hist. Soc.,* **21** : 340
342.	*Cremnomys elvira* (Ellerman, 1947)	Large Rock Rat	Salem, T N / 1946. *Raattus (Cremnomys) elvira* Ellerman, *Ann. Mag. nat. Hist. (Ser., 2)* : **13** : 207
	Genus ***Dacnomys*** Thomas, 1917		
343.	*Dacnomys millardi* Thomas, 1916	Millard's Rat	Darjeeling. W.B./1916. *Dacnomys millardi* Thomas, *J. B. N. H.S.,* **24** : 404

(1)	(2)	(3)	(4)
	Genus ***Dyomys*** Thomas 1917		
344.	*Dyomys crumpi* Thomas 1917	Crump's Mouse	Bihar/ 1917. *Diomys crumpi* Thomas, *J B N H S.*, **25** : 203
	Genus ***Golunda*** Gray, 1837		
345.	*Golunda ellioti* Gray, 1837	Indian Bush Rat	Karnataka/ 1837. *Golunda ellioti* Gray, *Mag. Nat. Hist. (Charlesworth's)* **1** : 586
	Genus ***Hadromys*** Thomas 1911		
346.	*Hadromys humei* (Thomas, 1886)	Hume's Rat	Manipur/1886. *Mus humei* Thomas, *Proc. zool. Soc. London, 63.*
	Genus ***Leopoldamys*** Ilerman, 1947		
347.	*Leopoldamys edwardsi* (Thomas, 1882)	Edward's Rat	China/ 1882. *Mus edwardsi* Thomas, *Proc. zool. Soc. London*, 587.
	Genus ***Micromys*** Dehne, 1841		
348.	*Micromys minutus* (B. Pallas, 1771)	Harvest Mouse	Russia/1771. *Mus minutus* Pallas, *Reise Prov. Russ. Reichs.*, **1** : 454
	Genus ***Millardia*** Thomas, 1911		
349.	*Millardia gleadowi* (Murray, 1885)	Sand colured Metad	Pakisthan / 1886. *Mus gleadowi* Murray, *Proc. zool, Soc. London,* : 809
350.	*Millardia kondana* Mishra & Dhanda, 1975	Large Metad	Maharashtra / 1975. *Millardia kondana* Mishra and Dhanda, *J. Mammol,* **56** : 76.
351.	*Millardia meltada* (Gray,1837)	Soft furred Metad	Karnataka/ 1837. *Millardia meltada* Gray, *Ann. Mag. nat. Hist. (ser. 1),* **1** : 586.
	Genus ***Mus*** Linnaeus, 1758		
352.	*Mus booduga* Gray, 1837	Little Indian Field Mouse	Maharasthra/ 1837. *Leggada booduga* Gray, *Charlesworth's Mag. Nat. Hist.* **1** : 586.
353.	*Mus cervicolor* Hodgson, 1845	Fawn Coloured Mouse	Nepal/1845. *Mus cervicolor* Hodgson, *Ann. Mag. nat. Hist. (ser.1)* **15** : 268.
354.	*Mus cooki* Ryley, 1914	Ryley's Spiny Mouse	Myanmar/ 1914. *Mus cookie* Ryley, *J B N H S.*, **22** : 663
355.	*Mus famulus* Bonhote,1889	Bonhot's Mouse	Coonor T N / 1898. *Mus famulus* Bonhote, *J B N H S.*, **12** : 99
356.	*Mus musculus* Linnaeus, 1758	House Mouse	Sweden/ 1758. *Mus musculus* Linnaeus, *Syst. Nat, 10th ed.*, **1** : 62
357.	*Mus pahari* Thomas, 1916	Sikkim Mouse	Darjeeling, WB/1916. *Mus pahari* Thomas, *JBNHS.*, **21** : 772
358.	*Mus phillipsi* Wroughton, 1912	Wroughtons Small spiny mouse	Madhya Pradesh/1912. *Mus phillipsi* Wroughton, *JBNHS.*, **21** : 772

(1)	(2)	(3)	(4)
359.	*Mus platythrix* Bennet,1832	Brown Spiny Mouse	Madras, T.N./1839. *Mus saxicola* Elliot, *Madrass J Litt. Sci.*,, **10** : 215
360.	*Mus saxicola* Elliot, 1839	Slliot's Spiny Mouse	India/1830. *Arvicola indica* Gray and Hardwicke, *Illustr Indian Zool.*, **1** : pl. 11
361.	*Mus terricolor* Blyth, 1851	None	Calcutta WB/1851. *Mus terricolor* Blyth, *J. Asiat. Soc. Bengal*, **20** : 172
	Genus ***Nesokia*** Gray, 1842		
362.	*Nesokia indica* (Gray & Hardwicke, 1832)	Short Tailed Bandicoot rat	India/ 1830. *Arvicola indica* Gray and Hardwicke, Illust. Indian Zool., 1 P. I.11
	Genus ***Niviventer*** Marshall, 1976		
363.	*Niviventer brahma* (Thomas,1914)	Thomas' Chestnut Rat	Arunachal Pradesh/ 1914. *Epimys brahma* Thomas, *J B N H S.*, **23** : 232
364.	*Niviventer eha* (B Wroughton,1916)	Little Himalayan rat	Sikkim/ 1916. *Epimys eha* Wroughton, *J B N H S.*, **24** : 428
365.	*Niviventer fulvescens* (Gray, 1847)	Chestnut Rat	Nepal / *Mus fulvescens* Gray, Cat. *Hodgson Coll. Br. Mus.*, p. 18
366.	*Niviventer langbianis* (Robinson & Kloss, 1922)	Dark tailed Rat	Vietnam/1922. *Mus langbianis* Robinson and Klosss, *Ann. Mag. nat. Host. (ser. 9)* **9** : 96
367.	*Niviventer niviventer* (Hodgson, 1836)	Himalayan White Bellied Rat	Nepal/ 1836. *Mus niniventer* Hodgson, *J. Asiatic Soc. Bengal.*, **5** : 234
368.	*Niviventer tenaster* (Thomas, 1916)	Tenasserium Long tailed rat	Myanmar/ *Epimys tenaster* Thomas, *Ann. Mag. nat. Hist. (Ser. 8)*, **17** : 425.
	Genus ***Rattus*** Fischer, 1803		
369.	*Rattus burrus* (Miller, 1902)	Miller's Nicobar Rat	Nicobar Islands/ 1902/ *Mus burrus* Muller, *Proc. U.S. Nat. Mus.*, **24** : 768
370.	*Rattus nitidus* (Hodgosn, 1845)	Himalayan Rat	Nepal/1845. *Mus nitidus* Hodgson, *Ann. Mag. nat. Hist. (ser. 1)*, **15** : 267
371.	*Rattus norvegicus* (Berkenhout, 1769)	Norway Brown rat	Great Britain/1769. *Mus norvegicus* Berkenhout, *Outlines of the Natural History of Great Britain and Ireland* **1** : 5
372.	*Rattus palmarum* (Zelber, 1869)	Palm Rat	Nicobar Islands/1869. *Mus palmarum* Zelbor, *Reise Oesterr Fregatte Novara, Zool. (Wirbelthiere), Saugeth*, P. 26
373.	*Rattus ranjaniae* Agrwal & Ghoshal, 1969	Ranjini's Filed Rat	Tiruvananthapuram, Kerala/ 1969. *Rattus ranjiniae* Agrwal and Ghosal., *Proc. zool. Soc. Calcutta*, **22** : 41
374.	*Rattus rattus* (Linnaeus, 1758)	Common House Rat	Sweden/1758. *Mus rattus* Linnaeus, *Syst. Nat. 10th ed.*, **1** : 61

(1)	(2)	(3)	(4)
375.	*Rattus sikkimensis* Hinton, 1919	Sikkim Rat	Darjeeling, West Bengal/ 1919. *Rattus sikkimensis* Hinston, *J B N H S.*, **26**., 394
376.	*Rattus stoicus* (Miller, 1902)	Andaman Rat	Andaman islands/1902. *Mus stoicus* Miller, *Proc U S Natl. Mus.*, **24** : 759.
377.	*Rattus tanezumi* (Temminck, 1844)	Tenezumi Rat	Japan/1844. *Rattus tanezumi* Temminck, *In Sielbold, Temmninck and Schlegel, Fauna Japonica, Arnz et al. Socil. Lugduni Batavarum,* p. 15.
378.	*Rattus turkestanicus* (Satunin, 1903)	Turkestan Rat	Kirgizhia/1903. *Mus turkestanicus* Satunin, *Ann. Mag. Zool. Imp. Sci. St. Peterburg* **7** : 588
379.	*Rattus vicerex* (Bonhote, 1903)	Short tailed Turketan Rat	Shimla, Himachal Pradesh/ 1903. *Mus vicerex* Bonhoe, *Ann. Mag. Nat. Hist.* **11** : 473
	Subfamilly PLATACHANTOMYINAE Genus ***Platacanthomys*** Blyth, 1859		
380.	*Platacanthomys lasiurus* Blyth, 1859	Malabar Spiny Dormice	Malabar, Kerala/1859. *Platycanthomys lasiurus* Blyth, *J. Asiatic Soc. Bengal.* **28** : 289
	Genus ***Vandeleuria*** Gray, 1842		
381.	*Vandeleuria oleracea* (Bennet, 1832)	Long tailed tree mouse	Madras,T.N./1832. *Mus oleracea* Bennett, *Proc. zool, London,* : 121
	Subfamily RHIZOMYINAE Genus ***Cannomys*** Thomas, 1915		
382.	*Cannomys badius* (Hodgson, 1841)	Bay Bamboo Rat	Nepal/1841. *Cannomys badius* Hodgson, *Calcutta J Nat. Hist.*, **2** : 60
	Genus ***Rhizomys*** Gray, 1831		
383.	*Rhizomys pruinosus* Blyth, 1851	Hoary Bamboo rat	Meghalaya/1851. *Rhizomys pruinosus* Blyth, *J. Asiatic Soc. Bengal.*, **20** : 517.
	Suborder HISTRICOGNATHI Family HISTRICIDAE Genus ***Atherurus*** Cuvier, 1829		
384.	*Atherurus macrorus* (Linneus,1758)	Asiatic Brushtailed Porcupine	Malaysia/1758. *Hystrix macroura* Linnaeus, *Syst. Nat., 10th ed.* **1** : 57
	Genus ***Histrix*** Linnaeus, 1758		
385.	*Histrix brachyura* Linnaeus, 1758	Himalayan Crestless Porcupine	Malaysia /1758. *Histrix brachura* Linneus, *Syst. Nat., 10th ed.* **1** : 57
386.	*Histrix indica* (Kerr, 1792)	Indian Crested Porcupine	

(1)	(2)	(3)	(4)
	Order LAGOMORPHA Family OCHOTONIDAE Thomas, 1897 Genus ***Ochotona*** Link, 1795		
387.	*Ochotona curzoniae* (Hodgson,1858)	Plateau Pika	Tibet/1858. *Lagomys curzoniae* Hodgson, *J Asiatic Sopc. Bengal.*, **26** : 207.
388.	*Ochotona forresti* Thomas,1923	Forrest's Pika	China/1923. *Ochotona forresti* Thomas, *Ann. Mag. nat. Hist. (ser. 9)* **11** : 662
389.	*Ochotona ladacensis* (Gunther,1875)	Ladakh Pika	J & K/1875. *Lagomys ladcensis* Gunther, *Ann. Mag. nat. Hist. (Ser. 4)*, **16** : 23
390.	*Ochotona macrotis* (Gunther,1875)	Large eared Pika	Turkistan/1875. Lagomys macrotis Gunther, *Ann. Mag. nat. Hist. (Ser. 4)*, **16** : 231
391.	*Ochotona nubrika* Thomas,1922	Nubra Pika	J & K/1922. *Ochotona nubrica* Thomas, *Ann. Mag. Nt. Hist. I Ser. 9)* **9** : 187
392.	*Ochotona roylei* (Ogilby,1839)	Royle's Pika	Uttar Pradesh/ 1839. *Lagomys roylei* Ogilby, *Royle's Illus. Botany. Himalaya, Vol.* **2** : 69 *(erroneously labeled as Lagomys alpinus)*
393.	*Ochotona thibetana* (Milne-Edwards, 1971)	Maupin Pika	China/1871. *Lagomys thibetana* Milen – Edwards *Nouv. Arch. Hist. Nat. Paris Bull.* **7** : 3
	Family LEPORIDAE Fischer, 1817 Genus ***Caprolagus*** Blyth,1845		
394.	*Caprolagus hispidus* (Pearson,1839)	Hispid Hare/ Assam Rabbit	Assam/ 1839. *Lepus hispidus* Pearson, In *M'Clelland Proc. zool. Soc. London* : 152
	Order LAGOMORPHA Family LEPORIDAE Fischer, 1817 Genus ***Lepus*** Linnaues, 1758		
395.	*Lepus nigricollis* Cuvier, 1823	Indian Hare or Black-napped Hare	Malabar, Kerala/ 1823. *Lepus nigricollis* Cuvier, *Dict. Sci. Nat.*, **26** : 307
396.	*Lepus oiostolus* Hodgson,1840	Wooly Hare	Tibet/ 1840. *Lepus oistolus* Hodgosn, *J Asiatic Soc. Bengal*, **9** : 1186
397.	*Lepus tolai* Pallas, 1778	Tolai Hare	Russia/ 1778. *Lepus tolai* Pallas, *Nova Spec. Quad, Glir, Ord.* P. 17.

Dicerorhinus sumatrensis : No direct sightings has been recorded within Indian limits, as it is extralimital. Since it is included in Schedule - I of WL (P) Act, 1972, the species has been considered here under species account.

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ENDANGERED

Order INSECTIVORA

Family SORICIDAE

Subfamily CROCIDURINAE

1. *Crocidura hispida* Thomas
Andaman spiny shrew

Synonyms : Not available

Common names : Andaman spiny shrew

Regional names : Not known

Diagnostic characters : A large sized *Crocidura* species with tail much longer than head and body (more than 120%). Hind feet comparatively larger. Third unicuspid teeth greater than the second. Bristles on the tail well developed. Dorsal pelage greyish brown with bristly texture. Skull comparatively larger in size in most of the respects.

Measurements : (in mm) Head and body length : 85.0, tail length : 103.0, Hindfeet : 25.5, greatest lenght of the skull : 28.0, upper tooth row : 12.3, M_2-M_2 width : 8.4

Weight : Not known

Intraspecific variations : No subspecies.

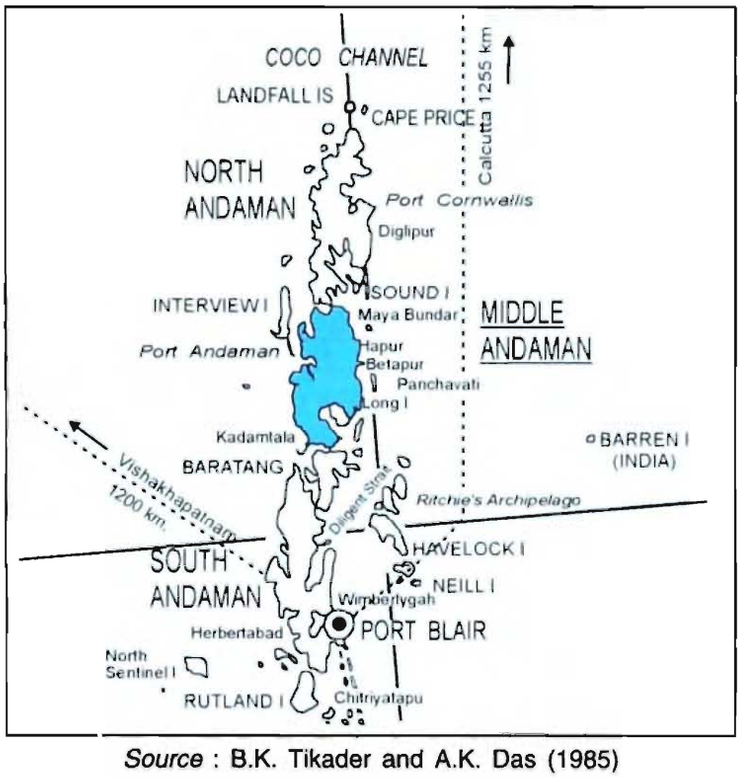
Distribution : Within Indian limits the species is known to occur only in middle Andaman Islands.

Endemism : Endemic to Andaman Islands of India.

Altitude : 50-100 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 2001-5000 sq. kms.



Source : B.K. Tikader and A.K. Das (1985)

Locations : *No. of locations* : One (Middle Andaman Island); *Type* : Isolated.

Habit, Habitat and Ecology : Terrestrial and fossorial.

Habitat structure : Living in burrows.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Not known.

Museum records : *Locality* : Northern end of Middle Andaman Islands; *Year* : 1913; *Collector* : Thomas; *Name of Museum* : British (Natural History) Museum, London.

Threats : Habitat fragmentation and loss of habitat; *Effect of threats on population (Perceived or inferred)* : Can't say.

Trade : Not known; *Parts in trade* : Not known; *Effect of trade on population (Perceived or inferred)* : Can't say

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule Not Listed; Part; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Endangered (National); *IUCN (2002)* (Proposed) : Endangered (Global) based on Version 2.3(1994) (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring and taxonomic studies.

REFERENCES

Corbet, G.B. and Hill, J.E. 1992. *The Mammals of the Indomalayan Region* : 1-488. Publisher : Oxford University Press, London.

Ellerman, J.R. and Morrison-Scott, T.C.S. 1951. *Checklist of Palaearctic and Indian Mammals* : 1-810. Publisher : British Museum (Natural History), London.

Molur, S.; Nameer, P.O. and Walker, S. 1998. *Report of the Workshop "Conservation Assessment and Management plan for Mammals of India." (BCPP-Endangered Species Project),* : 1-176. Publisher : Zoo Outreach Organistaion, Conservation Breeding Specialist Group India, Coimbatore, India.

Tikader, B.K. and Das, A.K. 1985. *Glimpses of animal life of Andaman and Nicobar Island* : 1-177. Publisher : Director, *Zool. Surv. India*, Calcutta.

Evaluated by : M.S. Pradhan

ENDANGERED

Order INSECTIVORA

Family SORICIDAE

Subfamily CROCIDURINAE

2. *Crocidura pergrisea* Miller
Pale grey shrew

Synonyms : None.

Common names : Pale grey shrew

Regional names : Not available

Diagnostic characters : *Crocidura pergrisea* is one of the larger *Crocidura* species and is strikingly pale grey on dorsal side while white or creamy white on ventral side. The tail is comparitively longer (70% + of head and body length). The tail posseses a few scattered long and errect hairs. There are three upper unicuspid teeth. Any medium sized shrew of pale gray colouration with lighter underparts and 28 teeth in upper jaw collected from highland regions of Kashmir could be easily assigned to *Crocidura pergrisea.*

Measurements : (in mm) : Average head and body length : 72, tail length : 53, hindfeet : 13, ear length : 9, greatest skull length : 19-20, upper tooth row : 8.4-8.6.

Weight : Not available.

Intraspecific variations : No variation has been reported in the Indian populations (Hassinger, 1973 as cited in Corbet and Hill, 1992).

Distribution : Jammu and Kashmir within Indian limits.

Endemism : Non-Endemic species.

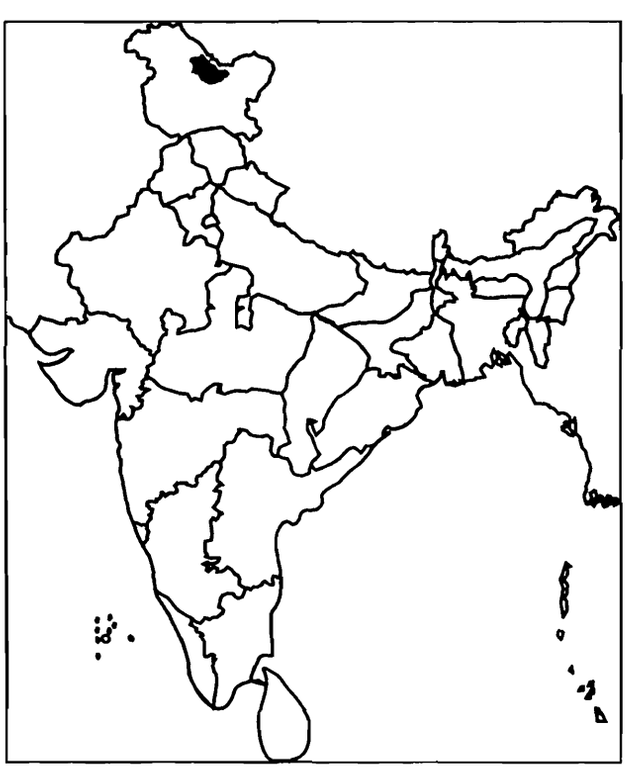
Altitude : 2900-3200 Mts.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 2001-5000 sq. kms.

locations : *No. of locations* : Three in Kashmir; *Type* : Isolated.

Habit, Habitat and Ecology : Terrestrial, semiarid and rocky areas at high altitude at drier parts of mountainous and hilly tracts. The species appears to be living in most hostile environment at high altitudes. It matures very quickly and has a short period of life. It is able to attack and feed on soil borne crustaceans, worms, insect larvae, nestlings and even small mammals.



Source : M.S. Pradhan

Habitat structure : Highland habitat.

Population : *Global Population* : Not known; *No. of mature individuals in all the populations* : Not known

Captive population : None

Life span : (Wild) : Short lived; (Captivity) : Not known

Population trend : Unknown

Museum records : *Locality* : Baltistan; *Year* : 1912; *Collector* : Dr. W.L. Abbot; *Number of examples studied or collected* : Type specimen; *Name of Museum* : Not available.

Sighting records : *Type of sighting* : None; *Field notes* : This shrew appears to confine to the inner and dryer Himalayan ranges. It is uncommon judging from the collected material (Roberts, 1997)

Threats : Habitat fragmentation, human interference, loss of habitat. insurgency/ war/and limited distribution.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Not known; *Parts in trade* : Not known; *Effect of trade on population (Perceived or inferred)* : Not declining.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule Not Listed; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Endangered (National); *IUCN (2002)* (Proposed) : Vulnerable (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, field survey, monitoring and taxonomic studies.

Remarks : Roberts (Per. Com.) proposed "Presumed Endangered" Status because of limited distribution and unfavourable habitat. Chakraborty (1983) and Roberts, (1997) carried out some studies on distribution and ecology of this species.

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Molur, S.; Nameer, P.O. and Walker, S. 1998. *Report of the Workshop "Conservation Assessment and Management plan for Mammals of India." (BCPP-Endangered Species Project),* : 1-176. Publisher : ZooOutreach Organistaion, Conservation Breeding Specialist Group India, Coimbatore, India.

Roberts. T.J. 1997. *The Mammals of Pakistan* : 1-525. Publisher : Oxford University Press, London.

Evaluated by : M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order SCANDENTIA

Family TUPAIIDAE

Subfamily TUPAIINAE

3. *Anathana ellioti* (Waterhouse)
Madras Tree Shrew

Synonyms : *Tupia ellioti* Waterhouse.

Common names : Madras Tree Shrew, Indian Tree Shrew.

Regional names : Tamil : Munghil Anathana; Marathi : Zad chichundri.

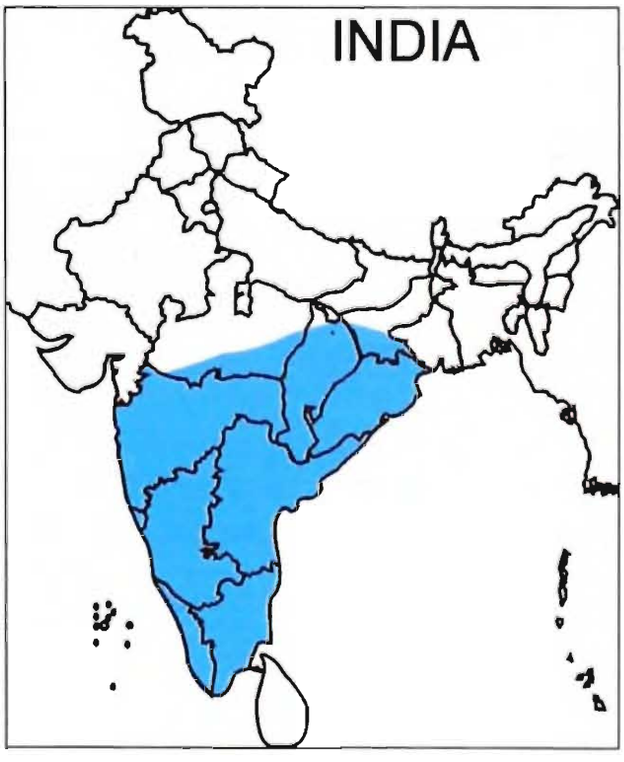
Diagnostic characters : In apperance a tree shrew is a combination of shrew, squirrel and a mongoose. Its long snout is shrew-like, the rounded ears, body, limbs and bushy tail suggests like a squirrel and while in motion with long body and the extended bushy tail, its behaviour suggests like that of a mongoose. The feet are like that of squirrel well fitted for climbing. The size is similar to adult squirrel. Reddish brown to greyish brown speckled with black colour on dorsal side. There is an oblique pale shoulder stripe. The ventrum whitish in colour. Feet buff in colour.

Measurements : (in mm) Head and body length : male : 160-180, female : 177-185, tail length : male : 169-195. female : 165-187.

Weight : Not known

Intraspecific variations : Entire family Tupiidae was previously kept in mammalian Order Primates and shifted later on to Insectivora. However, based on the evolutionary studies family Tupiidae has, now, been kept in a new order Scandentia. Three subspecies have been proposed under A. *ellioti*, namely : (i) *A. ellioti ellioti* (ii) *A. ellioti wroughtoni* and (iii) *A. ellioti pallida*. However, taxonomic studies are recommended to confirm the subspecies status.

Distribution : Peninsular India : Northern limit upto Satpura hills in the west and Bihar in east.



Source : Corbet and Hill (1992)

Endemism : Endemic to Peninsular India.

Altitude : Up to 1400 Mts.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, Habitat and Ecology : The name gives wrong impression about its true habitat. Basically, it moves through the fallen leaves on the ground. It takes to trees as expert climbers as a means to escape or as a shelter. Mostly feed on insects, seeds, fruits small mammals and birds. Very little information is available about its breeding habit. A pair or family prefers to live in a selected territory.

Photo : T.D. Bhattacharya

Anathana ellioti (Waterhouse)

Habitat structure : Scrub jungle, dry and moist deciduous forest. Prefers to live mostly in forested areas.

Population : *Global population* : Many; *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Stable.

Museum records : *Locality* : Tadoba-Andheri Tiger Reserve in Maharashtra State, India; Year : 1991; *Collector* : Dr. R.M. Sharma; *Number of examples studied or collected* : One specimen; *Name of Museum* : Zoological Survey of India, WRS, Pune.

Sighting records : *Type of sighting* : Direct; *Field notes* : Direct sighting in the field. The movements on ground are almost like a mongoose. Tree shrew was sighted at different times by separate survey teams from Zoological Survey of India and Forest Dept. authorities in Pench National Park, Nawegaon National Park, Melghat Tiger Reserve and Tadoba-Andhari Tiger Reserve in Maharashtra state.

Threats : Habitat fragmentation, loss of habitat, human interference; *Effect of threats on population (Perceived or inferred)* : Can't say.

Trade : Not known; *Parts in trade* : Not known; *Effect of trade on population (Perceived or inferred)* : Can't say.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule Not Listed; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National); *IUCN (2002)* (Proposed) : Lower Risk-Near Threatened (Global) based on Version 2.3 (1994) (IUCN, 2003).

Taxon related studies recommended : *Ex-situ* survey, monitoring through field surveys, genetic studies and taxonomic studies at subspecies level.

Remarks : It is strongly recommended that the species be brought under Indian Wildlife (Protection) Act Schedule and offer the species full protection considering its importance from evolutionary point of view. Presumably the species appears to be connecting link between four major mammalian orders *viz.* Scandentia, Insectivora, Carnivora and Primates.

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Corbet, G.B. and Hill, J.E. 1992. *The Mammals of the Indomalayan Region* : 1-488. Publisher : Oxford University Press, London.

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Prater, S.H. 1980. *The Book of Indian Animals* : 1-323. Publisher : Bombay Natural History Society, Mumbai.

Roonwal, M.L. and Mohnot, S.M. 1977. *Primates of South Asia* : 1-421. Publisher : Harvard University Press, U.K.

Evaluated by : M.S. Pradhan

ENDANGERED

Order CHIROPTERA

Suborder MICROCHIROPTERA

Family VESPERTILIONIDAE

Subfamily VESPERTILIONINAE

4. *Ia io* Thomas
Great Evening bat

Synonyms : *Ia longimana* Pen 1962; *Parascotomanes bealieui* Bourret 1942.

Common names : Great Evening bat, Great Pipistrelle

Regional names : Not available

Diagnostic characters : The great evening bat is one of the largest Vespertilionid bats with fore arm length in the range of 70.9-77.3 mm. The ears are broad with the tips rounded. The tragus is one- third the height of the pinna. The tail is long with its tip extruding out some 6 mm from interfemoral membrane. The pelage is uniform grey brown above shining in light, while the ventrum is uniform matt grey brown. Skull very robust. Rostrum broad and flat. The first upper incisor (I_2) is large and broad, while the second (I_3) is minute and subequal in height to the Cingulum of I_2. The upper canine is very powerful. Number of upper and lower premolars: 2/2, while incisors 2/3.

Measurements : (in mm) : Forearm length : 70.9-77.3, tail length : 65, hindfoot : 170, ear : 23.7 -24, greatest length of the skull : 27-29.4, condylo-canine length : 25.2-26.2.

Weight : Not known.

Intraspecific variations : The genus is closely related to *Eptesicus* (Corbet and Hill, 1992).

Distribution : Meghalaya in India.

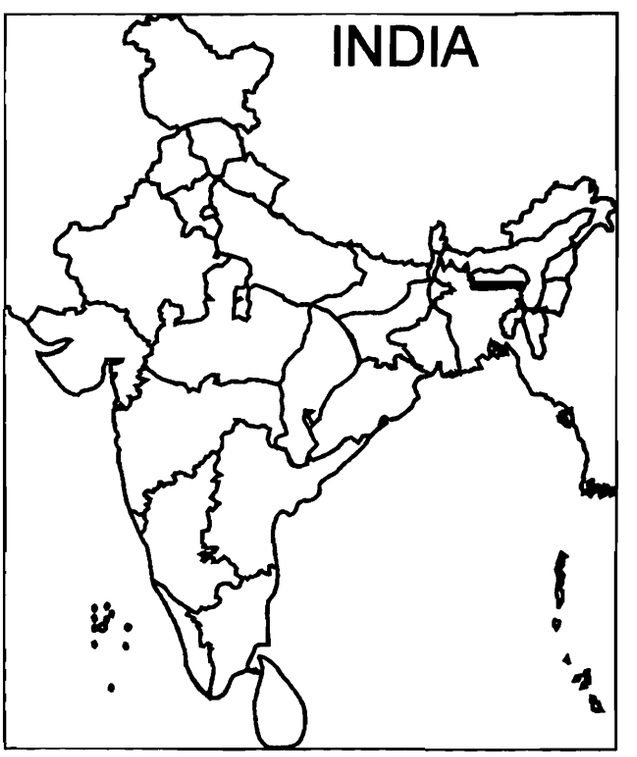
Endemism : Non-Endemic species.

Altitude : 1600 mts.

Area of occupancy : 101-500 sq. kms.

Extent of occurence : 101-500 sq. kms.

Locations : *No. of locations* : Three locations in India; *Type* : Fragmented.



Source : M.S. Pradhan

Habit, Habitat and Ecology : Great Evening Bat is nocturnal in habit and roosts in a natural cave. Not much information about feeding habit is available except that it is an insectivorous bat. In China the species appears to breed in the month of March and April. Most of the female specimens collected in April were pregnent (Bates and Harrison 1997). It is colonial in habit preferring to live in dense forested areas.

Habitat structure : Subtropical dense forest areas.

Population : *Global population* : >2500; *No. of mature individuals in all the populations* : less than 2500.

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Declining, decline rate : <20% in last five years.

Museum records : *Locality* : Mosmai cave, Cherapunji, East Khasi Hills Dist., Meghalaya. It is a lime stone cave; *Year* : 1970; *Collector* : G. Topal; *Number of examples studied or collected* : Studied one, sighted one; *Name of Museum* : Hungarian Museum Nat. Hist. Budapest, Hungary.

Sighting records : *Type of sighting* : Direct; *Field notes* : Sinha saw one bat which was almost trapped in the mist net set on the mouth of Mosmai Cave, Cherrapunji, Meghalaya, on 23rd Sept. 1990. The bat was very big in size. It touched the mist net twice, but got escaped and flew back in the cave when attempted to capture. The bat later did not come out of the cave.

Threats : Human interference, loss of habitat and habitat fragmentation.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Not known; *Parts in trade* : Not known; *Effect of trade on population (Perceived or inferred)* : Not declining.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule not-listed; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Endangered (National); *IUCN (2002)* (Proposed) : Lower Risk-Near Threatened (Global) based on Version 2.3 (IUCN, 2003).

Taxon related studies recommended : Monitoring through field surveys.

Remarks : The CAMP Workshop conducted in India during 2002; the IUCN conservation status of the species was assessed again as Endangered (National) based on IUCN Version 3.1. (CAMP Report, 2002).

REFERENCES

Bates, P.J.J. & Harrison, D.L. 1997. *Bats of the Indian Subcontinent* : xiv+1-268. Publisher : Harrison Zoological Museum, Kent, U.K.

Molur, S.; Nameer, P.O. and Walker, S. 1998. *Report of the Workshop "Conservation Assessment and Management plan for Mammals of India." (BCPP-Endangered Species Project)* : 1-176. Publisher : ZooOutreach Organistaion, Conservation Breeding Specialist Group India, Coimbatore, India.

Molur, S.; Marimuthu, G.; Srinivasulu, C.; Mistry, S.; Hutson, A.; Bates, P.J.J. Walker, S.; Padma Priya, K. and Binu Priya, A.R. 2002. *Status of South Asian Chiroptera : Conservation Assessment and Management Plan (C.A.M.P.) Workshop Report,* : viii+1-154. Publisher : ZooOutreach Organisation/ Conservation Breeding Specialist Group South Asia and Wildlife Information & Liason Development Society, Coimbatore, India.

Evaluated by : M.S. Pradhan and Y.P. Sinha

CRITICALLY ENDANGERED

Order CHIROPTERA

Suborder MICROCHIROPTERA

Family MOLOSSIDAE

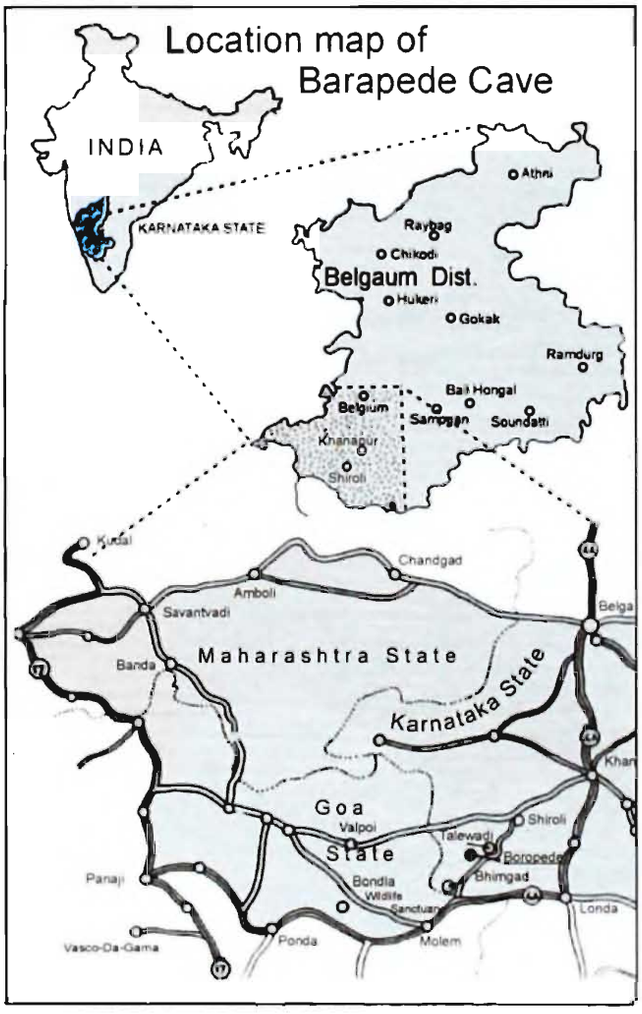
5. *Otomops wroughtoni* (Thomas)
Wroughton's Free Tailed Bat

Synonyms : *Nyctinomus wroughtoni* Thomas, 1913.

Common names : Wroughton's Free Tailed Bat.

Regional names : None.

Diagnostic characters : This is a large insectivorous molossid bat with long forearm and a stout tail projecting beyond the narrow interfemoral membrane. Ears large and connected to each other by a membrane over the forehead. The bat possesses some peculier characters like margins of the ears are dotted with a number of small horny points, tragus minute and triangular in shape, anterior border of the pinna with well developed extra lobe, face naked with no hairs, nostrils with prominent projecting pads, mouth wide and fleshy etc. Pelage dorsally rich glossy dark chocolate brown, while ventrally dull brown in colour. There is a thin white border on each flank exending to the groin and antebranchial membrane. There is a contrasting grey color collar extending to chin and upper chest. The shoulders and nape of the neck are light greyish white in colour.



Source : P.W. Garde

Measurements : (in mm) : Head and body length : 87-99, tail length : 41-50, hindfoot : 10-14, forearm length : 62-67, ear : 31-34, greatest length of the skull : 24.2-25.5, condylo-canine length : 21.8-23.2.

Weight : Not known.

Intraspecific variations : No subspecies.

Distribution : Barapede cave, Dist. Belgaum, Karnataka, India.

Endemism : Endemic to India.

Altitude : 800 mts.

Area of occupancy : Less than 10 sq. kms.

Extent of occurence : Less than 10 sq. kms.

Locations : *No. of locations* : One; *Type* : Contiguous.

Habit, Habitat and Ecology : The species is known, even now, from a single place all over the globe. It is apparantly confined to single diurnal biotope, which is nothing, but a vast natural calciferous cave on a large plateau rising above the thick forest patches. The cave in the forested area is almost concealed by trees and tall bushes. There is a high degree of humidity inside the cave from floral components of the cave floor, which mostly belong to algae and mosses. The walls are full of lateral ramifications. The bats are in habit of hiding inside the narrow deep crack, crevices and hole or cavities in the form of inverted funnels. Not much information is available about its feeding habits. These bats live in small groups of varying sizes of 2-15 bats or even more of both sexes per group. During daytime, they remain silent and motionless. When disturbed they either "walk slowly away" or fly within the cave but hardly leave the cave.

Habitat structure : Single cave in forested area. There are permanent water patches and high degree of humidity inside the cave.

Otomops wroughtoni (Thomas)

Population : *Global population* : 75+ (Ramakrishna *et al.*, 2003); *No. of mature individuals in all the populations* : Less than 250.

Captive population : None.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Stable (Ramakrishna *et al.*, 2003).

Museum records : *Locality* : Barpede cave, Karnataka, South India; *Year* : 1980 and 2002; *Collector* : H.R. Bhat; G. Topal and Ramakrishna (1980) and Ramakrishna and Pradhan (2002); *Number of examples studied or collected* : Total four examples; *Name of Museum* : National Institute of Virology, Pune, and Zoological Survey of India, WRS, Pune.

Sighting records : *Type of sighting* : Direct; *Field notes* : Topal and Ramakrishna (1980), Bates and others (1992), Mistry and Parab (July, 2001) and Ramakrishna and others (March, 2002) visited Barapede cave for status survey studies of *O. wroughtoni*. There is another unauthentic, unpublished and unheard record from Meghalaya based on collection of a single specimen from foraging area by A. Thabah in 2001 (CAMP Report, 2002). The specimen was identified by Bates, P.J.J, Harrison Museum, London. Since then, there is no record of the species from Meghalaya. Therefore, the record from Meghalaya needs authentication.

Threats : Extreme Fragmentation of the niche, human interference, loss of habitat; *Effect of threats on population (Perceived or inferred)* : Can't say.

Trade : No; *Parts in trade* : No; *Effect of trade on population (Perceived or inferred)* : Not declining.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Critically Endangered (National); *IUCN (2002)* (Proposed) : Critically Endangered (Global) based on Version 2.3 (1994) (IUCN, 2003).

Taxon related studies recommended : *Ex-situ* survey, monitoring, limiting factor reseach, habitat managemnt, conservation strategy recommended, public awareness through education etc.

Remarks : In CAMP Workshop conducted in India in 2002 the IUCN conservation status of the species was assessed again as Critically Endangered (National) based on IUCN Version 3.1. (CAMP Report, 2002).

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Ramakrishna, Pradhan, M. S. and Sanjay Thakur. 2003. *Status Survey of Endangered Species : Wroughton's Free-tailed Bat, Otomops wroughtoni* : 1-16. Publisher : Director, Zoological Survey of India, Kolkata.

Evaluated by : Ramakrishna, M.S. Pradhan, Y.P. Sinha and Sanjay Thakur

ENDANGERED

Order CHIROPTERA

Suborder MEGACHIROPTERA

Family PTEROPODIDAE

Subfamily PTEROPODINAE

6. *Latidens salimalli* Thonglongya
Salim Ali's Fruit bat

Synonyms : *Not available.*

Common names : Slim Ali's Fruit bat.

Regional names : Not available.

Diagnostic characters : *Latidens* is a monospecific genus and L. *Salimalli* is endemic to India. Medium sized fruit bat, external tail absent, palatal ridges fifteen. Rostrum rather elongated and narrow. Palate very long especially postdental portion. Postorbital foramina absent. There is only one pair of upper and lower simple peg-like inscisors, cheekteeth broad. Ears oval in outline with narrow rounded tips. Dorsal pelage short, soft and dense. It is dark brown to black grizzled with pale hairs on dorsal side. The patagium is devoid of hairs. The baculum is relatively massive. Braincase elongated. First premolar (pm2) very small and slightly exceeds the incisors in the crown area.

Measurements : (in mm) : Head and body length : 102.0-109.0; hindfoot : 8-15; forearm length : 66.0-69.0; 5th metatarsal : 43.1-47.6; ear : 15.5-18.5; greatest skull length : 32.6-34.3; condylo-basal length : 31.4-33.0, zygomatic breadth : 21.0-22.0 cm, maxillary tooth row : 11.3-11.8; mandible : 24.8-26.3.

Weight : Not known.

Intraspecific variations : No subspecies.

Distribution : Tamilnadu and Kerala in India.

Endemism : Endemic to India.

Altitude : 800 to1100 mts.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 101-500 sq. kms.

Source : M.S. Pradhan

Locations : *No. of locations* : Four; *Type* : Contiguous.

Habit, Habitat and Ecology : The species was found in the broad-leaved montane forest, interspersed with coffee bunches at an altitude of about 1500 ft. (460 m). It is a cave dwelling, frugivorous and a colonial species. Nothing is known about its breeding habits.

Habitat structure : High wavy mountains in Agastyamalai, Tamil Nadu.

Population : *Global population* : less than 2500; *No. of mature individuals in all the populations* : less than 2500.

Captive population : Not known.

Life span : (Wild) : Not known.; (Captivity) : Not known.

Population trend : Likely to decline, general decline.

Museum records : *Locality* : Kardana Coffee Estate in high wavy mountains (Type Locality) and Kalakkad-Mundanthurai Tiger Reserve; *Year* : 1994, 1992; *Collector* : Bates, (1994), Ghosh, Bhattacharya and Saha (1992); *Name of Museum* : Bombay Natural History, Mumbai, and Zoological Survey of India, Kolkata.

Sighting records : *Type of sighting* : Direct; *Field notes* : *L. Salimalli* was sighted in Meghamalai by Manoj Muni in 1993 and also by Agoramoorthy between 1996-2000 (CAMP, Report, 2002). Padmanabhan recorded the species from Periyar Tiger Reserve in 1996. Ghosh, Bhattacharya and Saha sighted it in Kalakkad-Mundanthurai Tiger Reserve in 1999.

Threats Agriculture and farming, grazing, human interference, loss of habitat, trade, hunting, decline in prey species, exploitation and coffee & cardamon plantation; *Effect of threats on population (Perceived or inferred)* Declining

Photo : Juliet Vanitharani

Latidens salimalli Thonglongya from day roost in Kalakkad Mundanthurai Tiger Reserve

Trade : Yes. Local; *Parts in trade* : Meat Insurg, body oil used as traditional medicine; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : Not listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Endangered (National) (CAMP Report, 2002); *IUCN (2002)* (Proposed) : Critically Endangered (Global) based on Version 2.3 (1994) (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring and taxonomic studies.

Remarks : In CAMP Workshop conducted in India in 2002 the IUCN conservation status of the species was assessed again as Endangered (National) based on IUCN Version 3.1. (CAMP Report, 2002).

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Evaluated by : M.S. Pradhan and Y.P. Sinha

LOWER RISK-NEAR THREATENED

Order PRIMATES

Family LORIDAE

7. *Loris tardigradus* (Linnaeus)
Slender Loris

Synonyms : *Ceylonicus, gracilis, grandis, lydekkerianus, malabaricus, nordicus, nycticeboides, zeylanicus.*

Common name : Slender Loris.

Regional names : Telugu : Devanga pilli, Tamil : Thevanga, Kannada : Mala manushya.

Diagnostic characters : The slender Loris, as the name suggests, is a small, slender-bodied primate of the size of a kitten. It has an elongated snout, long and slender limbs, large round ears, closely set eyes encircled with brown rim and a well-developed index finger. External tail absent. body well furred dark grey to reddish brown in colour with silver tinge on the back. Underparts white or buff.

Measurements : (in mm) : Head and body length : male 186-264, female 198-249.

Weight : (in Kg) : Male 0.35, Female 0.27.

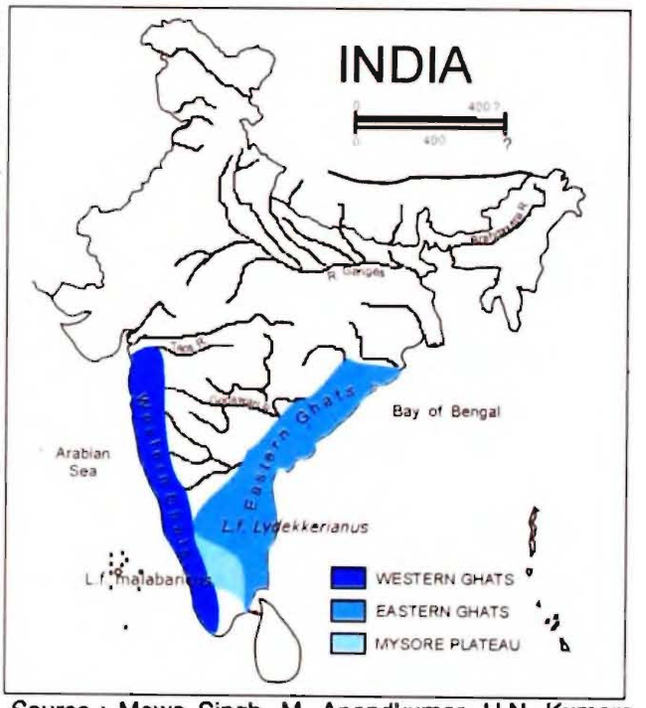
Intraspecific variations : Two sub species occur in India : *Lydekkerianus* (From Eastern Ghats to Mangalore) and *malabaricus* (Malbar coast from Goa to Trivendrum) (Mewa Singh, *et al.*, 1999). However, Wilson and Reeder (1993) expressed the possibility of occurrance of more than one species in the region. Therefore, a revisionary taxonomic study at species level is strongly recommended.

Distribution : Parts of Andhra Pradesh, Karnataka, Kerala and Tamil Nadu in South India.

Endemism : Non-Endemic species.

Altitude : 200-950 m.

Area of occupancy : 501-2000 sq. kms.



Source : Mewa Singh, M. Anandkumar, H.N. Kumara and S.M. Mohnot

Extent of occurence : 10001-20000 sq. kms.

Locations : *No. of locations* : Many in south India; *Type* Isolated.

Habit, habitat and ecology Lives alone or with a mate. Chiefly insectivores but also feeds on young shoots, leaves, berries, bird eggs etc. Breeds twice a year during April-May and October November. Litter consists of one or two young ones.

Habitat structure : Tropical forest, open wood land, swampy coastal forest and crop land near forest.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : less than 250.

Photo : Bishwajit Roychowdhury

Loris tardigradus (Linnaeus)

Captive population : Males : 4 + unsexed 1 = Total 5 in four Indian zoos and 35 in zoos abroad (CAMP Report, 2003 and IAIZ, 1999-2000).

Life span : (Wild) : 15-20 years; (Captivity) : 12-22 Years.

Population trend : General decline.

Museum records : *Locality* : Western Ghats, Karnataka; *Year* : 1990; *Collector* : Donation form Katraj Snake Park, Pune; *Number of examples studied or collected* : one; *Name of Museum* : Zoological Survey of India, WRS, Pune.

Sighting records : *Type of Sighting* : Direct and Indirect; *Field notes* : Number of sightings reported in recent studies in Tamil Nadu by Mewa Singh *et al.*, (1999), in Kerala by Easa, *et al.* (2000) and in Andhra Pradesh by Mewa Singh *et al.* (2001).

Threats : Loss of habitat, trade, hunting, inbreeding, hunting for medicine and road accidents, corrider loss etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local; *Parts in trade* : Eyes, meat insurg, for lab experiments and medicines; *Effect of trade on population (Perceived or inferred)* Declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part -I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National); *IUCN (2002)* (Proposed) : Vulnerable (Global) based on Version 2.3 (1994) (IUCN, 2003).

Taxon related studies recommended : Survey, monitoring, gentic studies, taxonomic studies, limiting factor research and habitat mangement.

Remarks : In CAMP Workshop conducted in India in 2003 the IUCN conservation status of the species (*Loris lydekkerianus=Loris tardigradus*) was assessed again as Near Threatened (National) based on IUCN Version 3.1. (CAMP Report, 2003).

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Evaluated by : J.R.B. Alfred and M.S. Pradhan

DATA DEFICIENT
Order PRIMATES
Family LORIDAE

8. *Nycticebus coucang* (Boddaert)
Slow Loris

Synonyms : New name *Nycticebus bengalensis (Lacepede)* proposed by Grover (2001).

Common name : Slow Loris.

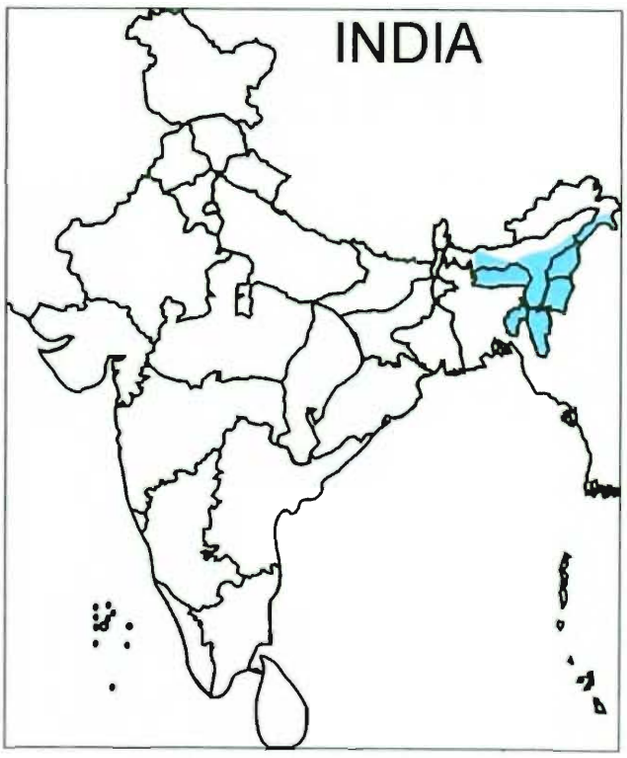
Regional names : (Hindi) Sharmindi Billi, (Bengali) Lagawanti banar.

Diagnostic characters : Size of a small cat. The body and limbs of slow loris are stout with round head with large round eyes encircled with dark brown rim. Short ears. Stumpy rudimentary tail hidden in the fur. Silvery white on head and shoulders grey on flanks and rump with a brown stripe on the crown and back.

Measurements : (in mm) : Head and body length : male : 265-380, female : 268-335.

Weight : (in Kg) Male : 0.85-1.67, female : 0.9-1.32.

Intraspecific variations : Out of four recognised subspecies only one (*bengalensis*) occurs in India. Groves (2001) has proposed to raise the status of *bengalensis* to the species level with suggestion that *coucang* is an extralimital species. Therefore, confirmation of taxonomic status has become essential for this species.



Source : M.S. Pradhan

Distribution : South of Brahamaputra river in northeastern India.

Endemism : Non-Endemic species.

Altitude : 50-1300 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, Habitat and Ecology : Slow Loris is a very seclusive nocturnal creature. It seldom comes on ground, sleeping during day time in holes and crevices of trees. Feeds chiefly on leaves, young shoots, fruits, and insects. Breeds all the year round and gives birth to single or rarely twin individuals. At birth, body is fully coverd with fur and eyes open.

Habitat structure : Tropical evergreen rain forest and semi-evregreen forest. The slow loris is a upper and middle canopy dweller in dense forest.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Males : 14 + females : 6 + unsexed : 1 = Total : 21, in nine Indian zoos. (ENVIS report of WII, 2001). Males : 45 + females : 46 + unsexed : 1 = Total : 92 in 30 zoo abroad (CAMP Report, 1998).

Life span : (Wild) : 10 years; (Captivity) : 12 years.

Population trend : Declining, general decline.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Recent studies carried out in N.E. India by Jayantha Das, Dilip Chetry, J. Biswas, Rekha Medhi and Joydeep Bose under the project entitled, "Status and Distribution of non-Human primates in NE India." during 1994-1999 reported direct and indirect sighting records.

Photo : Bishwajit Roychowdhury

Nycticebus coucang (Boddaert)

Threats : Human interferance, loss of habitat, trade, hunting, developmental activites, tree felling and jhoom cultivation; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Domestic; *Parts in trade* : Live animals, organs; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Insufficiently known; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National).; *IUCN (2002)* (Proposed) : Data Deficient (Global) based on Version 2.3 (1994) (IUCN, 2003).

Taxon related studies recommended : Survey, monitoring and life history studies.

Remarks : In the CAMP Workshop conducted in India (2003) the IUCN conservation status of the species was assessed as *Data Deficient* (National) based on IUCN Version 3.1. (CAMP Report, 2003).

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Evaluated by : J.R.B. Alfred and M.S. Pradhan

CRITICALLY ENDANGERED

Order PRIMATES

Family CERCOPITHECIDAE

Subfamily CERCOPITHECINAE

9. *Macaca arctioides* (Geoffroy)
Stump-Tailed Macaque

Synonyms : *Macaca speciosa* Geoffroy.

Common name : Stump-Tailed Macaque.

Regional names : Lahus of Assam : Man ka, Nagar : Chantee, Assamese : Senduri bandar, Bengali : Sinduri bana.

Diagnostic characters : A large macaque characterised by a very short tail, about 5 cm in length and also in having a naked rump around the callosities. The face is blotched red with bald forehead and radiating crown hairs. Thickset limbs. The Macaque is dark chestnut above and pale below in colour. The fur is shaggy. The newborn are creamy white.

Measurements : (in mm) : Head and body length : male 482-700, female 495-555. tail length : male 41-100, female 10-61.

Weight : (in Kg) : 6-18.

Intraspecific variations : Out of three recognised subspecies (Cobet and Hill, 1992) only the nominate subspecies occurs in India.

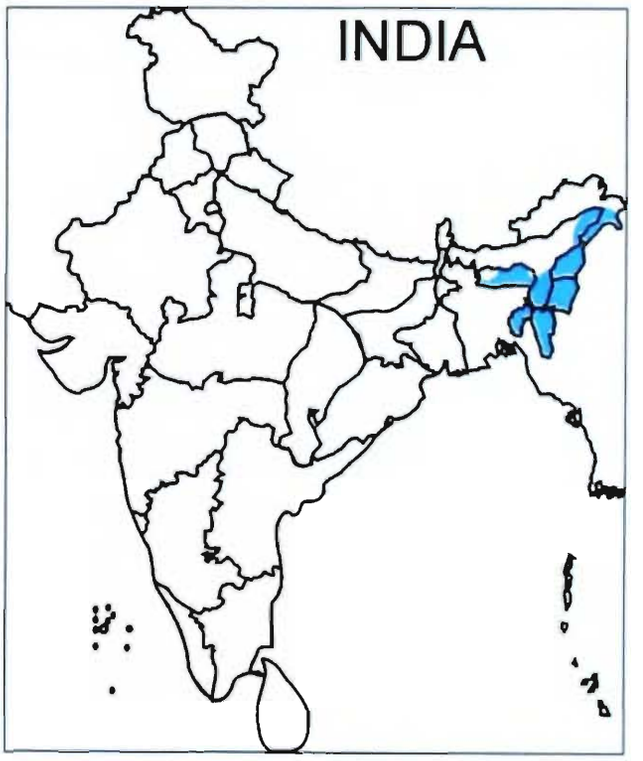
Distribution : South of river Bramhaputra in northeastern India including Tripura.

Endemism : Non-Endemic species.

Altitude : up to 2400 mm.

Area of occupancy : 501-2000 sq. kms.

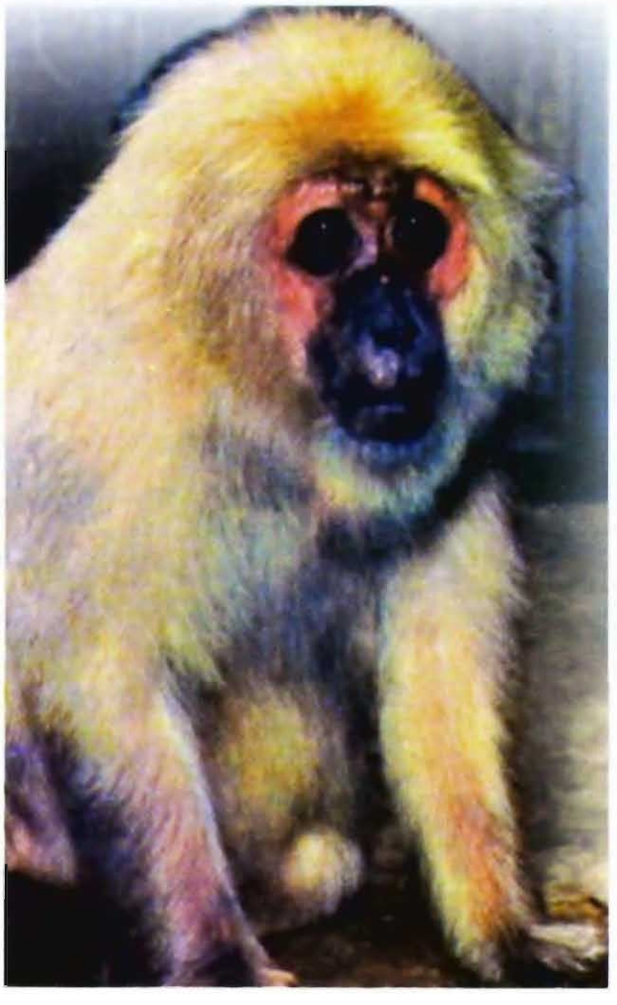
Extent of occurence : 10001-20000 sq. kms.



Source : M.S. Pradhan

Locations : *No. of locations* : Many; *Type* : Fragmented.

Habit, Habitat and Ecology : Terrestrial, arboreal, semiarboreal and diurnal in habit. They live in groups of 1-20 individuals, sometimes more. Chiefly frugivorous, but also feeds on leaves, stems, tubers and seeds. In places like Nagaland, these macaques are quite ferocious.



Macaca arctioides (Geoffroy)

Habitat structure : Different strata of tropical evergreen dense forest and also in forest near cultivated Lands.

Population : *Global population* : Less than 250; *No. of mature individuals in all the populations* : less than 250.

Captive population : Males : 20 + females : 21 = Total : 41 in 10 Indian zoo (South Asian Primate CAMP Report, 2003).

Life span : (Wild) : 10-12 years; (Captivity) : 30 years.

Population trend : Declining.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Studies conducted by Mukherjee (1982) Mandal and Bhattacharya (1992) from ZSI and by Dilip Chetry, Rekha Medhi, Jihosuo Biswas and Jayantha Das in NE India for Indo-Us Primate project, entitled,"Status and Distribution of Non-Human primates in NE India." during 1994-1999 reported direct and indirect sighting records (CAMP Report, 1998, 2003).

Threats : Habitat fragmentation, loss of habitat, trade, hunting, corridor loss and spread of jhoom cultivation etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Domestic; *Parts in trade* : Live animals, meat insurg, pet, food and traditional Medicine; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National); *IUCN (2002)* (Proposed): Vulnerable (Global) based on Version 2.3 (1994) (IUCN, 2003).

Taxon related studies recommended : Monitoring, life history studies, *in-situ* survey.

Remarks : To ensure better legal protection from various threats to the species, it is strongly recommonended that the species be brought under Schedule-I, Part-I of Indian Wildlife (Protection) Act. Further, in CAMP Workshop conducted in India in 2003 the IUCN conservation status of the species was assessed as Critically Endangered (National) based on IUCN Version 3.1. (CAMP Report, 2003).

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Evaluated by : J.R.B. Alfred and M.S. Pradhan

NEAR THREATENED

Order PRIMATES

Family CERCOPITHECIDAE

Subfamily CERCOPITHECINAE

10. *Macaca fascicularis umbrosa* (Miller)
Crab Eating Macaque

Synonyms : *Macaca umbrosus* Miller, *Macaca fascicularis (Raffles)*

Common names : Crab eating Macaque, Long tailed Macaque, Nicobar long tailed Macaque

Regional names : Not known

Diagnostic characters : A medium sized macaque, with a heavy head. Resembles bonnet macaque of South India, but crab-eating macaque is larger in size. It posseses prominent eyebrows, backwardly directed crown hairs and long black strong tail which may be as long as or longer than head and body length. body dusky grey or fawn coloured above, while lighter below. A white patch present above the upper eyelids. Face pinkish brown. The newborn is sparcely haired and have a dark cap and a spinal streak.

Measurements : (in mm) : Head and body length : 485-510, tail length : 535-555.

Weight : (in Kg) : Male : 3.5-8.3, Female : 2.5-5.7.

Intraspecific variations : Only one subspecies namely *M. fascicularis umbrosa* occurs in India.

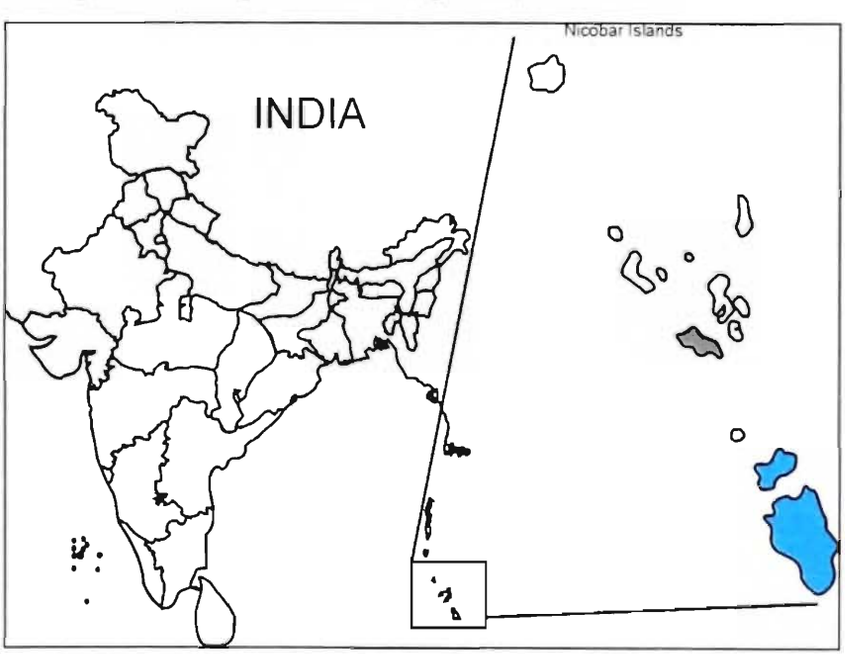
Distribution : Great Nicobar, Little Nicobar and Catchal Islands within Indian limits.

Endemism : Indian Endemic species.

Altitude : Up to 600 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 2001-5000 sq. kms.



Source : WII, Dehra Dun

Locations : *No. of locations* : Three in actual area of occupancy of 1241 sq. kms. and actual extent of occurrence of 1378 sq. kms.; *Type* : Fragmented

Habit, habitat and ecology : Diurnal, arboreal in inland forests, while terrestrial or semiterrestrial in coastal mangroove forest. Some colonise near human settlements in the vicinity of forests to invade the crop fields, vegetable gardens, orchards etc. Contrary to its popular name, it is omnivorous in habit preferring to eat vegetable matter, fruits, tender shoots in addition to crustaceans and molluscs. The group size consists of 5-15 individuals but may go upto 100.

Habitat structure : Tropical rain forest consisting of tall trees with profuse undergrowth.

Population : *Global population* : More than 10,000; *No. of mature individuals in all the populations* : less than 2500.

Captive population : Males : 11 + females : 8 = Total : 19 in 2 Indian zoo (Wildlife Institute Report on non-human primates, 2001).

Life span : (Wild) : 12 years; (captivity) : Not known.

Population trend : Stable.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Studies carried out under Indo-US Primate Project by P. Umapathy, G. Mewa Singh and Mohnat in April 2000, by M, Vishnu Priya in 1990-93 and also by Rauf Ali and Harry Andrews in Great Nicobar in 1990-91 reported direct and indirect sighting records (CAMP Report, 1998, 2003).

Threats : Loss of habitat, hunting, alien invasive species, natural disasters, Tsunami (since oceanic area, subject to cyclone etc.); *Effect of threats on population (Perceived or inferred)* : Declining.

Macaca fascicularis umbrosa (Miller)

Trade : Local and domestic; *Parts in trade* : Live animals, meat insurg. (by local Shompin Tribe); *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Critically Endangered (National); *IUCN (2002)* (Proposed) : Near Threatened (Global) based on Version 2.3 (1994) (IUCN, 2003).

Taxon related studies recommended : Survey and monitoring.

Remarks : In CAMP Workshop conducted in India in 2003 the IUCN conservation status of the species was assessed as Near Threatened (National) based on IUCN Version 3.1. (CAMP Report, 2003). Justification for change in criteria was better/ new information available at the workshop.

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Evaluated by : J.R.B. Alfred and M.S. Pradhan

ENDANGERED

Order PRIMATES

Family CERCOPITHECIDAE

Subfamily CERCOPITHECINAE

11. *Macaca nemestrina* (Linnaeus)
Pig-tailed Macaque

Synonyms : *Macaca nemestrina blythii,* Pocock.

Common names : Pig-tailed Macaque, Northern Pig-tailed Macaque.

Regional names : Garo : Peko, Naga: Kangh, Assamese : Gahri Nejia Bandar.

Diagnostic characters : One of the largest species of the genus with long legs and long muzzle. Large and stout in built with a small tail like that of a pig. Crown hairs short radiating from a central whorl. A strong black patch present on the forehead. A V-shaped stripe is also present over the forehead. Dorsal surface of the body golden brown to russet gizzled with or without blackish patches. Ventral side greyish white. The tail black above while light yellowish brown below.

Measurements : (in mm) : Head and body length : male : 508-775, female : 400-576, tail length : male : 160-281, female : 137-200.

Weight : (in Kg) : Male : 6.2-14.5, female : 4.4-10.9.

Intraspecific variations : Out of three recognised subspecies (Fooden, 1975) only one namenly, *Macaca nemestrina leonina* occurs in India.

Distribution : North east India.

Endemism : Non-Endemic species.

Altitude : 50-1200m.

Area of occupancy : 101-500 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : 24 within actual range of area of occupancy of 11-500 sq. kms.; *Type* : Fragmented.

Habit, habitat and ecology : Pig-tail Macaque inhabits low-land primary and

Source : WII, Dehra Dun

secondary forests to coastal swamps through dryland and montane forests. It lives in low density with large home range to extract food resources. It is basically frugivorous and diurnal in habit.

Habitat structure : Pig-tail Macaque generally occupies middle canopy of different types of forests ranging from moist deciduous to wet evergreen forest.

Population : *Global population* : 2000-2500; *No.of mature individuals in all the populations* : less than 2500.

Captive population : Males : 10 + females : 7 = Total : 17 in nine Indian zoo (ENVIS Report of Wildlife Institute of India, 2001 on Non-Human Primates).

Life span : (Wild) : 10 Years; (Captivity) : 26 years.

Population trend : General decline.

Sighting records : *Type of sighting* : Direct and Indirect; *Field notes* : Survey studies carried out under Indo-US Primate Project between the period 1994-99 by Northeast Centre, Animal Ecology and Wildlife Biology lab., Gauhati University, reported direct and indirect sighting records (CAMP Report, 2003).

Threats : Habitat fragmentation, human interference, loss of habitat, trade, hunting, cultural use, developmental activities, accidental mortality, jhoom cultivation activities and deliberate fires etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Domestic; *Parts in trade* : Live animals, meat insurg, body parts, zoo exhibits etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Macaca nemestrina (Linnaeus)

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Data Deficient (National); *IUCN (2002)* (Proposed) : Data Deficient (Global) (CAMP Report, 1998).

Taxon related studies recommended : *Ex-situ* survey, monitoring and habitat management.

Remarks : In CAMP Workshop conducted in India in 2003 the IUCN conservation status of the species (*Macaca leonina* (Blyth)=*Macaca nemestrina* (Lin.) was assessed as Endangered (National) based on IUCN Version 3.1. (CAMP Report, 2003). Considering the higher degree of threats to the survival of the species, it is recommended to include this species in Schedule-I Part-I of Indian Wildlife (Protection) Act.

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Molur Sanjay, Brandon-Jones Douglas, Dittus Wolfgang, Eudey Ardith, Kumar Ajith, Singh Mewa, Feeroz, M.M., Chalise Mukesh, Priya Padma, Walker Sally 2003. *Status of South Asian Primates : Conservation Assessment and Management Plan (C.A.M.P.) Workshop Report,* 2003 : viii+1-432. Publisher : ZooOutreach Organization/CBSG-South Asia, Coimbatore, India.

Molur, S.; Nameer, P.O. and Walker, S. 1998. *Report of the Workshop "Conservation Assessment and Management plan for Mammals of India." (BCPP-Endangered Species Project)* : 1-176. Publisher : ZooOutreach Organistaion, Conservation Breeding Specialist Group India, Coimbatore, India.

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Evaluated by : J.R.B. Alfred and M.S. Pradhan

ENDANGERED
Order PRIMATES
Family CERCOPITHECIDAE
Subfamily CERCOPITHECINAE

12. *Macaca silenus* (Linn.)
Lion-tailed Macaque

Synonyms : *Simia silenus, Linnaeus.*

Common names : Lion-tailed Macaque.

Regional names : Hindi : Siah bandar, Kannada : Singalika, Malyalam : Nella Manthi, Tamil : Korangu, Telgu : Kondamachu.

Diagnostic characters : A medium sized macaque distinguished from all other macaque species by presence of great mane of long dark-grey on brownish grey hairs growing from the temples and cheeks, by its glossy black coat and also by its tuft of hairs at the tail tip like lion's tail. Hence the name lion-tailed macaque. The tuft of hairs is more pronouced in males. The tail length is one-half to two third of the head and body length. The face is bare and black..

Measurements : (in mm) Head and body length : male : 508-610, female : 415-481 tail length : male 254-386, female : 254-318.

Weight : 6-7 Kg.

Intraspecific variations : No subspecies. However, Wynad Plateau population and the one living on high wavy mountains are reported to be larger than the Anaimalai Hill populations (Anonymous, 1994).

Distribution : The Western Ghats between the latitudes 8° 25'N and 15'N in the Indian states of Karnataka, Tamil Nadu and Kerala.

Endemism : Endemic to India.

Altitude : 600-1600 m.

Area of occupancy : Greater than 2001 sq. kms.

Source : WII, Dehra Dun

Extent of occurence : 2001-5000 sq. kms.

Locations : *No. of locations* : Many, Highly fragmented; *Type* : Fragmented.

Habit, Habitat and Ecology : The Lion-tailed macaque is gregarious and is a native of dense evergreen or semi-evergreen rain forests of high trees in secluded areas. Its occurence in tea and cardomom plantations interspersed with thick forests has also been reported. It lives in-group of 4-30 individuals. The group prefers tall trees of 20 m or more in height. It feeds on fruits, seeds, buds, leaves, flowers, insects etc. Though more arboreal in habit, its food plant species are said to belong to climber and undergrowth categories. Diurnal in behavior.

Habitat structure : Decreasing.

Population : *Global population* : Less than 10,000; *No. of mature individuals in all the populations* : less than 2500.

Captive population : Male : 28 + Female : 22 = Total : 50 in 18 Indian zoo and 330 in 51 zoo abroad (CAMP Report, 2003).

Life span : (Wild) : 20 yrs.; (Captivity) : 35 years.

Population trend : General decline.

Sighting records : *Type of sighting* : Direct and Indirect; *Field notes* : sighting records reported by Ajith Kumar (2001) and many others. Kerala Forest Reseach Institute conducted status surveys also during 1993-2001 (CAMP Report, 2003).

Threats : Habitat fragmentation, agriculture, farming, loss of habitat, trade, hunting, corridor loss, trapping, inbreeding etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Macaca silenus (Linn.)

Trade : Local; *Parts in trade* : Live animals, meat insurg., for food and medicine, pets, live animal requirement for zoos etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : Endangered (National); *IUCN (2002)* (Proposed) : Endangered (National and Global,).

Taxon related studies recommended : Survey, monitoring, habitat management.

REFERENCES

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Tikader, B.K. 1983. *Threatened Animals of India* : 1-307. Publisher : Director, *Zool. Surv. India*, Calcutta.

Evaluated by : J.R.B. Alfred and M.S. Pradhan

ENDANGERED

Order PRIMATES

Family CERCOPITHECIDAE

Subfamily CERCOPITHECINAE

13. *Macaca assamensis* (M'clelland)
Assamese macaque

Synonyms : *None.*

Common names : Assamese macaque.

Regional names : Assamese : Asomia moula, Garo : Makre-dow, Bengali : Asame Bundar.

Diagnostic characters : Relatively large in size but looks almost similar like Rhesus monkey. However, Assamese macaque can be distinguished at once from Rhesus macaque by the complete absence of orange-redcolour on its loin and the rump. Moreover, it has a full soft coat. The back is yellowish to dark brown. Crown hairs grow backwards without any sign of whorl or cap. The pendulous tail is well haired like that of Rhesus. The face is pale flesh-coloured. Callosities on hinderquarters are pinkish with no bare area around them.

Measurements : (in mm) : Head and body length : male : 476, female : 40-527, tail length : 178-386.

Weight : (in Kg) : Male : 6.1-13.0, female : 4.6-6.8.

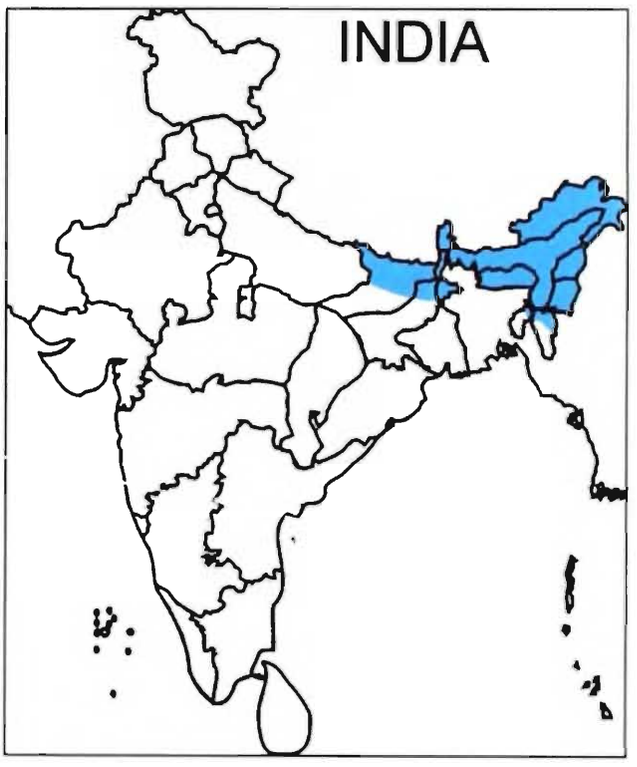
Intraspecific variations : Two subspecies are recognised : *Macaca assamensis assamensis* (M'Clelland) *and Macaca assamensis pelops*, Hodgson.

Distribution : From Himachal Pradesh eastward to northeast Indian states through West Bengal and Sikkim in India. Southwards it extends to Sundarbans.

Endemism : Non-Endemic species.

Altitude : 50-2300m.

Area of occupancy : Greater than 2000 sq. kms.



Source : WII, Dehra Dun

Extent of occurence : 2001-5000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Fragmented.

Habit, habitat and ecology : Terrestrial, arboreal, diurnal and omnivorous. Lives in groups of different sizes. Sluggish and quiet in behaviour when undisturbed. It raids maize and other cultivated fields.

Habitat structure : Subtropical evergreen-to-evergreen forests. Middle and higher canopies in different forest stratas.

Population : *Global population* : 5000-6000 in India; *No.of mature individuals in all the populations* : less than 50.

Captive population : Males : 52 + females : 37 + unsexed : 10 = Total : 99 in 12 Indian zoo (CAMP Report, 2003).

Life span : (Wild) : 10-12yrs; (captivity) : 10-12yrs.

population trend : Declining.

sighting records : *Type of sighting* : Direct and Indirect; *Field notes* : Annual Reports of Indo-US Project teams during 1994-1999 and Ph.D. Thesis of Sangeeta Mitra on study on the ecology and behaviour of Assamese Macaque 2001, reported number of sightings of Assamese macaque within its distribution range (CAMP Report, 2003).

Threats : Agriculture and farming, loss of habitat, trade, hunting, corridor loss, developmental activities etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Macaca assamensis (M'clelland)

Trade : Domestic; *Parts in trade* : Bones, meat insurg, body parts for traditional medicines and live animals for zoo.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Endangered (National), Enadangered in South Asia based on Version 3.1 (CAMP Reprot, 2003) and Vunerable (Global) (IUCN, 2003).

Taxon related studies recommended : *Ex-situ* survey, monitoring, taxonomic studies and life history studies.

Remarks : Considering the higher degree of threats to the survival of the species, it is recommended that the species should be included in Schedule-I Part-I of Indian Wildlife (Protection) Act.

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Evaluated by : J.R.B. Alfred and M.S. Pradhan

CITICALLY ENDANGERED

Order PRIMATES

Family CERCOPITHECIDAE

Subfamily COLOBINAE

14. *Trachypithecus geei* (Khajuria)
Golden Langur

Synonyms : *Presbytis geei* Khajuria *and Semnopithecus geei,* (Khajuria).

Common names : Golden Langur, Gee's Golden Langur.

Regional names : Hindi : Sunhala Langur, Bengali : Sonali bandar.

Diagnostic characters : A large sized langur with rich golden to creamy buff colour. The whiskers, neck, shoulders and hindquarters brighter than rest of the body. An irregularly developed whorl present on the forehead with hairs radiating backwards and sideways. Whiskers long. Tail long with a slight tassel. In captivity, golden langur shows seasonal colour variations. Cream coloured or almost white in summer, while dark golden to chestnut in winter season.

Measurements : (in mm) : Head and body length : female : 640-720; male : 488-610; tail length: female : 780-940; male : 710-805.

Weight : (in Kg) : Female : 10-12; Male : 9-10.

Intraspecific variations : *Trachypithecus geei* (Khajuria) has been retained, here, following Biswas (1966), Wilson and Reeder (1993) and Brandon-Jones (2002). No subspecies.

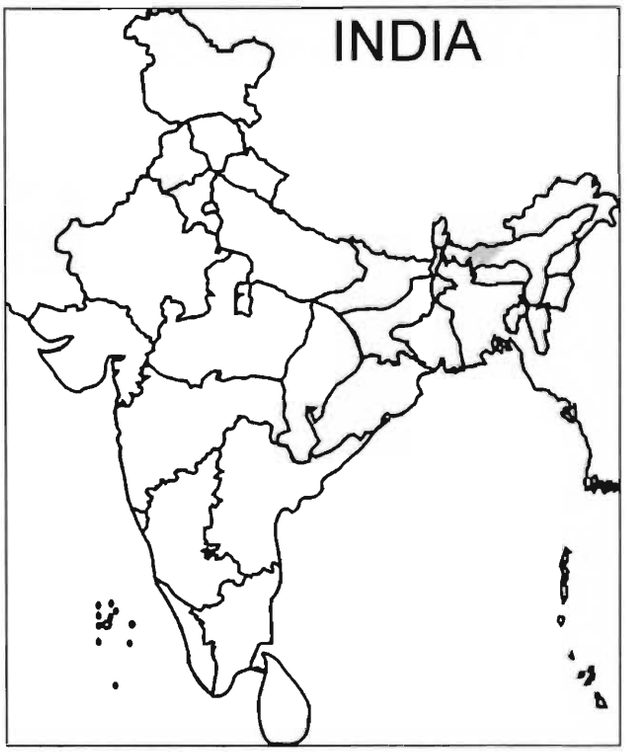
Distribution : The Golden Langoor is distributed in the Himalayan foothills along Assam Bhutan border between Sankosh and Manas rivers in India and Bhutan.

Endemism : Non-Endemic species.

Altitude : 150-3000m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 501-2000 sq. kms.



Source : M.S. Pradhan

Locations : *No. of locations* : 32, along Indo-Bhutan border; *Type* : Fragmented.

Habit, Habitat and Ecology : Golden Langur lives in mixed deciduous, riverine forests. It also prefers to inhabit the tropical evergreen, and moist deciduous forests. It is a non-aggressive, docile, diurnal and folivorous langur.

Habitat structure : Forests with predominance of sal species, *Shorea robusta*, prefered. Golden Langur is a middle and upper canopy dweller species.

Population : *Global population* : 4500; *No.of mature individuals in all the populations* : less than 2500.

Captive population : 10 in 10 Indian zoo, inventory of animals in Indian zoo (1999-2000).

Life span : (Wild) : 10 yrs; (captivity) : Not known.

Population trend : Declining @ less than 30% in last 30 years (CAMP Report, 2003).

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Studies under Indo-US primate project conducted in NE India during 1997-98 by J. Biswas, J. Das and P. Bujarbarua at Northeast Centre, Guwahati, Assam, (CAMP Report, 2003) and studies carried out by Mukherjee (1994) have reported number of sighting records.

Photo : K. Deuti

Trachypithecus geei (Khajuria)

Trachypithecus geei (Khajuria)

Threats : Habitat fragmentation, agriculture and farming, human interference, loss of habitat, trade, restricted population, limited range of distribution and high juvenile mortality rate; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local and domestic; *Parts in trade* : Live animals for zoo and entertainment centres (Pradhan, 1997). Live animals are also trapped as pets and also for road shows; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Critically Endangered (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Critically Endangered (National) and Endangered (Global) (CAMP Report, 2003).

Taxon related studies recommended : Survey, monitoring, life history studies and limiting factor research.

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Evaluated by : J.R.B. Alfred and M.S. Pradhan

ENDANGERED
Order PRIMATES
Family CERCOPITHECIDAE
Subfamily COLOBINAE

15. *Trachypithecus phayrei* (Blyth)
Phayre's Leaf Monkey

Synonyms : *Presbytis phayrei* (Blyth) *Semnopithecus phayrei* (Blyth).

Common names : Phayre's Leaf Monkey, Phayre's Langur.

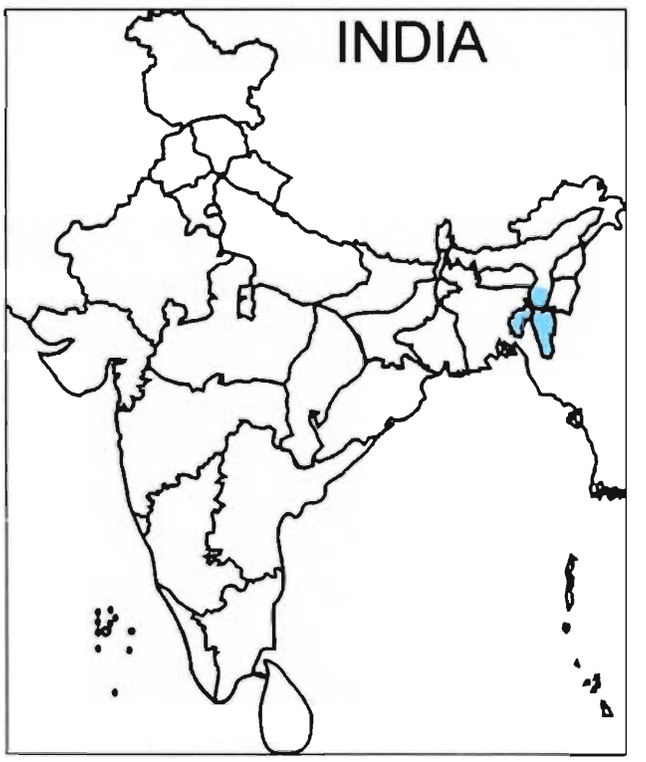
Regional names : Assamese & Bengali : Chashma bandar, Mizo : Daur.

Diagnostic characters : The Phayre's Leaf Monkey is a dark ashy brown langur. The head sometimes has a crest but not a cap like capped langur. There is a distinct white patch around the eyes and lips; otherwise the face is black in colour. The shoulders and upper arms have silvery luster. Ventrum white in colour. Females possess pale patch on the thighs. Young ones are straw coloured.

Measurements : (in mm) : Head and body length : male : 420-600, female : 442-570; tail length : male : 648-858, female : 720-795.

Weight : (in Kg) Male : 7.9-8.7, Female : 5.6-6.8.

Intraspecific variations : Brandon-Jones *et al.* (2002) has considered Phayre's leaf Monkey as a subspecies of *Trachepithecus obscurus* in his unpublished working document for CAMP workshop organised by Zoo Outreach organisation, Coimbatore, in March 2002. However, *Trachepithecus phayrei* (Blyth) has been retained here following Corbet and Hill (1997), Wilson and Reeder (1993) and ENVIS Report of wildlife institute of India on Non-Human primates of India (2001).



Distribution : Assam (Cachar Dist) Mizoram (Dampa Tiger Reserve) and Tripura in India.

Endemism : Non-Endemic species.

Altitude : 50-800 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Source : M.S. Pradhan

Locations : *No. of locations* : 23 Localities; *Type* : Fragmented.

Habit, Habitat and Ecology : Phayre's Leaf Monkey is seen in dense sal-forests. It's preferred habitat is bamboo and banana plantations along hillsides in the vicinity of streams. It is predominantly arboreal and folivorous. Its food consists mainly of leaves, followed by flowers and fruits and bamboo shoots. It is very shy in nature. When alarmed the whole group rushes to the upper canopy in the forest leaping from tree to tree. The group size consists of about 30 individuals.

Habitat structure : Sal forest, mixed moist deciduous forests. Middle to upper story dweller. Rarely seen at the canopy.

Population : *Global population* : >1600 in wild in India; *No. of mature individuals in all the populations* : Less than 2500.

Captive population : Male : 1 + females 2 = Total : 3 in one Indian Zoo (CAMP, 2003).

Life span : (Wild) : 10-12 years; (Captivity) : Not known.

Population trend : Declining @ 10%.

Museum records : *Locality* : Record not available.

Project Specific records : Record not available.

Sighting records : *Type of sighting* : Direct and Indirect; *Field notes* : Number of sighting records have been reported during the studies carried out in 1993 by R. Mukherjee, S. Chaudhari and A. Murmu of ZSI, Kolkata, and also in the studies carried out under Indo-US primate project during 1994-2000 by Joydeep Bose, Dilip Chetry, J. Das, J. Biswas, K. Medhi, P. Bujarbaruah, F. Begum and A. Srivastava (All cited in CAMP Report, 2003).

Photo : Atul K. Gupta

Trachypithecus phayrei (Blyth)

Threats : Interspecific competition, habitat fragmentation, agriculture and farming, loss of habitat, shifting (jhoom) cultivation, hunting and trade; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local; *Parts in trade* : Organs, meat insurg., body parts for traditional medicine.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX*-II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Endangered (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Endangered (National) and Endangered (South Asia) (CAMP Report, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, taxonomy and habitat management.

Remarks : Phayre's Leaf Monkey is the State animal of Tripura.

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Tikader, B.K. 1983. *Threatened Animals of India* : 1-307. Publisher : Director, *Zool. Surv. India*, Calcutta.

Evaluated by : J.R.B. Alfred and M.S. Pradhan

ENDAGERED
Order PRIMATES
Family CERCOPITHECIDAE
Subfamily COLOBINAE

16. *Trachypithecus pileatus* (Blyth)
Capped langur

Synonyms : *Presbytis pileatus* (Blyth).

Common names : Capped Langur.

Regional names : Not available.

Diagnostic characters : Langur with robust built and with tail length longer than head and body length. Harsh hair directed backwards from the forehead to form a cap. Cheek hairs long and cover ears partly. Dorsal colouration dusky grey to ashy grey. However, hands, feet, mid dorsal region and occassionaly crown dark brown or black. Ventrum, cheeks and sides of neck pale fulvous to golden brown. Face black, while tail dark brown with distal half blackish in colour.

Measurements : (in mm) : Head and body length : male : 533-710, female : 490-610, tail length : male : 859-1040, female : 750-955.

Weight : (in Kg) : Male : 11.5-14, female : 9.5-11.3.

Intraspecific variations : Four subspecies are recognised (Pocock, 1939) : i) *T.p. brahma* (Lakhimpur, Assam); ii) *T. p. durga* (Below 600m, Northeast India), iii) *T.p. pileatus* (Above 600 m, Northeast India) and iv) *T. p. tenebricus* (Kamrup Dist, Assam).

Distribution : Northeast India within Indian limits.

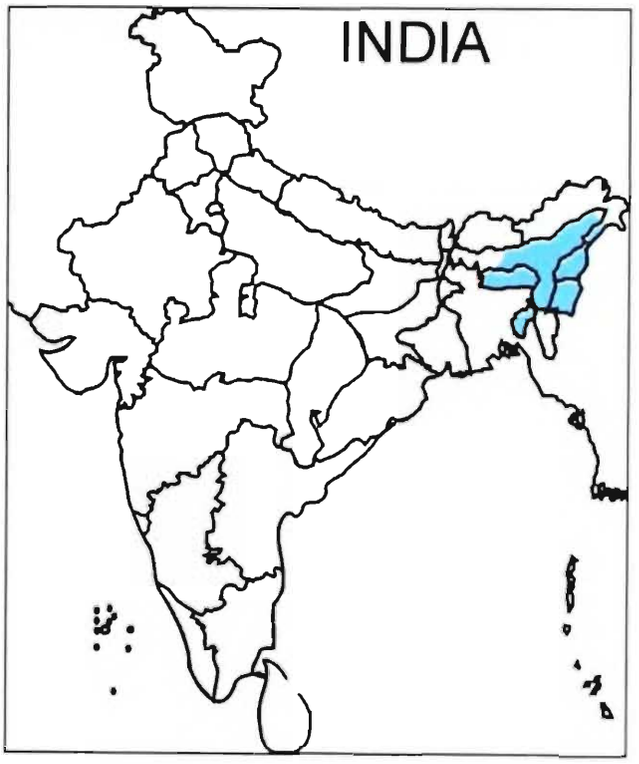
Endemism : Non-Endemic species.

Altitude : Flood plains-2000 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Locations : *No. of locations* : Many but isolated in the northeastern India; *Type* : Contiguous.



Source : B.K. Tikader (1983)

Habit, Habitat and Ecology : Terrestrial, entirely arboreal and diurnal forest dwelling langur. Inhabits dense and secluded tropical and secondary forests including bamboo forest intersected by streams.

Habitat structure : Dense and secluded tropical and secondary forests intersected by streams.

Population : *Global population* : >3000; *No. of mature individuals in all the populations* : less than 2500.

Captive population : Males : 8 + females : 5 = Total : 13 in 12 Indian zoo (CAMP Report, 2003).

Life span : (Wild) : 10-12 years; (Captivity) : Not known.

Population trend : Declining.

Museum records : *Locality* : Record not available.

Project specific records : Record not available.

Sighting records : *Type of sighting* : Direct; *Field notes* : Direct sighing records reported by number of authorities at different places and times in Northeast India (CAMP Report, 2003).

Threats : Habitat fragmentation, human interference, loss of habitat, trade, hunting, in-breeding, corridor loss; *Effect of threats on population (Perceived or inferred)* Declining.

Trachypithecus pileatus (Blyth)

Trade : Local, domestic, and international; *parts in trade*: live animals, fur, taxidermy models, products and organs; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) Data Deficient (Global); *IUCN (2002)* (Proposed).

Taxon related studies recommended : *In-situ* survey, monitoring and habitat management.

Remarks : CAMP Workshop Report (2003) has assigned different conservation status for the four subspecies of *Trachypithecus pileatus*. However, Endangered (National) status has been taken into consideration, here, for the entire species based on all their assessments.

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Evaluated by : J.R.B. Alfred and M.S. Pradhan

VULNERABLE

Order PRIMATES

Family CERCOPITHECIDAE

Subfamily COLOBINAE

17. *Semnopithecus johnii* (Fischer)
Nilgiri Langur

Synonyms : *Presbytis johnii* (Fischer), *Trachypithecus johnii* (Fischer) *Semnopithecus (Trachypithecus) johnii,* (Fischer).

Common names : Nilgiri Langur.

Regional names : Tamil : Mandi or Manthi, Karumanthi; Mayayalam : Vella manthi, Karinkorugn.

Diagnostic characters : A Glossy black langur, having the back of the head yellowish brown colour. The rump and tail grizzled. The tail is fairly long. Hairs on the head are long but non-radiating. Femles possess a white patch on the inner side of the thighs.

Measurements : (in mm) : Head and body length : male : 508-700, female : 550-600; tail length : male : 680-965, female : 720-800.

Weight : (in Kg) : Male : 9.1 -13.2, Female : 10.9-11.3.

Intraspecific variations : No subspecies/species Name : *Semnopithecus johnii* (Fischer) has been retained here following Grooves (2001).

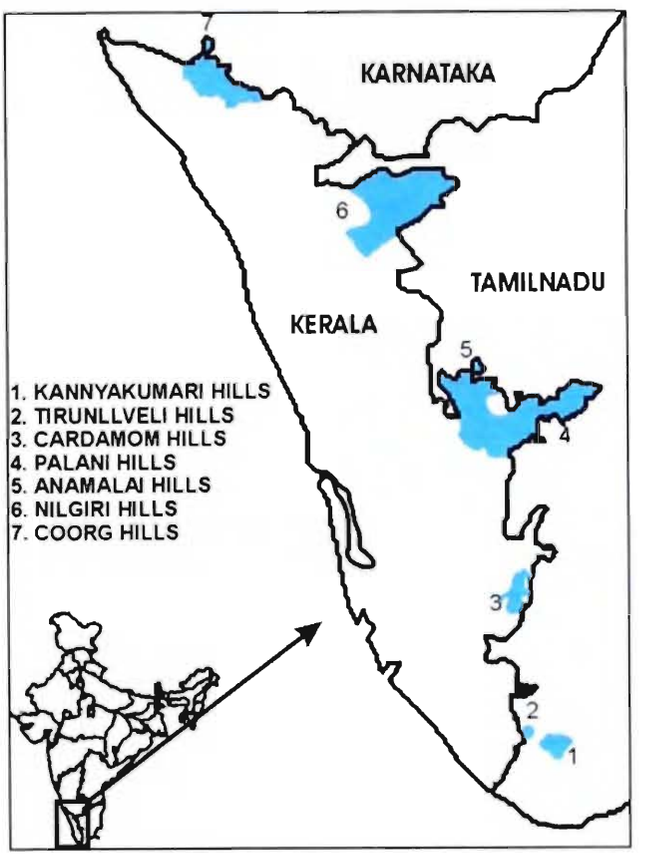
Distribution : Nilgiri, Anaimalai, Bramhagiri, Palni Hills, Kanyakumari Hills, Tirunelvelli Hills and Cardamom Hills in India.

Endemism : Endemic to Western Ghats.

Altitude : 300-2000 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 10001-20000 sq. kms.



Source : W. Sunderaj, S.F.W./WII, Dehra Dun

Locations : *No. of locations* : 7; *Type* : Fragmented.

Habit, Habitat and Ecology : Nilgiri Langur is truely arboreal in nature. They live in smaller groups with 5-24 individuals per group. The langurs prefer varried habitats at lower elevations like tropical evergreen, moist mixed deciduous forests, plantations and riverine habitat. But the preferred ecological niche at higher elevations is evergreen forest.

Habitat structure : Tropical rain forest, Moist evergreen /Moist deciduous forest and plantations.

Population : *Global population* : 10,000; *No. of mature individuals in all the populations* : less than 2500.

Captive population : Males : 11 + females : 14 + unsexed : 2 = Total 27 in 8 Indian zoo (CAMP Report, 2003).

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Declining.

Project specific records : Record not available.

Semnopithecus johnii (Fischer)

Sighting records : *Type of sighting* : Direct and indirect; Field notes : Number of sightings has been reported in Western Ghats. (KFRI, Kerala, during 1993,1997 Wildlife census; Ramachandran K.K. and Joseph, Silent Valley surveys during 1993-96; Ramachandran K.K. New Ambarambalam surveys during 1998-2000; Giri Periyar surveys during 2001; Sunderraj Kalakad-Mundanthurai surveys during 1998 (CAMP Report, 2003) and Pradhan, M.S. Eravikulum National Park surveys during 1994 (Pradhan, 1994).

Threats : Interspecific competition, habitat fragmentation, agriculture and farming, mining & exploration, human interference, loss of habitat, trade, hunting, developmental activities, accidental mortality and ecological imbalance.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local and domestic; *Parts in trade* : Live animals, meat insurg., body parts for traditional medicines; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)*: Vulnerable; *IUCN (1998)* (Proposed) : Vulnerable; *IUCN (2003)* (Proposed) : Vulnerable.

Taxon related studies recommended : *Ex-situ* survey, moitoring, genetic studies, taxonomic studies and life history studies.

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Evaluated by : J.R.B. Alfred and M.S. Pradhan

ENDANGERED

Order PRIMATES

Family HYLOBATIDAE

18. *Bunopithecus hoolock hoolock* Harlan
Hoolock Gibbon

Synonyms : *Hylobates hoolock* (Harlan); *Simia hoolock* (Harlan).

Common name : Hoolock Gibbon.

Regional names : Bengali : Vlluk, Assamese : Holon bandar, Garo : Heru, Manipuri : Yomma, Khasi : Hulu.

Diagnostic characters : The Hoolock Gibbon is the only ape species found in India. Among the 9 known species of Southeast asian lesser apes, the hoolock is the largest gibbon after the siamang. The hoolock is slender bodied tailless ape with long arms; almost double the length of legs. It has a small and round head with a strong white band above the eyebrows. Adult hoolock is sexually dichromatic, they undergo a sequence of color changes from infancy to the sexually dichromatic adults. The male is always black with white band above eyebrows and with large genital tuft. Adult female is golden or buff or brownish buff coloured.

Measurements : (in mm) : Head and body length : 450-630.

Weight : (in Kg) : Male : 6.1-7.9; Female : 6.0-6.6.

Intraspecific variations : Out of two valid subspecies, only the nominate subspecies occurs within Indian limits.

Distribution : Northeastern India. South of river Bramhaputra in India.

Endemism : Non-Endemic species.

Altitude : 100-1370 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Locations : *No. of locations* : 124; *Type* : Fragmented.

Source : B.K. Tikader (1983)

Habit, Habitat and Ecology : Hoolck Gibbon lives in forests mainly along the hill slopes in small family parties. A group consists of male, female and their offsprings. The male is monogamous in habit. They live in a definite territory. The hoolock is more agile than the other ape species. At night they remain in forests, while at dawn they ascend to the hillsides, go to treetops for basking in the sun. A group can be detected by its peculiar call in the morning hours. Call started by a member is picked up by all. The suspensory behaviour helps them to make use of closely set three-tier forest.

Habitat structure : Tropical semideciduous and tropical deciduous forests on the hill slopes.

Population : *Global population* : >10,000; *No. of mature individuals in all the populations* : less than 2500.

Captive population : Males : 3 + females : 5 = Total : 8 in 6 Indian zoo (CAMP Report, 2003).

Life span : (Wild) : 17 Years; (Captivity) : Not known.

Population trend : Declining.

Museum records : *Locality* : Record not available.

Project specific records : Record not available.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Number of sighting records based on the studies carried out in various localities of NE India between the period 1986-2001, by Alfred and Sati from Zoological Survey of India, Kolkata, and also by the team of Indo-US Primate Project (CAMP Report, 2003).

Photo : J.R.B.Alfred and J.P. Sati

Bunopithecus hoolock hoolock Harlan

Threats : Agriculture and farming, habitat fragmentation, human interference, loss of habitat, trade, hunting, corridor loss, accidental mortality, developmental activites, jhoom cultivation and encroachment; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Domestic and international; *Parts in trade* : Live animals (Pradhan, 1997), fur, meat insurg., body parts for traditional medicines; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : Vulnerable (National) and Data Deficient (Global); *IUCN (2003)* (Proposed) : Endangered (National) and Endangered (Global).

Taxon related studies recommended : *In-situ* Survey, *Ex-situ* survey, monitoring, habitat mangement.

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Evaluated by : J.R.B. Alfred and M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order CARNIVORA

Family CANIDAE

19. *Canis lupus pallipes* Sykes
Wolf

Synonyms : Large number of synonyms have been listed in Alfred *et al.*, (2002).

Common names : Wolf, Indian wolf; Indian Grey Wolf.

Regional names : Hindi : Bheriya, Hurar, Hundar, Bighana; Marathi : Landga; Kannada : Thola; Telgu : Toralu; Tamil : Onai.

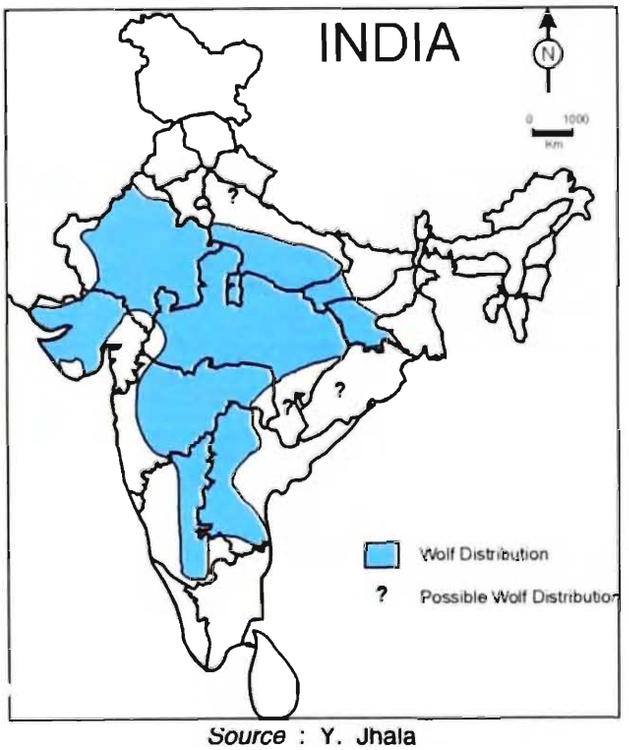
Diagnostic characters : The wolf shows resemblance in size with the Alsatian dog. However, it is small in size than its counterpart from northern hemisphere. The size, large skull and powerful jaws with strong cutting teeth distiguishes the wolf in the dog family. The head with arching brows and elevated forehead are also the charcterestic features of the wolf. The bushy tail less than half of the head and body length with its tip in black colour. Dorsum fur of long coarse hairs greyish fulvous usually with brownish or reddish tinge mixed with black. Reddish or rufous individuals are also not uncommon. Greyish face with a mixture of black and white hairs. Legs are ochraceous but paler inside. A crest of long hairs on back of the neck and shoulders may be present. Undersurface with soft dingy white hairs. Back of ears reddish buff. Ears are pointed and upstanding. Iris pale greyish yellow. Rhinarium mostly black in colour.

Measurements : (in cm) : Head and body length : 90-130; tail length : 35-45; height at shoulders : 65-75.

Weight : (in Kg) : 18-27.

Intraspecific variations : Within Indian limits only two subspecies have been reported, namely : *Canis lupus pallipes*. Sykes and *Canis lupus chanco* Gray.

Distribution : Within Indian limits the Indian Wolf occurs in Himalayas and further south to desert zone and to dry open country in the peninsular India including Deccan plateau. However, it has



Source : Y. Jhala

not been reported from the southern extremities of India or from the northeastern regions of India.

Endemism : Non-Endemic species.

Altitude : Up to 4000 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Isolated.

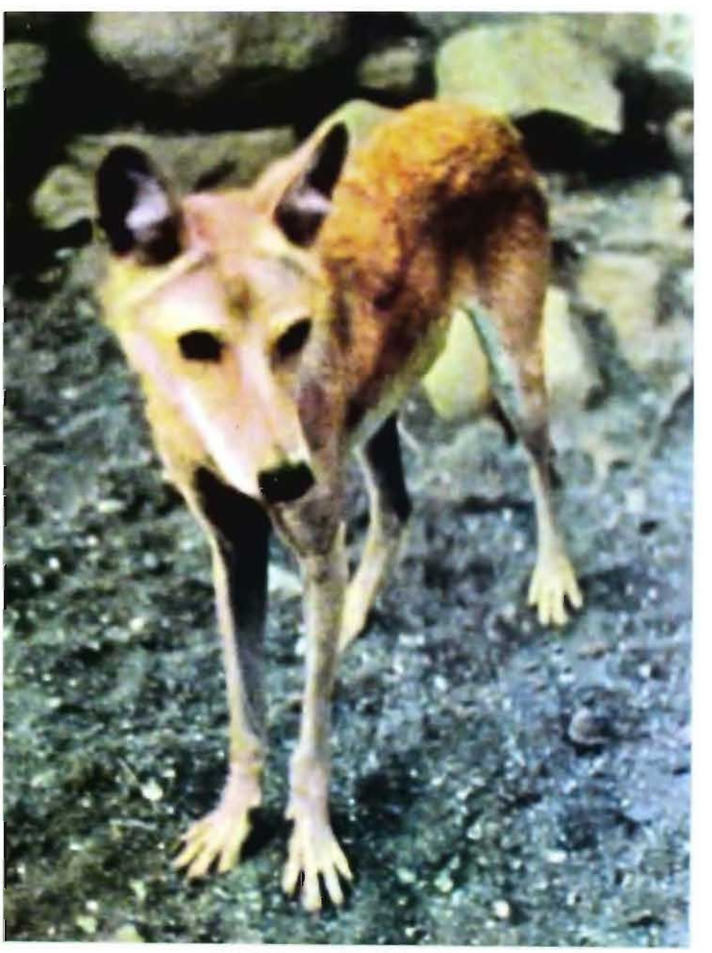
Habit, habitat and ecology : Wolves prefer to live in variety of habitats in dry open country and deserts. It has developed preference for arid and semi arid habitats. It avoids forests. It finds refuge in crevices, burrows in sands, holes or gaps in rocks or between boulders, caves etc. It hunts at night and attacks animals such as Blackbuck, Chinkara, hares, rodents, goats, sheep, fox, poultry etc. of which first four forms favourite prey item. Blackbuck is most favoured prey species. Incidence of child lifting has also been recorded (Jhala and Sharma, 1997). Breeding takes place mostly at the end of rainy season and the young ones are born around December. Three to eight wolves may form pair bonds lasting for several years. Young wolves generally remain with their parents and hunt in a family group for first few months of their lives. A larger group of wolves may comprise a couple of family packs. It apperas to be sympatric in distribution with dholes in some parts of the country. Wolf is supposed to be a major predator and a flagship species of grassland and shrubland habitats. Cub mortality rate due to diseases is also high (Sharma, 1994).

Habitat structure : Varied habitats in dry open country and deserts. Prefers arid and semi-arid habitats.

Population : *Global population* : 1000-2000 (Jhala, 1998); *No. of mature individuals in all the populations* : less than 2500.

Captive population : Males 21 + females : 20 + unsexed : 11 = Total : 52 in 16 Indian zoo. Males : 21 + females : 10 + unsexed 1 =Total : 33 in 5 zoo abroad (CAMP, 1998).

Life span : (Wild) : 12-15 Years; (Captivity) : Not known.



Canis lupus pallipes Sykes

Population trend : Declining.

Sighting records : *Type of Sighting* : Direct and Indirect; *Field notes* : Sighting records and populations are reported by Jhala and Giles (1991), Jhala (1997, 1998, and 2000) and Sharma (1994) based on field studies. Many sighting records within Indian limits have been reported from various localities at different times by a number of authorities.

Threats : Interspecific competition, diseases, human interference, loss of habitat, trade, hunting, decline in prey species, hybridization, corridor loss, poisoning, human-wolf conflict through cases of child lifting and misbeliefs, attack on live stock etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, domestic, commercial and international; *Parts in trade* : Live animals, fur, body parts.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global).

Taxon related studies recommended: Survey, monitoring, life history studies, *In-situ* survey, conservation strategy, population studies.

Remarks : Considering the levels of threats, nature of trade and currently avilable information, it is strongly recommended to include Indian wolf in the higher threat category of IUCN. Roberts (1997), Anonymous (1994) and Jhala (1998, 2000) consider the status of Indian population as rare and have strongly recommended stricter enforcement of the conservation measures for the protection of the species. Further, Tikader (1983) has categorised the wolf species as endangered species.

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Evaluated by : M.S. Pradhan and Y. Jhala

NOT EVALUATED
Order CARNIVORA
Family CANIDAE

20. *Canis lupus chanco* Gray
Tibetan Wolf

Synonyms : *Not available.*

Common name : Tibetan Wolf.

Regional names : Hindi : Bheriya, Tibetan : Changu.

Diagnostic characters : Tibetan wolf is almost a size of an Alsatian dog. It is almost similar in many respects to Indian wolf except that Tibetan wolf is larger in size and heavier in built. Like Indian Wolf, it possesses large skull and long powerful jaws, arching brows and elavated forehead. The colouration is greyish brown or rather more greyish. Sometimes Tibetan wolf possesses long haired black and white or rather blackish shaggy coat. The winter coat is very thick and wooly with luxuriant neck ruff.

Measurements : (in cm) : Head and body length : 90-102, tail length : 35-38, height at shoulder : 76.

Weight : (in Kg) : 20.

Intraspecific variations : Only one subspecies is known to occur within Indian Limit, namely : *Canis lupus chanco* Gray.

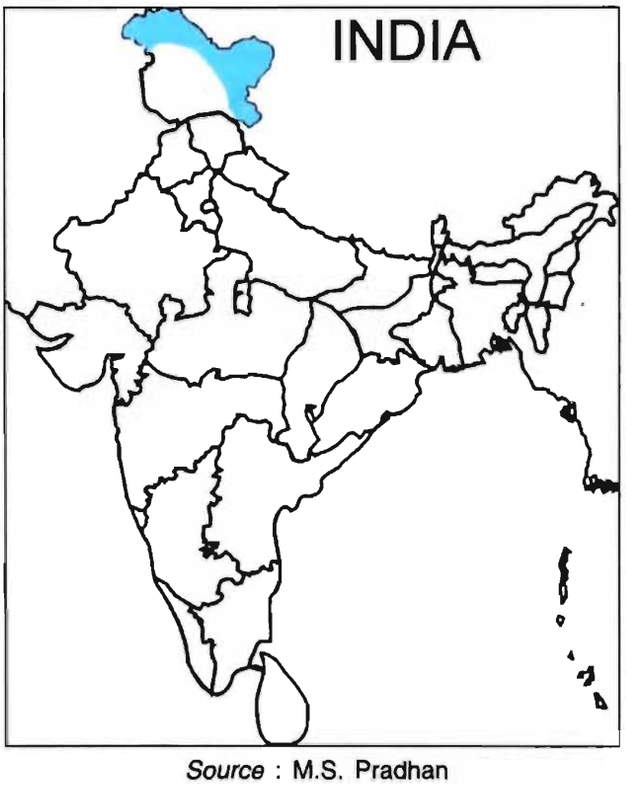
Distribution : Within Indian limits the Tibetan Wolf occurs in upper Himalayan or trans Himalayan regions.

Endemism Non-Endemic species.

Altitude : 4800-5150 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 2001-5000 sq. kms.



Source : M.S. Pradhan

Locations : *No. of locations* : 3-4; *Type* : Isolated.

Habit, Habitat and Ecology : The high altitude race of the wolf species behaves like a nomadic population and it migrates to long distances for its prey. It occurs in

mountainous semiarid and dry areas. During winter season, they travel down the valleys along with the grazing flock's upto snowline. During summer, it prefers to live in holes, crevices, caves in rocks and in thickest of reeds and scrubs. It can hunt both at day and night. Ibex, antelope's, rodents and small other animals form the major part of its diet in summer, while wild sheep and goats in winter. Mating season between January to April and young ones are born in spring. Litter size ranges from 1 to 11. Tibetan wolf may live singly or in small groups. During the upward altitudinal movements, the wolf follows the foot trails of other animals including human being. Cub mortality rate due to diseases is also high (Sharma, 1994). Wolf species is at the fairly top position of the biological pyramid in the ecosystem. Therefore, elaborate studies on its habit, habitat ecology and behaviour are essential from conservation point of view.

Habitat structure : High altitude race of the wolf species preferring to live in dry arid and semi-arid areas. Moves and migrates with the prey species.

Population : *Global population* : 3000; *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : Males : 10 + females : 5 = Total : 15 in one Indian zoo. Males : 3 + females : 4 = Total : 7 in 3 zoo abroad (CAMP Report, 1998).

Life span : (Wild) : 12-15 Years; (captivity) : Not known.

Population trend : Declining.

Sighting records : *Type of sighting* : Direct and Indirect; *Field notes* : sighting records reported by Johnsingh *et al.* (1999), Roberts (1997), Sharma (1994) and Hilaluddin (1997).

Canis lupus chanco Gray

Threats : Diseases, Human interference, trade, hunting, decline in prey species, insurgency/terrorism/ war, human-wolf conflict due to cases of attack on livestock, accidental deaths due to trapping and infant mortality (Sharma, 1994); *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, Domestic; *Parts in trade* : Skin, fur; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Insufficiently known; *IUCN (1998)* (Proposed) : Not Evaluated (national).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, limiting factor research, conservation startegy recommended, population studies.

Remarks : Considering the levels of threat, nature of trade and currently available information, it is strongly recommended to include Tibetan wolf in the higher threat category of IUCN. Roberts (1997), Anonymous (1994) and Sharma (1994) considers the status of Tibetan wolf within Indian limits as Rare.

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Evaluated by : M.S. Pradhan

LOWER RISK-LEAST CONCERN

Order CARNIVORA

Family CANIDAE

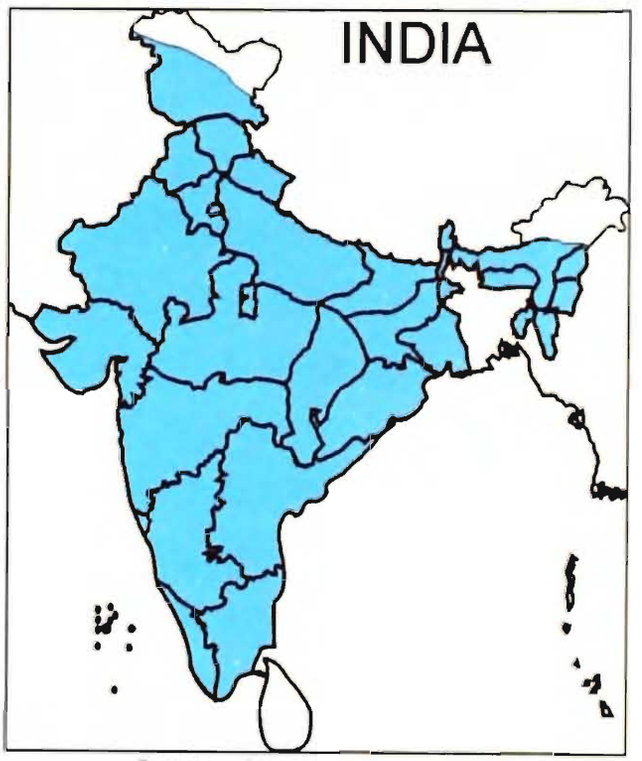
21. *Canis aureus* Linnaeus
Asiatic Jackal

Synonyms : Number of synonyms reported by Alfred *et al.*, 2002 (*algirensis, anthus, balcanicus, barbarus, bea, caucasica, cruesemanni, dalmatinus, deoderleini, ecsedensis, gallaensis, graceus, grayi, hadramauticus, hungaricus, indcus, kola, lanka, lupaster, macroccanus, mengesi, minor, moreotica, naria, nubianus, riparius, sacer, senegalensis, somalicus, soundanicus, studeri, syriacus, thooides, tripolitanus, typicus, variegates, vulgaris).*

Common names : Asiatic Jackal, Golden Jackal, Jackal.

Regional names : Hindi : Gidar or Sial or Phial; Marathi : Kolha; Kannada; Kalla Nari; Tamil : Kalla Nari; Telugu : Nakka; Malyalam : Karaken Nari; Assamese : Hiyali; Bengali : Shiyal, Srigal.

Diagnostic characters : The Jackal is one of the most familiar animals of the country. It is almost a smaller version of the wolf with comparatively shorter legs and narrower muzzle. However, Jackal lacks the elevated forehead and the arching brows of the wolf. It is smaller than a village dog and possesses a very bushy tail. Its coat colour is variable with season and locality. The general colouration is a mixture of balck and white washed with buff around the shoulders, ears and legs. Its head is light brown in colour. The body fur is rather coarse and wiry. The mid dorsal region as well as the back of the tail bears predominatly black hairs. Face and lower flanks may be grizzled and greyer. Back of the ears brownish buff. Tail tip black. Hairs around eyes, lips and throat are whitish, while those on the outer surface of the legs are warmer with ochraceous tinge. Animals from north are on average bigger and heavier in size. Black variants are not uncommon in north.



Source : Corbet and Hill (1992)

Measurements : (in cm) : Head and body length : 60.0-80.0; tail length : 20.0-27.0; height at shoulders : 38.0 - 45.0.

Weight : (in Kg) : 7.0-12.2.

Intraspecific variations : Three subspecies are known to occur within Indian Limits. They are : i) *Canis aureus aureus* Linnaeus; ii) *Canis aureus indicus* Hodgson; iii) *Canis aureus naria* Wroughton.

Distribution : Almost throughout India within Indian limits.

Endemism : Non-Endemic species.

Altitude : Up to 3660 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, Habitat and Ecology : Like wolf, the Jackal is adaptable to live in any environment. It's long drawn eerie howling at dusk or dawn is most familiar. It is well established near hill stations and villages on plains. It is nocturnal in habit, comes out at dusk, and retires at dawn. They are seen on plain and are equally comfortable on forested hills. Jackals are intelligent and they feed on carrion, small animals, birds and even insects and fruits. However, bulk diet consists of rodents and reptiles obtained through hunting. They may even attack melon patches and sugarcane fields. The jackal lives in small and/or large packs. They undertake fairly long migrations. Jackals breed throughout the year and litter consists of usually four young ones. Jackals take shelter in holes in the ground, amongst ruins or in dense tall grass and/or scrubs. However, they are also scavanger in habit and do not hesitate to attack and prey upon the individual prey species.

Habitat structure : Any type of forest and urban, semi-urban, rural environments. Adaptable to any favourable habitat.

Canis aureus Linnaeus

Photo : A.J.T. Johnsingh, WII, dehra Dun

Canis aureus Linnaeus

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Males : 64 + females : 56 + unsexed : 33 = Total : 156 in Indian zoo. Males : 7 + females : 6 = Total : 13 in 4 zoo abroad (CAMP Report, 1998).

Life span : (Wild) : 12 years; (Captivity) : 15 years.

Population trend : Declining.

Museum records : *Name of museum* : Some of the Regional Stations and Head Quarters of Zoological Survey of India and Bombay Natural History Society, Mumbai, possess representative specimens of this species in their collections.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Field sighting records reported by Sharma (1994), Agrawal *et al.* (1992), (collection records), Pradhan (in press), and Roberts (1997). Moreover there are number of informal sighting reports from different parts of the country.

Threats : Interspecific competition, disease, human interference, loss of habitat, trade, pollution, hunting, poisoning, accidental deaths, deaths due to dreaded disease like rabies; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, domestic and international; *Parts in trade* : Skin, fur, body parts (Pradhan, 1997); *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : III; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Lower Risk-Least Concern (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, limiting factor research, conservation strategy recommended population and conservation status studies.

Remarks : Considering the level of threat, nature of illegal trade involved and currently available information, it is strongly recommended to list the species in the higher Threat category of IUCN.

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Evaluated by : M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order CARNIVORA

Family CANIADE

22. *Cuon alpinus dukhunensis* (Sykes)
Wild dog

Synonyms : *Canis dukhunensis* Sykes.

Common names : Wild dog, Indian Wild Dog, Red Dog, Dhole.

Regional names : Hindi : Sonkutta, Jangli Kutta, Ban Kutta; Marathi : Dhol, Kolsum; Telgu : Raja Kutta; Malyalam : Shin nai; Tamil : Chen nai.

Diagnostic characters : In general apperance Indian wild dog is much like a domestic dog. In size, it is midway between wolf and jackal. It possesses long body like wolf but it's muzzle and legs are relatively shorter but thicker. The ears are slightly bent and more rounded at the tip. The tail quite bushy and bent. Indian wild dogs possess six molar teeth in the lower jaw and have 12-14 mammary teats, which are the characteristic features to separate them from dogs, wolves and jackals. The coat colour varies from sand stone with tawnier to rusty red turning deeper in southern populations. The black tipped tail is more darker than the body.

Measurements : (in cm) : Head and body length : 90.0-96.0, tail length : 36.0-43.0; height at shoulder : 43.0-55.0.

Weight : (in Kg) : 12.0-20.0. Females are lighter in weight.

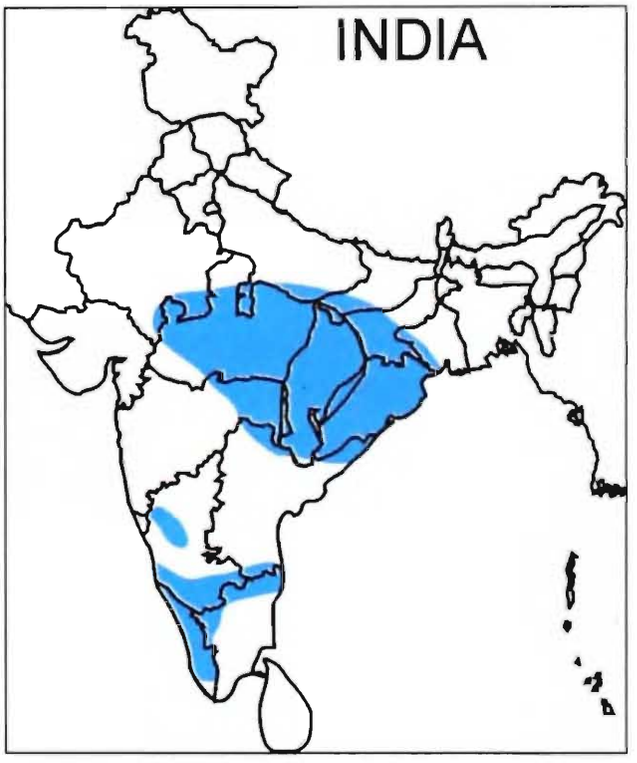
Intraspecific variations : The Deccan Plateau Indian populations are recoginsed as a separate subspecies *viz. Cuon alpinus dukhunensis* (Sykes).

Distribution : Asiatic Wild dog occurs in Deccan Plateau south of Ganges within the Peninsular Indian limits.

Endemism : The subspecies is endemic to the peninsular Indian region.

Altitude : Up to 3500 mts.

Area of occupancy : Greater than 2001 sq. kms.



Source : Corbet and Hill (1992)

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Fragmented.

Habit, Habitat and Ecology : The Asiatic wild dog is a terrestrial animal and it prefers to restrict itself to the forest covers only. It lives in all types of forests except in mangrove forest. Any forested region offering food, shelter and water to drink or place to hide is a suitable habitat for this subspecies. The wild dog is a social animal and lives in packs numbering from 2-40. It maintains prolonged associated relationship between parent and young ones. A large pack may be union of more than one family. Wild Dog hunts by sight during daytime and rarely at night. The prey is trailed by scent, pursued at sight with no violent outburst of speed or attacks. The pursuit may be silent under a heavy cover. The packs are led by a leader who indicates lines of approaches which may fall in two strategies : 1) Attack in line formation and 2) Some members of the pack remain at periphery and intercept and attack the fleeing prey. The ecology and behaviour of wild dogs have been very well studied and doucmented by Johnsingh (1983), Rice (1986) and Karnath and Sunquist (1995, 2000). All of them could not find in their studies any competitive spatial exclusion of the predators in the respective study areas. Although behavioural mechanisms may enable the coexistance with tigers, leopard and wild dog, the prey selection pattern depends on the availability of prey in appropriate size classes. Wild dogs usually pery upon spotted deer, samber, pigs, barking deer, mouse deer etc.

It may even attack and hunt large prey sizes like swamp deer, gaur and even tiger. They consume their kills rapidly. The favourite prey species in most of the places are spotted deer and sambar. They use whistiling calls as means of communication, which is quite useful at the time of hunting. Though, wild dogs are true prolific breeders, they are susceptible to dreaded diseases like rabies, mange and cannine distemper. There is marked fluctuations in the population structure. Suddenly it may decrease and/or increase at any time. They may live in caves, crevices or even earth ditches. Their main breeding season is from November-March and four to six young ones are born after a gestation period of one week. The adults accord great solicitude to growing pups. Dholes as on today are considered to be world's most efficient predator.

Cuon alpinus dukhunensis (Sykes)

Photo : A.J.T. Johnsingh, WII, dehra Dun

Cuon alpinus dukhunensis (Sykes)

Habitat structure : Prefers to live in various habitats under forest covers.

Population : *Global population* : 20,000; *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : Males : 2 + females : 8 + unsexed : 9 = Total : 19 in 4 Indian zoo. Males : 17 + females : 20 = Total : 37 in 7 zoo abroad CAMP Report (1998).

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Declining.

Sighting records : *Type of sighting* : Direct; *Field notes* : sighting records in different parts of the country have been reported in number of publications. Detailed account on prey selection, predation and behaviour of dhole is a available in Johnsingh (1983, 1986) Rice (1986) and Karnath and Sunquist (1995).

Threats : Diseases, habitat fragmentation, interspecific competition, grazing, loss of habitat, decline in prey species, poisoning, hybridization, human-wild dog conflict in unprotected areas (Johnsingh, 1986).; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Possibly for Zoo; *Parts in trade* : Live animals; *Effect of trade on population (Perceived or inferred)* : Not declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book (IUCN, 1994)* : Not listed; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National).

Taxon related studies recommended : *In-situ* survey, mointoring, taxonomic studies, life history studies, limiting factor research, habitat mangement, population studies.

Remarks : Scientific studies on breeding aspects and biolgy of dhole are recommended.

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Evaluated by : M.S. Pradhan

CRITICALLY ENDANGERED

Order CARNIVORA

Family CANIDAE

23. *Cuon alpinus laniger* Pallas
Ladakh Dhole

Synonyms : *Canis laniger* Pocock.

Common names : Ladakh Dhole, Trans Himalayan Dog.

Regional names : Hindi : Dhol, Son; Kashmiri : Ramkun; Ladakhi : Farra.

Diagnostic characters : The Ladakh Dhole shows all the physical characteristics of Indian Wild Dog or Dhole (*Cuon alpinus dukhunensis)* described eariler. The only difference between the two subspecies lies in possession of thicker and paler red coloured pelage than the peninsular Dhole and the Himalayan Dhole. The measurment and weight ranges mentioned for *Cuon alipinus dukhunensis* are same for all the three subspecies. sighting of Ladakh Dhole is very rare. In size Ladakh Dhole is midway between wolf and Jackal.

Measurements : Same as those of Indian Wild Dog or Dhole.

Weight : Same as those of Indian Wild Dog or Dhole.

Intraspecific variations : The Ladakh population has been recognised as a separate *Cuon* subspecies *viz. Cuon alpinus laniger* Pallas.

Distribution : Ladakh Dhole is sparsely but widely distributed in Ladakh region within Indian limits.

Endemism : Non-Endemic species.

Altitude : Above 2400 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Locations : *No. of locations* : One; *Type* : Fragmented.

Source : M.S. Pradhan

Habit, Habitat and Ecology : The most distinctive differences between the habits of Ladakh Dhole and those of the other two subspecies are : i) Ladakh Dholes live at very high altitudes in almost cold desert region of Ladkah; ii) They are diurnal in habit and live in packs of 2-30 individuals in open country. The other habits such as living in packs with a leader in dens or caves, hunting skills and undertaking long distance migration are same as those for other two subspecies. They attack and kill as a team on animals such as wild sheep and antelope in Ladakah and Markhor, muskdeer and goral in Kashmir. Little or no information is available about breeding habits of Ladakh Dhole. Ladakh Dholes are also prone to fluctuations in populations due to fatal diseases.

Habitat structure : Barren cold desert region at higher altitudes of Ladakh.

Population : *Global population* : 100-200; *No. of mature individuals in all the populations* : Less than 250.

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Unknown.

Sighting records : *Type of sighting* : Direct/Indirect; *Field notes* : Johnsingh (1985, 1986) and Sharma (1994) reported occurrence of Ladakh Dhole in Kashmir and Tibet region.

Threats : Disease, loss of habitat (especially in Kashmir), Decline in prey species, poisoning and hybridization.; *Effect of threats on population (Perceived or inferred)* : Can't say.

Trade : Not known; *Parts in trade* : Not known; *Effect of trade on population (Perceived or inferred)* : Not declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Critically Endangered.

Taxon related studies recommended : *In-situ* survey, monitoring, taxonomic studies, life history studies, limitning factor research, habitat management, population status studies etc.

Remarks : The higer category of IUCN has been recommended for the subspecies reported from Jammu and Kashmir (Ladakh.)

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Evaluated by : M.S. Pradhan

VULNERABLE

Order CARNIVORA

Family CANIDAE

24. *Cuon alpinus primaevus* (Hodgson)
Himalyan Red Dog

Synonyms : *Canis primaevus* Hodgson.

Common names : Himalyan Red Dog, Indian Wild Dog, Dhole.

Regional names : Bengali : Bannya Lal kukur, Ram kutta, Himalayas : Bhaosa, Bhunsa, Buansu, Assamese : Rang Kukur, Oriya : Balia kukura, Manipuri : Huithou.

Diagnostic characters : The Himalyan Red Dog shows all the characteristics of Indian Wild Dog or Dhole (*Cuon alpinus dukhunensis*) described earlier. The only difference between the three subspecies lies in possession of thick and darker coloured (Deep red colour) pelage than the peninsular and Ladakh population. However, pelage of Ladakh population is comparatively thicker than that of Himalyan Red Dog. The measurements and weight ranges mentioned for *Cuon alpinus dukhuneusis* are same for all the three subspecies. sighting of Himalyan Red Dog is infrequent although, it still has an excellent and widespread wildlife habitat with wide range of distribution.

Measurements : Same as that of *Cuon alpinus dukhunensis*.

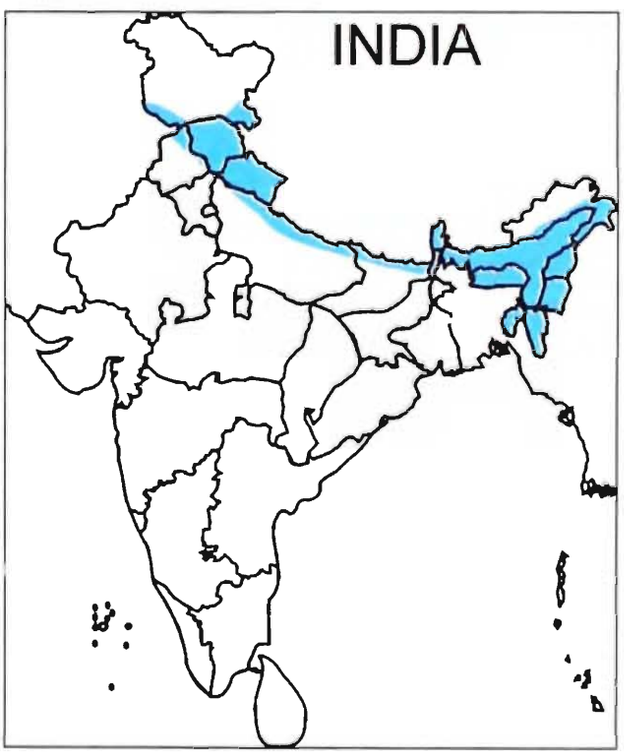
Weight : Same as that of *Cuon alpinus dukhunensis*.

Intraspecific variations : The Himalyan Wild dog poplution has been recognised as a separate subspecies *viz. Cuon alpinus primaevus* (Hodgson).

Distribution : Himalyan Red dog is known to occur in the entire Himalayan range from Kumaon (Uttaranchal Pradesh) to Sikkim, West Bengal and Assam and to northeast Indian states within Indian Limits.

Endemism : Non-Endemic species.

Altitude : May go up to 2440 m or even more.



Source : Corbet and Hill (1992)

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Fragmented.

Habit, habitat and ecology : The Himalyan Dholes show similarities in habit, ecology and behaviour with those of the Peninsular population of Indian wild dog or Dhole. The Red Dog prefers to restrict itself to forest, which may be dry, or mosit deciduous forest or even alpine type. Sudden fluctuations in the populations due to fatal diseases have been reported in this species also. No detailed information is available on its breeding biology. Dholes in Himalaya are known to feed on markhor, muskdeer, goral, chital, samber, swamp deer, pig, gaur, buffalo etc.

Habitat structure : Dry and Moist deciduous forests.

Population : *Global population* : Regional population about 1000. Mature individuals between 500-600 (CAMP Report, 1998); *No.of mature individuals in all the populations* : less than 2500.

Captive population : None in Indian Zoo.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Declining.

Sighting records : *Type of sighting* : Direct and Indirect; *Field notes* : Sighting records reported by Johnsingh (1985, 1986), Agrarwal *et al.* (1992) Sharma (1994) and Shreshtha (1997).

Threats : Diseases, Human interference, loss of habitat, decline in prey species, poisoning, hybridization etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Not known; *Parts in trade* : Not known; *Effect of trade on population (Perceived or inferred)* : Not declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Vulnerable (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, monitoring, taxonomic studies, life history studies, limiting factor research, habitat management, population status studies, breeding biology and ecology of Himalayan populations.

Remarks : Sudden fluctuations in the wild dog populations in India due to diseases have been reported for all the subspecies. Scientific reasons for the same may be studied in details.

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Evaluated by : M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order CARNIVORA

Family CANIDAE

25. *Vulpes vulpes pusilla* Blyth
Desert Fox

Synonyms : *Vulpes pusillus* Blyth and number of synonyms as reported by Alfred *et al.* (2002).

Common names : Desert Fox, Red Fox, White footed fox.

Regional names : Hindi : Lomri, Sindhi : Lokri.

Diagnostic characters : The red or Desert Fox is smaller in size than Jackal and it possesses longer and bushy tail. The tail tappers at the end. Tail tip white in colour. The muzzle is slender in shape, ears relatively large. Back of the ears black or very dark brown. Desert Fox is comparatively smaller in size and built than the Hill Fox (*Vulpes vulpes montanna*). The body fur of Desert Fox is very short and tail is less bushy. The pelage colour is much greyer red. The outer limbs and paws extensively white. There is dark spot below each eye.

Measurements : (in cm) : Head and body length : 48.00-60.00, tail length : 30.00-46.00, hindfoot length : 12.00-13.00, ear length : 8.4-9.1.

Weight : (in Kg) : 3.00-4.00.

Intraspecific variations : Only one sub-species of Desert Fox, namely *Vulpes vulpes pusilla,* Blyth, has been reported from Nort-Western Indian Region.

Distribution : Within Indian limits Desert fox is found in Thar desert areas of Gujarat, Rajasthan, Punjab and Haryana.

Endemism : Non-Endemic species.

Altitude : up to 2000 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 5001-10000 sq. kms.

Source : M.S. Pradhan

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, habitat and ecology : Like Hill Fox, Desert Fox also lives singly in non-breeding season. It is not a social animal in hunting habits. It is the inhabitant of arid and semiarid regions. It is generaly found in sandy wastes, sand dunes and riverbeds with scattered bushes. It is a nocturnal animal in habit and like Hill Fox, feeds on rodents, small birds, reptiles and insects like termites. It also feeds on fruits. It may pick up discarded food and often near human habitats. It breeds around winter and give birth to 5-7 young ones in March-April. The habit of marking territories and giving repeated high pitch calls by males is similar to that of Hill Fox. Red Foxes are said to pair for life. A pair may occupy the same dune for years. Its burrow may possess number of openings.

Habitat structure : Desert and Semi-desert areas.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : None in India or abroad (CAMP Report, 1998).

Life span : (Wild) : 4-5 years; (captivity) : 11 years.

Population trend : Declining.

Sighting records : *Type of sighting* : Direct; *Field notes* : Number of foxes were sighted in Sudasaree and Miyajlar areas of Desert National Park while visiting under the project, Fauna of Desert National Park, by ZSI teams from Desert Regional Station, Jodhpur.

Vulpes vulpes pusilla Blyth

Threats : Diseases, habitat fragmentation, agriculture and farming, human interference, loss of habitat, trade, hunting, poisoning, corridor loss etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, domestic; *Parts in trade* : Skin, fur; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : III; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, taxonomic studies, population and status survey studies.

Remarks : Considering the levels of threat, nature of trade and the currently available information, it is strongly recommended that the Desert Fox may be listed in one of the higher Threat categories of IUCN.

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Evaluated by : Q.H. Baqri, M.S. Pradhan and P.L. Kankane

LOWER RISK-NEAR THREATENED

Order CARNIVORA

Family CANIDAE

26. *Vulpes vulpes montanna* Linnaeus
Common Red Fox

Synonyms : Number of synonyms are listed in Alfred *et al.* (2002).

Common names : Common Red Fox, Red Fox, Hill Fox.

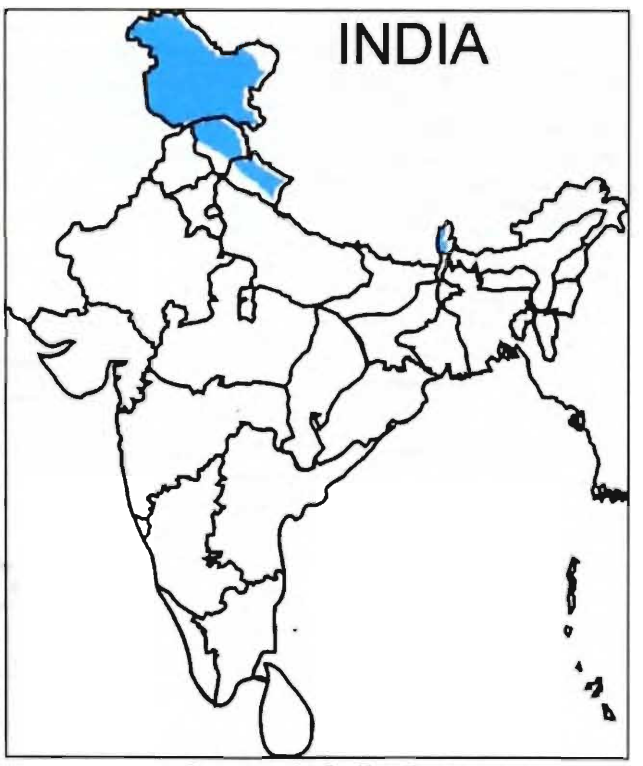
Regional names : Hindi : Lomri, Kashmiri : Loh.

Diagnostic characters : The coat of Common Red Fox is rich reddish in colour, fur long and silky with a very bushy tail. The upper part on the backside of the ears is black but the tip of the tail is conspicuously white. Red is dominant colour, but the colour is variable. Yellow, grey, silvery and even black individuals have been recorded. The face is rufous, but there is a dark spot below each eye. The Hill Fox is a typical high altitude subspecies with long thick and silky fur of bright colour. The luxuriant winter furcoat when shed, the fox is scarcely recognisable. The dark underfur showing through the moulting coat gives it a grey-brown tinge. The species is basically variable in size and general colouration. The muzzle of the fox is more slender than that of Jackal. Ears comapratively larger in size. There is a patch of black hairs midway between eyes and nose. Iris golden brown, while rhinarium black in colour. There are three pairs of mammae.

Measurements : (in cm) : Head and body length: 50.0-70.0; tail length : 35.0-45.0 and Hind foot : 13.0-15.0.

Weight : (in Kg) : 3.0-4.0.

Intraspecific variations : The high altitude subspecies within Indian limits is recognised by one subspecies only. *Vulpes vulpes montanna* Linnaeus. *Vulpes vulpes griffithi* Blyth reported from Kashmir has been synoymized in *vulpes vulpes* (Linnaeus) (Alfred *et al.* 2002). Another species *Vulpes ferrilata* Hodgson, which is included in schedule I Part I, has been currently considered as a extralimital species since its distribution has been reported from Tibet, Nepal, China and Yunnan (Wozencraft in Wilson and Reeder, 1993).



Source : M.S. Pradhan

Distribution : Within Indian limits, common Red Fox is found at higher altitudes only in northern Himalayas from Ladakh and Kashmir to Sikkim.

Endemism : Non-Endemic species.

Altitude : Up to 5500 mts.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, Habitat and Ecology : Common Red Fox lives among the thorny bushes and willows close to stream edges in cold desert conditions. It is also common in brushwood and cultivated lands in lower Himalayan region. It avoids forests for living. Prefers dry and semi arid climate. It lives in burrows dug under the ground or among rocks. Foxes are not social like wolves and dogs. They hunt singly or in pairs. Food varies with season and habitat and feed mainly on rodents like marmots, voles, Squirrels and mice/hares. It also feeds on pigeon's partridges and reptiles. In harsh winter it may be compelled to visit human dwellings to pick up discarded food and offal. Besides, from meat it also feeds on insects, berries and combs of honeybees. Red Fox breeds during winter season and cubbing time are in spring. Litter size consists of 5 to 7 cubs. Mortality rate is high in weak Foxes in winter season. Males mark their territories by urinating on bushes. During breeding season, they bark a great deal at night. Call of females is harsher.

Habitat structure : Among the thorny bushes and willows close to stream edges.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : None in zoo in India or abroad. (CAMP Report, 1998).

Life span : (Wild) : 10 years; (Captivity) : 12 Yrs.

Population trend : Declining.

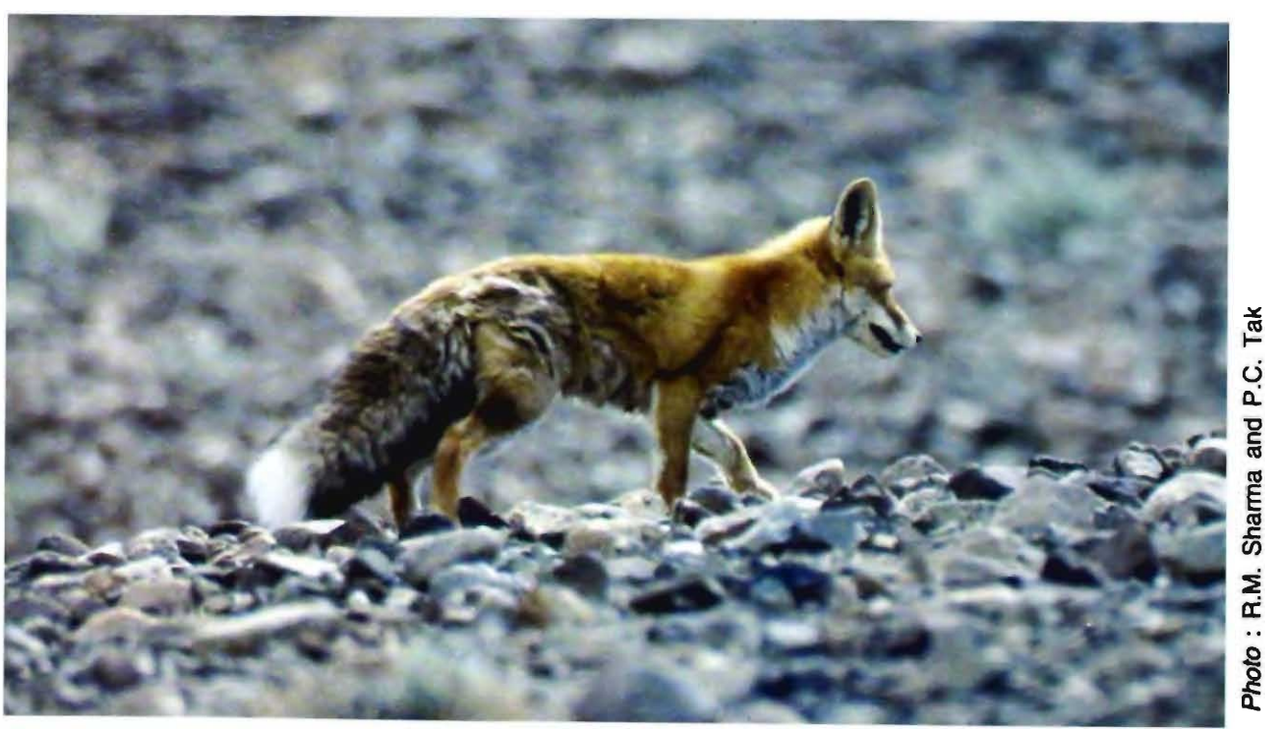


Photo : R.M. Sharma and P.C. Tak

Vulpes vulpes montanna Linnaeus

Sighting records : *Type of sighting* : Direct/Indirect; *Field notes* : Number of direct/indirect sighting records reported by Charkraborty (1983), Sharma (1994), Roberts (1997) and Johnsingh *et al.* (1999).

Threats : Interaspecific competetion, diseases, human interference, loss of habitat, trade, hunting, poisoning, poaching for skin on large scale (Chakraborty, 1983); *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, Domestic and international.; *Parts in trade* : Live animals, fur, body parts.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : III; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, limiting factor research etc.

Remarks : Considering the higher levels of threat and large scale poaching (Roberts, 1997 and Chakraborty, 1983), it is strongly recommended to include the subspecies in the higher Threat category of IUCN.

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Evaluated by : Q.H. Baqri, M.S. Pradhan and P.L. Kankane

LOWER RISK-NEAR THREATENED

Order CARNIVORA

Family CANIDAE

27. *Vulpes bengalensis* (Shaw)
Indian Fox

Synonyms : *Canis bengalensis, Shaw, chryrurus, hodgsonii, indicus, kokree, rufescens, Xanthura.*

Common names : Indian Fox, Bengal Fox.

Regional names : Hindi : Lomri, Lokri, Lokeria, Lom; Marathi : Khokkad; Kannada : Sanna nari; Tamil : Kulla, nuree; Telugu : Konka nakka, Gunta nakka pati-nare; Bengali : Khak-siyal; Orriya : Kodisilai; Assamese : Hiyal.

Diagnostic characters : The Indian or Bengal Fox is a common fox species of penninsular India and is smaller in built and size than the red fox species. It is slender limbed animal. It can be eaisly distiguinshed by its black tipped bushy tail and by its overall greyish colour. It looks something like a small jackal. Legs browner than body. Ears brown with black margin. Rhinarium naked and black. There is a small patch of black hairs around the upper part of the muzzle in front of the eyes. Females possess six mammae.

Measurements : (in cm) : Head and body length : 45.0-60.0; tail length : 25.0-35.0.

Weight : (in Kg) : 1.8-3.2.

Intraspecific variations : No subspecies.

Distribution : Practically whole of India, south of Himalayan foothills to Kanyakumari except in the northeastern India.

Endemism : Non-Endemic species.

Altitude : Up to 1350 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Source : Corbet and Hill (1992)

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, Habitat and Ecology : Common Fox is a terrestrial, fossorial animal with nocturnal behaviour. It lives singly and/or in pairs during breeding season. They live in burrows with multiple openings dug by them below 2-3 feet in the open ground. It hunts chiefly at night. They are also seen near human habitation. They are opportunistic feeders and scat analysis revealed insects, crabs, scorpions, termites, rodents (*Millardia* sp. and *Mus booduga* etc.) Food remains around burrow openings included hedgehog skin pieces, parts of rat snake and feathers of birds. Thus, it appears to be ,quite omnivorous in feeding habit. Young ones are born between February and April (Prater, 1980). However, Johnsingh (1978) observed coincidence of births with the onset of the southeast monsoon in Janury in Tamil Nadu. The litter size consists of 4 youngones. Further, Johnsingh (1978) reports interspecific competition between common mangose and Bengal Fox. The normal call is a chattering high-pitched call.

Habitat structure : Like all other fox species, the common Indian Fox prefers open country rather than entering forests. It does not live in true deserts but are sighted in arid and semi-arid areas. It lives in scrubs in flat and rocky areas. Many live in cultivated lands close to irrigation canals and also in wastelands, barren lands and broken countries. General habitat structure is decreasing with general decline.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Males : 14 + females : 16 + unsexed : 11 = Total : 41 in 19 Indian zoo (CAMP Report, 1998).

Life span : (Wild) : Not known; (Captivity) : Not known.

Vulpes bengalensis (Shaw)

Population trend : Declining.

Museum records : *Name of Museum* : Some of the Regional Stations and Head Quarters of Zoological Survey Of India and Bombay Natural History Society, Mumbai, possess representative specimens of this species in their collections.

Sighting records : *Type of sighting* : Direct and Indirect; *Field notes* : Sighting records reported by Johnsingh (1978), Agrawal *et al.* (1992), Chakraborty and Agarwal (2000) and Menon (2003). Moreover there are number of informal sighting reports from different parts of the country.

Threats : Interspecific competition, disease, human interference, loss of habitat, trade, pollution, hunting, poisoning, killings by human beings due to superstitious beliefs (Tikader, 1983; Pradhan 1997); *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, domestic, commercial and international; *Parts in trade* : Skin, fur, meat insurg., body parts; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : III; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Data Deficient (Global) based on 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, montioring, life history studies, population and status survey studies.

Remarks : Taking into consideration the levels of threat, nature of trade involved and currently available information, it is strongly recommended to include Indian Fox in one of the higher Threat categories of IUCN.

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Evaluated by : M.S. Pradhan

VULNERABLE

Order CARNIVORA

Family HERPESTIDAE

Subfamily HERPESTINAE

28. *Herpestes urva* (Hodgson)
Crab-eating Mongoose

Synonyms : *Gulo urva* (Hodgson); *Viverra fusca* Gray.

Common names : Crab-eating Mongoose.

Regional names : Not available.

Diagnostic characters : A large powerfully built mongoose almost similar in size to stripe-neck mongoose with comparatively short tail. It is characterised by the presence of a white stripes running from the corner of the mouth along the side of the neck upto the shoulder. Soles of the hind feet are hairy nearly down to the hallux. The hairs are long and coarse and dusky iron grey or black in colour with white tips. The head, hands and the feet are dark brown or black. The wooly underfur is dark-brown at the base, while pale brownish yellow at the tips.

Measurements : (in mm) : Head and body length : 450-570. tail length without the hairs at the tip : 250-350.

Weight : (in Kg) : 1.8-2.3.

Intraspecific variations : No subspecies.

Distribution : The crab-eating mongoose is distributed in West Bengal, Assam and north-east India within the Indian limits.

Source : B.K. Tikader (1983)

Endemism : Non-Endemic species.

Altitude : 0-400 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Locations : *No. of locations* : Three Indian states including Assam, Arunachal Pradesh and West Bengal; *Type* : Fragmented.

Habit, Habitat and Ecology : Crab

eating mongoose is diurnal or crepescular in habit. It is more aquatic in habit than other mongoose species. Expert swimmer and diver to catch frogs, fishes, snails and crabs from hill stream areas. It exposes its preys from under stones and rocky crevices with the help of its paws. It also feeds on small birds, mammals and reptiles. No information is available on its breeding habit. This species is less agile than other mongoose species but it vanishes among the undergrowth whenever noticed by human being. They are generally seen single, in pairs or in small groups. The litter may contain one or two young ones. The crab-eating mongoose, as means of self-defence, squirts out a fluid with a great force from its anal glands.

Habitat structure : Along the banks of hill streams in moist-deciduous forest, river banks, swamps and inundated paddy fields.

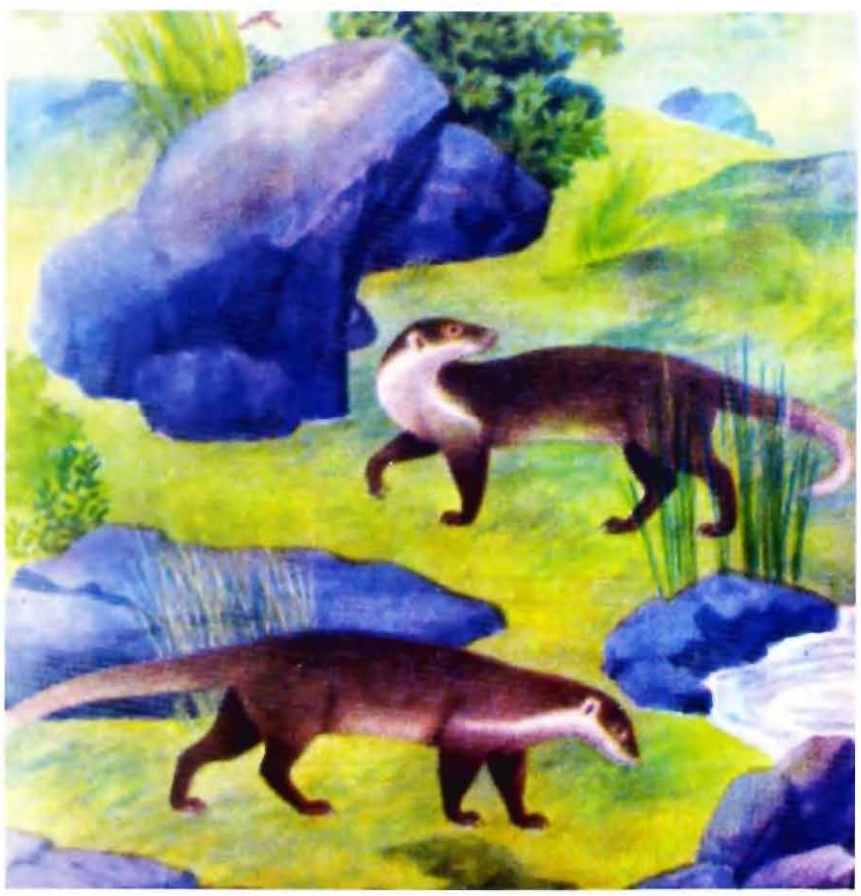
Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Male : 1 in one Indian zoo, males : 2 + females : 2 = Total : 4 in one Zoo abroad (CAMP Report, 1998).

Life span : (Wild) : Not known; (Captivity) : 12 years.

Population trend : Declining.

Sighting records : *Type of sighting* : Direct; *Field notes* : Recent sighting records are from Arunachal Pradesh and Assam reported by Choudhury (1999) and Suresh Kumar (1999).



Herpestes urva (Hodgson)

Threats : Human interference and loss of habitat; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : No.; *Parts in trade* : No.; *Effect of trade on population (Perceived or inferred)* : Not declining.

Conservation status : *CITES APPENDIX* : III; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Vulnerable (National) and Data

Deficient (Global); *IUCN (2002)* (Proposed) : Vulnerable based on 2.3 Version (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring and life history studies.

Remarks : *In-situ* detailed surveys followed by monitoring surveys of the population within Indian limit to gather more information on the life history and behaviour of the species is strongly recommended.

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Evaluated by : M.S. Pradhan

DATA DEFICIENT
Order CARNIVORA
Family URSIDAE
Subfamily URSINAE

29. *Helarctos malayanus malayanus* (Raffles)
Malayan Sun Bear

Synonyms : *anmamiticus, euryspilus, wardi.*

Common names : Malayan Sun Bear.

Regional names : Hindi : Malayan Bhalu.

Diagnostic characters : Malyan Sun Bear is the smallest of all the bear species. The muzzle and ears are short. Bullae swollen. The paws are large with inturned pointed claws. Soles naked. Forelegs bow shaped. Hairs are short and coarse. body dark chocolate brown or jet black, while muzzle and chin pale in colour. Crescent or variable shaped pale coloured patch on chest. The patch may be yellow or orange in colour. upper incisors six in number.

Measurements : (in cm/mm) : Head and body length : 110-140 cm; length of middorsal Hairs : 13-55 mm; height at shoulder : 70 cm (Approx.).

Weight : (in Kg) : 27-65.

Intraspecific variations : Generic classification is very unstable even today. Corbet and Hill (1992) feels it best to keep all the bear species including Malayan sun bear in the genera *Ursus*. However, Alfred *et al.* (2002) have retained malyan sun bear in *Helarctos*. Same classification has been adopted here. Out of two subspecies the nominate subspecies, *Helarctors malayanus malayanus*, (Raffles) occurs in India.

Source : B.K. Tikadar (1983)

Distribution : Assam, Mizoram and Arunachal Pradesh in India.

Endemism : Non-Endemic species.

Altitude : Up to 1000 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Locations : *No. of locations* : Six; *Type* : Fragmented.

Habit, Habitat and Ecology : Malayan sun bear is terrestrial and more arboreal than the other bear species. It is nocturnal, crepsucular and diurnal in habit. It lives in forested hilly regions. Omnivorous in diet however feeds mainly on fruits and buds. It also can consume invertebrates and small vertebrates. Malayan bear is believed to be monogamous and it breeds throuh out the year. However, mates between May and June. One or two young ones are born in the litter.

Habitat structure : Subtropical hilly forested areas of north east India.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Females : 2 + unsexed 3 = Total : 5 in one Indian zoo. males : 40 + females 65 = Total : 105 in zoo abroad (CAMP Report, 1998).

Life span : (Wild) : Not known; (captivity) : 14 Years.

Population trend : Declining.

Museum records : None.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sighting records at Garo hills, Assam, Mehalaya, Cacher, Mizo hills and south Mizoram at different times reported by Gee (1967), Ghosh (1987) and Chattopadhyay (all cited in Anonymous, 1994).

Threats : Habitat fragmentation, human interfernence, loss of habitat, trade, hunting, corridor loss, killed as a pest of coconut plantations; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, domestic and international; *Parts in trade* : Skin, live animals, fur, organs, meat insurg., body parts and gall bladder; *Effect of trade on population (Perceived or inferred)* : Declining.

Helarctos malayanus malayanus (Raffles)

Photo : WII, Dehra Dun

Helarctos malayanus malayanus (Raffles)

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* Endangered; *IUCN (1998)* (Proposed) : Data Deficient (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Data Deficient based on Version 2.3 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, taxonomic studies and life history studies. importance of gall bldder should be studied in details from medicinal value point of view.

Remarks : Considering the nature and levels of threats and on the basis of currently availbale information it is strongly recommended that Malayan Sun Bear should be brought under higher Threat category of ICUN.

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Evaluated by : M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order CARNIVORA

Family URSIDAE

Subfamily URSINAE

30. *Ursus arctos isabellinus* Horsfield
Himaylan Brown Bear

Synonyms : Number of synonyms have been reported by Alfred *et al.* (2002).

Common names : Himaylan Brown Bear, Grizzly Bear, Red Bear, Snow Bear.

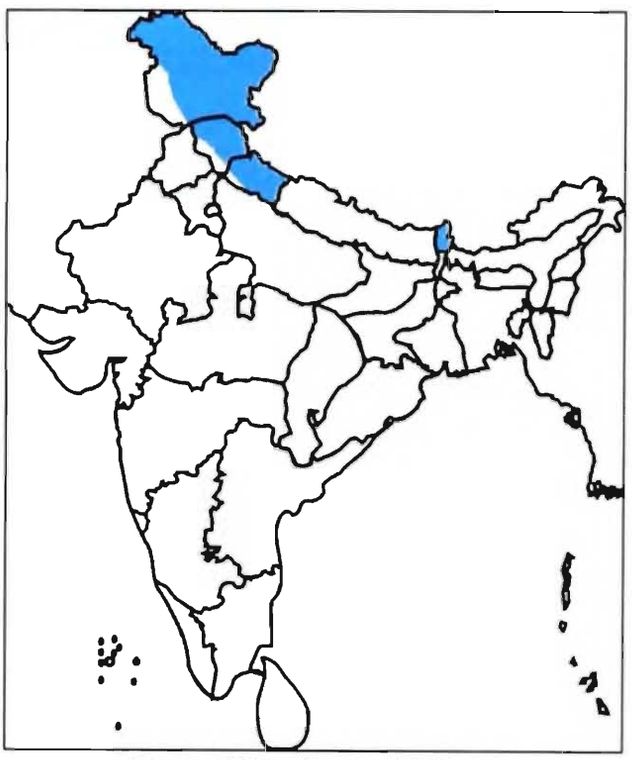
Regional names : Hindi : Burf ka Reech, Lal Bhalu, Safed Bhalu, Siala Reech, Kashmiri : Haput.

Diagnostic characters : Himalayan Brown Bear is one of the subspecies of *Ursus arctos* from Europe. Indian subspecies varies much in size but generaly grow larger, heavier with longer limbs than the Himalayan Black Bear. Sexual dimorphism is observed to some extent in this species. Females are smaller and lighter than males. Colour of Brown Bear is greatly variable from sandy to reddish brown depending on season and pelage. Sometimes hairs are silvery grey with white tips. Fur, in winter, longer and thicker matted with profuse underwool. The lon guard hairs are generaly bleached with silver- blond or isabelline- brown colour; the new hairs after moult show a darker reddish brown colour pattern. Texture of winter pelage is soft. There is a conspicuous hump of long hairs over shoulders. Ears are small rounded and lips noticeably protrusible and mobile. Second pre-molar is generally absent (PM : 3) upper incisors six in number. Forelimb claws long and strong. Sometimes there is often a white or pale coloured half collar (Chevron) present on the chest in some individuals. The names "Red Bear' or "Snow Bear" are misnomer.

Measurements : (in cm) : Head and body length : male : 150-220; female : 137-183; tail length : 7.6; circumference round the neck : 91.0 (approx.).

Weight : (in Kg) : 150-250

Intraspecific variations : Out of seven subspecies only one subspecies, namely *Ursus arctos isabellinus* Horsfield occurs in India. It is distiguished by its paler colour.



Source : B.K. Tikader (1983)

Distribution : Within Indian limits, Himaylayan Brown Bear oocurs sporadically at higher elevations from Kashmir in Western to Sikkim in central Himalayas (Roberts, 1997). It occupies inaccesible biotopes. They are usually confined to the rolling uplands and alpine meadows above the timberline. Brown Bear is one of the most widely distributed mammal subspecies in the northern Hemisphere.

Endemism : Non-Endemic species.

Altitude : Between 3750-6000 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, Habitat and Ecology : Himalayan Brown Bear lives in a variety of habitats at higher altitudes such as caves, large tree hollows, under mass of fallen leaves and burrows dug by themselves. It prefers to live on grass slopes above the tree line close to the snow. It enjoys a wide variety of food such as young sprouts of grasses, berries, wild fruits, crustaceans, insects and rodents. They have been observed to dig up and eat voles. However, mainly, they are harbivorous in diet. When provoked it can attack and kill domestic goat and sheep. In winter season and during scarcity period it may feed even on carrion. It is diurnal in habit. It has acute sense of smell and keen sight, which help in searching the food. The Brown Bear enters into hibernation in winter. They excavate their own hibernating liar or den or may utilize

Photo : R.M. Sharmai

Ursus arctos isabellinus Horsfield

natural caves. They also undertake altitudinal migration in summer which occassionaly can results in terrorising the livestock in the lower valleys. The Brown Bear rarely climbs. Mating occurs in early summer and one or two cubs are born while under hibernation during winter retreating period. Brown Bear appears to have only one complete moult of its fur every year.

Habitat structure : Mostly grass land near snowline above timber zone at higher altitudes. Prefers variety of biotopes to live in. There is a general decline in the habitat structure of Himalayan Brown Bear due to change in habitat structure.

Population : *Global population* : Not known since it lives in inaccessible areas at higher altitudes; *No. of mature individuals in all the populations* : Not known

Captive population : Males : 6 + females : 2 = Total : 8 in 5 Indian zoo. Males : 30 + females : 36 = Total : 66 in 21 in zoo abroad (CAMP Report 1998).

Life span : (Wild) : Not known; (Captivity) : 47 years (Sharma, 1998).

Population trend : Declining.

Sighting records : *Type of sighting* : Direct and Indirect; *Field notes* : Sighting records reported from Himalayan region within Indian limits by Roberts (1997), Bedi and Bedi (1984), Sharma (1998) and Anonymous (1992). Sighting of Himalayan Brown Bear population in wild has become very rare since last couple of decades (Schaller, 1997, in Sharma, 1998).

Threats : Interspecific competition, human interference, loss of habitat, trade, hunting and insurgency/terrorism/war; *Effect of threats on population (Perceived or inferred)* : Declining

Trade : Local, Domestic and International; *Parts in trade*: Skin, live animals, fur, organs, meat insurg., body parts and gall bladder; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, monitoring, taxonomic studies. Importance of gall bladder to be studied in details from medicinal value point of view.

Remarks : Considering the nature and levels of threats and on the basis of currently available information, it is strongly recommened that the Himayalan Brown Bear should be included in the list of the species with higher Threat category of IUCN.

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Evaluated by : M.S. Pradhan

LOWER RISK-LEAST COCERN

Order CARNIVORA

Family URSIDAE

Subfamily URSINAE

31. *Ursus thibetanus* Cuvier
Asiatic Black Bear

Synonyms : *Selenarctos thibetanus, arboreus, clarki, formosus, gedrosianus, japonicus, laniger, leuconyx, macneilli, melli, rexi, toquatus, ussuricus, wulsini.*

Common names : Asiatic Black Bear, Himalayan Black Bear.

Regional names : Hindi : Reech, Bhalu; Kashmiri : Haput; Assamese : Satun, Mansu, Burma, Sitam Mopal.

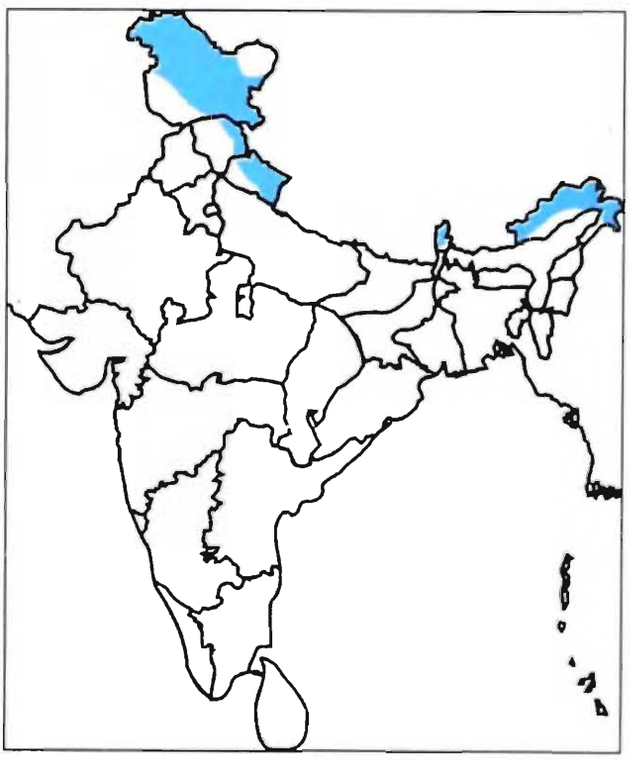
Diagnostic characters : Himalayan Black Bear is a large sized bear with a compact built. It possesses short, smooth and shining black fur. Shining and smooth coloured fur and claws distinguish Himalayan Black Bear from Sloth Bear. Muzzle, however, is tan or brown in colour. A distinct and characteristic "V" shaped cream or white coloured mark on chest. The characteristic mark may extend from sternum to the armpits. Otherwise, the body is shining jet black in colur. There is no or little underwool. A ruff of extra long coarse hairs surround the cheeks. The long hairy hump on the shoulders is absent in this species. There are four pre-molars and six incisors in the upper jaw. Claws on the forelegs are horny, short but sharply recurved. Therefore, it is better adapted for tree climbing than digging in the soil. Tail is just stumpy. Plantigrade digits with naked soles. Males are always larger in size and weight.

Measurements : (in cm/mm) : Head and body length : males : 140-195 cm; females : 130-170 cm; tail length : 75-100 mm; hair length 50-155 mm.

Weight : (in Kg) : 90-180.

Intraspecific variations : Two subspecies namely, *Ursus thibetannus laniger* (Pocock) and *Ursus thibetanus thibetanus* (Cuvier) are known to occur within Indian Limits.

Distribution : Within Indian limits, the Himalayan Black Bear occurs in Jammu and Kashmir, Himachal Pradesh, Uttar Pradesh, West Bengal, Sikkim, Assam and Mizoram.



Source : Corbet and Hill (1992)

Endemism : Non-Endemic species.

Altitude : 1525-3660 mts.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Locations : No. of *locations* : Many; Type : Isolated.

Habit, habitat and ecology : Steep, densely forested hills are the favoured habitats of Himalayan Black Bear. They have been observed upto the limits of treeline at 3660 m in summer, while in lower valleys at 1523 m in winter. In Assam, they are encountered even at lower elevation. It is more nocturnal in habit but can be seen occassionaly during daytime also (Roberts, 1997). It can more freely climb a tree for foraging. It is more frugivorous in habit. Type of food varies with the season. It feeds mostly on plant material like berries, fruits, seeds, barks, rhizomes etc. The bears work hard to get honey from the beehives. In autumn, they raid the maize, sorghum and date fields. Insects, termites, locusts and beetle larvae provide variety to the diet. The diet can be supplemented with lizards also. The bears living near the villages attack and kill sheep, goat or even cattle. When provoked, human beings are also mauled and killed. Bears possess uncertain temperment. Black Bear digs its own burrow generally under an over hanging boulder. It goes into hibernation in winter. However, they may occasionaly emerge to forage even during winter months. Though the sense of the smell of this bear is very strong, the eyesight is very weak. The identity depends more on the scent rather than the sight. They can swim as well. Mating takes palce in October with young ones stay with mother for almost two years. Hence, on a number of occasions one may come across with parties of

Ursus thibetanus Cuvier

four individuals. Such parties are uncertain in behaviour and the mothers can act dangerously while protecting the young ones.

Habitat structure : Dense forests of various types. Cultivated lands and variety of habitats. The habitat sturcture is decreasing. Nature of decline : General.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive Population : Not known.

Life span : (Wild) : Not known; (Captivity) : 33 years (Roberts, 1997).

Population trend : Declining.

Sighting records : *Type of Sighting* : Direct and indirect; *Field notes* : Roberts (1997) and Hilaluddin (1997) reported a number of sightings of Himalayan Black Bear in Kashmir region. Anonymous (1992) records sighting reports in Himachal Pardesh while Ghosh (1985) mentioned about sighting of Black Bear in Neora Valley, Darjeeling District, West Bengal.

Threats : Interspecific competition, human interference, loss of habitat, trade, hunting, insurgency/terrorism/war, corridor loss and trade of live cubs for street shows; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, domestic and international; *Parts in trade* : Skin, live animals, fur, glands, meat insurg., body parts and gall bladder; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II (Listed as *Selenarctos thibetanus*); *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Lower Risk-Least Concern (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Vulnerable based on Version 2.3 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring and taxonomic studies.

Remarks : Considering the nature and levels of threats and on the basis of currently available information, it is strongly recommended that Himalayan Black Bear should be included in the list of species with higher Threat category of IUCN.

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Evaluated by : M.S. Pradhan

VULNERABLE

Order CARNIVORA

Family URSIDAE

Subfamily URSINAE

32. *Melursus ursinus ursinus* (Shaw)
Sloth Bear

Synonyms : *Ursinus ursinus*, (Shaw); *U. labiatus; U. longirostris; Arceus niger.*

Common names : Sloth Bear.

Regional names : Hindi : Bhalu, Marathi: Aswal, Tamil and Kannada : Karadee, Telugu : Elegu, Malyalam : Pani Karadi.

Diagnostic characters : The Sloth Bear is almost as big as Himalayan Black Bear but slimmer in size and shape. It has an elongated muzzle and lower lip, long unkempt black hairs and short hindlegs. The body is covered all over with long, coarse, unkempt black hairs with a V-shaped white mark on the chest. Its head is broad between the ears giving it a triangular shape. The legs are broad, feet flat and pugmarks are human like. The claws on the fore feet are strong and white or ivory coloured. Muzzle and tip of the feet are dirty white or yellowish. The coat may have brownish tinge. Males are generally larger than the females. Ears large and tufted. Upper incisors four in number.

Measurements : (in cm/mm) : Head and body length : 140-170 cm; Height at shoulder : 65-85cm; length of hair (Mid dorsal) : 50-120 mm.

Weight : (in Kg) : Males : 127-145; females : 64 and above.

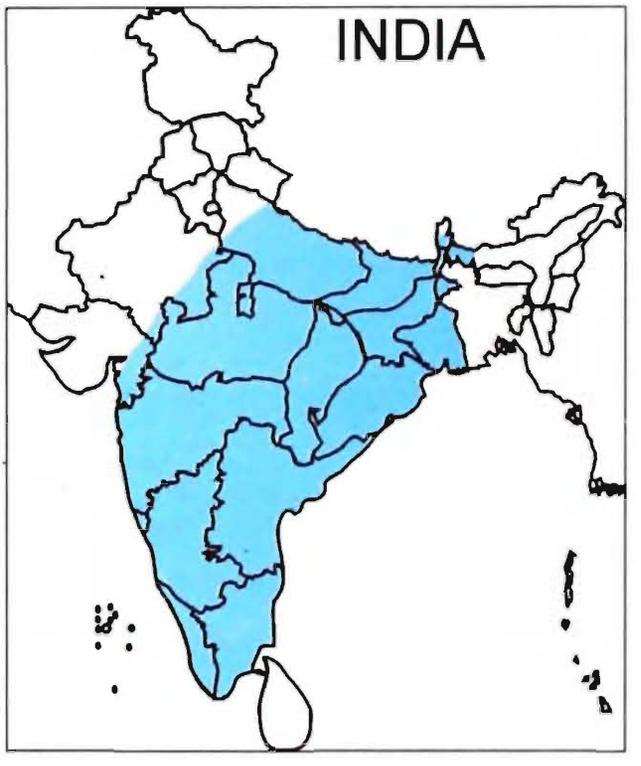
Intraspecific variations : Only nominate subspecies namely *Melursus ursinus ursinus* (Shaw) has been reported from the Indian territory.

Distribution : All over India from the Himalayan foot hills to the extreme southernmost parts and Assam in the east.

Endemism : Non-Endemic species.

Altitude : Upto 2500 m.

Area of occupancy : Greater than 2001 sq. kms.



Source : M.S. Pradhan

Extent of occurence : Greater than 20000 sq. kms.

Locations : No. of *locations* : Many; Type : Fragmented.

Habit, habitat and ecology : Sloth Bear prefers to live in forest where food and shelter available in abundance. They are terrestrial, semi-arboreal and nocturnal in habit and come out shortly before sunset to feed. They hunt for food throughout the night. To get sufficient food to support their bulky bodies they walk long distances and work hard. Their food depends on season and availability. They feed on different types of fruits, berries, seeds, insects etc. Their favourite diet is Mahua flowers (*Madhuka latifolia*), termites and honey. It climbs to hit and knock down combs full of honey. When hungry they even feed on carrions. Sloth bear is unpredictable in temperment and can attack human being when provoked. After the rainy season, the bears can raid and attack the fields of ripening sugarcane and maize. Sloth bear mates in hot weather and youngones are borne in December and January. The cubs live with the mother for 2-3 years.

Habitat structure : Sloth Bear lives in different types of forests and grassland and on hilltops. The habitat structure is changing with general decline.

Population : Global *population* : Regional population : 5000-7000 *(CAMP Report, 1998); No. of mature individuals in all the populations* : Greater than 2500.

Captive population : Males : 68 + females : 55 + unsexed : 16 = Total : 139 in Indian zoo; males : 19 + females : 20 = Total : 39 in zoo abroad (CAMP Report 1998).

Life span : (Wild) : Not known; (Captivity) : 40 years (Prater, 1980).

Population trend : Declining.

Sighting records : *Type of sighting* : Direct and Indirect; *Field Notes* : Sighting records in wild at different places have been reported by Johnsingh (1989), Yoganand (1996), Bhaskar *et al.* (1992,1997) (Last two cited in CAMP Report, 1998) and Pradhan (1997).

Melursus ursinus ursinus (Shaw)

Threats : Interspecific competition, loss of habitat, agriculture and farming, grazing, human interference, trade, hunting, corridor loss, forest fires, bear-human conflict.; Effect of threats on population (Perceived or inferred) : Declining.

Trade : Local, domestic and international; *Parts in trade* : Skin, live animals, fur, organs (specially gall bladder), meat insurge.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule I; Part I; *Indian Red Data Book (IUCN, 1994)* : Not listed; *IUCN (1998)* (Proposed) : Vulnerable (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Vulnerable (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, taxonomic studies at generic level, limiting factor research, habitat management.

Remarks : Considering the nature and degree of threats and trades reported, it is strongly recommended to include Sloth Bear in one of the Endangered categories of IUCN.

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Evaluated by : M.S. Pradhan

VULNERABLE

Order CARNIVORA

Family URSIDAE

Subfamily AILURINAE

33. *Ailurus fulgens fulgens* F. Cuvier
Red Panda or Lesser Panda or Cat Bear

Synonyms : Not Available.

Common names : Red Panda or Lesser Panda or Cat Bear.

Regional names : Bhotia : Oakdonga, Wakdonga, Lepcha : Sankam.

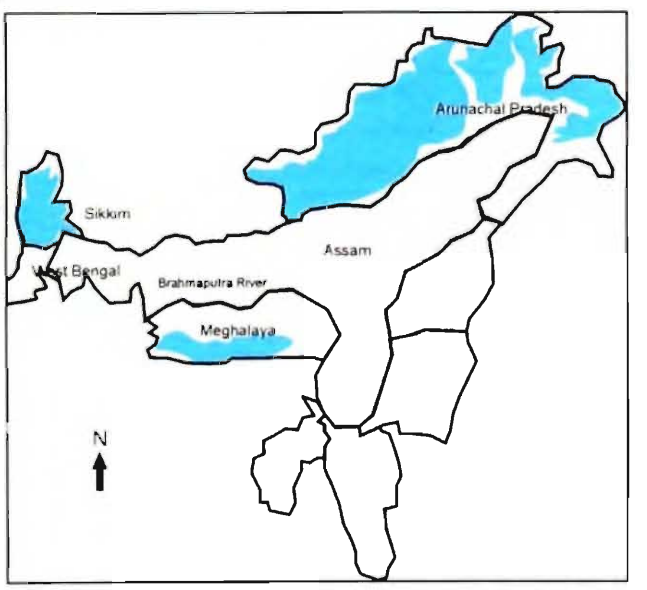
Diagnostic characters : Red Panda or Cat Bear is closely related to the bear family. Its dense wooly coat, rounded head, large pointed ears, stumpy muzzle and hairy-soled legs with retractile claws are the characterstic feature of this animal. Feet plantigrade with the front legs are pigeon toed. The animal is of the size of a jungle cat. Its bright colours make it look attractive. It's dense wooly coat is bright chestunt red in colour, the fluffy tail is ringed with light and dark sheds of rusty red with the tip being black. The ears are red with the edges and inner side white in colour. The face and lower lip are white. A vertical red stripe runs from eye to the gape. The underside and legs black.

Measurements : (in mm) : Head and body length : 510-640; tail : 280-480; height at shoulders : 300 (Approx.).

Weight : (in Kg) : 5-6.

Intraspecific variations : Out of two subspecies, the nominate subspecies *Aliurus fulgens fulgens* F. Cuvier occurs in India.

Distribution : Eastern Himalaya in northeast India and between Nepal and Bhutan. Particularly in Assam, Arunachal Pradesh, Mishimi Hills, Sikkim, Darjeeling Dist, W.B. Isolated Populations in Meghalaya plateau (Garo and Khasi Hills) and in North India.



Source : A. Choudhury

Endemism : Non-Endemic species.

Altitude : Himalaya : 1500-500 m, Meghalaya 700-1400m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Fragmented.

Habit, habitat and ecology : Red Panda is a shy animal and preferring to live in the temperate, subtropical and even tropical forests. It is arboreal and nocturnal in habit. The most favoured habitat is fir-jhapra bamboo thickets. Feeds on a bamboo sprouts, grasses, roots and fruits. Also feeds on Insects. Usually gives birth to one or two young ones during spring season.

Habitat structure : Subtropical and temperate forests. In Meghalaya : Tropical forests, preferably, bamboo thicket in proximity of water is the habitat specificity. However, the habitat structure is decreasing. The nature of decrease is general decline.

Population : *Global Population* : In India : 5000-6000; *No. of mature individuals in all the populations* : less than 2500.

Captive Population : Males: 5 + females : 6 = Total : 11 in Indian zoo. males : 90 + females : 116 + unsexed 16 = Total : 222 in zoo abroad (CAMP Report, 1998).

Life span : (Wild) Not known; (Captivity) : 14 + years (Anonymous, 1994).

Ailurus fulgens fulgens F. Cuvier

Population trend : Declining.

Sighting records : *Type of sighting* : Direct; *Field notes* : Direct sighting at about 20 sites by Choudhury during the status survey studies conducted by him during the period 1990-2000 (Choudhury, 2001). Chakraborty and Sen (1991) (as cited in Anonymous, 1994) have also conducted studies of this subspecies.

Threats : Interspecific competition, human interference, habitat fragmentation, loss of habitat, trade, hunting, corridor loss, agriculture and farming, grazing, genetic problems like inbreeding, forest fire, jhoom cultivation and habitat degradation; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local and domestic; *Parts in trade* : Live animal, fur, meat insurg. and body parts; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection)*

Act (1972) (As amended upto 2002) : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : Vulnerable (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Endangered on the basis of Version 2.3 (IUCN, 2003).

Taxon related studies recommended : Ex-situ survey, genetic studies, in-situ survey, monitoring, taxonomic studies, life history studies, habitat management and evolutionary studies.

Remarks : In the view of Global conservation status recommended in 2000 IUCN Red List (Endangered) (IUCN 2003) and taking into consideration of the levels of threat listed and the additional available information, it is strongly recommened that the species be included in the Endangered category of IUCN at National level also.

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Evaluated by : M.S. Pradhan

NOT EVALUATED

Order CARNIVORA

Family MUSTELIDAE

Subfamily LUTRINAE

34. *Amblonyx cinereus* (Illiger)
Clawless Otter

Synonyms : *Aonyx cinerea* (Illiger); *Lutra cinerea* Illiger; *Lutra concolor* (Refinerque).

Common names : Clawless Otter.

Regional names : English : Oriental Small-clawed otter or Small clawed otter; Hindi : Ud, Ud Bilao, Pani kutta; Bengali : Chhota Ud or Bhondar

Diagnostic characters: Oriental small clawed or clawless otter is a small sized otter. As name suggests the claws of these otters are rudimentary and do not project well beyond the digits. Because of the semiaquatic habitat, the otters possess webbed feet, thick flat muscular tail, a close set coat of waterproof fur, larger hindfeet than the forefeet and arry of rigid whiskers. All these characters show association with aquatic habits. Its sleek coat is lined with waterproof underfur, which protects it from severe cold. The body is streamlined and cylindrical while the broad head is sightly roundish above. The rhinarium is naked and without hairs. The feet of small-clawed otter however, are partly webbed. Upper premolars are three in number. Tail is almost half the head and body length. Dorsum dark brown, while venter slightly paler in colour. Throat buff coloured. Edge of the upper lip, chin, sides of neck and throat are grey or nearly white.

Measurements : (In cm/mm) : Head and body length: 36-61; tail length : 25-35; hindfoot: 85-95; greatest skull length: 85-95 length of pelage hair (white zone of wool) : 5-6.

Weight : (in Kg) : 3-6

Intraspecific variations : Small clawed Otter is represented by two subspecies in India. Namely *Amblonyx cinereus concolor* Rafinesque and *Amblonyx cinereus nirnai* Pocock.

Source : M.S. Pradhan

Distribution : The range of distribution is wide spread but discontinous. It extends from Himalayan foothills near Kullu eastward to Arunachal hill ranges, plains of Assam and Lower Bengal in Indian limits. In southern India, it has been reported from higher ranges of Mysore, Nilgiris and Palni Hills.

Endemism : Non-Endemic species.

Altitude : Up to 3600 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Isolated

Habit, habitat and ecology : *Amblonyx cinereus* is carnivorous. It hunts and feeds mainly on snails, crustaceans, frogs and aquatic birds in addition to fish, and not only on fish. Primary preference is given more to snails, freshwater molluscs and crabs. Invertebrates constitute 87% of its diet. They dwell in swampy mangroves, freshwater wetlands and close to streams. They spend more time on land than in water. They dig their own dens near riverside. Though they are excellent swimmers, they keep themselves to shallows and riverbanks only. They are very intelligent, social and playful creatures and live in groups of upto 18 individuals. They are diurnal in behaviour. They communicate very well with each other and will forage together and deposit their faeces at the communal toilet sites on dry ground near water. Depending upon the availability of food, they undertake local migrations. Small-clawed otter tracks are very distinctive and lack claw impressions. *A. cinereus* breed as monogamous pairs which mate for life. As many as two litters of 2-6 pups are born every year. Sexual maturity is attained at 2-3 years of age. Small-clawed otter has a high climatic and trophic adaptability. They occur from coastal wetlands to mountain streams (Hussain, 1999).

Amblonyx cinereus (Illiger)

Habitat structure : Marshes, hill streams, flooded paddy fields. There is a general decline in the habitat structure of Clawless Otter.

Population : *Global population* : Unknown; *No. of mature individuals in all the populations* : Less than 2500.

Captive population : None in India. Males : 109 + females : 110 + unsexed 42 = Total : 261 in 56 zoo abroad (CAMP Report, 1998).

Life span : (Wild) : Not known; (captivity) : 11 years.

Population trend : Unknown.

Sighting records : *Type of Sighting* : Direct/Indirect; *Field Notes* : Recent sighting records reported within Indian Limits by Ghosh (1987), Shrestha (1997), Nagulu (1999), Hussain (1997) and Choudhury (1999).

Threats : Human interference, loss of habitat, trade, pollution, hunting, decline in prey species, excessive commercial developmental activites, fishing activites; entanglement in fishing nets; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, domestic and international; *Parts in trade* : Skin, organs, meat insurg., hunting for use of body parts in traditional medicinal treatments; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994) : Not listed; IUCN (1998) (Proposed)* : Not Listed; *IUCN (2002)* (Proposed) : Lower Risk-Near Threatened based on Version 2.3 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, taxonomic studies, life history studies, limiting factors research, habitat management, status survey studies, population studies, human-otter conflict etc.

Remarks : Considering the high levels of threats and trade, discontinous geographical distribution and currently available information, it is strongly recommended that the small-clawed otter be included in one of the higher conservation status categories of IUCN. Mass public awareness campaigns are also recommended to protect this species from its illegal trade.

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Evaluated by : V. Nagulu, C. Srinivasulu and M.S. Pradhan

NOT EVALUATED

Order CARNIVORA

Family MUSTELIDAE

Subfamily LUTRINAE

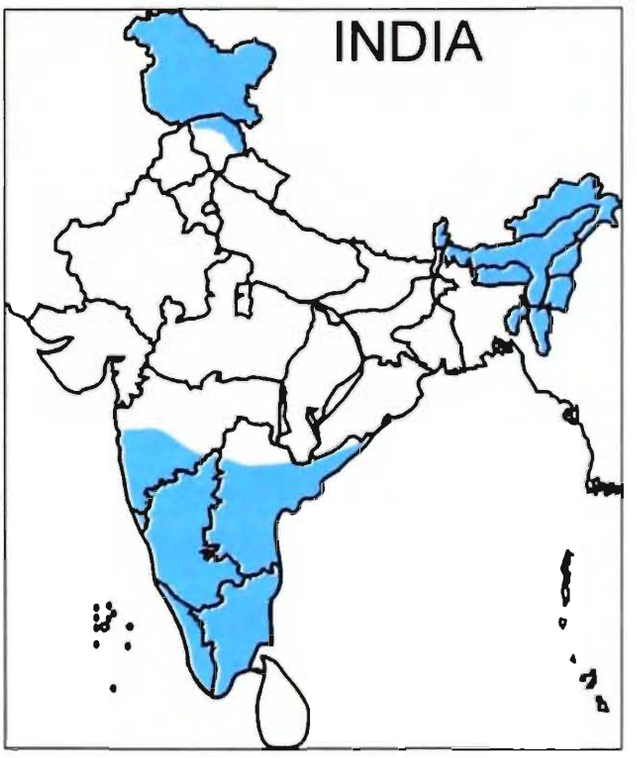
35. *Lutra lutra* (Linnaeus)
Common Otter

Synonyms : *Mustela lutra* Linnaeus; *Amurensis, angustifrons, aureventer, aurobrunneus, balcalensis, barang, ceylonica, chinensis, flaviatilis, hanensis, indica, intermedia, japonica, kamtschatica, kutab, marinus, meridionalis, monticolus, nair, nepalensis, nippon,nudipes, oxiana, piscatorial, roensis, seitanica, sinensis, splendida, stejnegeri, bulgaris, whiteleyi.*

Common names : Common Otter.

Regional names : Hindi : Ud, Udni, Ud Bilao, Pani kutta; Bengali : Ud Bhondar; Marathi : Pan Manjar, Pan Kutra; Malyalam and Kannada : Nirnai.

Diagnostic characters : The common otter shows almost all the characters similar to those of smooth coated otter except that common otter has a very dense fur of dark olive brown colour, the tail is very thick muscular and flattened dorsoventrally into a paddle shape at its distal end. The ventral surface of the tail is round so that the cross section of the tail is elliptical. The rhinarium is bare and mostly black in colour. The shape of its outer rim shows a "W" All feet are plantigrade and with strong claws and webs between the toes. The webs extend to the last bone of each digit. The external pinnae are very small. The head is flattened and broad. There are number of white vibrissae around muzzle. Both sexes possess glandular pouch around anus emiting secretions, which are not very repulsive. Dorsum varies in colour from rusty to dusky brown, while ventrum lighter in colour, grey or white. The lips and throat show yellow, white and grey spots. The guard hairs are highly glossy which helps in quick drying and also aid in minimizing friction while swimming.



Source : M.S. Pradhan

Measurements : (in cm/mm) : Head and body length : 60-76 cm, tail length 35-46 cm, hind foot 10-11 cm. ear length 15 mm.

Weight : (in Kg) : 5-7.5.

Intraspecific variations : Three subspecies are known to occur within Indian limits, they are i) *Lutera lutra aurobrunnae* Hodgson; ii) *Lutra lutra monticola* Hodgson and iii) *Lutra lutra nair* Cuvier.

Distribution : Like small clawed Otter, the Common Otter has also a discontinuous but a wide distribution ranging from Jammu and Kashmir, Himachal Pradesh and Uttar Pradesh to Assam, Arunachal Pradesh in north and northeastern India. In Penninsular India, it has been reported from Orrissa, Maharashtra, Goa, Karnataka, Kerala, Tamilnadu and Pondicherry.

Endemism : Non-Endemic species.

Altitude : Up to 3500 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of Locations* : Many; *Type* : Isolated.

Habit, habitat and ecology : Common otter has been very well studied in various places. They appear to be intelligent with keen sense for play activities associated with hunting. They also appear to be monogamous in behaviour with family group remaining intact for several months. They live in a wide variety of aquatic habitats

Photo : Sung-Yong Han, WII, Dehra Dun

Lutra lutra (Linnaeus)

including high and low altitudinal lakes, rivers, streams, manmade water bodies, marsh and coastal ares. Variety of fish forms the major constituent of common otter diet. Sometimes it may exceeds its 80% of Total diet. Supplementary diet includes wide spectrum of prey species ranging from insects to small birds and mammals. Their movements on the ground are clumsy. However, they are excellent divers and swimmers. They take shelter on land in the burrows. Their nursey or halt is always near the banks. Sometimes burrow opening below water level. They may also excavate roots of the tree near banks. They undertake long distance migration during unfavourable seasons. Otters mark their territory by rubbing anal glands on stones or clumps of grasses. Mating takes place in water. Chitamapalli (1979) reported birth of youngone in January-February. Youngones stay with parents till they are nearly fully-grown. Common otter can be tamed easily.

Habitat structure : Wide variety of fresh-water aquatic habitats. The habitat structure is changing with general decline.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Less than 2500.

Captive population : Males : 17 + females : 10 + unsexed : 4 = Total : 31 in 13 zoo in India. Males : 29 + females : 32 and unsexed : 2 = Total : 63 in 20 zoo abroad (CAMP Report, 1998).

Life span : (Wild) : Not known; (captivity) : 19 years (Robert, 1997).

Population trend : Declining.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Nagulu *et al.* (1999), Hussain (1999) Roberts (1997) and Chitamapalli (1979) have reported number of sighting records within Indian limits.

Threats : Interspecific competition, human interference, loss of habitat, trade, hunting, decline in prey species, corridor loss, poaching, accidental deaths due to gill net fishing; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, domestic, international; *Parts in trade* : Skin, taxidermy models, fur, body parts; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Not Evaluated (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Vulnerable based on 2.3 Version (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, taxonomic studies, habitat management, population studies, status survey studies and human-otter conflict studies.

Remarks : Considering the high degree of threats and trades involved and currently available information, it is strongly recommanded that the Common Otter be listed in one of the higher Threat categories of IUCN. Moreover, public aware campaingns are strongly recommended for the protection of this species.

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Evaluated by : M.S. Pradhan

NOT EVALUATED
Order CARNIVORA
Family MUSTELIDAE
Subfamily LUTRINAE

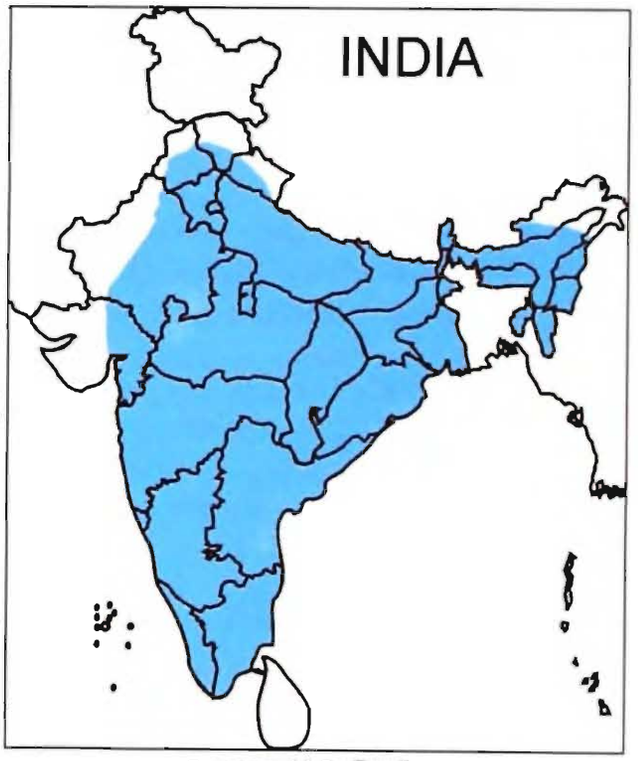
36. *Lutrogale perspicillata* (I. Geoffroy Saint Hillaire) Smooth Indian Otter

Synonyms : *Lutra perspicillata* I. Geoffroy Saint Hillaire, *ellioti, tarayensis* and *macrodus*.

Common names : Smooth Indian Otter.

Regional names : English : Smooth-coated Indian Otter, Hindi : Vol Bilao, Telugu : Neerkukka; Bengali : Bhondar; Marathi : Pan Manjar; Tamil, Kannada and Malyalam : Neer Nai.

Diagnostic characters : Smooth Indian otter is similar in shape and proportion to the Common or Eurasian otter (Lutra lutra). However, it is slightly smaller than the common otter. Smooth coated otter posseses flatened tail with lateral kees. Further, the outer border of the bare rhinarium of *Lutragale perspicillata* is convex. It has heavy body, short limbs and powerful muscular tail. Tail length is more than half the head and body length. The pelage is smooth and sleek with hair texture velvety. Muzzle not spotted. Fore and hind paws large and well webbed with strongly clawed digits. However, third phalanges free of webs. The general colouration lighter than that of small clawed Otter. Dorsum varies from deep, nearly blackish brown, to lighter brown or even to much paler tawny or sandy brown. Underside lighter than the dorsal side. Paws are paler in colour. Upper lip, cheek sides of the neck, chin and the throat white, whitish or creamy.



Source : M.S. Pradhan

Measurements : (in cm/mm) : Total length : 106-130 cm; head and body length: 59.00-79.00 cm; tail length 37-50 cm; hind foot : 10.0 to 14.2 cm.; length of guard hairs : 12-14 mm; length of under fur : 6-8mm.

Weight : (in Kg) : 6.5 - 11.4.

Intraspecific variations : Two subspecies are known to occur within Indian limits, namely : *Lutrogale perspicillata perspicillata* (I. Geoffroy

Saint Hillaire) and *Lutrogale perspicillata sindica* (Pocock).

Distribution : Throughout India within Indian limits.

Endemism : Non-Endemic species.

Altitude : Up to 540 mts.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Fragmented.

Habit, habitat and ecology : The smooth coated otter is a species of plains occuring along the large rivers, lakes, man-made waterbodies, coasts, swamps and mangrove forests. It can enter the tidal waters also. It even uses rice fields as foraging grounds. It shows more inclination for rocky stretches, since they provide sites for dens and resting. This species feeds chiefly on fish, though it may supplement its diet with shrimps crayfish, crabs, and insects, frogs, mudskippers, birds and rodents. Fish forms 75-100% components of its diet. The otter species is sociable and gregarious. They hunt in parties. They can travel for long distances whenever they feel it neccesary. They are expert swimmers. They are very vocal and when excited emit high-pitched rapidly repeated screams. They live in groups. The group size may consist of 5-8 members of a family. Breeding in captivity takes place during the period from Aug to Nov. Sexual maturity is attained at the age of 22 months. The litter size varies from 1-5.

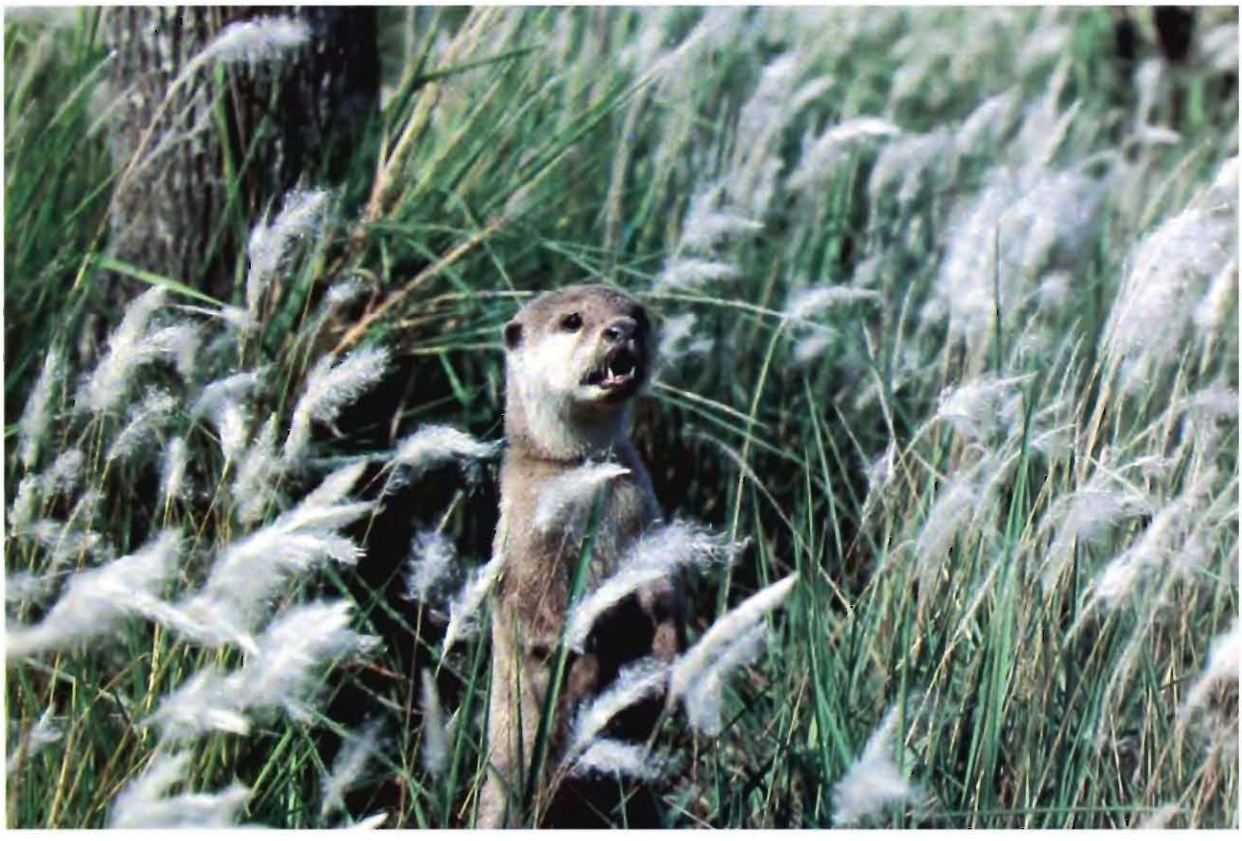


Photo : Forest Department, West Bengal

Lutrogale perspicillata (I. Geoffroy Saint Hillaire)

Habitat structure : Basically a species of plains and it is generally found in large rivers, lakes, man-made waterbodies, coasts, swamps and mangrove forests. The habitat structure is changing with decline (20% in last 10 years).

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : less than 2500.

Captive population : Males : 4 + females : 2 = Total : 6 in Indian zoo. Males : 2 + females : 3 = Total : 5 in 2 zoo abroad (CAMP Report 1998).

Life span : (Wild) : Not known; (captivity) : 20 years + five months (Hussain, 1999).

Population trend : Declining.

Sighting records : *Type of sighting* : Direct; *Field Notes* : Recent sighting records reported by Nagulu (1999), Hussain (1997, 1999) Agrawal *et al.* (1992) and Roberts (1997) and Choudhury (1999).

Threats : Interspecific competition, habitat fragmentation, human interference, loss of habitat, trade, pesticides, pollution, competition from exotic species, hunting, decline in prey species, conversion of mangrove areas for prawn culture, trapping in gillnets etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, domestic, international; *Parts in trade* : Skin, fur, meat insurg, hunting; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II (Listed as *Lutra perspicillata*); *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Not Evaluated; *IUCN (2002)* (Proposed) : Vulnerable based on Version 2.3 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, life history study, limiting factor research, habitat management, status survey studies, population studies, human-otter conflict studies.

Remarks : Considering the higher degree of threats and trades invoved and currently available information it is strongly recommended that the Smooth Coated Otter be listed in one of the higher Threat categories of IUCN.

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Evaluated by : V. Nagulu, C. Srinivasulu and M.S. Pradhan

DATA DEFICIENT
Order CARNIVORA
Family MUSTELIDAE
Subfamily MELINAE

37. *Arctonyx collaris* Cuvier
Hog Badger

Synonyms : *A. colloris taraiyensis*, Gray.

Common name : Hog Badger.

Regional name : Hindi : Bala Sur.

Diagnostic characters : The body of Hog Badger possesses strong stumpy legs resembling those of a bear. The legs bear long and powerful digging claws. Hog Badger has a long truncated snout with terminal disk containing the nostrils much like those of a pig. Ears short and rounded. The dorsal colour is a mixture of black, white and buff giving the coat greyish tone. It is similar to Honey Badger (Ratel) in certain characters. The fur is coarse. The underparts and limbs are dusky. Head whitish with a dark brown band extending from the upper lip to around eyes and ears. Another dusky stripe is across the cheeks. Throat and sides of neck are whitish. The pale throat and dark sripe on the cheek help in distinguishing Hog Badger from true Badger, while blackish dorsal side separates it from ratel. The rhinarium is pinkish in colour. The tail is normally whitish above and below but its base is blackish to some extent. Forelegs above elbows and hind legs are black or deep brown.

Measurements : (in mm) : Head and body length : 550-700; tail length : 120-170.

Weight : (in Kg) : 7-14.

Intraspecific variations : Out of six subspecies two are known to occur within Indian limits. They are *Arctonyx collaris collaris* Cuvier and *Arctonyx collaris consul* Pocock.

Distribution : West Bengal (Darjeeling), Sikkim, Assam, Nagaland, Manipur and Tripura within Indian limits.

Endemism : Non-Endemic species.

Altitude : Upto 1300 m.

Source : B.K. Tikader (1983)

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Locations : *No. of locations* : Many (Choudhury, 1999); *Type* : Isolated.

Habit, habitat and ecology : In India, the Hog Badgers inhabit tropical forests and they frequent stony grounds, small hills, rocky barren terrains with crevices and fissures. They are crepescular and nocturnal in behaviour. It is a very bold animal and uses teeth and claws during encounters. Apparently, they appear to be omnivorous in feeding habit. Not much information is available about their feeding and reproductive behaviour. A female from China gave birth to four youngones in April. Hog Badger has poor eyesight and it relies more on scent.

Habitat structure : Hog Badgers inhabit stony grounds, small hills, rocky barren terrains with crevices and fissures and frequent tropical forests. No information is available about any change in its habitat structure.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Unknown.

Sighting records : *Type of Sighting* : Direct and indirect; *Field notes* : Sighting records within Indian limits recorded by Choudhury (1999) and Hussain (1999).

Threats : Human interference, loss of habitat, hunting and corridor loss; *Effect of threats on population (Perceived or inferred)* : Can't say.

Arctonyx collaris Cuvier

Trade : Local and domestic; *Parts in trade* : Fur; *Effect of trade on population (Perceived or inferred)* : Can't say.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Insufficiently known; IUCN (1998) (Proposed) : Data Deficient (National and Global, both).

Taxon related studies recommended : *In-situ* survey, monitoring and life history studies.

Remarks : In light of the currently available additional information, Hog Badger can be listed fewer than one of the higher Threat categories of IUCN.

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Evaluated by : J.B.R. Alfred and M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order CARNIVORA

Family MUSTELIDAE

Subfamily MELLIVORINAE

38. *Mellivora capensis* (Schreber)

Ratel

Synonyms : *Viverra capensis, Schreber; abyssinca, Brockmani, buchnani, concisa, cottoni, inauritus, indicus, leuconota, maxwelli, mellivora, pumilio, ratel, retelus, sagulata, signata, typicus, vernayi, wilsoni.*

Common names : Ratel, Honey Badger.

Regional names : Hindi : Beju, Bajra, Tamil and Kannada : Tarakaradi, Telgu : Bigu Khawar; Marathi : Chandi Aswal, Sindhi : Gorpat, Bhojpuri : Bajru Bal.

Diagnostic characters : The Ratel is a thickset odd-looking mammal with the most striking appearance. body squat and bear like, but legs short, stumpy and strong. Tail and ears small. Head broad but muzzle not protruded like bear. Forefeet large, bowed like bear armed with strong and partially retractile claws, feet broad. Head and body length much longer than other mustelid species. Premolars 3/3. Pelage thick with coarse hairs and no under fur. Dorsal surface of head, body and part of tail pale yellow or whitish contrasting strongly with shining deep black legs, ventral surface and underparts of tail. It is a quite unique feature amongst the mammalian species. Hindfeet claws are much short. Soles with nacked pads. There is a sac like anal gland around the anus from which an offensive secretion is emitted. Males are slightly heavier than females. Skin of Ratel is thick and loose with large stink glands. These characteristics are useful in self-defence.

Measurements : (in cm/mm) : Head and body length : 60-77 cm, tail length : 15-24 cm, height at shoulders : 25-30 cm, forefeet claws : 350-400 mm (above curve).

Weight : (in Kg) : 8-10.

Intraspecific variations : Out of 15 subspecies, two namely *Mellivora capensis inaurita* and *Mellivora capensis indica* occur in India.

Source : S.A. Hussain (1999)

Distribution : From base of Himalayas to Kanyakumari with exception of **Malabar** coast. Eastern limit in India extends upto West Bengal only.

Endemism : Non-Endemic species.

Altitude : 0-900 mts.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Contiguous.

Habit, habitat and ecology : Ratel resembles bears in its habit of digging holes. However, Ratel may feel contented with natural holes and/or burrows to sleep under cover. Its powerful legs and claws reveal that its preferred method of hunting is by digging. Ratel is not exclusively noctornal in habit. Food consists of mammals, birds, reptiles and insects. It may also take fruit and honey. It may attack livestock as well. Ratels can feed on carrions. They are belived to exhume and feed on corpses, hence the name "Grave digger" Ratels have been obserevd in pairs. They are fearless of humans and emits secretion from anal glands in self-defence. They are in playful mood when out for foraging. They are also in habit of sudden somersaulting. They breed throughout summer with gestation period of 180 days. Litter size varies from 2-4. Only females feed helpless young ones. Basically, the animal is harmless and helpful for man as it acts as "honey guide" Further, it is beneficail since it preys upon snakes, rodents and insects.

Habitat structure : Ratel lives in desert and dry or moist deciduous forests avoiding regions of heavy rainfall. It prefers hilly broken country and when on plains it lives along riverbanks. The habitat structure is derceasing with general decline.

Mellivora capensis (Schreber)

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Males : 15 + females : 5 + unsexed : 3 = Total : 23 in 12 Indian zoo. Males : 6 + females : 4 + unsexed : 2 = Total : 12 in 6 zoo abroad. (CAMP Report, 1998).

Life span : (Wild) : Not known; (Captivity) : 26 Years (Roberts, 1997).

Population trend : Declining, General Decline.

Museum records : *Locality* : Melghat Tiger Reserve in Maharashtra State; *Year* : Not known; *Collector* : Forest Dept. Authorities; *Number of examples studied or collected* : One; *Name of Museum* : Semadoh Museum in Melghat Tiger Reserve.

Sighting records : *Type of sighting* : Direct/Indirect; *Field notes* : Recent field studies are in progress in Perambiculam Wildlife Sanctuary by S.M. Vairavel (Camp report, 1998). Distribution wide, however, the animal is very secretive in nature and difficult to locate. Sighting records reported by Roberts (1997), Hussain (1999) and Pradhan (communicated).

Threats : Interspecific competition, habitat fragmentation, human interference, loss of habitat and killing due to superstition.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local; *Parts in trade* : Live animals; *Effect of trade on population (Perceived or inferred)* : Can't say.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Insufficiently known; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, monitoring, population and status survey studies.

Remarks : Attempts should be made to get rid of superstitions about harmless ratel and stop people from killing. Captive breeding programme of ratel should also be encouraged. Its current status should be analysed by conducting distribution and population studies.

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Evaluated by : M.S. Pradhan

ENDANGERED

Order CARNIVORA

Family MUSTELLIDAE

Subfamily MELINAE

39. *Melogale moschata* (Gray)
Chinese Ferret Badger

Synonyms : *Helictis moschata*, Gray, *ferro-greseus, sorella, taxilla, subaurantiaca.*

Common names : Chinese Ferret Badger, Small-toothed Ferret Badger.

Regional names : Not known.

Diagnostic characters : The badgers are distinguished from other species of the Weasel (Mustelid) family by presence of their broad feet armed with great claws. They are neither retractile nor sharp to hold and kill the prey. Claws are used for digging purpose only. Badgers possess characteristic long projecting snout. Badgers use it to collect root and probe soil. A Ferret Badger is a mixture of weasel and badger. Its projecting snout is badger like, while its long non-retractile claws are like those of weasel. Further, they possess, like weasel, fine whiskers, large ears, long limbs and tail. Ferret Badger has an aptitude for climbing. Chinese ferret is more agile climber, ears rounded with white margins. Molar teeth are smaller and narrow crowned in Chinese Ferret Badger. In general, the coat colour varies from deep purplish grey to brown of different shades. The white tips of long hairs give the coat a distinct silvery touch. The face markings, cheeks, nuchal stripes and underparts, yellowish or buffy white. A narrow interrupting white stripe is present from the crown of the head to the shoulders only.

Source : S.A. Hussain (1999)

Measurements : (in mm) : Head and body length: 330-430; tail length (with hair): 152-230.

Weight : 1.75 Kg (Approx.).

Intraspecific variations : One subspecies *Melogale moschata millsi* Thomas is known to occur within Indian limits.

Distribution : North eastern India from

West Bengal eastwards to Assam, Manipur, Nagaland and Arunachal Pradesh within Indian limits.

Endemism : Non-Endemic species.

Altitude : upto 1600 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 2001-5000 sq. kms.

Locations : *No. of locations* : Five in India from five Indian states; *Type* : Isolated.

Habit, habitat and ecology : Chinese Ferret Badger is nocturnal in habit and usually comes out at dusk for feeding. They live in holes made by them or in the burrows of other animals. They may live in rock crevices as well. They are good climbers and often sleep on the tree branches. They are omnivorous and known to feed on small animals, insects, earthworms and fruits. It is believed that Lepcha and Bhotia tribes allow these animals to enter their huts as they feed on cockroaches and other insects. Not much is known about its breeding habits except that 1-3 young ones are born in May- June.

Habitat structure : Tropical and sub-tropical forests and grassland. The Habitat structure is on general decline.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : One male and one female in one Indian zoo. One in zoo abroad. (CAMP Report, 1998).

Life span : (Wild) : Not known; (Captivity) : Not known.

Photo : BNHS,Mumbai, WII, Dehra Dun

Melogale moschata (Gray)

Population trend : Declining.

Sighting records : *Type of sighting* : Direct and Indirect; *Field notes* : Sighting records reported by Hussain (1999) and Choudhury (1999).

Threats : Human Interference, loss of habitat, trade, hunting etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local; *Parts in trade* : Meat Insurg; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : III; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Endangered (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, monitoring and life history studies.

Remarks : *In-situ* survey, monitoring and life history studies are strongly recommended to understand the status of Ferret Badgers in India.

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Evaluated by : M.S. Pradhan

VULNERABLE
Order CARNIVORA
Family MUSTELIDAE
Subfamily MELINAE

40. *Melogale personata* I. Geoffroy Saint Hilaire
Large-toothed Ferret Badger

Synonyms : *Gulo nipelensis* Hodgeson.

Common names : Large-toothed Ferret Badger, Burmese Ferret Badger.

Regional names : Not Available.

Diagnostic characters : A Ferret Badger is a mixture of weasel and badger. Its long projecting snout can be used by this species for probing. Its feet possess badger like non-rectractile claws which are basically used for digging. However, it possesses fine array of whiskers, large ears, large limbs and tail like weasels. The pads under feet are striated. Large toothed Ferret Badger is similar in size to Chinese Ferret Badger. The difference between two species lies in dentition pattern. The molar teeth are massive and wide crowned in *personata*, while they are small and narrow in *moschata*. PM_4 is massive, while PM_1 is disproportionately smaller than PM_2. Externally Tail Length is 50-60% as of Head and body Length. Rostrum width at PM_4–PM_4 between 24-28 mm. General body colour varies from deep purplish grey to shades of brown. A narrow dorsal white streak extends up to the back or base of the tail which is mostly pale with or without white tail tip.

Measurements : (in cm/mm): Head and body length: 33-45cm; tail length 17-27cm; hindfoot length: 57 mm; ear: 27 mm.

Weight : (in Kg) : 1.75.

Intraspecific variations : Out of four subspecies, two appears to occur within Indian limits. They are : *Melogale personata personata* I. Geoffroy Saint-Hilaire and *Melogale personata nipelensis* (Hodgson).

Distribution : West Bengal, Sikkim, Assam, Meghalaya, Arunachal Pradesh and Manipur in Eastern and northeastern Indian limits.

Source : M.S. Pradhan

Endemism : Non-Endemic species.

Altitude : Not known.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : 6-7; *Type* : Fragmented.

Habit, habitat and ecology : Ferret Badgers are nocturnal in habit and come out at dusk to hunt their food. They lie in burrows during daytime. They may spend daytime in tree holes and rock crevices. They are expert climbers. They are omnivorous in feeding habits, living much on fruits, small birds and mammals. They may take insects and cockroaches. The anal glands normal. In normal life they are fearless and tenacious. Little is known about their breeding habits.

Habitat structure : Tropical and subtropical forests near water bodies. The habitat structure is decreasing with general decline.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : None.

Life span : (Wild) : Not known; (captivity) : Not known.

Population trend : Population size declining with general decline.

Museum records : *Number of examples studied or collected* : One stuffed specimen from Khasi Hills, Meghalaya; *Name of museum* : Zoological Survey of India.

Sighting records : *Type of sighting* : Direct and Indirect; *Field notes* : Sighting records reported by Agrawal *et al.* (1992), Hussain (1999), Choudhury (1999) and Chakraborthy and Bhattacharya (1999).

Photo : BNHS,Mumbai, WII, Dehra Dun

Melogale personata I. Geoffroy Saint Hilaire

Threats : Loss of habitat and hunting; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : No; *Parts in trade* : Not known; *Effect of trade on population (Perceived or inferred)* : Not declining.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Vulnerable (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, monitoring, life-history studies, population studies.

Remarks : Population and conservation status studies of the species strongly recommended.

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Evaluated by : M.S. Pradhan

DATA DEFICIENT
Order CARNIVORA
Family MUSTELIDAE
Subfamily MUSTIELINAE

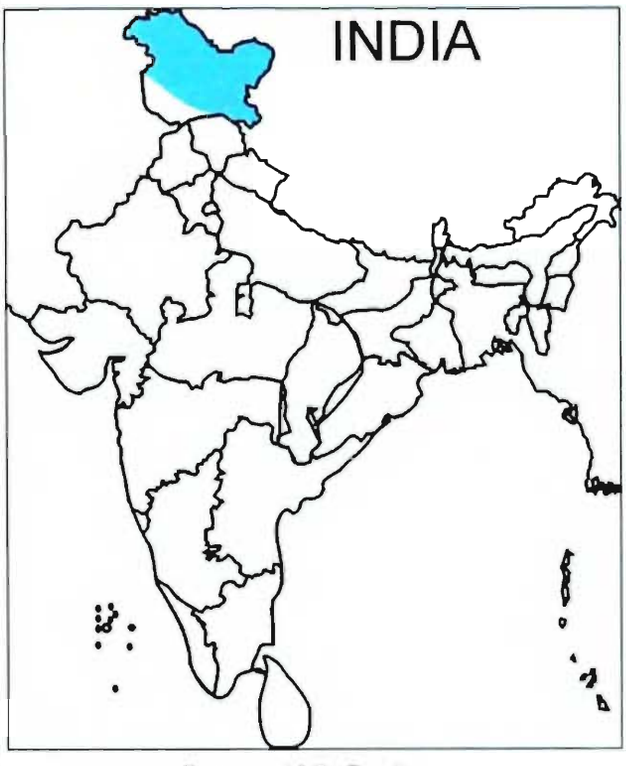
41. *Mustela erminea ferghanae* Thomas
Ermine

Synonyms : *alascensis, algiricus, anguinae, angustidens, articus, audax, bangsi, celenda, cigognanii, fallenda, ferghanae, haidarum, herminea, hibernicus, imperii, initis, invicta, kadiacensis, kanei, labiata, leptus, lymani, microtis, mortigena, murices, Nippon, olympica, polaris, pusilla, richardsonii, roxosa, salva, seclusa, semplei, stratori, vyulgaris, whiteheadi.*

Common names : Ermine, Stoat, Himalayan stoat.

Regional names : Not known.

Diagnostic characters : Ermine or stoat belongs to carnivore weasel family. The body is cylindrical, elongated sinuous like. The ears are round but do not protrude above crown in lateral position. Hindfoot less than 65 mm. Mustela can be distinguished from Martes by its smaller size with shorter legs and longer body and neck. The muzzle is blunt and obtuse with naked black rhinarium and dark eyes. Ears covered with hairs from both the sides. All the feet possess plantigrade digits with sharp claws. The planter pads are covered with fur. The general body colour during summer is glossy chestnut brown with dark reddish hue. There may be flecks of white on different regions of the head. The narrow long and not so bushy tail ends in part with distinct black colour. The winter coat is charcterstically snowy white with the sole exception of black tail tip. The paws of all the feet are conspiciously white in colour in constrast to the dark coloured short legs.



Source : M.S. Pradhan

Measurements : (in cm) : Head and body length : 18.4-22.9; tail length : 7.0-8.9.

Weight : (in gm) : 130.

Intraspecific variations : Only one subspecies, *Mustela erimea ferghanae*, occurs in India.

Distribution : Ladakh in Jammu and Kashmir within Indian limits.

Endemism : Non-Endemic species.

Altitude : 1500-4880 m

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 2001-5000 sq. kms.

Locations : *No. of locations* : One, Ladakh in Jammu and Kashmir, India; *Type* : Contiguous.

Habit, habitat and ecology : Ermine or Himalayan Stoat is a species of high altitude living always above 1500 m. It lives amongst rocks, heap of stones or in hallows of the tree near river banks. It is exclusively carnivorous, lives on ground, and leads solitary life in nature and hunts during day and night. Its most favourite prey species is voles. It migrates in large parties to long distances. It also feeds on rodents, hares and game birds. It eats bird's eggs and insects as well. The Ermine is associated with alpine and sub-alpine scrub zone in Himalayas. During winter, it may descend down to the valleys. It may hunt more individuals to store them underground in its tunnels for future consumption. The Ermine mate in summer, but the implantation of fertilized ovae in the uterine wall is delayed until four

Photo : E. Dragesco, WWF/WII, Dehra Dun

Mustela erminea ferghanae Thomas

weeks before the young ones are born in spring. Depending upon the favourable conditions, the gestation period varies between 220-380 days. The Eramines produces one litter per year, the litter size being 5-13 individuals. Adult size is attained in three to four months after birth. Suckling pregnancy occurs in eramine a characteristic feature rare in mustelids. The mother constructs a nest-chamber by enlarging a deep underground burrow and lines the chambers with dry grass and the fur of voles. There may be 2-3 entrances to this chamber. Hill Fox, Stone Marten and larger birds of prey predate upon stoats. When threatened they emit a high ptiched chattering sound..

Habitat structure : It lives in a deserted rodent burrow or among boulders in rocky areas or even close to river banks, streams or edges of tanks, ponds and lakes at high altitudes. The habitat structure is decreasing with general decline.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive Population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Declining.

Sighting records : *Type of sighting* : Direct and Indirect; *Field notes* : Sharma (1994), Roberts (1997), Sathykumar (1999) and Hussain (1999) have reported sighting records within Indian limits.

Threats : Human interference, loss of habitat, trade, hunting, corridor loss, hunting for the beautiful pelt.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, domestic and international; *Parts in trade* : Skin and fur; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : III; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Insufficiently known; *IUCN (1998)* (Proposed) : Data Deficient National and Global, both).

Taxon related studies recommended : *In-situ* survey, montioring, population and status survey studies.

Remarks : Considering the levels of threat and trade and currently available information, it is strongly recommended to include eramines in the list of one of the higher threat categories of IUCN. Further, it may also be shifted to *CITES APPENDIX* : II based on the information available on the illegal trade of its beautiful pelt across the international borders.

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Evaluated by : M.S. Pradhan

DATA DEFICIENT
Order CARNIVORA
Family MUSTELIDAE
Subfamily MUSTELINAE

42. *Mustela altaica temon* Hodgson
Pale Weasel

Synonyms : *alpina, astutus, birulai, longstafii, raddei* and *sacana.*

Common names : Pale weasel, mountain weasel, alpine weasel.

Regional names : Not available.

Diagnostic characters : Mountain Weasel is a typical weasel of mustelid family with a long cylindrical body, long neck, short legs and long but not very bushy tail. It does not possess any black tail tip like ermine or stout. Colour of the limbs is darker like that of dorsum while the paws are contrastingly white a characterstic feature of pale weasel. Since weasel is highly predatory in behaviour it possesses sharp meat cutting teeth. Tail is more than half the head and body length. Mountain weasal is slightly larger than eramine. Pale coloured coat is distinctive of this species. The colouration above and on sides varies from light brown, bright yellow to little darker and brown but never bright ochre. The ventrum is yellow or cream sharply demarcating along the flanks and sides of the neck from the dorsum in colouration. The white on the lower side may extend upto the edge of the upper rhinarium. The underneath fur is short, soft and very thick like wool. Soles hairy. The long hairs between them conceal nacked pads.

Measurements : (in cm) : Head and body length : 22.07-29.0; tail length : 11.8-16.5 (with hairs).

Weight : (in gm) : 127 gms +.

Intraspecific variations : Only one sub-species is known to occur in Indian regions namely *Mustela altaica temon* Hodgson.

Distribution : Within Indian limits pale weasel is reported from Jammu & Kashmir, Himachal Pradesh, Uttar Pradesh and Sikkim at higher altitudes only.

Source : S.A. Hussain (1999)

Endemism : Non-Endemic species.

Altitude : 2130-4100 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : At least 6 in Himalayan region (Roberts, 1997 and Hussain, 1999); *Type* : Isolated.

Habit, habitat and ecology : Pale weasel is confined to higher mountainous regions in the alpine zones and also in the mountain steppe country in the region of very scanty rainfall. It occurs in wide variety of habitats ranging from broader valleys to cold desert condition and also on humid alpine slopes or in dry coniferous forest. Very little information is available about its habits. It appears that it is exclusively carnivorous in habit, preying mainly upon pika (*Ochotona roylei*), migratory hamsters (*Cricetulus migratorius*) and sometimes also upon voles (*Alticola* sp.) It can suplement its diet with lizards and birds in summer. It is capable possibly of burrowing in its own burrows. As per the avilable records the Russian popultaion mates in Feburary producing one litter in a year However, possibilty of two litters in a year has been reported by Hussain (1999). The litter size does not exceed 5 young ones. No evidence of delyed implantation in this species is available.

Habitat structure : Found in wide variety of habitats at higher altitudes in mountainous regions. Habitat structure stable.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population Not known.

Life span (Wild) Not known; (Captivity) Not known.

Photo : H.S. Mehta

Mustela altaica temon Hodgson

Population trend : Not known.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sharma (1994), Roberts (1997) and Hussain (1999) have reported sighting records at higher altitudes in the Himalayan region. Sighting of Pale Weasel (Photograph) during the field survey of Ladakh region by ZSI team from High Altitude Field Station, Solan.

Threats : Not Known (CAMP Report, 1998); Effect of threats on population (Perceived or inferred) : Can't say.

Trade : Not Known (CAMP Report, 1998); Parts in trade : Not Known (CAMP Report, 1998); Effect of trade on population (Perceived or inferred) : Can't say.

Conservation status : *CITES APPENDIX* : III; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Data Deficient (National and Global, both).

Taxon related studies recommended : *In-situ* survey studies, monitoring and population and status survey studies.

Remarks : On the basis of the currently available information, the species can be listed in one of the Threat categories of IUCN. Moreover, Roberts (1997) has reported Rare status for populations from this region.

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Evaluated by : M.S. Pradhan

DATA DEFICIENT

Order CARNIVORA

Family MUSTELIDAE

Subfamily MUSTELINAE

43. *Mustela kathiah* Hodgson
Yellow-bellied Weasel

Synonyms : *auriventer, dorsalis and tsaidamensis.*

Common names : Yellow-bellied Weasel.

Regional names : Hindi : Kathia-nyal.

Diagnostic characters : Yellow bellied weasel shows characteristic of a typical weasel with flattened almost snake like head, small ears, stream-lined cylindrical body, short leg and tail, abruptly ending short snout and trenchant meat cutting teeth. The paws are dark, tail more than half the length of head and body. Soles or pads naked and not hairy. The most distinctive feature of yellow-bellied weasel is the sharp contrast in colour between dorsum and ventrum. The colour on the dorsal side of the body and entire tail and outside limb areas is deep chocolate-brown. The edges of the upper lip, chin and part of throat are white in colour, while rest of the underside is rich sulphur yellow in colour which extends further on the inner side of the thighs. Two pairs of mammae present.

Measurements : (in cm) : Head and body length : 21.5-29.0; tail length : 12.5-19.0.

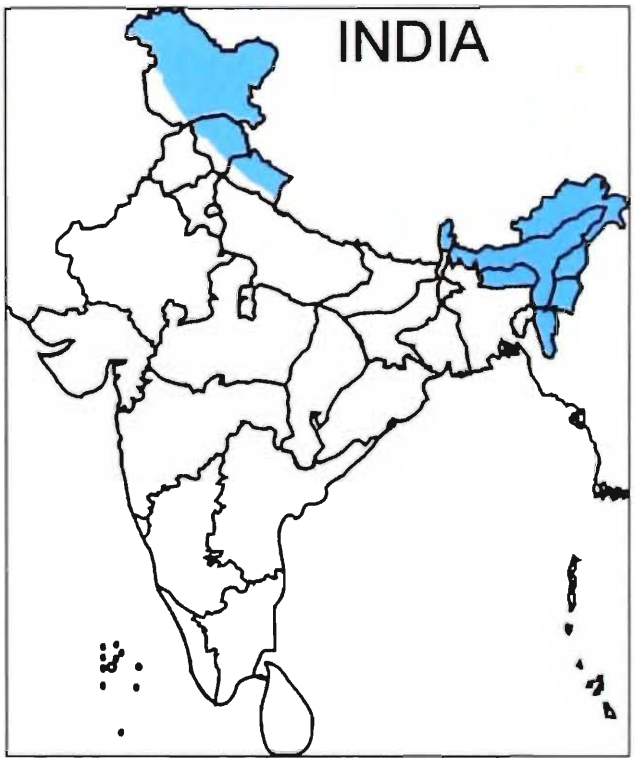
Weight : (in Kg) : 1.56.

Intraspecific variations : Two subspecies have been reported from Indian limits namely : *Mustela kathaih caporiaccoi* and *Mustela kathiah kathiah* Hodgson.

Distribution : The Yellow bellied Weasel is distributed within Indian limits at higher altitude between 1800-4000 m from Jammu and Kashmir through Himachal Pradesh, Uttar Pradesh, West Bengal and Sikkim to Meghalya, Nagaland and Arunachal Pradesh.

Endemism : Non-Endemic species.

Altitude : 1800-4000 m.



Source : S.A. Hussain (1999)

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : 7-8 locations; *Type* : Isolated.

Habit, habitat and ecology : Very little or almost no information is available about habit, habitat and ecology of this species. It feeds mostly on rodents. In Nepal, these animals are kept as pets for eradicating rodents from houses. However, it may also attack fowls, geese and even goat and sheep. It possibly prefers to live in more humid forests of eastern Himalayas.

Habitat structure : Variety of forests, which are more humid.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : None in India.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Not known.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sighting records reported by Suresh Kumar (1999), Choudhury (1999) and Agrawal *et al.* (1992).

Threats : Human interference, hunting and trade; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local and domestic; *Parts in trade* : Fur, meat insurg.; *Effect of trade on population (Perceived or inferred)* : Declining.

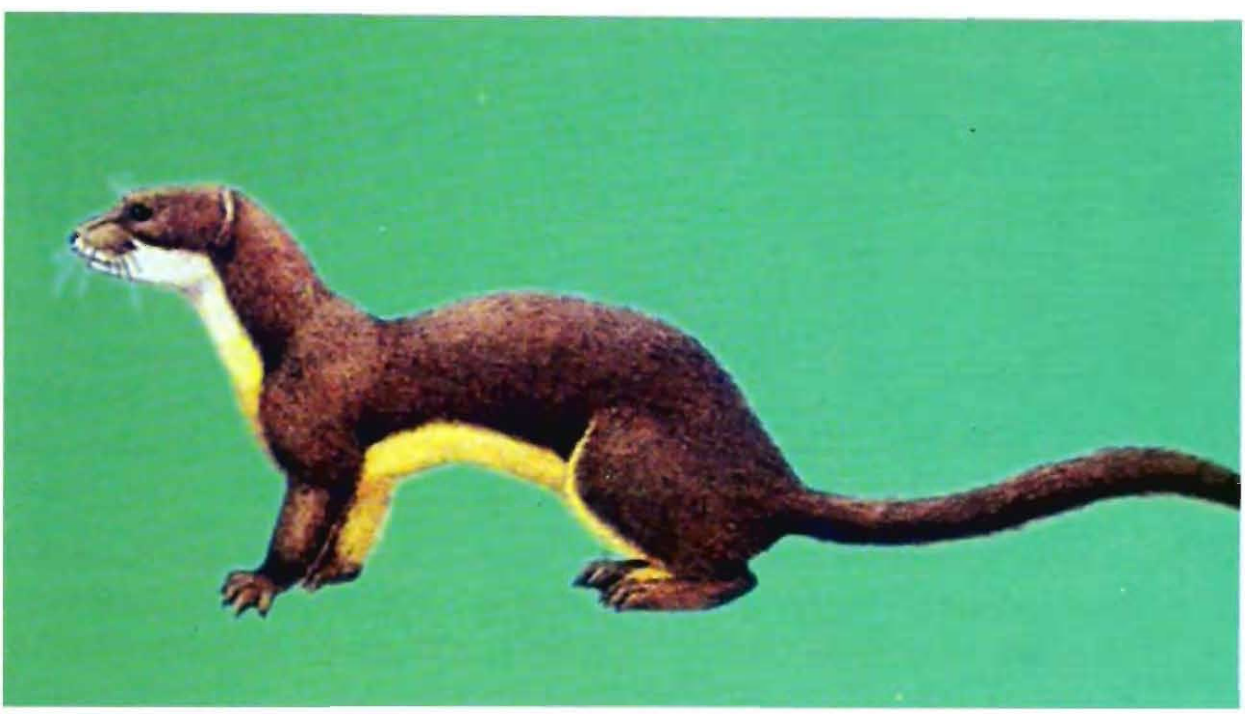


Photo : BNHS, Mumbai/WII, Dehra Dun

Mustela kathiah Hodgson

Conservation status : *CITES APPENDIX* : III; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Data Deficient (National and Global, both).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies and population and status survey Studies.

Remarks : To assess the status of *M. kathiah* on the basis of IUCN guidelines, a detailed study on the species are strongly recommended. Further, Choudhury (1999) considers the status of the species in northeast India as Rare than *Martes flavigula.*

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Evaluated by : M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order CARNIVORA

Family MUSTELIDAE

Subfamily MUSTELINAE

44. *Mustela sibirica* Pallas
Siberian Weasel or Himalayan Weasel

Synonyms : *asali, australis, canigula, charbinensis, coreanus, davidianus, fontanierii, hamptoni, hodgsoni, horsieldii, humeralis, itatsi, katsurai, major, manchurica, melli, miles, moupinensis, natsi, noctis, peninsulae, quielpartis, sho, sibirica, stegmanni, subhemachalanus, tafeli, taivana.*

Common names : Siberian Weasel or Himalayan Weasel.

Regional names : Not Available.

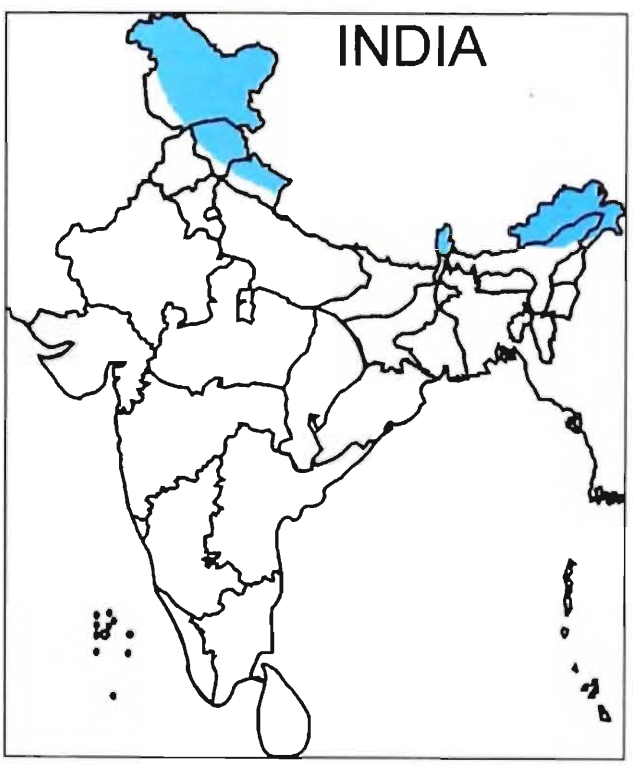
Diagnostic characters : The Siberean Weasel is a large-sized Weasel compared to other Weasel species. Its tail is little more than half the head and body length. The body, like all other Weasel species, is long cylindrical with almost flattened head, small ears, short muzzle and legs. Forelegs comparatively shorter than hindlegs. The winter coat is typically long and full with tail hairy but tapering. Soles thickly haired round all the pads. Mammae four pairs. There is no demarcation between the dorsal and ventral colours. The general colour varies from bright golden or foxy red to deep chocolate brown above, while slightly paler below. The tail may possess contrasting dark tip at the end. The throat may, however, be wholly reddish brown or whitish. The muzzle, chin and the edge of upper lip may be white.

Measurements : (in cm) : Head and body length : 25.5-30.5; tail length : 13.5-15.5.

Weight : Not known.

Intraspecific variations : Two subspecies have been recorded from India, namely *Mustela sibirica hodgsoni* and *Mustela sibirica subhemachalanus*.

Distribution : Within Indian limits the Siberian or Himalyan Weasel is distributed in the Himalayas from Kashmir eastward through Himachal Pradesh, Uttar Pradesh and Sikkim to West Bengal and Arunachal



Source : S.A. Hussain (1999)

Pradesh at higher altitude.

Endemism : Non-Endemic species.

Altitude : 1525-4880 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of Locations* : Many; *Type* : Fragmented.

Habit, habitat and ecology : The Siberian Weasel demonstrates a remarkable adaptability to various ecological conditions at higher altitudes. It may prefer to live in dense forests, or in dry sandy valleys or even in low-lying swampy areas. They seek shelter among rocks, dens, under roots of trees, hollow stumps, logs or even in the burrows of other animals. It is a giant form amongst its closely related species. It is known for its arched back and swift movements in a series of rapid easy bounds. It moves restlessly in search of food. While on move, it suddenly stops every now and then to stand erect and peer around. It shows boldness and courage in attacking and killing its prey, which is far larger in size than itself. It follows the prey by scent marking and pounces on it to kill. Its preferred diet is rodents, which can be supported by birds, reptiles (including snakes), insects, eggs etc. The weasel shows great skill in hunting the preys. It is a perfect killing machine.

Photo : H.S. Mehta

Mustela sibirica Pallas

It paralyses the prey with terror and kills it swiftly without giving any chance for self-defence. It hunts alone by itself except during mating period. The mating season apperas to be from February to May depending on the region. In Human habitations, it can take shelter in roofs, cracks and crevices etc. It is mostly nocturnal but can hunt during daytime also. The litter size consits of 4 to 10 individuals.

Habitat structure : It lives in the temperate and alpine forests and also in the open grassland and scrub above tree line. The habitat structure is changing showing general decline.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive Population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Declining.

Sighting records : *Type of sighting* : Direct/indirect; *Field notes* : Sathyakumar (1999) and Choudhury (1999) have reported number of sighting records within Indian Limits.

Threats : Human interference, loss of habitat, hunting; Effect of threats on population (Perceived or inferred) : Declining.

Trade : Local and domestic; *Parts in trade* : Skin, fur; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : III; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, population and conservation status survey studies.

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Evaluated by : M.S. Pradhan

LOWER RISK-LEAST CONCERN

Order CARNIVORA

Family MUSTELIDAE

Subfamily MUSTELINAE

45. *Martes flavigula flavigula* (Boddaert)
Yellow throated Marten

Synonyms : *Mustela flavigula* and *atterima, chrysogaster, chrysopilia, quadricolor, hardwickei, henricii, indochinensis, lasiotis, leucocephalus, leucotis, Melina, melli, penisnularis, typical, yuenshanensis.*

Common names : Yellow throated Marten, Indian Marten.

Regional names : Hindi : Tuturala; Male : Chitrola, Female : Chitoli.

Diagnostic characters : Comapratively bigger in size than other marten species. Its tail and limbs are proportionately longer. The rhinarium is naked and black. Upper lip smooth and not grooved. The ears are low set and rounded. The eartips, however, are in level with flat and broad skull. Pads naked with sharp claws. The iris is dark brown. Forelimbs heavily muscular and powerful, helping the marten in running both underneath and along the tree branches as well as directly down vertical on the tree trunks. Tail is almost three-forth of length of head and body. Tail not bushy. Scent glands present in both sexes near the anus and base of the tail. Females possess four pairs of mammae. Lower flanks and hind quarters silvery blond with yellow shade in colour with the upper parts of the face, neck, forelimbs and tail being almost jet black in colour. The chest, throat, lower jaw and sides of the neck are however creamy white to rich canary yellow. This yellow colour sharply contrasts with the jet-black colour of upper part of the neck. The lower flanks and hind quarters may conatin mixture of darker grey and brown hairs.

Source : S.A. Hussain (1999)

Measurements : (in cm) : Head and body length : 40.00-63.5; tail length : 38.0-48.00; hindfoot length : 10-30; ear Length : 3.5.

Weight : (in Kg) : Maximum up to 3.4.

Intraspecific variations : Only one subspecies, namely *Martes flavigula flavigula*, (Boddaert) is known to occur within in this region.

Distribution : From foothills of Himalayas eastwards to northeastern India through Himachal Pradesh, Uttar Pradesh, Sikkim and West Bengal within Indian limits.

Endemism : Non-Endemic species.

Altitude : 600-3500 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, habitat and ecology : The yellow throated marten is chiefly a riverine forest dwelling species reported mostly from the temperate zones. At lower altitude, it is associated with the tropical pine forests descending to the tropical moist deciduous forests. It leads a solitary life except during breeding season when growing young ones are seen with the females. Though diurnal in habit, it hunts at night. It is an agile climber and omnivorous in habits. The diet includes wide spectrum of species ranging from small rodents and birds to amphibian and insects. They may even attack gaint squirrel, musk deer and barking deer. It may cherish frugivorous and nector diets also. Mating may take place in August and young ones are born in following April. The litter size consists of 2-5 individuals.

Habitat structure : Riverine, tropical, subtropical and alpine meadow. The Habitat structure is changing showing decrease in the habitat with general decline.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : less than 2500.

Photo : Sean A. Austin, WII, Dehra Dun

Martes flavigula flavigula (Boddaert)

Captive population : Male : 1 + female : 1 = Total : 2 in one Indian zoo. Males : 6+ Females : 4 + unsexed : 2 = Total : 12 in 6 zoo abroad (CAMP Report, 1998).

Life span : (Wild) : Not known; (Captivity) : 14 years and six months.

Population trend : Declining.

Sighting records : *Type of Sighting* : Direct/indirect; *Field notes* : Hilaluddin (1997), Roberts (1997), Suresh Kumar (1999), Sathykumar (1999) and Choudhury (1999) have reported a number of sighting records of the species from this region.

Threats : Human interference, loss of habitat, trade, hunting, insurgency/ terrorism/ war; Effect of threats on population (Perceived or inferred) : Declining.

Trade : Local, domestic; *Parts in trade* : Skin, live animals, fur; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : III; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Lower Risk-Least Concern (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, population and status survey studies.

Remarks : Considering the level of threats, trade and currently available information, it strongly recommended to include this species in the higer Threat category of IUCN.

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Evaluated by : M.S. Pradhan

DATA DEFICIENT

Order CARNIVORA

Family MUSTELIDAE

Subfamily MUSTELINAE

46. *Martes foina intermedia* Severtzow
Beech Marten

Synonyms : *domestica, leucolachnaea, mediterranea, rosanowi, toufoeus.*

Common names : Beech Marten, Stone Marten.

Regional names : Hindi : Dalla, Hafa.

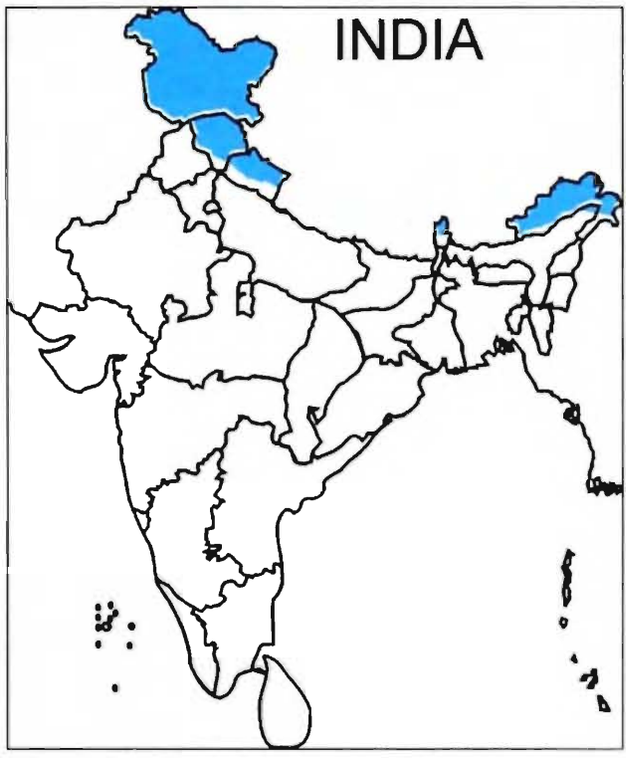
Diagnostic characters : The Beech or Stone Martin is an alert, slender and graceful carnivore. This little Weasel like animal has a dense soft fur of a rich liver-chestnut colour with a thick bushy dark coloured tail. The tail is as long as head and body. Legs are moderately long, but very powerful. Its triangular head is broad between the ears, which are round in shape, and lowly set. It has a sharp pointed muzzle and a naked pinkish coloured rhinarium. Iris almost black in colour. Each leg with five digits bearing dark brown coloured sharp non-rectractile claws. Colour and length of the coat varies exceedingly in different seasons, chocolate or ochreous brown to tawny, drab or even grey brown colour. Some lighter patches on dorsal surface may or may not be present. Ventrum lighter than dorsum. The throat is typically white or yellowish with two brownish lines or patches of variable sizes. Legs usually darker than the body. The basic structure is a mixture of cat and squirrel characters. The soles of feet are thickly haired in winter. Males are bigger in size than females.

Measurements : (in cm) : Head and body length : 25.00-45.00; tail length : 22.00-26.00; height at shoulder : 12.00.

Weight : (in Kg) : up to 2-3.

Intraspecific variations : Only one subspecies, namely *Martes foina intermedia* Severtzow, is known to occur within Indian Limits.

Distribution : From northern (Jammu & Kashmir) to the western Himalayas and farther eastwards to Arunachal Pradesh through Himachal Pradesh, Uttar Pradesh, Sikkim, West Benagal and Assam within Indian limits.



Source : S.A. Hussain (1999)

Endemism : Non-Endemic species.

Altitude : 1200-3620 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Locations : *No. of Locations* : Many; *Type* : Isolated.

Habit, habitat and ecology : The Beech Marten is rarely seen below 1500 m and it prefers to inhabit forests and barren habitats of the temperate and alpine Himalayan zones. It leads a solitary life, largely diurnal but often hunts at night. It often seeks shelter in tree hollows, under rocks and boulders and in holes. Like all other Marten species, Beech Marten is an omnivorous in its dietary habit ranging from young barking deer, flying squirrels, voles and mouse hares to birds, lizards, snakes and frogs. It also feeds on honey, nut, fruits, berries and cherries. It is also seen in the vicinity of human settlements raiding poultry farms and pigeon cooperatives (Hussain, 1999). Mating in Stone Marten takes place in mid summer with delayed implantation of the fertilized ovum. The young ones are born in March or April. The litter size varies between 3-5. When suspicious or excited it emits repeated loud vocal calls as "tock-tock-tock" (Roberts, 1997).

Habitat structure : Himalayan temperate, tropical pine forest, tropical dry deciduous forest, Himalayan scrub forest etc. The habitat structure is decreasing with general decline.

Photo : Fritz Volimar,WWF/WII, Dehra Dun

Martes foina intermedia Severtzow

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : None in India.

Life span : (Wild) : 5-10 years; (Captivity) : 14 years (Roberts, 1997).

Population trend : Declining.

Sighting records : *Type of sighting* : Direct/indirect; *Field notes* : Recent sighting records from Indian regions reported by Suresh Kumar (1999), Sathyakumar (1999), Sharma (1994), Hilaluddin (1994) and also from the adjoining areas of Pakistan by Roberts (1997).

Threats : Loss of habitat, trade, hunting, insurgency/terrorism/war; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, domestic; *Parts in trade* : Skin, Live animal, Fur; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : III; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994) : Not Listed; IUCN (1998) (Proposed)* : Data Deficient (National and Global, both).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies and population estimation and conservation status studies.

Remarks : Considering the levels of threats and trade and also the currently availabe information, it is strongly recommended to include the species in one of the higher Threat categories of IUCN.

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Evaluated by : M.S. Pradhan

VULNERABLE

Order CARNIVORA

Family MUSTELIDAE

Subfamily MUSTELINAE

47. *Martes gwatkinsii* Horsfield
Nilgiri Marten

Synonyms : *Martes flavigula gwatkinsii* Horsfield.

Common names : Nilgiri Marten, South Indian Yellow-Throated Marten.

Regional names : Tamil : Murranai; Malyalam : Muranai, Karumvernku, Koduvalli.

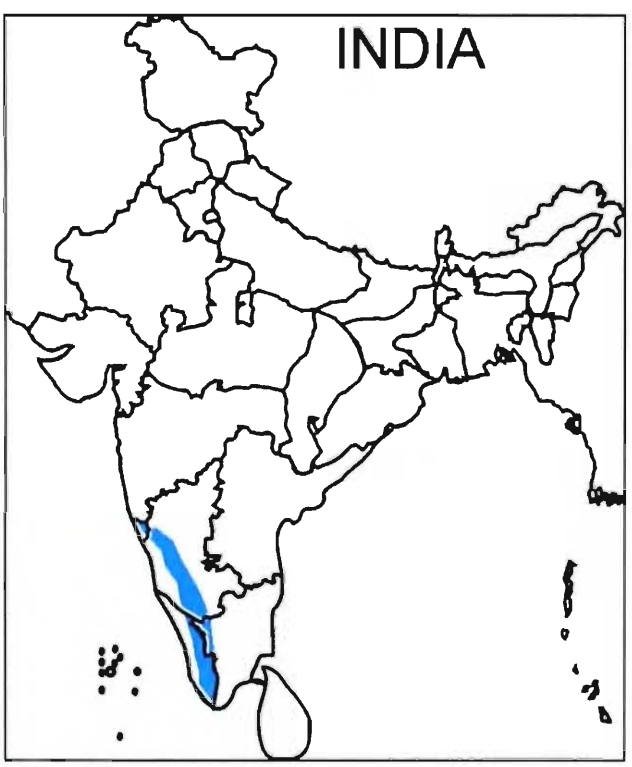
Diagnostic characters : Nilgiri Marten is similar to yellow-throated Marten in most of the respects. However, it appears to be larger in size than the later species. It can be distiguinshed from the yellow- throated Marten mainly by the presence of flattened brain case with a prominent frontal concavity. It is definitely a beautiful animal unmistakable for its entire mostly dark or black coloured dorsum with a stout tail and weasel like legs. The throat is brightly coloured, ranging from pale yellow to bright orange. Nothing is known about its breeding habits.

Measurements : (in cm) : Head and body length : 55.00 to 65.00; tail length : 40.00 to 45.00.

Weight : (in Kg) : About 2.1.

Intraspecific variations : No subspecies.

Distribution : South of 12^0 N (Coorg) in Western Ghats of India. It has been recently reported from Dharwad, Nilgiri Biosphere Reserve, Travancore, Eravikulam National Park, Peppara Wildlife Sanctuary, Silent Valley, Upper Bhavani and Kalakkad-Mundanthurai Tiger Reserve areas of Western Ghats in India.



Source : M.S. Pradhan

Endemism : Endemic to Western Ghats of India.

Altitude : 350-2500 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, habitat and ecology : Riverine forest dwelling species. Though, it can move on the ground, it is more comfortable on the trees. It can travel longer distances on tree canopies, if undisturbed, in dense and evergreen forests (Muddappa, 1999). It is mostly diurnal in habit. It can hunt species like mouse deer, varanus, birds, squirrels and hares. It also feeds on rodents, lizards, insects, fruits, berries and honey. Nothing is known about the breeding habits of this elegant species.

Habitat structure : Dense forest dwelling species. The habitat structure is changing with general decline.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : None in India.

Life span : (Wild) : Not known; (captivity) : Not known.

Population trend : Unknown.

Sighting records : *Type of sighting* : Direct/indirect; *Field notes* : Sighting records reported by Gokula and Ramachandran (1996), Mudappa (1999), Hussain (1999), John and Madhukumar (2002), Pradhan (2002) and Cheruvat *et al.* (2002).

Threats : Human interference, loss of habitat, trade, hunting and accidental hunting; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, domestic; *Parts in trade* : Skin, live animals, fur; *Effect of trade on population (Perceived or inferred)* : Declining.

Martes gwatkinsii Horsfield:

Conservation status : *CITES APPENDIX* : III; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Vulnerable.

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, population and conservation status studies.

Remarks : Individuals of this species in some areas raid honey boxes in farms and feed on honey. Hence, such animals are treated as pests in these areas (Mudappa, 1999). Factual confirmation, verification and remedies are essentail in such cases.

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Evaluated by : M.S. Pradhan

CRITICALLY ENDANGERED

Order CARNIVORA

Family VIVERRIDAE

Subfamily VIVERRINAE

48. *Viverra civettina* Blyth
Malbar civet

Synonyms : *Viverra megaspila civettina* Blyth.

Common names : Malbar civet.

Regional names : Malayalam : Jawad, Mala merus, Malbar verukn, Kannan chandu.

Diagnostic characters: The Malbar civet is approximately similar to the large Indian civet with sturdy typical civet built and with a long head, long compressed body, short legs and bushy tail. An erectile crest of long-deep black hairs extending from between the shoulders to the entire length of the tail. It possesses nacked soles with interdigital webs, body colour distinctly yellowish with large black spots instead of sripes at the hinder part of the body. The black spots do not form any pattern on the body. Its head is grey, the chin brown and base of the ears little lighter. The neck is white in front, dusky on the back and may posses two or three black gorgets on the sides. The tail tip is black. It is ringed with six broad black complete rings with incomplete yellowish white rings between them. The size of Malabar civet is as large as a country dog.

Measurements : (in cm) : Head and body length : 75-85 tail length : 32-40.

Weight : (in Kg) : 6.5-8.0.

Intraspecific variations : No subspecies.

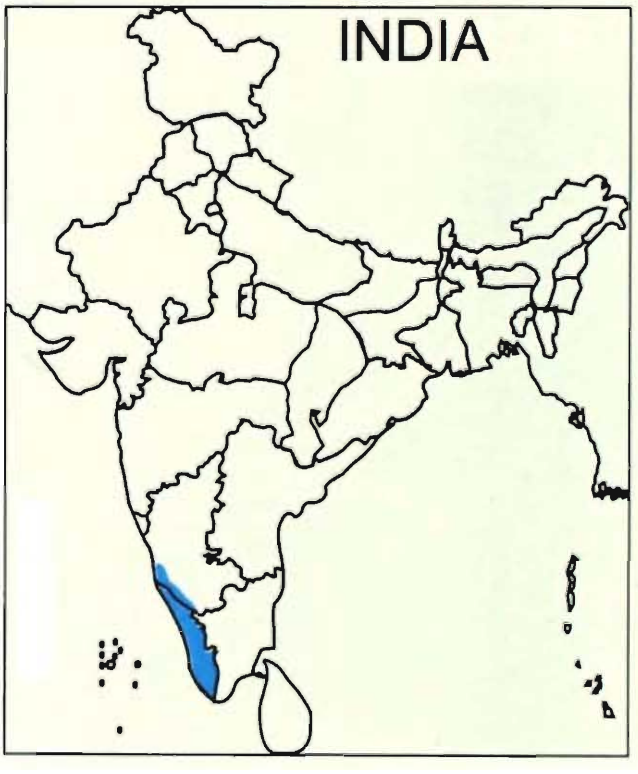
Distribution : From Honnavar in Karnataka to Kanyakumari, Tamil Nadu in Western Ghats of India.

Endemism : Endemic to southern Western Ghats in India.

Altitude : upto 600 mts.

Area of occupancy : 11-100 sq. kms.

Extent of occurence : 501-2000 sq. kms.



Source : B.K. Tikader (1983)

Locations : *No. of locations* : Wandoor Kerala, Elayur Kerala, Probably in other areas also, but no confirmed records available; *Type* : Isolated.

Habit, habitat and ecology : Malbar civet is terrestrial and mainly nocturnal preferring to live in lowland forests and cashew plantations with undergrowth along the foothills of Western Ghats. The typical habitat can be classified as lowland swamps and riparian forests in the coastal plains provinces of Western Ghats. The Malbar civet retreats to the forests and/ or cashew during daytime. Almost nothing is known about its ecology, biology, feeding and other habits.

Habitat structure : Deciduous forests with streams and sufficient moisture regions.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Declining.

Museum records : *Locality* : Chattaryottupuram, Wandoor in Kerala; *Year* : April, 2000; *Collector* : N.V.K. Ashraf; *Number of examples studied or collected* : 2; *Name of Museum* : ZSI, WII.

Project specific records : Chattango Hupuram, Wandoor, Kerala; April 2000; Studies conducted by N.V.K. Ashraf.; Two Museum specimans.

Sighting records : *Type of sighting* : No direct sighting in recent years; *Field notes* : On the verge of extinction, a few isolated populations may be surviving in man-made vegetation zones like cashew plantations which offer serious threats due to change in land use patterns.

Threats : Habitat fragmentation, human interference, loss of habitat, hunting, corridor loss, poaching and trapping, clearing of cashew plantation for planting rubber; *Effect of threats on population (Perceived or inferred)* : Declining.

Viverra civettina Blyth

Trade: Not known; *Parts in trade* : Not known; *Effect of trade on population (Perceived or inferred)* : Can't say.

Conservation status : *CITES APPENDIX* : III; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : Critically Endangered; *IUCN (2002)* (Proposed) : Critical based on Version 2.3 (IUCN, 2003)

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, limiting factors reserach, captive breeding.

Remarks : *In-situ* survey, monitoring studies limiting factor research and population studies of malbar civet are strongly recommended to assess the latest conservation status.

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Evaluated by : N.V.K. Ashraf and M.S. Pradhan

VULNERABLE

Order CARNIVORA

Family VIVERRIDAE

Subfamily VIVERRINAE

49. *Viverrra zibetha* Linnaeus
Large Indian Civet

Synonyms : *civettoides, filchneri, melanura, orientalis, picta, piscator, undulta, astoni, pruinosa, sigillata, surdastar.*

Common names : Large Indian Civet.

Regional names : Hindi : Kattas, Bengali: Mach Bhondar, Bagdos, Pudo Gaula; Bhotia : Kung.

Diagnostic characters : A sturdily built civet with a pointed muzzle, short stumpy legs and a long compressed true civet like body. The third and fourth digits of the forefeet possess well-developed skin-sheaths offering protection to the claws. All the feet are thickly haired between the pads. A distinct crest of dorsal erectile long deep black hairs present running along the spine from the between the shoulders to the base of the tail. Presence of distinct crest differentiates large Indian Civet (*Viverra*) from the small civets (*Viverricula*). General colour dark hoary grey usually mixed with yellowish or brown tinge. Prominent dark bands on the chest and shoulders form loops and rosettes on hinderquarters. The tail is almost half the head and body length. Flanks are marked with indistinct dark spots. The front of the muzzle has white patch on each side. Chin and fore-throat blackish. Anterior edges of the ears are widely separate. The tail possesses 5-8 dark bands separated by whitish rings. The body colour varies individually with age, sex and season.

Measurements : (in cm/mm) : Head and body length : 66.0-82.00 cm; tail length : 35.00-49.5cm; hindfoot length : 11.5-12.7 cm; ear : 55-57 mm.

Weight : (in Kg) : 8-9.

Intraspecific variations : Two subspecies namely *Viverra zibetha zibetha* Linnaeus and *Viverra zibetta picta* Wroughton occur within Indian Limits.

Distribution : Possibaly from Chamba (?) to North Bengal, Sikkim, eastward to Orissa, Assam, Meghalaya, Nagaland, Manipur and Arunachal Pradesh within

Source : Corbet and Hill (1992)

Indian limits.

Endemism : Non-Endemic species.

Altitude : 0-3000 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, habitat and ecology : Large Indian Civet leads a solitary life and restricted to forest floor. It is nocturnal in behaviour. However, it is a very good climber. Basically, it is a carnivorous animal but can also feed on variety of fruits. Large Indian Civets breed during May-June. The litter consists of 3-4 young ones.

Habitat structure : Terrestrial and forest dweller. Tropical dry to rain forests. The Habitat structure is changing with General decline.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Male : 1 + unsexed : 1= Total : 2 in Indian zoo; male : 2 + female : 1 + unsexed : 2 = Total : 5 in 3 zoo abroad (CAMP Report, 1998).

Life span : (Wild) : Not known; (captivity) : 15 Years.

Population trend : Declining.

Museum records : *Name of museum* : Number of specimens collected in past from various Indian localities have been deposited in the National Zoological collection of Zoological Survey of India, Kolkata.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Number of recent sighting records from Eastern and North eastern Indian region has been reported by Choudhury (1999) and Suresh Kumar (1999).

Photo : Sean A., WII, Dehra Dun

Viverrra zibetha Linnaeus

Threats : Human interference, loss of habitat, trade, hunting for medical use. *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local; *Parts in trade* : Live animals, fur, organs, meat insurg., body parts etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : III; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Vulnerable (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, monitoring, taxonomic studies, life histiory studies, habitat mangement.

Remarks : The species has been introduced in Andamans in 1985 (CAMP Report, 1998). Considering the nature of threats and recently available information, it is strongly recommended that the species be included in the list of higher Threat categories of IUCN.

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Evaluated by : M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order CARNIVORA

Family VIVERRIDAE

Subfamily VIVERRINAE

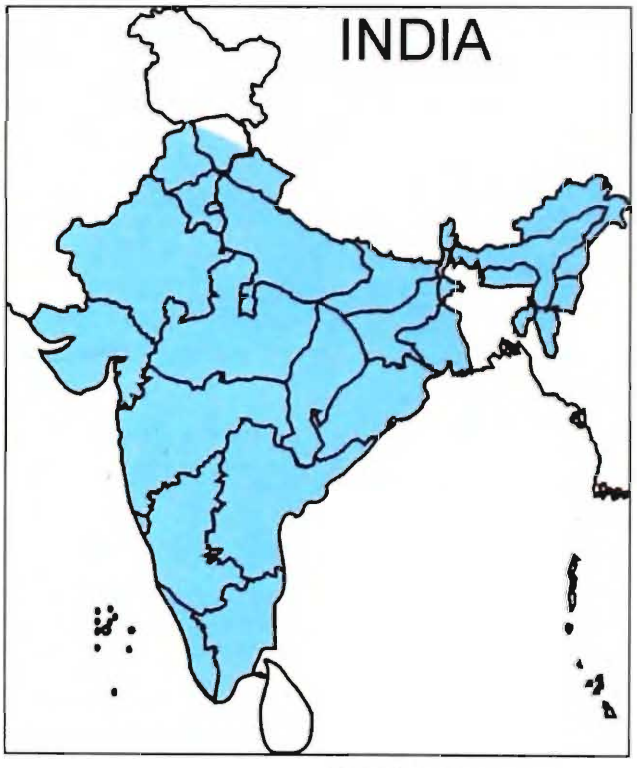
50. *Viverricula indica* (Desmarest)
Small Indian Civet

Synonyms : *pallida, rasse, wellsi, bengalensis, deserti, mayori, baptistae, hanensis, malaccensis, schlegelli, tgaivana, thai.*

Common names : Small Indian Civet, Rasse.

Regional names : Hindi : Kasturi; Bengali : Gando, Gaula, Gondhgokul; Marathi : Jowadi Manjar; Kannada : Poonagubekku, poonugu kotthi; Telugu : Pungagu pilli; Tamil : Punego peoeny; Malyalam : Meru.

Diagnostic characters : Small Indian Civet is cat like in appearance and possesses comparatively long forelegs and conspicuous broad and round external ear pinna. The anterior margins of the pinnae are closely set together on the crown. The dorsal crest absent. Claws exposed and unprotected. Tail almost two third of the head and body length. Small Indian Civet is smaller in size than desert cat. The slender muzzle is pointed. General body colour varies from sandy -buff to greyish spotted with blackish patches in parallel horizontal lines. The spots are smaller along the spinal surface where they merge into continuous lines. The legs are blackish or dark brown. The tail conspicously marked with 9-10 concentric black rings alternating with orange or orchraceous or buffed white. Throat and breast are greyish white with two thick black semicircular bands on the upper side of the throat. When viewed from the front broad round ears and chest patterns are prominently seen. Both sexes possess perianal scent glands.



Source : Corbet & Hill (1992)

Measurements : (in cm) : Head and body length : 45.0-63.0; tail length : 36.5-41.5.

Weight : (in Kg) : 2.2-3.4.

Intraspecific variations : Five subspecies are known to occur within Indian limits namely : *V. indica bengalensis, V. indica baptistae, V.*

indica deserti, V. indica indica and *V. indica wellsi.*

Distribution : Small Indian Civet is distributed throughout India in all suitable habitats.

Endemism : Non-Endemic species.

Altitude : 0-2500 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, habitat and ecology : *V. indica* is a solitary semi-arboreal and strictly nocturnal animal prefer to spend time in the long grasses and scrubs. It hunts mostly on ground. Omnivorous in habit and diet includes rodents, lizards, insects, nestlings, eggs and fruits. It lives in burrows dug by it or under rocks and crevices. It breeds round the year with litter size varying between 3-5 young ones.

Habitat structure : All suitable habitats excluding deserts and higher altitudes. They have been noticed near human habitation on number of occassions. The habitat structure is decreasing with general decline.

Photo : Ajith Kumar, WII, Dehra Dun

Viverricula indica (Desmarest)

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive Population : Males : 12 + females : 8 + unsexed : 18 = Total : 38 in 10 Indian zoo. Males : 1 + females : 1 + unsexed : 1 = Total : 3 in 3 zoo abroad (CAMP Report, 1998).

Life span : (Wild) : Not known; (captivity) : 22 years.

Population trend : Declining.

Museum records : *Name of museum* : Some of the Regional Stations and Head Quarters of Zoological Survey of India, and Bombay Natural History Society, Mumbai, possess representative specimens of this species in their collections.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Number of recent sightings have been reported (Roberts, 1997; CAMP Report, 1998; Agrawal, 1992 and Hussain, 1999).

Threats : Human interference, loss of habitat, trade, hunting, hunting for body parts.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local and commercial; *Parts in trade* : Live animal, glands, organs, meat insurg., body parts, trade for traditional medicinal use (Pradhan, 1997); *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : III; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not listed; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* Survey, Monitoring, Life History studies, Use of Civetine gland secretions and other body parts for different purposes including making of traditional medicines.

Remarks : Considering the levels of threat and trade on the basis of the currently available information (Roberts, 1997; Pradhan, 1997; Hussain, 1999 and CAMP Report, 1998), it is recommended that the species should be included in one of the higher Threat categories of IUCN.

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Evaluated by : M.S. Pradhan

VULNERABLE

Order CARNIVORA

Family VIVERRIDAE

Subfamily VIVERRINAE

51. *Prionodon pardicolor pardicolor* Hodgson
Spotted Linsang

Synonyms : *Prionodon pardicolor* Hodgson

Common name : Spotted Linsang.

Regional names : English : Tiger civet, Bhotia : Zik chum, Lepcha : Suilyu, Silu.

Diagnostic characters : Spotted Linsang is the smallest of all the civet species. It possesses pointed muzzle, short limbs, elongated body and retractive claws. Tail is as long as the head and body. Scent glands absent in both sexes. The general colouration is beautiful, rich orange fulvour or golden colour on dorsal side with large black spots arranged in longitudunal rows. Tail with 8-10 dark coloured rings.

Measurements : (in mm) : Head and body length : 305-452; tail length : 302-402.

Weight : (in gms) : 598-798.

Intraspecific variations : Out of two subspecies only *Prionodon pardicolor pardicolor* Hodgson occurs within Indian limits.

Distribution : Sikkim, Assam and Arunachal Pradesh.

Altitude : 150- 2750 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Locations : *No. of locations* : 13 locations; *Type* : Fragmented.

Habit, habitat and ecology : Spotted Linsang a most uncommon civet prefers to live in mountain and hilly forests. Not a gregarious species but moves freely on ground and trees. It preys chiefly on

Source : M.S. Pradhan

insects, small birds and mammals. As per zoo records, it breeds twice in a year (February to August) and the litter consists of two young ones (Anonymous, 1994). Linsang shows feline characterstics (spotted body, rectractile claws etc.) and behaviour (spring and climb on a tree and live mainly by hunting). Linsang take shelter in the hollows of decayed trees.

Habitat structure : Hilly, mountainous temperate, coniferous and tropical rain forests. There is a general decrease in the habitat structure.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : None in India, 3 males in zoo abroad (CAMP Report, 1998).

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Declining.

Sighting records : *Type of sighting* : Direct and Indirect; *Field notes* : Sighting records within Indian limits reported by Choudhury (1999), Suresh Kumar (1999), Gupta (1999) and Chakraborthy and Sen (1991).

Threats : Interspecific competition, loss of habitat, hunting, unkown threats for which information is not available (Anonymous, 1994); *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local; Parts in trade : Not known; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : Vulnerable (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, monitoring, genetic studies, life history studies, limiting factor research.

Prionodon pardicolor pardicolor Hodgson

Remarks : Very little information is available about this species, probably because this beautiful civet was rare within Indian limits even at the begining of the last century. Therefore, *in-situ* status survey studies of this species within Indian jurisdiction are strongly recommended. Due to its habit of hunting small mammals, it may be playing some important role in control of the rodent species.

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Evaluated by : M.S. Pradhan

LOWER RISK-LEAST CONCERN

Order CARNIVORA

Family VIVERRIDAE

Subfamily PARADOXURINAE

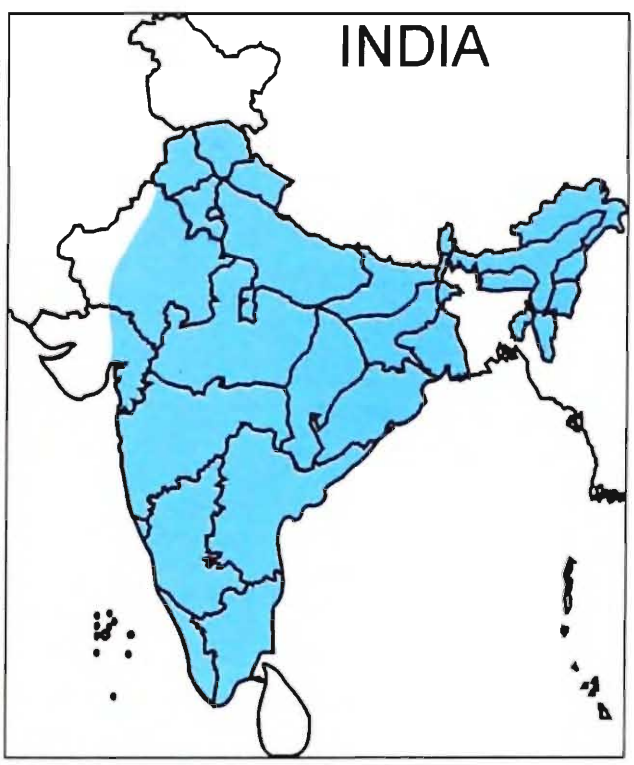
52. *Paradoxurus hermaphroditus* (Pallas)
Common palm civet

Synonyms : *baritensis, birmanicus, Bandar, brunnipes, conscens, canus, celebenis, cochinensis, crassipes, crossi, dubius, exitus, felinus, fossa, fuliginosus, fuscus, hamiltonii, hanieli, hirsutus, javanica, jorandensis, kangeanus, kutensis, laneus, laotum, lehmanni, leucopus, lignicolor, macrodus, milleri, minax, minor, musanga, musangoides, nictitanus, niger, nigra, nigrifrons, padagnus, pallasi, pallens, parvus, pennantii, phillipensis, prehensilis, pugnax, pulcher, quadriscriptus, ravus, rind]janicus, roustus, rubidus, sabanus, sacer, scIndiae, senex, setosus, siberus, simplex,. Strictis, sumatrensis, sumbansus, torvus, typus, vellerosus, viscinus.*

Common names : Common palm civet, Toddy cat.

Regional names : Hindi : Lakati, khatas; Bengali : Bhondar; Marathi : Ud manjar; Kannada : Mara Bekku, Manta; Telugu : Manu Pilli; Tamil and Malyalam : Mara Nai, Mara Meru.

Diagnostic characters : Palm Civet is a medium sized civet, which posseses long hairy tail with uniform dark colour and no rings. It is mostly arboreal in habit. The ears with rounded tips are set relatively wide apart. The toddy cat is a black or blackish brown with a heavy built. It possesses long coarse and shaggy hair and short limbs. The hairy tail is almost as long as the head and the body. The ground colour varies seasonally and individually from olive grey to almost cream with dark bases. The back is dotted with three indistinct black or dark brown longitudinal stripes. They can be coalescing spots along the mid line with scattered dark spots on the shoulders and flanks. Northwestern population may possess least clear spots or stripes. Both sexes possess perianal scent glands.



Source : M.S. Pradhan

Measurements : Head and body length 42-69 cm. Tail length 40-60 cm.

Weight : 2.4-4.0 Kg.

Intraspecific variations : 7 subspecies of *Paradoxurus hermaphroditus* are known to occur within Indian limits they are : i) *Paradoxurus hermaphroditus hermaphroditus;* ii) *Paradoxurus hermaphroditus bondar;* iii) *Paradoxurus hermaphroditus laneus;* iv) *Paradoxurus hermaphroditus pallasi;* v) *Paradoxurus hermaphroditus nictitatans;* vi) *Paradoxurus hermaphroditus scindiae;* and vii) *Paradoxurus hermaphroditus vellerosus.*

Distribution : Almost throughout the country within Indian limits excluding desert part of Rajasthan and Gujarat and north eastern-most part of Arunachal Pradesh.

Endemism : Non-Endemic species.

Altitude : 0-1500 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, habitat and ecology : The common palm civet is mostly solitary, nocturnal and largely arboreal species. It comes on the ground to cross open spaces or to hunt. It shows synonthropic behavior, adapting to live near villages, hiding in roofs, crevices or in tile drains etc. Like other civets, the toddy cat is omnivorous in feeding habits and prefers to feed on birds, rodents, insects and fruits such as banana, coffee, pineapple, berries etc. When threatened, they make hissing sounds like that of a cat. It breeds throughout the year and litter consists of 3-4 young ones. It attains maturity at the age of 11-12 months.

Paradoxurus hermaphroditus (Pallas)

Habitat structure : It prefers to live in different types of forests and roam around in plantations. The habitat structure appears to be stable at present. *Prediction* : General decline in habitat structure.

Population : Global population : Many; No. of mature individuals in all the populations : Not known.

Captive Population : Males : 48 + females : 33 + unsexed : 15 = Total : 96 in 34 Indian zoo. Males : 20 + females : 14 + unsexed : 2 = Total : 36 in 13 zoo abroad (CAMP Report, 1998).

Life span : (Wild) : Not known; (captivity) : 22 years.

Population trend : General decline.

·*Museum records* : *Name of museum* : Some of the Regional Stations and Head Quarters of Zoological Survey of India and Bombay Natural History Society possess representative specimens of this species in thier collections.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Number of sighting records from different parts of the country have been reported at different times (CAMP Report, 1998, Agrawal *et al.*, 1992 and Hussain, 1999).

Threats : Human interference, trade, hunting, road kills and hunting for medicines; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, commercial, international; *Parts in trade* : Live animals, glands, organs, meat insurg, products, body parts for traditional medicine (Pradhan, 1997); *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Lower Risk-Least Concern (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, Use of Civetine gland secretions and other parts for different purposes including making of traditional medicines.

Remarks : Considering the levels of threat and trade and on the basis of the currently available information (Pradhan, 1997; Hussain, 1999 and CAMP report, 1998) it is recommended that this species shuld be included in one of the CITES Appendices and also in one of the higher Threat categories of IUCN.

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Evaluated by : M.S. Pradhan

VULNERABLE

Order CARNIVORA

Family VIVERRIDAE

Subfamily PARADOXURINAE

53. *Paradoxurus jerdoni* Blanford
Jerdon's Palm Civet

Synonyms : Not available.

Common names : Jerdon's Palm Civet, Brown Palm Civet.

Regional name : Malayalam : Kanthakeeri.

Diagnostic characters : The brown or palm civet is more or less similar to the common palm civet in size. Hairs on neck in reversed direction growing forward from shoulder to head. General body colour is brown. Head, shoulder and limbs deep brown or blackish. The back and sides greyish brown while tail darker with its tip light brown to dirty white. Unlike common palm civet, it lacks body markings. Individual colour variation is quite common, facial vibrissae brown to blackish. Palatal foramina long, projecting beyond the canine level. The length of the tail is almost the same as head and body length.

Measurements : (in cm) : Head and body length : 48-59; Tail length : 40-53.5.

Weight : (in Kg) : 2.4-4.0.

Intraspecific variations : Two subspecies have been recognised *viz Paradoxurus jerdoni jerdoni* Blanford (Tamil Nadu, Kerala) and *Paradoxurus jerdoni caniscus* Pocock (Karnataka).

Distribution : South Western Ghats in Karnataka, Tamil Nadu and Kerala in India.

Endemism : Endemic to Western Ghats in India.

Altitude : 100-1600 m.

Area of occupancy : 501-2000 sq. kms.

Extent of Occurence: 2001-5000 sq. kms.

Source : S.A. Hussain (1999)

Locations : *No. of locations* : Periyar Wildlife Sanctuary, Annamalai Wildlife Sanctuary, Silent Valley, Kalakkad Mundanthurai Wildlife Sanctuary; *Type* : Fragmented.

Habit, habitat and ecology : The brown palm civet is found in well-forested areas at higher elevations. More common at high altitudes. It is basically arboreal and strictly nocturnal in habit. It is mainly frugivorous animal. It feed also on small birds, mammals and insects. It leads a solitary life and play an important role in seed dispersal of many rainforest tree and liana species (Mudappa, 1999). No information is available on the breeding habitat of the species.

Habitat structure : Evergreen, semi-evergreen and decidous forests near tea and coffee estates are the favourite sheltering habitats. Change in habitat greater than 20 % in the last 100 years.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : None.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Unknown.

Sighting records : *Type of sighting* : *Field notes* : Though no animal was sighted during the survey, subsequent studies have shown that they are fairly common. Many sightings reported in recent times.

Threats : Habitat fragmentation, loss of habitat, hunting, poaching and traping; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Not known; *Parts in trade* : Not known; *Effect of trade on population (Perceived or inferred)* : Can't say.

Conservation status : CITES APPENDIX : III; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN,*

Photo : Divya Mudappa, WII, Dehra Dun

Paradoxurus jerdoni Blanford

1994) : Not listed; *IUCN (1998)* (Proposed) : Vulnerable; *IUCN (2002)* (Proposed) : Vulnerable based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, limiting factor research, population status studies, radio collaring etc.

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Evaluated by : N.V.K. Ashraf and M.S. Pradhan

VULNERABLE

Order CARNIVORA

Family VIVERRIDAE

Subfamily PARADOXURINAE

54. *Arctogalidia trivirgata millsi* (Wroughton)
Small Toothed Palm Civet

Synonyms : *Paradoxurus trivirgata, bancana, bicolor, depressa, fusca, inornata, leucotis, macra, major, melli, millsi, mima, simplex, stigmaticus, tingia, trilineatus* are the synonyms as listed by Alfred *et al.* (2002).

Common name : Small toothed palm civet.

Regional names : English : Three striped palm civet, Three banded palm civet; Regional names : Not available.

Diagnostic characters : The small-toothed palm civet resembles closely common palm civet in external form and lengths of legs and tail. Tail longer than head and body in length. However, in small- toothed palm civet scent glands are present in front of vulva in females. Ear with poorly developed bursa. Regions between planter and digital pads without hairs. The general dorsal colouration is tawny, but individual variations from dusky grey tawny to bright ochre-buff are also seen. The head is darker and greyer. Muzzle brownish with median white streak extending upto front of the forehead. Three distinct middorsal black or dark brown longitudinal stripes present on the back of the adult specimens. The flanks are unmarked. The juveniles are uniformly brown in colour.

Measurements : (in cm) : Head and body length : 48.0 - 57.5; tail length : 56.0-60.0.

Weight : (in Kg) : 2.0 to 2.7.

Intraspecific variations : Only one subspecies, namely *Arctogalidia trivirgata millsi* (Wroughton), is known to occur within Indian limits.

Distribution : Small toothed palm civet is distributed possibly from West Bengal (Darjeeling Dist.) to Assam and Arunachal Pradesh in northeast within Indian limits.

Endemism : Non-Endemic species.

Source : M.S. Pradhan

Altitude : Species prefers to live on plains.

Area of Occupancy: Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Ten; *Type* : Isolated.

Habit, habitat and ecology : Small toothed palm civet is mostly a solitary civet cat. Occassionaly it may be seen in small parties comprising females with young ones. It is a terrestrial, arboreal, nocturnal and omnivorous civet cat. Like toddy cat, it may be seen resting during daytime on the upper branches of tall trees. It feeds mostly on fruits supplemmenting the diet with small mammals, birds, insects, lizards, frogs etc. Litter consists usually of three young ones. Not much information is availble about its breeding season and habits.

Habitat structure : Prefers to live in dense forersts.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : None in India.

Life span : (Wild) : Not known; (Captivity) : 11 years.

Population trend : Unknown.

Sighting records : *Type of sighting* : *Field notes* : Sighting records within Indian limits reported by Choudhary (1999).

Threats : Human interference, Loss of habitat; *Effect of threats on population (Perceived or inferred)* : Can't say.

Photo : Alian Compost, WWF/WII, Dehra Dun

Arctogalidia trivirgata millsi (Wroughton)

Trade : Not known; *Parts in trade* : Not known; *Effect of trade on population (Perceived or inferred)* : Can't say.

Conservation status : *CITES APPENDIX* : Not listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not listed; *IUCN (1998)* (Proposed) : Vulnerable (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, Population and status survey studies.

Remarks : Studies to establish current distribution within Indian limits strongly recommended.

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Evaluated by : M.S. Pradhan

LOWER RISK-LEAST CONCERNED

Order CARNIVORA

Family VIVERRIDAE

Subfamily PARADOXURINAE

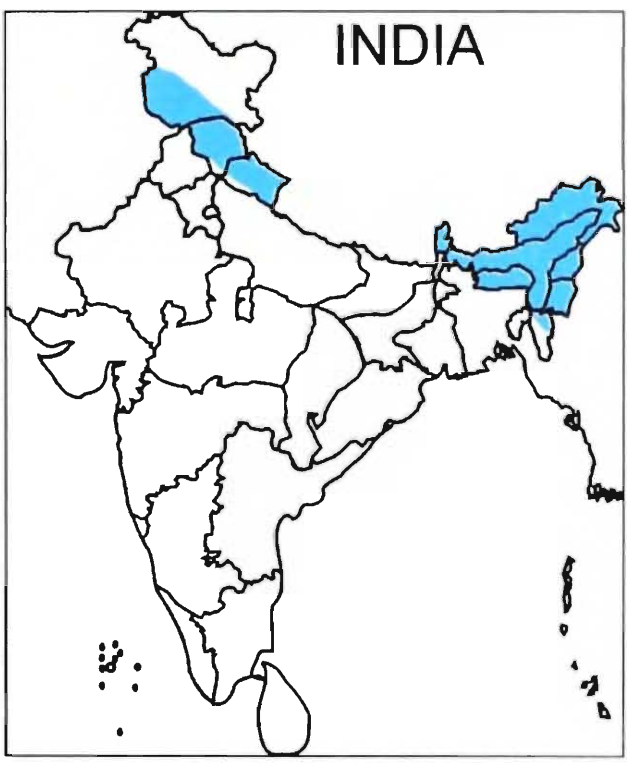
55. *Paguma larvata* (Hamilton-Smith)
Himalayan Masked Palm Civet

Synonyms : *Gulo larvatus*, Hamilton-Smith and *annectans, aurata, grayi, hainana, intrudens, janetta, jourdanii, langer, lanigerus, leucocephala, leucomystax, neglecta, nigriceps, nipalensis, ogilbyi, pallasii, reversii, rivalis, robustus, rubidus, taivana, tytleriii, vegans, wroughotinii, yunalis.*

Common name : Himalayan Masked Palm Civet.

Regional names : English : Masked palm civet, Kashmir Masked palm civet, Hindi : Biju.

Diagnostic characters : The Himalayan Masked palm civet is characterstically different from other civets by its white whiskers and by the Total absence of any spots or stripes on the body. It is larger and heavier than toddy cat with relatively longer tail. The tail is cylindrical and muscular near the proximal end. It has a smaller pointed head with rounded ears. Striking feature is of abudant vibrissae, which are white in colour. The general body colouration ranges from uniform greyish black to almost black above, while greyish buff to whitish below. Tail often tipped with dirty white. The face has a definite black and greyish white pattern, which may vary in shape from individual to individual. However, creamy white semicircular bands behind and below the eye are a usual pattern. A white band running from the centre of the forehead to the tip of nose and another band beneath the ears passing over the cheeks are also characteristic facial marks. The species has 4 glands around the anus, releasing thick yellow fluid with highly noxious smell.



Source : M.S. Pradhan

Measurements : (in cm) : Head and body length : 41.5-73.0; tail length : 39-56; hindfoot : 100.0; Ear : 5.4.

Weight : (in Kg) : 3.6-6.0.

Intraspecific variations : Four subspecies have been recognised within Indian limits namely : *Paguma larvata grayi, Paguma larvata neglecta, Paguma larvata wroughtoni,* and *Paguma larvata tytlerii.*

Distribution : Himalayan Palm Civet, of all the civet species, has the largest distribution range through the Himalayas from Kashmir to Arunachal Pradesh through Punjab, Himachal Pradesh, Uttar Pradesh, West Bengal, Sikkim, and Assam within Indian limits. The range extends further downwards to Andaman islands.

Endemism : Non-Endemic species.

Altitude : 400-2500 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, habitat and ecology : Habit and habitat of Himalayan Mask civet is similar to those of common palm civet. It is basically arboreal, nocturnal and leads a solitary life. Sometimes it is active during the daytime. Like any cat, it can run up vertically on a tree with speed and agility. It spends day in hollow of a tree or occasionally in rock crevices. It is largely frugivorous in habit but can also feed on birds including poultry and small mammals. When alarmed it releases thick yellow fluid from the anal glands. Not much is known about the breeding habits of Himalayan Masked Civet. However, young ones were captureed during April-July (Roberts, 1997). The longitudinal black spinal stripes are conspicuous while facial marks are indistinct in newly born young ones. The litter size may consist of 1-4 young ones.

Habitat structure : Temperate and tropical forests on hillside. Takes shelter in hollows of the trees in mountain or hill forests. There is change in the habitat with general decline.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive Population : Males : 2 + females : 3 + unsexed : 1 = Total : 6 in 4 Indian zoo. Males : 12 + females : 10 = Total : 22 in 6 zoo abroad (CAMP Report, 1998).

Photo : Mohit Agarwal, WWF/WII, Dehra Dun

Paguma larvata (Hamilton-Smith)

Life span : (Wild) : Not known; (Captivity) : 15 years and 5 months (Hussian, 1999).

Population trend : Declining.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sighting records reported by Agrawal 1992, Roberts 1997 and Hussian 1999.

Threats : Interspecific competition, habitat fragmentation, human interference, loss of habitat, trade, hunting, corridor loss, poaching; Effect of threats on population (Perceived or inferred) : Declining.

Trade : Local, domestic, international; *Parts in trade* : Glands, meat insurg., products, body parts; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : III; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Lower Risk-Least Concerned (National) and Data Deficient (Global).

Remarks : Considering the currently available information and the level of threats, it is strongly recommended that Himalayan Masked palm civet can be included in one of the higher Threatened categories of IUCN on the basis of latest IUCN guidelines. As per the latest information Himalayan Masked palm civet has been reported to be a carrier of SARS disease. Further investigations and advanced research in this direction should be taken up urgently.

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Evaluated by : M.S. Pradhan

DATA DEFICIENT

Order CARNIVORA

Family VIVERRIDAE

Subfamily PARADOXURINAE

56. *Arctictis binturong* (Raffles)
Binturong

Synonyms : *Viverra binturong* Raffles.

Common names : Binturong, Cat Bear.

Regional names : Assamese : Young.

Diagnostic characters : Binturong is a member of Civet family and is essentially like *Paradoxurus* and *Paguma* but differs from them in possessing larger body size with heavy coarser long and shaggy coat. It can be distinguished from other civet species by its characteristic tufted hairs, long shaggy coat suggestive of a bear species, muscular tail base, prehensile tail and large bristling conspicuous white hairs longer than those of the fur. The tail is little shorter than the head and body. The general coat colour is black or blackish brown with pale tipped hairs giving a speckled appearance to pelage. Colour of tail is similar to that of the body.

Measurements : (in cm) : Head and body length 61-95; tail length 56-89.

Weight : (in Kg) : 9-14.

Intraspecific variations : Out of seven subspecies, only one namely *Arctictis binturong albiforns* (Cuvier) occurs within Indian limits.

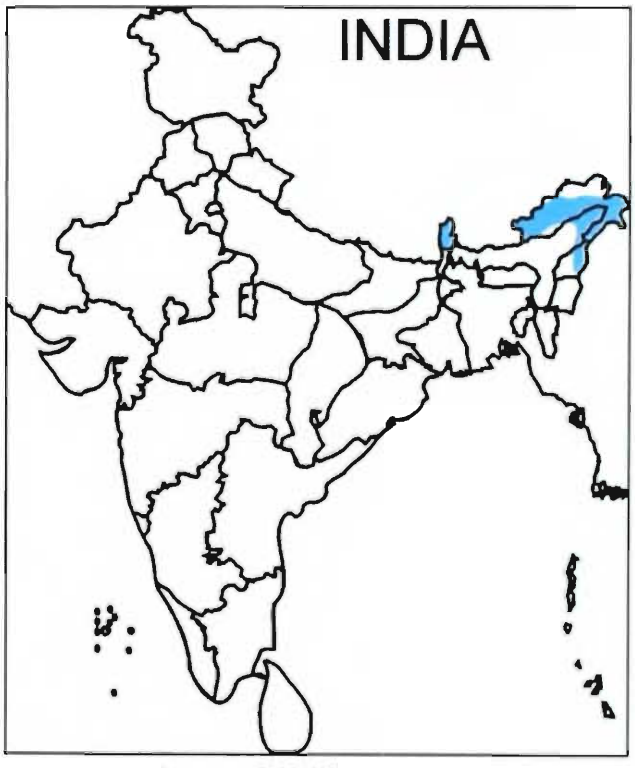
Distribution : From Sikkim and Assam to Arunchal Pradesh and further eastwards to Nagaland and Tripura within Indian limits.

Endemism : Non-Endemic species.

Altitude : Upto 2300 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.



Source : B.K. Tikader (1983)

Locations : *No. of locations* : Many; *Type* : Fragmented.

Habit, habitat and ecology : It is primarily a dense forest dwelling species leading solitary life. It may be seen in small parties with immatures. It is said to be omnivorous in habit, preferring to feed on fruits, shoots, insects, small birds and mammals. It may feed on fish as well. It is arboreal in behaviour spending daytime curled up in a tree hole. Said to breed throughout the year. Litter size 1-3. Gestation period lasts for 92 days while weaning starts from eight weeks.

Habitat structure : Dense forest dwelling species. The habitat structure is changing with general decline.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive Population : Males : 5 + females : 6= Total : 11 in 8 Indian zoo and males : 100 + females : 82 + unsexed : 7 = Total : 189 in 51 zoo abroad (Camp Report, 1998).

Life span : (Wild) : Not known; (Captivity) : 18 years and one month.

Population trend : Declining, with trend of general decline.

Sighting records : *Type of sighting* : Direct and Indirect; *Field notes* : Ghosh (1987) Chakraborty and Sen (1991), Choudhury (1999) and Sureshkumar (1999) have reported sighting records within Indian limits.

Threats : Interspecific competition, habitat fragmentation, human interference, loss of habitat, trade, hunting, corridor loss, habitat specificity etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Arctictis binturong (Raffles)

Trade : Local; *Parts in trade* : Live animals, body parts, organs, medicinal value; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : III; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998) (Proposed)* : Data Deficient (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, limiting factor research, population status studies.

Remarks : Binturong is the only civet species in the World that possesses prehensile tail. It is said that it can be easily domesticated and kept as a pet. Based on the currently available information it is strongly recommended that Binturang subspecies in India may be listed under one of the higher IUCN categories of Threatened species.

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Evaluated by : M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order CARNIVORA

Family FELIDAE

Subfamily FELINAE

57. *Prionailurus bengalensis* (Kerr)

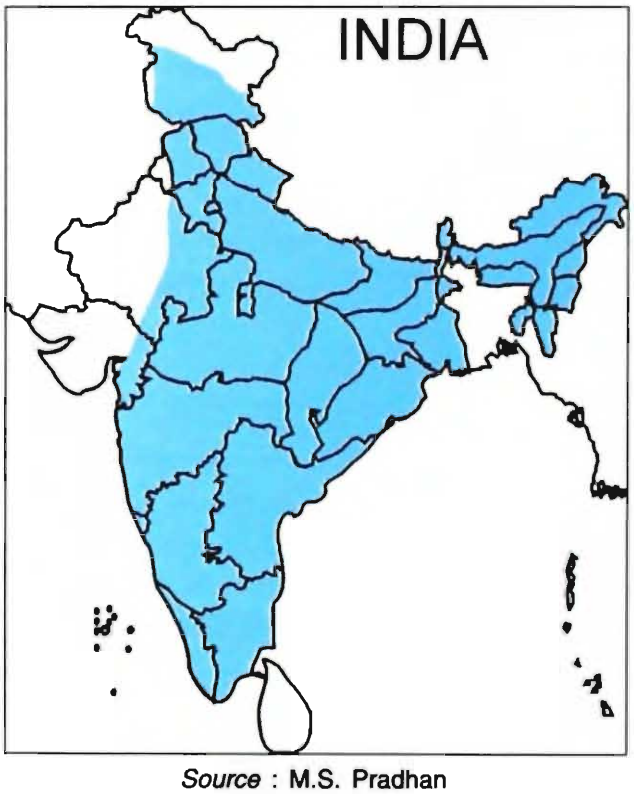
Leopard cat

Synonyms : *alleni, anastasiae, borneonensis, chinensis, ellioti, euptilura, horsieldi, ingrami, iriomotensis, javanensis, manchurica, microtis, minuta, nipalensis, pardochorus, raddei, reevesii, rickettii, seripta, sumatrana, tenasserimensis, tingia, trevelyani, undata, wagati.*

Common name : Leopard cat.

Regional names : Hindi : Chita Billi; Benagli : Ban biral; Marathi : Wagati; Malyalam : Biamn-Dhor; Assamese : Lota mekwri bagh; Kannada : Huli bekku; Mizo : Keipiri.

Diagnostic characters : The leopard cat is good looking cat relatively smaller in size with attractive markings on the pelage. All cat species under genus *Prionailurus* are distinguished by possession of spotted pelage with tendency to intergrate in to longitudinal stripes on shoulders. Ears bear prominent white spots on the backside. Throat hairs are reversed. Skull markedly elongated with palate longer than that of Felis. Legs longer in leopard cat with shorter tail and round ears. Underfur wooly. The ground colour varies from shades of tawny to pale yellowish buff. The whole body is handsomely marked with solid black spot like those of leopard or panther. Tail bears irregular spots except at the distal end with indistinct one or two rings and black tip. The forehead is patterned with 4-5 vertical narrow black stripes. Belly fur creamy white. The naked rhinarium is reddish brown. The iris is pale golden green. Vibrissae white in colour. There are irregular broad black streaks running from corner of the eye to base of the ear. Individuals in north India are furrier than those in south India.



Source : M.S. Pradhan

Measurements : (in cm/mm) : Head and body length : 40.0-60.0 cm; tail length : 21-31 cm; hindfoot length : 11.05 cm; ear length : 4.5 cm; skull length : 86-102 mm.

Weight : (in Kg) : 3.0-4.0. However, Russian specimens have weighed upto 7.0 Kg. (Mukherjee, 1999).

Intraspecific variations : Three Indian subspecies have been reported : i) *Prionailurus bengalensis bengalensis* (Kerr); ii) *Prionailurus bengalensis horsfieldi* (Gray) and iii) *Prionailurus bengalensis trevelyani* (Pocock).

Distribution : Practically whole of India excluding hot and cold deserts. Though Mukherjee (1999) and Menon (2003) exclude some parts of central India (Deccan Plateau) from the distribution range of Leoprad cat in India, Gogate (1999) has confirmed its occurence in the eastern part (Vidharbha region) of Maharashtra state.

Endemism : Non-Endemic species.

Altitude : up to 3000 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, habitat and ecology : The species has a wide spread distribution and is generally found in relatively thick vegetation cover. Though typical habitat is moist forested areas it is also seen in grassland, scrub forest and cultivated areas close to human settlements. Proximity to water sources is also an essential factor of its habitat. Leopard cat is nocturnal and arboreal in behaviour. It hunts chiefly on rodents, though young ungulates; birds, reptiles, insects and carrions are also prefered. In some areas they attack poultry as well . It breeds in spring and summer months. Litter size 1-4 kittens. They are reported to have interbred with domestic cats. They have also bred in captivity.

Habitat structure : Grassland, scrub forest, cultivated fields close to human settlements and also close to water resources. The habitat structure is changing with general decline.

Population : Global population : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Males : 36 + females : 45 + unsexed : 9 = Total : 90 in 20 Indian zoo. Males : 23 + females : 16 + unsexed : 1 = Total : 40 in 13 zoo abroad (CAMP Report, 1998).

Life span : (Wild) : Not known; (Captivity) : 13 years.

Prionailurus bengalensis (Kerr)

Population trend : Declining.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sighting records reported by Mukherjee (1998), Gogate (1999) and Roberts (1997).

Threats : Interspecific competetion, human interference, loss of habitat, trade, hunting for fur; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, domestic; *Parts in trade* : Skin, live animals (Pradhan, 1997), taxidermy models, fur; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Lower risk-Near Threatened.

Taxon related studies recommended : *In-situ* survey, monitoring and population studies.

Remarks : Considering the levels of threats and trade it is strongly recommended to include this species in the list of higher Threat category of IUCN.

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Evaluated by : M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order CARNIVORA

Family FELIDAE

Subfamily FELINAE

58. *Prionailurus rubiginosus rubiginosus* I. Geoffroy Saint Hilaire
Rusty Spotted Cat

Synonyms : *Felis rubiginosus* I. Geoffroy Saint Hilaire, *koladivinus, phillipsi.*

Common name : Rusty Spotted Cat.

Regional names : Tamil : Namati Pilli, Verewa Pinni; Gujarati : Bitari Billi; Kannada : Kaadu Bekku; Telugu : Chiruta Pilli; Malyalam : Thurubaan Poocha.

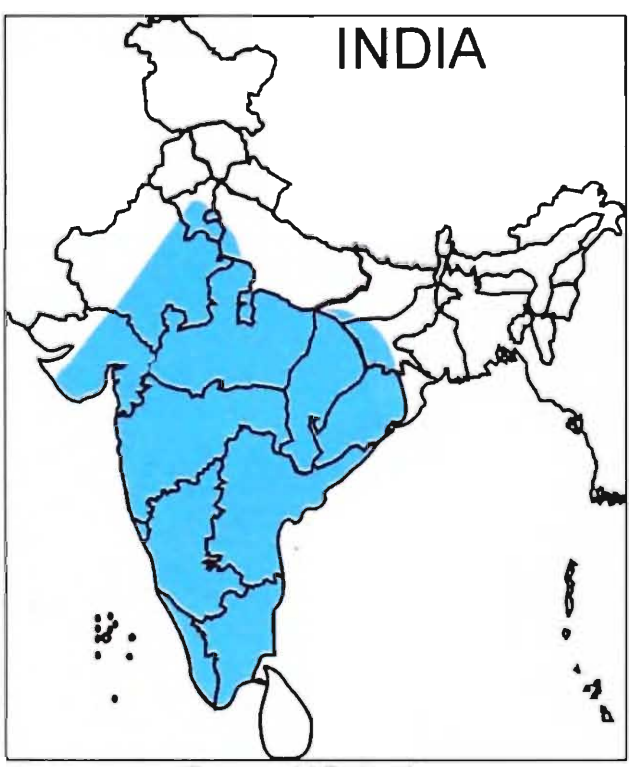
Diagnostic characters : Rusty spotted cat is smaller than a domestic cat. It is about half or 3/4th of the size of domestic cat. It is the smallest member of the cat family. It posseses short and round head and ears. Jaws and muzzle shortened. Tail is about half the length of head and body. Its coat is soft, smooth and dense. It is typically rufescent grey coloured with small brown bars and spots arranged in a linear pattern on the back. Those on hindquarters are reduced to small or almost neglegible spots. Ventral side white with black spots. Characterstically the tail is unmarked and more rofous in colour. The dark brown markings on the head and shoulders change to rusty on flanks and are reduced to smaller spots on the hindquaters. There are four dark lines running from the eyes and the base of the nose over the head to the nape. Two dark streaks on the cheeks present. The eyes are ringed with white. Backside of the ears rufus grey with dark tip and a lighter basal spot on each ear.

Measurements : (in cm/mm) : Head and body length: 35-40cm; tail length : 15-25 cm; hindfoot : about 86.0 mm; ear : 32.0 mm; tuft of hairs on ear : 12.0-13.0 mm.

Weight : (in Kg) : 1.0-2.0.

Intraspecific variations : Out of two subspecies only nominate subspecies *P. rubginosus rubiginosus* is known to occur within Indian limits.

Distribution : Rusty spotted cat occurs in scattered pockets in the



Source : M.S. Pradhan

Peninsular India upto Rajasthan, also an isolated record of its occurrence from Jammu and Kashmir (Chakraborty, 1979). Recently Shri. P.J. Thosare, Chief Conservator of Forests, Maharashtra State, has reported its occurrence in Pune Dist. (per. com. and Photograph).

Endemism : Non-Endemic species.

Altitude : 10-200 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, habitat and ecology : Habitat of the rusty spotted cat is varied throughout its distributional range from rocky outcrops, grasslands, scrub jungles and dry deciduous forests to areas around human habitation. It appears to be tolerant to man-modified habitats and plantations. It is visible after showers when it emerges out from its tree hideouts. It is arboreal and nocturnal in habit. It does not seem to be purturbed by human activities. Basically, this cat is not a creature of dense forest. It feeds chiefly on small mammals, birds and reptiles. At times, it may raid on poultry farms also. There are number of records of it giving birth to the young one on rooftops. Nothing is known about its social life and breeding habits except that it gives birth to 1-2 kittens after a gestation period of 66-68 days. Hybrids between rusty spotted cat and domestic cat are not known.

Habitat structure : Variety of habitats throughout its distributional range from rocky outcrops, grasslands, scrub jungles and dry deciduous forests to areas around human habitation. Tolerant to man-modified habitats and plantations. The habitat structure appears to be decreasing with general decline.

Photo : P. J. Thosare

Prionailurus rubiginosus rubiginosus I. Geoffroy Saint Hilaire

Population : Global population : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : None in Indian zoo. Males : 2 + females : 2 = Total : 4 in zoo abroad, (CAMP Report, 1998).

Life span : (Wild) : 10 years; (Captivity) : Not known.

Population trend : Unknown.

Sighting records : *Type of Sighting* : Direct and Indirect; *Field Notes* : Number of sighting records from various parts of the Peninsular India in recent years. Mukherjee (1998) in Rajasthan and Madhya Pradesh, Acharjyo (1998) Orrissa, Mukherjee (1998) in Andhra Pradesh, Gogate (1998), Thosare (Per. Comm.) and M. S. Pradhan (Per. observations) in Maharashtra and Chakraborthy (1979) in Jammu and Kashmir.

Threats : Loss of habitat, human interfernce, hybridization, accidental death, distribution in isolated pockets, professional trapping of live animals etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local and international; *Parts in trade* : Live animals, Fur; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book (IUCN, 1994)* : Insufficiently known; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Vulnerable based on Version 3.1, 2001 (IUCN, 2003)

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, population status and habitat mangement.

Remarks : Chakraborty (1979), Tikader (1983), Anonymous (1994), Mukherjee (1998) and Menon (2003) consider the status of rusty spotted cat as Rare. It is, therefore, strongly recommended to include this species in the higher category of IUCN based on their observations. Further it faces genuine threat of hybridization with domestic cats also.

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Evaluators : M.S. Pradhan and P.J. Thosare

VULNERABLE

Order CARNIVORA

Family FELIDAE

Subfamily FELINAE

59. *Prionailurus viverrinus* Bennett
Fishing cat

Synonyms : *Felis viverrina* Bennett, *bennetti*, *himalayanus*, *rhizophoreus*, *viverriceps*.

Common names : Fishing cat.

Regional names : Hindi : Khupya bagh; Bengali : Mecchobiral; Assamese : Meseka; Malyalam : Kattanpuli.

Diagnostic characters : The fishing cat is a medium sized, stockily built cat with elongated head, short legs and tail. However, it is much larger than rusty spotted and leopard cats in size. The feet posseses moderately developed interdigital webs. Claw-sheath does not completely enclose the retractile claws. body covered with short coarse earthy grey olevaceous tinged fur mixed with brown. There are elongated dark spots arranged in the longitudinal rows. Six to eight black lines run down the forehead to the neck. A pair of cheek stripes is present. Tail marked with incomplete 5-6 rings with black tip. Forelegs with two elbow bars. There is characteristic white spot on the backside of the rounded ear. The area around muzzle and lower cheeks is white.

Measurements : (in cm) : Head and body length : 70.0-86.0; tail length : 25.0-33.0; hindfoot : 16.0-16.5.

Weight : (in Kg) : 6-12.

Intraspecific variations : No subspecies reported from Indian region.

Distribution : Fishing cat has a wide but discontinuous distribution within Indian limits. It has been reported from Western Ghats, Bharatpur, parts of Central India belt of nothern India, Orissa, West Bengal, Assam, and other north eastern states.

Endemism : Non-Endemic species.

Altitude : 10-2000 m.

Area of occupancy : Greater than 2001 sq. kms.

Source : M.S. Pradhan

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Fragmented.

Habit, habitat and ecology : The fishing cat inhabits forests at 1500 m in the Himalayas as well as swamps at foothills of these mountains and in parts of West Bengal and Eastern India. It is also known from the vicinity of Chilka lake in Orissa and along the west coast from coastal Maharashtra to Kanyakumari. Thus, it is confined obviously to riverine swampy tidal creek and marshy areas. Whereever the cat stays; it needs dense cover for shelter. Fishing cat feels at home in water and can precisely dive and hunt fish in water. It is terrestrial, semi-aquatic in habit, and nocturnal in behaviour. It may also feed on aquatic bird species like waterfowls and ducks. The cat possesses a reputation for its strength and its boldness. It can even knock down feral dogs as well. Mukherjee (1998) reports that Fishing cat has bred well inside Keoladeo National Park Rajastan, India. However, no details are yet available. There may be 1-2 kittens in a litter.

Habitat structure : Dense forest covers near water bodies.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Males : 6 + females : 5 = Total : 11 in Indian zoo; males : 57 + females : 63 + unsexed : 1 = Total : 121 in zoo abroad (CAMP Report, 1998). Five specimens were born in captivity in different zoo (Anonymous, 1994).

Life span : (Wild): Not known; (captivity) : 10 years (Roberts, 1997).

Population trend : General Decline.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sighting records reported by Agrawal *et al.* (1992), Roberts (1997), Johnsingh (1998), and Gogate (1998).

Threats : Human interference, loss of habitat, trade, hunting, decline in prey species, corridor loss, change in landuse pattern, illegal fisheries and use of dynamite in fishing activity and destruction of aquatic vegetation; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, commercial, international; *Parts in trade* : Skin, live animals, fur (Anonymous, 1994 and Roberts, 1997), body parts, claws and bones (Anonymous, 1994); *Effect of trade on population (Perceived or inferred)* : Declining.

Photo : Bishwajit Roychowdhury

Prionailurus viverrinus Bennett

Conservation status : *CITES APPENDIX* : Not listed; *Indian Wildlife (Protection) Act (1972) (As ammended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Vulnerable (National) and Data Deficient (Global); *IUCN (2002)* (Proposed): Vulnerable (Global) based on Version 3.1 2001 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, population status studies.

Remarks : On the basis of the currently available information and also taking into consideration the levels of threats and nature of trade involved, it is strongly recommended to include fishing cat in higher Threat category of IUCN. More over Roberts (1997), Anonymous (1994) and Tikader (1983) report the status of this species as rare.

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Evaluated by : M.S. Pradhan

NOT LISTED
Order CARNIVORA
Family FELIDAE
Subfamily FELINAE

60. *Otocolobus manul nigripectus* (Hodgson)
Pallas Cat

Synonyms : *Felis manul, ferrugineus, mongolicus, satuni.*

Common names : Pallas Cat, Manul.

Regional names : Ladakhi : Ribilik.

Diagnostic characters : The Pallas cat is a small strange looking cat with thick long fur. The head typically broad with small and low set ears. Eyes placed high up on the forehead. The tail long, cylindrical and thick. Face grey coloured but the neck, back and body are silvery or iron grey in colour. Their legs are short and striped. The forehead is spotted. It has an enlarged auditory bullae and a flattened round forehead. There is pair of dark stripes on cheeks. The tail is bushy with 4-6 narrow black rings. The tail terminates with black tip. The Pallas cat was wrongly thought to be the ancestor of some breeds of domestic cats, particularly persian breed like sand cat.

Measurements : (in cm) : Head and body length : 45.00 - 60.00; tail length : 20.0-30.0; hindfoot : 12.0-13.0.

Weight : (in Kg) : 2.0-4.5.

Intraspecific variations : Only one subspecies is known to occur within Indian limits : *Otocolobus manul nigripectus* (Hodgson).

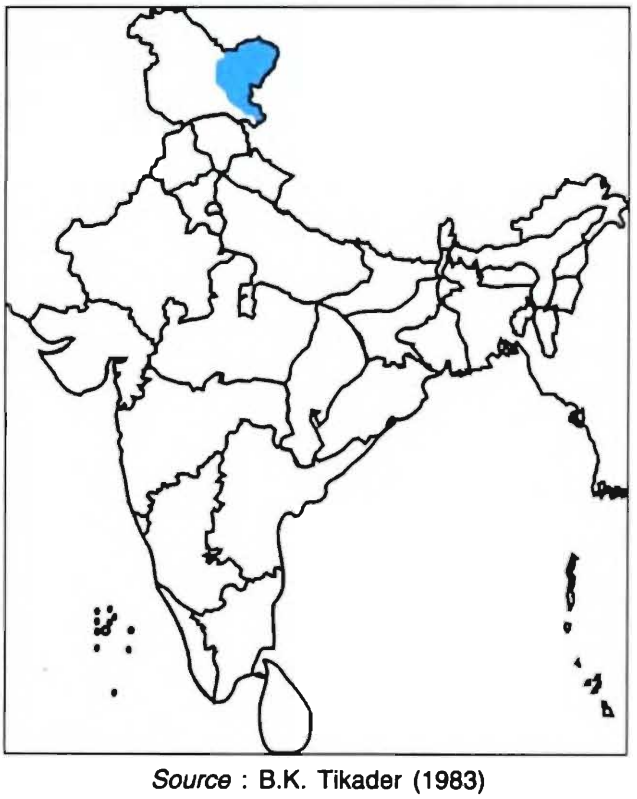
Distribution : Within Indian limits distribution of Pallas cat is restricted to Ladakh in Jammu & Kashmir.

Endemism : Non-Endemic species.

Altitude : 2500-4800 m.

Area of occupancy : 101-500 sq. kms.

Extent of occurence : 501-2000 sq. kms.



Source : B.K. Tikader (1983)

Locations : *No. of locations* : Few in India; *Type* : Fragmented.

Habit, habitat and ecology : Pallas cat remains confined to the higher reaches of mountain. It generally inhabits the rolling grassland or stony alpine patches and rocky outcrops at high altitudes. It is not seen in the extreme high altitude areas where there is a thick snow cover. Its principal prey species are pikas and rodents. It also feeds on small mammals and birds. Its resting sites are in crevices, caves or burrows of other animals. The cat appears to be aggressive and fearless of man. 4-5 young ones are born in a litter usually around April-May after a gestation period of 66 days. (Mukherjee, 1999).

Habitat structure : Barren stone valleys and hill ranges above tree line. The Habitat structure appears to be decreasing with general decline.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : 11 years.

Population trend : Declining.

Sighting records : *Type of sighting* : Direct and Indirect; *Field notes* : Sighting records are reported by Sharma (1994) and Roberts (1997).

Threats : Human interference, loss of habitat, trade, hunting, trapping.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local and international; *Parts in trade* : Skin, live animals, fur; *Effect of trade on population (Perceived or inferred)* : Declining.

Photo : Wildlife Institute of India, Dehra Dun

Otocolobus manul nigripectus (Hodgson)

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Insufficiently known; *IUCN (1998)* (Proposed) : Not listed (National); *IUCN (2002)* (Proposed) : Near Threatened (Global) based on version 3.1,2001 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, taxonomic studies, current population status.

Remarks : Roberts (1997) and Mukherjee (1999) have reported the status of this cat species as definitely Rare in Indian jurisdiction. Taking into consideration currently available information on level of threats, trade and distribution within Indian limits, it is strongly recommended that the species may be listed in one of the threat categories of IUCN.

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Evaluated by : M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order CARNIVORA

Family FELIDAE

Subfamily PANTHERINAE

61. *Pardofelis marmorata charltoni* (Gray)
Marbled Cat

Synonyms : *Felis marmorata* (Martin), *dosul*, *duvaucelli*, *longicaudata*, *ogilbii*.

Common names : Marbled Cat, Sand Cat.

Regional names : Bhotia : Sikmar; Lepcha : Dosal.

Diagnostic characters : The marbled cat is a miniature of a Clouded Leopard. It is a small sized cat with number of irregular blotches on the dorsal surface. There are number of black spots on the outer side of the limbs and the tail. Marble cat is slightly larger than the domestic cat and it posseses extremely long bushy tail. The blotches are arranged more or less in longitudinal pattern giving appearance of marble pattern. Its head is short and broad and is marked with one black stripe running up from the upper margin of the each eye. There are two black stripe on the cheeks and small spots on the forehead. The base colour varries from brownish grey to bright ochre or rufous brown. Ventrum pale in colour. Saggittal and occipital crest weak.

Measurements : (in cm) : Head and body length : 54-60; tail length : 35-54.

Weight : Not known.

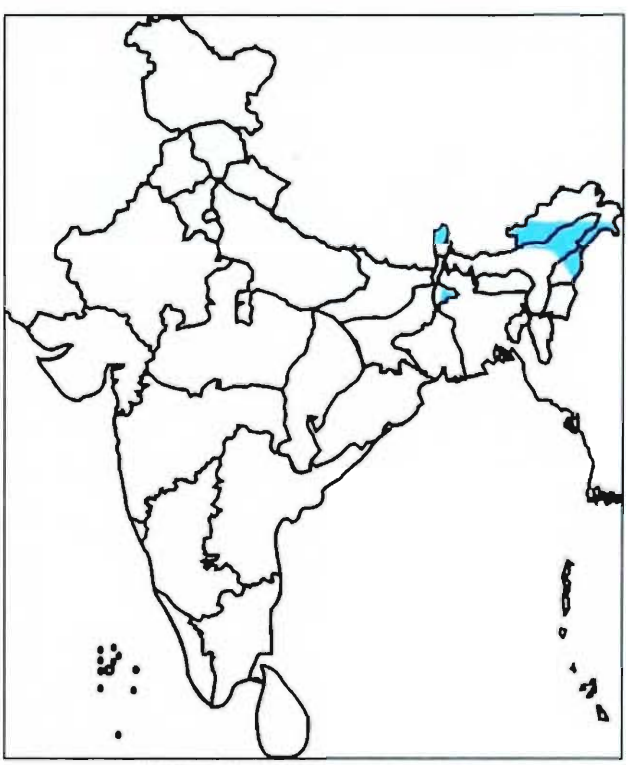
Intraspecific variations : Only one subspecies, namely *Pardofelis marmorata charltoni* (Gray) is known to occur in India.

Distribution : Marbled cat is reported from Darjeeling Dist. West Bengal, Sikkim, Namdapha and Manas within Indian limits. It is also known to occur on the northern side of Arunachal Pradesh in India.

Endemism : Non-Endemic species.

Altitude : 900-3000 m.

Area of occupancy : Greater than 2001 sq. kms.



Source : Corbet & Hill (1992)

Extent of occurence : 10001-20000 sq. kms.

Locations : *No. of locations* : Less than 10; *Type* : Isolated.

Habit, habitat and ecology : Marbled cat is known to inhabit the dense tropical deciduous to evergreen forests within its range of distribution. It is a terrestrial and arboreal cat with nocturnal behaviour. It feeds largly on rodents and birds. It might also prey upon other small to medium sized mammals (Anonymous, 1994). Nothing is known about its breeding behaviour except that the litter size is 1-4 young ones and the gestation period is of 81 days.

Habitat structure : The members of the species prefer to live in the dense tropical deciduous to evergreen forests. Habitat structure is changing with general decline.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Eleven in zoo abroad (Anonymous, 1994).

Life span : (Wild) : Not known; (captivity): 10 yrs.

Population trend : Declining with general decline.

Sighting records : *Type of sighting* : Direct and Indirect; *Field notes* : Occurrence records reported by Tikader (1983), CAMP Report (1998), Mukharjee (1998) and Anonymous (1994).

Threats : Habitat fragmentation, human interference, loss of habitat, trade, hunting etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local; *Parts in trade* : Skin, live animals, body parts; *Effect of trade on population (Perceived or inferred)* : Declining.

Photo : Wildlife Institute of India, Dehra Dun

Pardofelis marmorata charltoni (Gray)

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Vulnerable based on Version 3.1, 2001 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, taxonomic studies, and life history studies.

Remarks : Considering the level of threats and trades involved and currently available information, it is recommended that the species should be listed in one of the Endangered criteria of IUCN. Moreover, Anonymous (1994) and Tikader (1983) have also reported their conservation status as Endangered and Vulnerable respectively.

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Evaluated by : M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order CARNIVORA

Family FELIDAE

Subfamily FELINAE

62. *Felis silvestris ornata* Gray
Desert Cat

Synonyms : *agrius, angorensis, antiqorum, aureus, bouvieri, brevicaudata, brockmani, bubastis, caeruleus, caffra, cafra, aaligat, catus, caucasius, caudatus, cretenisis, cristata, cumana, cyrenarum, caemon, domesticus, euxina, ferox, ferus, foxi, grampia, griselda, griseoflava, gulata, haussa, hispanicus, huttoni, iraki, issikulenis, japonica, jordansi, kojlovi, longiceps, lowei, lybica, lybiensis, lynesi, macrothrix, madagacarensis, maniculata, namaquana, nandae, nestorovi, nubiensis, obscura, ocreata, ornate, pulchella, reyi, rubber, rubida, rupeli, rusticana, salvanicola, sarda, schintnikovi, sarvalina, siamnsis, sinensis, striatus, suriaca, taitae, tartessia, tarquata, tralatitia, trapezia, tristrami, ugandae, vulgaris, xanthella* from Alfred *et al.* (2002).

Common names : Desert Cat, Indian Desert Cat, Wild Cat

Regional names : Hindi : Rouminna, Jangli Billi; Registani Billi, Gujarati : Ran Billadi; Kutchhi : Jhengmano.

Diagnostic characters : The Indian desert cat with a broad head is slightly bigger than the domestic cat. Jungle cat and desert cat, both, are found in desert region as well as in the drier zones of Central India. The coat is thickly furred. Ears are rather small and are pointed with a very few short black hairs on the tip. Legs slightly longer than those of domestic cat. Soles black. The general body colouration is pale sandy yellow with number of rather small black spots arranged in some pattern. These spots lie in vertical lines down the trunk and flanks. The tail not thick or bushy but is spotted in the proximal half and with 4-5 black rings in the distal half. The belly in winter is with long and soft creamy white with a few indistinct black spots. The head shows small-scattered spots on the forehead. Black stripes present on forehead and neck. Two horizontal stripes may be present on the cheeks. Two black bars

Source : M.S. Pradhan

on the inner side of forearm. Chin, throat and breast white. Back of the ears is yellowish buff or "khaki" with darker tips. Vibrissae prominently white. Eyes vary from greenish grey to amber in colour. There is a considerable individual variation in colour due to interbreeding between wild and domestic *Populations*. This has resulted in large variety of cats with a dark greyish coat that is spotted or striped like Desert cat (Menon, 2003)

Altitude : Up to 500 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, habitat and ecology : Desert cat is generally seen in low-lying scrub jungle, semi arid and desert areas. It has also been sighted in close vicinity of cultivated tracts and villages near forest areas in Rajasthan and Maharashtra states. It is capable of excavating its own burrow system with two or more escape holes for its protection. In hilly areas, it tunnels under boulders or may utilise natural caves. It remains in burrows during daytime and wait till dusk time for hunting. Sometimes it is arboreal in habit and diurnal in behavoiur. Desert cat's subsistance rest mainly on desert rodents, besides feeding on hares, birds and reptiles and even on termites, cockroaches and other insects. It may even raid poultry pens. Breeding time in Rajasthan for Desert cat is in between October to February. The gestation period lasts for two months only. Litter size varies from 3-5 kittens, which face danger of predation by large cats. The pair bond is not everlasting.

Habitat structure : Arid, semi-arid and desert areas. Also sighted in close vicinity of cultivated tracts and villages near forests. *Habitat structure* appears to be stable.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known

Felis silvestris ornata Gray

Captive population : None in India. However, the species has been reported through artifical insemination in foreign zoo and research centers. (CAMP Report, 1998).

Life span : (Wild) : Not known; (captivity) : 16 years (Roberts, 1997).

Population trend : Declining.

Sighting records : *Type of sighting* : Direct; *Field*

notes : There are some interbreeding populations between desert cats and domestic cats. Desert cats have been sighted in Rajasthan and Madhya Pradesh by Kankane (2000), in Maharashtra State by Pradhan (in press) and in Gujarat by Singh (1998).

Threats : Habitat fragmentation, agriculture and farming, grazing, human interference, loss of habitat, trade, hunting, hybridization, corridor loss, hybrid population, poaching.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, commercial and international; *Parts in trade* : Skin, live animals, fur and body parts.; *Effect of trade on population (Perceived or inferred)* : Declining

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, monitoring, genetic studies, taxonomic studies, life history studies, habitat management and population status studies.

Remarks : Considering the level of threats, nature of trade and currently available information, it is strongly recommended that the Desert cat should be included in higher Threat category of IUCN. Moreover, Anonymous (1994) considers the status of Indian Desert Cat as Endangered.

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Evaluated by : Q.S. Baqri, M.S. Pradhan and P.L. Kankane

LOWER RISK-NEAR THREATENED

Order CARNIVORA

Family FELIDAE

Subfamily FELINAE

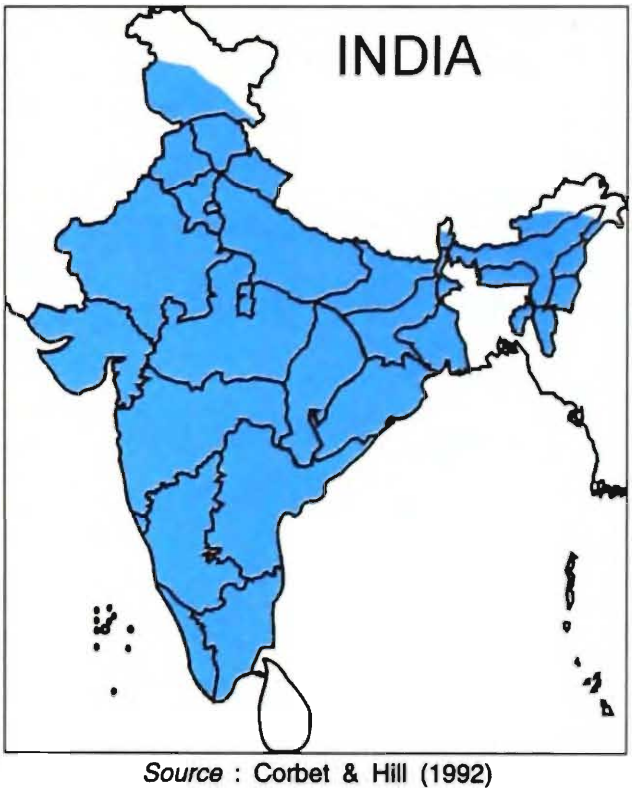
63. *Felis chaus* Schreber
Jungle Cat

Synonyms : *affinis, catolynx, chrysomelanotis, erythrotus, fulvidina, furax, jaquemonti, kelaarti, kutas, libycus, nilotica, ruppeli, shawiana, typical* as reported by Alfred *et al.* (2002).

Common name : Jungle Cat.

Regional names : Hindi : Khatas, Jangli Billi; Bengali : Ban Bilar; Marathi : Baul, Baoga; Telugu : Junka Pilli; Tamil: Kartu-poonay; Malyalam : Martu poocha; Kannada : Kada-bekku; Oriya : Bana Bhua; Gujarati : Jangli Biladi.

Diagnostic characters : Jungle cat is medium size cat with long legs and comparatively short tail. It is considerably larger than the desert cat. It possesses closely set long ears. Its pale green eyes give it cold and cruel expressions. Its body is unmarked by any spots. The summer coat is somewhat harsh while winter coat is softer. The fur colour varies from sandy or yellowish grey to tawny rufous. The tail is ringed with black colour towards the distal part, which terminates ultimately in black tip. The paws are pale yellowish, black or brownish underneath. Vestiges of stripes may be seen on neck and chest. The limbs are often marked with two solid transverse bars. The backside of the ears is reddish with a pale central spot. The ear tips may end in small pencil of black hairs. The belly fur is paler in colour. Some individual variations may also be seen. Naked rhinarium is brick red in colour. Eye may be circled with white. The northern and eastern India specimen may be larger than the Peninsular forms.



Source : Corbet & Hill (1992)

Measurements : (in cm) : Head and body length : 56.0-94.0; tail length: 20.0-31.0; hindfoot: 14.0-16.0; ear : 6.5-8.8.

Weight : (in Kg) : 5.0-9.0.

Intraspecific variations : Following four subspecies are known to occur within Indian limits : i) *Felis chaus kutas*

Pearson; ii) *Felis chaus affinis* Gray; iii) *Felis chaus kelaarti* Pocock and iv) *Felis chaus prateri* Pocock.

Distribution : Jungle cat is a most common cat distributed through all the different vegetation types and climatic zones of the country. Within Indian limits, it occurs throughout India excluding cold desert regions.

Endemism : Non-Endemic species.

Altitude : 0-2400 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, habitat and ecology : Jungle cat is a nocturnal and crepescular animal, which may live singly and/or in pairs. It prefers to live in varied habitats with good cover having access to water. Cultivated fields are also considered as good habitats for this cat. Its major prey species are rodents followed by small mammals' birds, reptiles, scorpions, insects etc. It also raids poultry farms. The jungle cat is capable of running at great speed. When there is any opportunity, it can also hunt prey of larger size. Jungle cat breeds perhaps twice in a year with 1-6 kittens in a litter. The gestation period is of 63-68 days. Mukherjee (1998) sighted a female with her kittens in Sariska Tiger Reserve during Winter season (December- January) summer appears to be a peak breeding season.

Habitat structure Open forests, dry deciduous and evergreen forest. It may be seen in grasslands and scrubby forest. Jungle cat prefers to live in the area with good vegetation cover and an easy access to water.

Felis chaus Schreber

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Males : 20 + females : 10 + unsexed : 10 = Total : 40 in 24 Indian zoo. Males : 25 + females : 24 + unsexed : 21 = Total : 51 in 16 zoo abroad (CAMP Report, 1998).

Life span : (Wild) : Not known; (Captivity) : 13 years.

Population trend : Stable.

Museum records : *Name of museum* : Some of the Regional Stations and Head Quarters of Zoological Survey of India and Bombay Natural History Society, Mumbai, possess representative specimens of this species in their collections.

Sighting records : *Type of sighting* : Direct; *Field notes* : Sighting reords have been reported from differnt parts of the country (Chakraborty, 1983 Agarwal *et al.*, 1992, and Pradhan (communicated). Some of them have also appeared in ENVIS report of Wildlife Institute of India, Dehra Dun (1998). Moreover, there are number of informal sighting reports from different parts of the country.

Threats : Human interference, poaching, accidental death, killing due to its habit of raiding poultry farms (apparantly there apperars to be no major threat to the existing population); *Effect of threats* on *population* (Perceived or inferred) : Can't say.

Trade : Local and internationl; *Parts in trade* : Live animals, fur; *Effect of trade on population (Perceived or inferred)* : Can't say.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not listed; *IUCN (1998)* (Proposed) : Lower risk-near threatened (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, montioring, life history studies.

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Evaluated by : M.S. Pradhan

NOT LISTED
Order CARNIVORA
Family FELIDAE
Subfamily FELINAE

64. *Catopuma temminckii temminckii* (Vigors and Horsefield) Golden Cat

Synonyms : *Felis temminckii* Vigors and Horsefield; *aurata; badiodorsalis, bainsei, dominicanorum, mitchelli moormensis, nigriscens, semenovi* and *tristis.*

Common names : Golden cat, Asiatic golden cat.

Regional names : Hindi : Sunheri Billi; Assamese : Shonali mekoori, Bangla; Shonali Biral; Manipuri : Tokpa.

Diagnostic characters : A medium to large sized, sturdy built cat with stout and rather long legs. Ears round, legs with large padded feet. Tail about 1/3 of head and body length. The colour and body patterns variable from uniform to the one which is heavily blotched. The commonly noticed coat colour is golden brown to grey without any patterns above. Ventrum paler. Head with horizontal white cheek sripes edged with black, running from below the eyes to behind gape. Another conspicuous white stripe present on inner side of the eyes. It bifurcates above and joins with a greyish stripe running on the crown. Ears black on innerside with whitish central spot. Tail terminates in dark tip. The face markings give the animal striking appearance.

Measurements : (in cm) : Head and body length : 75-105; tail length : 45-56; hindfoot length : 17-18.

Weight : (in Kg) : 8-15.

Intraspecific variations : Out of three subspecies reported from its range of global distribution only nominate subspecies occurs within Indian limits *viz. Catopuma temmickii temminckii* (Vigors and Horsfield).

Distribution : Within Indian limits Golden cat has been reported from Sikkim to eastern and north eastern Himalaya.

Endemism : Non-Endemic species.

Source : B.K. Tikader (1983)

Altitude : Upto 1500 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 5001-10000 sq. kms.

Locations : *No. of locations* : Not known; *Type* : Fragmented.

Habit, habitat and ecology : The Golden cat lives in the variety of forests in the Himalayan foothills as well as throughout its ditributional range. It takes shelter among rocks, crevices and also on trees. It is arboreal in habit and nocturnal in behaviour. It preys on rodents, birds, reptiles and small ungulates such as sheep, goat, goral and barking deer (Mukherjee, 1998). This animal is very stout and bold and can knock down much larger animal than itself. It is an expert climber and uses tree hollows for bringing up young ones. Generally, two cubs are born in each litter. The gestation period lasts for 80 days.

Habitat structure : Variety of forest types from tropical rain forest patches to dry deciduous forests of north east India, Terai and Duars open scrub and grassland Mukherjee, 1998). It can ascend to temperate zone up to attitute of about 1500 m. There is a change in the habitat strcture with general decline.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : 52 were kept in zoo abroad in 1980 (Anonymous, 1994).

Life span : (Wild) : Not known; (captivity) : Not known.

Population trend : General decline.

Catopuma temminckii temminckii (Vigors and Horsefield):

Sighting records : *Type of sighting* : *Field notes* : No recent sighting records reported from India. However, Agrawal, *et al.*, has carried out recent studies (1992), Anonymous (1994), Mukherjee (1998) and Menon, (2003).

Threats : Habitat fragmentation, human interference, loss of habitat, hunting, Trade, trapping for live animals (Anonymous, 1994); *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, commercial, international; *Parts in trade* : Skin, live animals, taxidermy models; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Not listed; *IUCN (1998)* (Proposed) : Not listed; *IUCN (2002)* (Proposed) : Vulnerable (Global) based on Version 3.1 2001 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, life history study, *Population* status study.

Remarks : With the currently available information on this species and taking into consideration the levels of threat and the nature of trade, it is recommended to include this species in one of the higher threat categories of IUCN. Tikader (1985) and Anonymous (1994) consider this species from Indian region as Rare and Endangered respectively.

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Evaluated by : M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order CARNIVORA

Family FELIDAE

Subfamily FELINAE

65. *Caracal caracal schmitzi* Matschiie

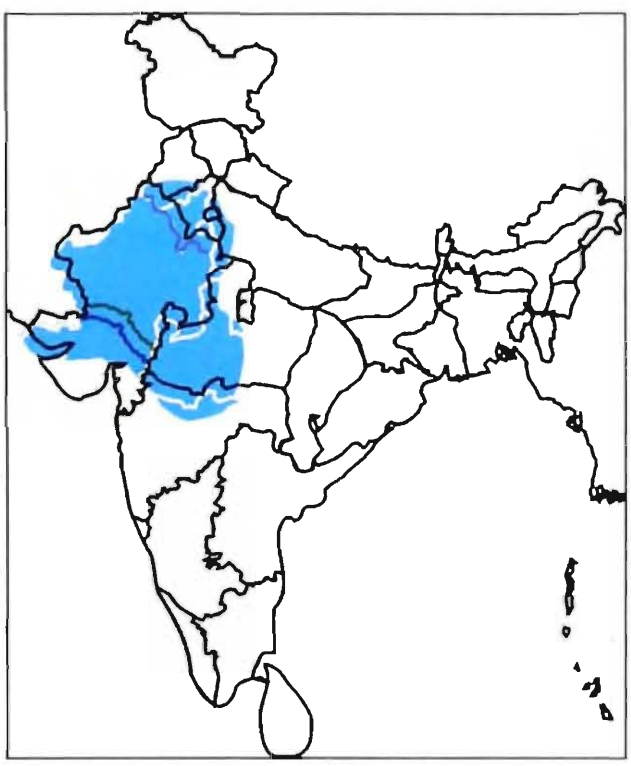
Caracal

Synonyms : *Felis caracal caracal* (Schreber), *aharonil, algira, bengalensis, berberorum, coloniae, corylinus, damarensis, limpopoensis, lucani, medjerdae, melanotis, michelis, nubicus, poecilotus, roothi, schmitzi, spatzi* as listed in Alfred *et al.* (2002).

Common names : Caracal.

Regional names : Hindi : Siyeh gush; Kutchhi : Hinotro; Korku : Bada Manu.

Diagnostic characters : A medium sized cat, smaller and slender than lynx, possessing long and powerful legs and a short tail, which reach just below the hocks. Paws appear relatively large and round with fully rectractile claws. Ruff of long hairs around cheeks absent in Caracal. Caracal tends to look higher in the hind quarters when standing. Ears set fairly close together and are characterstic in structure. They are triangular and pointed with a long erect tuft of black hairs at the tip. Backside of the ears black. Its coat is short and dense on the back, but comparatively wooly on the belly. The general ground colour is uniformly reddish sandy grey above, buff or white below with no trace of any distinct patterns. Some faint brown spots on the each side of the upper lip and two short vertical bars above the eyes present. The overall built of the cat is graceful and handsome. The apical tuft of hairs on the ear tips usually droops over. Rhinarium is dark brown. The limbs and the tail are of the same colour as that of the body.



Source : M.S. Pradhan

Measurements : (in cm/mm) : *Head and body length* : 62.0-82.0 cm; tail length : 23.0-32.0 cm. hindfoot : 17.0-21.0 cm. height at shoulder : 40.0-46.0 cm; apical tuft of hairs of ear : upto 40.00 mm.

Weight : (in Kg) : 14.0-22.0.

Intraspecific variations : Out of nine subspecies only one namely *Caracal caracal schmitzi* Matschie occurs within Indian limits. However, these subspecies have been recognised on the basis of minor colour variations.

Distribution : Caracal is found in Punjab, Rajasthan, Gujarat, eastern Uttrar Pradesh, western Madhya Pradesh and northern Maharashtara state within Indian limits.

Endemism : Non-Endemic species.

Altitude : Low hilly country/Lower altitutdes.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Fragmented.

Habit, habitat and ecology : Caracal is known to inhabit sandy deserts, semi-arid open bushes, scattered forests on grass plains and low scruby hillocks. It is a terrestrial and semi-arboreal cat with nocturnal behaviour. The tree hollows, crevices among rocks and boulders are its common shelter during daytime. Caracal moves with incredible speed and agility. It feeds on smaller animals like rodents, lizards, snakes, birds etc. However, it is capable of preying upon hare, antelope and gazelle, urial, peafowl etc. Breeding in captivity has been well recorded. The litter-size varies from 2-4. Gestation period varies between 63-81 days. Caracal appears to breed only once in a year. However, it is not confined to any particular season. The trapped kittens can be tamed very eaisly. When in pairs, its social organisation is typical. Large male home range incorporates smaller exclusive female ranges.

Habitat structure : Hot desert region and low hilly countries with scattered sparse vegetation and arid condition. There is no remarkable change in the habitat structure.

Caracal caracal schmitzi, Matschiie

Population : *Global population* : Not known; No. of mature individuals in all the populations : Not known.

Captive population : None in zoo in India and abroad. (CAMP Report, 1998).

Life span : (Wild) : 10-20 years; (Captivity) : 16-17 years.

Population trend : General Decline

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Mata Pahar Near Samber Lake, Rajasthan by Z.S.I. Party (1994). Other *Sighting records* : Gujarat (Singh : 1998), Sariska and Ranathambore Tiger Reserves in Rajasthan (Mukherjee, 1998); Melghat Tiger Reserve in Maharashtra (Gogate, 1998) and in Rajasthan state (Sharma, 1998).

Threats : Habitat fragmentation, human interference, loss of habitat, trade, hunting, poaching; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local.; *Parts in trade* : Live animals, fur, skin.; *Effect of trade on population (Perceived or inferred)* : Declining

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, limiting factor research, habitat management, population status studies.

Remarks : Considering the levels of threats and nature of trade involved as reported by Tikader (1983), Anonymous (1994), Roberts (1997) and Mukherjee (1998) it is strongly recommended to include caracal in higher Threat category of IUCN. Moreover, Tikader (1983) and Anonymous (1994) have already reported the species as Endangered species.

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Evaluated by : M.S. Pradhan

ENDANGERED
Order CARNIVORA
Family FELIDAE
Subfamily FELINAE

66. *Lynx lynx isabellina* Blyth
Lynx

Synonyms : *Felis lynx Linnaeus borealis, carpathicus, cervaria, dinniki, isabellina, kamensis, luilinus, lyncula, martinoi, neglectus, orientalis, strogonovi, tibetanus, vulgaris, vulpinus, wardi, wrangeli*, have been reported by Alfred *et al.* (2002).

Common name : Lynx.

Regional names : English : Eurpoean Lynx, Eurasian Lynx, Himalayan Lynx; Kashmiri : Patsalam, Lahul : Phiauku, Ladakhi : Eeh.

Diagnostic characters : The Lynx is a strongly built cat high on the legs. The most distinctive Character are its isabellian colour and long tuft of black tipped hair on the top of the ears. The ears are triangular and pendant. The hairs on the cheeks are lengthened behind to form a ruff on the face. These hairs frame the face as a speciailised adaptation to severe cold at high altitudes. Unlike Caracal, Lynx has a short and dark tail reaching half way to the hocks. There is some fringe of pendant hairs under the chin. The summer coat is slightly darker with sprinkled spots, which disappear in heavy winter coat and furred feet. The winter coat is fawn and white.

Measurements : (in cm/mm) : Head and body length : 86.0-107.0 cm. tail length; 14.0-20.5 cm.; ear tuft : 45.0-73.0 mm.

Weight : (in Kg) : 18.0-21.0.

Intraspecific variations : Out of ten subspecies of *Lynx lynx* only one occurs in India *viz. Lynx lynx isabellina* Blyth.

Distribution : Within Indian limits Lynx occurs in Gilgit and Ladakh regions of Jammu and Kashmir.

Endemism : Non-Endemic species.

Altitude : 2500-4000 m.

Area of occupancy : 501-2000 sq. kms.

Source : B.K. Tikader (1983)

Extent of occurence : 2001-5000 sq. kms.

Locations : *No. of locations* : Nubra valley, Ladakh, Hemis National Park in Jammu Kashmir in India; *Type* : Isolated.

Habit, habitat and ecology: Habitat of Lynx is variable ranging from alpine forest to woodlands and to barren rocky areas above tree line. It is crepuscular in habit. The Lynx shelters in dense cover provided by willow, scrub, patches of reeds and tall grass. During daytime shelter is sought in some natural hollow or caves between rocks. They lead normally solitary life. Lynx is an highly agile predaceous cat species. They have acute vision and sense of hearing. They hunt birds and small mammals. They are even capable of hunting sheep, goat, young Ibex and Markhor. They have succeeding in catching and hunting patridges, hill pigeons, pheasants etc. Favoured diet is mostly hares, rodents and marmots. Breeding habits are poorly known. It appears that they breed in August (Tikader, 1983). Gestation period is of 69 days and the litter size is 2-3 kittens. The mother hides its litter in a cave or a hole among rocks.

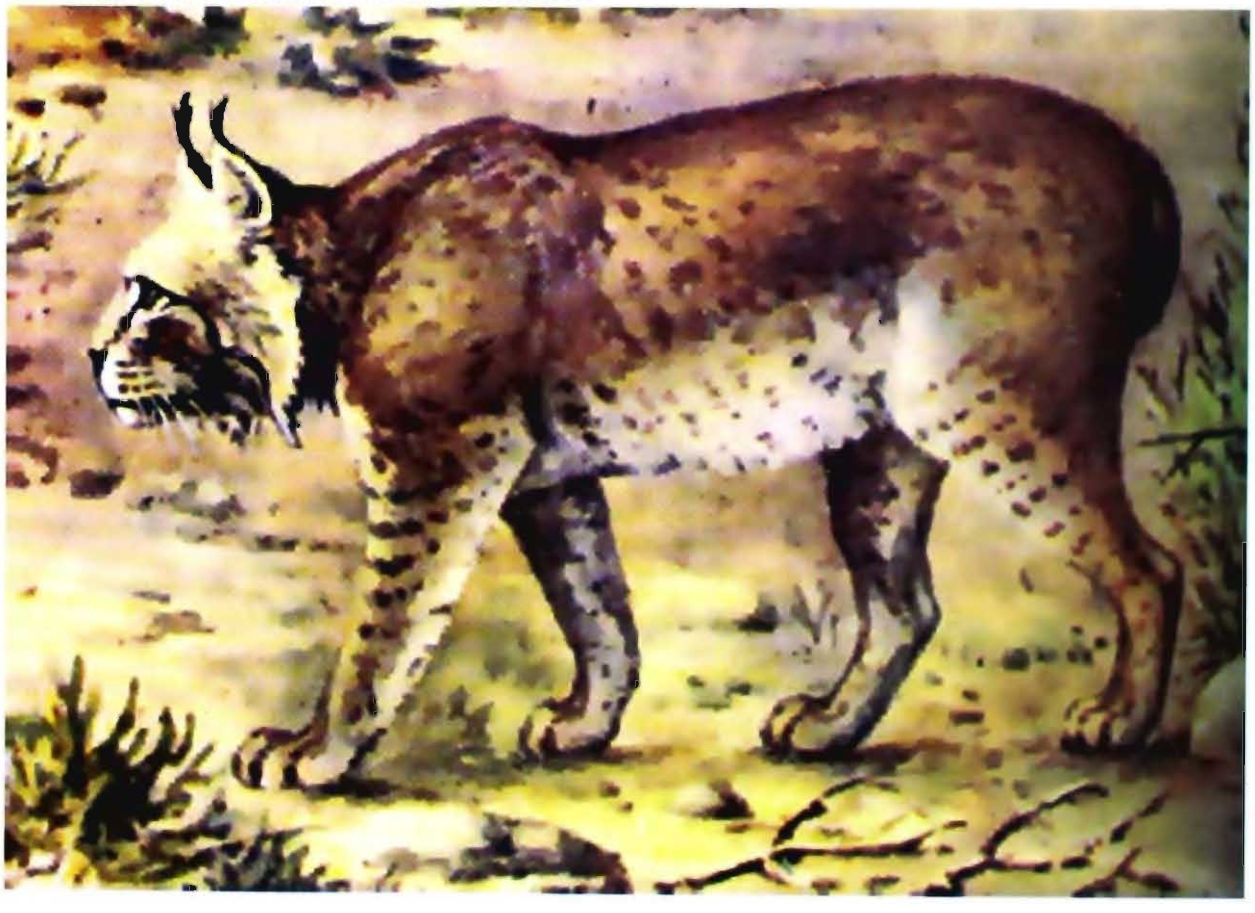
Habitat structure : A high altitude species living in variety of habitats from alpine forests to barren rockey areas. Decrease in habitat structure with general decline.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Males : 2 in two Indian zoo. Males : 36 + females : 29 + unsexed : 2 = Total : 67 in 24 zoo abroad (CAMP report, 1998).

Life span : (Wild) : Not known; (Captivity) : 16 years (Roberts, 1997).

Population trend : General decline.



Lynx lynx isabellina Blyth

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sighting records reported by Johnsingh (1986), Hilaluddin (1997), Roberts (1997) and Mukherjee (1998).

Threats : Interspecific competition, habitat fragmentation, human interference, loss of habitat, Trade, hunting, decline in prey species, insergency/terrorism/war; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, commercial, international; *Parts in trade* : Skin, live animals, fur, body parts (Roberts,1997); *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : Endangered (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : For *Lynx lynx*; Near Threatened (Global) based on Version 3.1, 2001 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, population status studies.

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Evaluated by : M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order CARNIVORA

Family FELIDAE

Subfamily PANTHERINAE

67. *Neofelis nebulosa* Griffith
Clouded Leopard

Synonyms : *Felis nebulosa* Griffith; *Pardofelis nebulosa* (Griffith), *brachyrus*, *diardi*, *macrocelis*, *macrosceloides*.

Common name : Clouded Leopard.

Regional names : Lepcha : Pungmar, Satchuk; Bhotia : Kung; Bengali : Lamchita; Assamese : Ghodaphutuki bagh; Mizo : Kelral.

Diagnostic characters : The Clouded Leopard has a long body and tail, short limbs and round black ears. Forelegs shorter than hindlegs. Large padded feet. Head long and rather narrow with a broad muzzle. Upper canines long. Iris brownish yellow or grayish green. Tail long and well furred. Fur rather short. The general colour of the body varies from grayish yellow to yellowish brown. Head spotted and face marked with cheek stripes. Large 'Clouded' spots present on the body. Dark blotches surrounded by black margins form the spots. There are some solid spots on the legs. Tail marked with number of rings and a black tip. Ventrum and inner side of the legs whitish on pale tawny. The short legs give it heavy appearance. Clouded Leopard is the smallest of the big cats, and is most strikingly patterned cat in India.

Measurements : (in cm) : Head and body length : 60.0-110.0; tail length : 70.0-90.0; height at the shoulders : 50.0-60.0.

Weight : (in Kg) : 11.0-22.0.

Intraspecific variations : Only one subspecies, namely *Neofelis nebulosa macrosceloides* (Hodgson), has been reported from Indian limits.

Distribution : Within Indian limits, the Clouded Leopard has been reported from north eastern India including northern parts of West Bengal, Assam and Sikkim.

Endemism : Non-Endemic species.

Altitude : Upto 3000 m.

Source : V. Menon (2003)

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, habitat and ecology : The Clouded Leopard is largely arboreal. It inhabits dense forests where it hunts by night. Its powerful jaws and great canine teeth and heavy built adapt it to the killing of deer and equally large sized animals. It also preys upon goats and pigs. Its diet includes variety of animals like primates, squirrels, birds etc. It sometimes visits villages in the hilly terrain and tea garden areas of northern Bengal to lift domestic animals of its size. Nothing is known about its breeding habits except that it looks after its young ones in tree hollows. Litter size is generally two in Clouded Leopard.

Habitat structure : Prefers to live in dense forests ranging from deciduous to evergreen forests. It may also live in grassland and scrubland habitats. The habitat structure is changing with general decline.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Males : 9 + females : 4 = Total : 13 in 7 Indian zoo (CAMP Report, 1998). Males : 98 + females : 79 = Total : 177 in 47 zoo abroad (CAMP Report, 1998).

Life span : (Wild) : Not known; (Captivity) : 20 years.

Population trend : Population trend shows general decline in population.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sightings and other records reported by Anonymous (1994), Choudhary (1993), CAMP Report (1998) and Menon (2003).

Threats : Habitat fragmentation, human interference, loss of habitat, trade, hunting, decline in prey species, poaching; *Effect of threats on population (Perceived or inferred)* : Declining.

Neofelis nebulosa Griffith

Trade : commercial, international; *Parts in trade* : Skin, live animals, taxidermy models, fur, body parts; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Vulnerable (Global) based on Version 3.1 2001 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, limiting factors research, popualation status studies.

Remarks : Considering the currently available information on level of threats and nature of trade involved, it is strongly recommanded to include this species in one of the higher Threat category of IUCN. Further Tikader (1983) and Anonymous (1994) considered this species as Rare and Endangered respectively.

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Evaluated by : M.S. Pradhan

EXTINCT

Order CARNIVORA

Family FELIDAE

Subfamily PANTHERINAE

68. *Acinonyx jubatus* (Schreber)
Asiatic Cheetah

Synonyms : *Felis jubatus* Schreber other synonyms are *fearonii, fearonis, guttata, hecki, lanea, megabalica, ngorongorensis, obergi, raddei, raineyi, rex, senegalenis, soemmeringii, velox, venatica, venator, wagneri* (Alfred *et al.*, 2002).

Common names : Asiatic Cheetah, Hunting Leopard.

Regional names : Hindi and Marathi : Cheetah.

Diagnostic characters : The Asiatic cheetah or hunting leopard is little smaller than the panther and much lighter in built. It is distinctively large cat, with long legs, slimmer body and a small round head. Cheetah possesses exposed rectractile claws without any claw sheaths. It has a harsh coat varying from tawny to bright ruddy fawn colour above while pale below. body covered with a small close-set soild round or oval black spots. A black stripe runs from inner corner of each eye to the edge of the mouth. Ears short and rounded, back side black except at the tip. Tail long more than half of head and body Length.

Measurements : (in cm) : Head and body length : 90-150; tail length : 30.0-80.0; hindfoot : 28.0-30.0; height at shoulder : 60.0-80.00.

Weight : Not known.

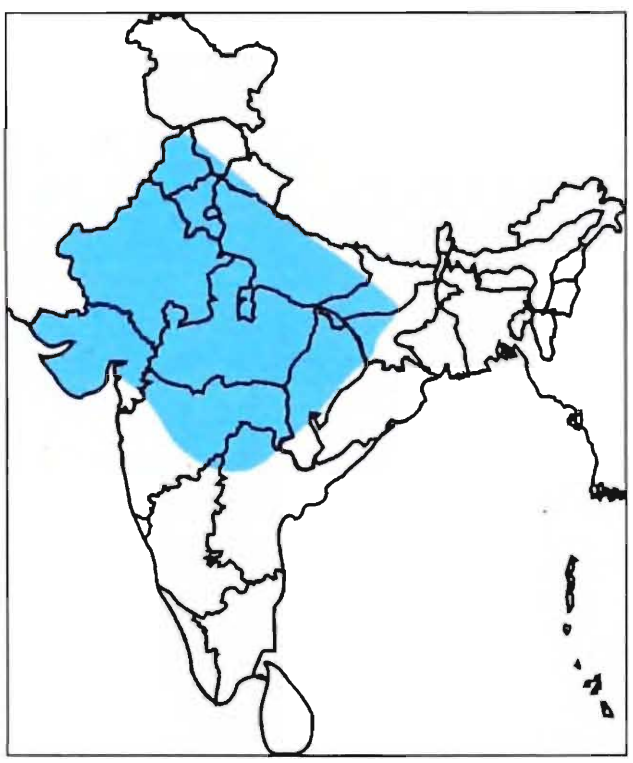
Intraspecific variations : Only one subspecies was known to occur in past in India: *Acinonyx jubatus venaticus* (Griffith).

Distribution : Extinct in India since 1952. Now found as a few scattered survivors in Northeastern Iran in Asia.

Area of occupancy : Not known.

Extent of occurence : Not known.

Locations : *No. of locations* : No information is available since 1952; *Type* : Isolated.



Source : Corbet & Hill (1992)

Habit, habitat and ecology : No current information is availble, though in past, it used to live in open, semi-arid grassland and Savanna scrub forests. It lived most commonly in low rugged hills and came down from its lair amidst rocks and boulders for hunting in neighbourhood. In last phase, cheetahs were shot in thick jungles of central India. No current information is avilable about cheetah from this region.

Population : *Global population* : None in India since last authentic record reoprted in 1952. Not Known about global population; *No. of mature individuals in all the populations* : Not known.

Captive population : None.

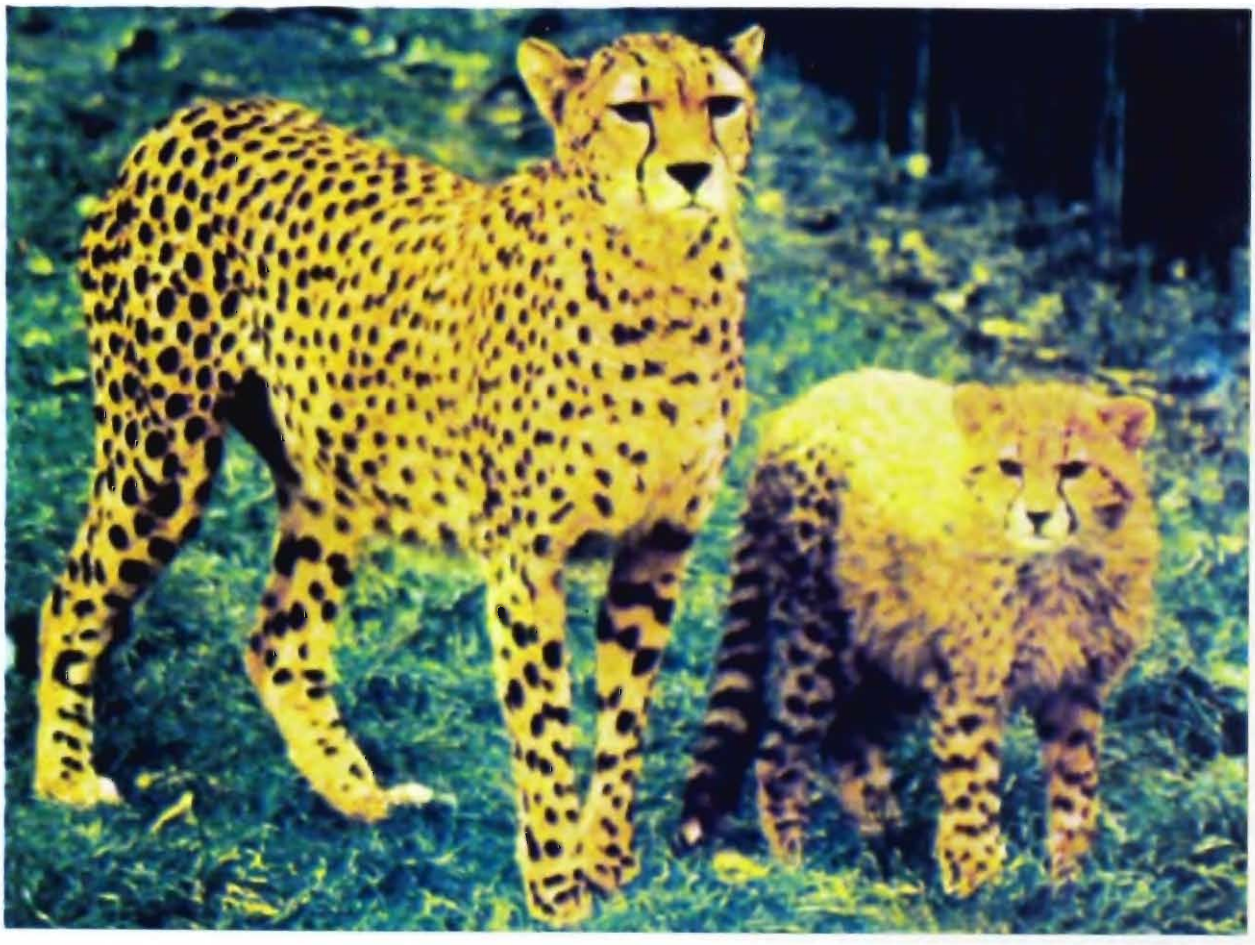
Life span : (Wild) : Not known since 1952; (Captivity) : Not known.

Population trend : Reported extinct since 1952.

Museum records : *Number of examples studied or collected* : Six skins kept in two Indian places.; *Name of museum* : There are only 6 Cheetah skins in India of definite Indian Origin. 3 in Lallgarh Palace, Bikaner, 3 with the Maharaja of Korea's family. There is one in ZSI, Kolkata, acquired in 1898. However, its origin is doubtful.

Sighting records : *Type of sighting* : Direct; *Field notes* : Last authentic sighting record was reported from India in 1952.

Threats : Indian Cheetah is already Exinct.



Acinonyx jubatus (Schreber)

Trade : International for African Cheetah; *Parts in trade* : Live animals for zoo, Taxidermy models (Anonymous, 1994); *Effect of trade on population (Perceived or inferred)* : Can't say.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Extinct; *IUCN (1998)* (Proposed) : Extinct (National); *IUCN (2002)* (Proposed) : Vulnerable (Global) based on 3.1 Version (IUCN, 2003).

Taxon related studies recommended : Reintroduction programme studies in a scientific and systematic manner.

Remarks : Comments of Shri. Divyabhushansingh : 1) Last credible sighting of cheetah was in 1968. Last three animals were shot in 1948 (Prater, 1980); 2) The range of Cheetah was from Rajsthan to Orissa and from Punjab to the southeren tip of the Deccan Plateau with a few stragglers beyond; 3) Only 229 definte records of Cheetahs in the subcontinent can be recorded for the period 1772 to 1947, followed by 1952 credible record in India and 1968 sporadic sighting record from Pakistan. About 50 plus animals still survive in Iran; 4) Habitat preference was for open grasslands though in the last phase Cheetahs were shot in thick jungle of central India. (Rewa); 5) Two subspecies are generally accpeted i.e. *Acinonys jubatus jubatus* (Schreber) of sub Sahara Africa and *Acinoyx jubatus venaticus* (Griffith) of Asia. However, *mt* DNA analysis initiated from a sample base of only 3 skin pieces has suggested more similarites than differences. Hence, sub-specification may not be justified. The matter is in a flux. Attempts are on by Geroge B. Schaller of Wildlife Conservation Society, New York, to get *mt* DNA analysis done to increase the sample base to examine sub-specific status; 6) There are only 6 Cheetah skins in India of definite Indian origin : 3 in Lallgarh Palace, Bikaner, and 3 with the Maharaja of Korea's family. There is one in ZSI, Kolkata, acquired in 1898. It is doubtful of Indian origin. Lallgarh cheetahs were shot in Rewa in 1925; these were the specimens from which samples sent to Prof. David Woodruff of University of California, San Diego for mt DNA analysis. The Korea Cheetah was shot in 1948; 7) Causes of extinction possibly caused by a) Their constant removal (both sexes) as trained hunters for hunting with them for thousand years; b) Disappearance of grasslands; c) They are not prolific breeders; d) Their young ones were taken by Lions, Hyanas etc.; 8) Existence of suitable habitat for reintroduction doubtful in India. Creation of such habitat is the only answer. Adendum from M.S. Pradhan : 1) Attempt to breed imported cheetahs in captivity in India and translocate them to a suitable habitat during the period 1990-95 proved to be unsuccessful (Arora *et al.,* 1999). According to them project cheetah would need a well-planned strategy imbued with expertise on husbandry and medical care; 2) As a part of reintroduction programme cheetah in wild, India is planning to clone the cheetah, *Acinonyx jubatus*, at La CONES, Hydrabad. Scientists are planning to clone a cheetah in five years. The efforts are being attempted by La CONES, in joint venture with Deprtment of Biotechnology, Central Zoo Authority of India, Nehru Zoological Park and Andhra Pradesh Forest Department (Anonymous, 2001).

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Evaluated by : Divyabhushan Singh & M.S. Pradhan

CRITICALLY ENDANGERED

Order CARNIVORA

Family FELIDAE

Subfamily PANTHERINAE

69. *Panthera leo persica* (Meyer)
Asiatic Lion

Synonyms : *Felis leo, adusta, africanus, asiaticus, azandicus, barbarus, bengalenis, bleyenberghi, capensis, gambianus, gaofratensis, hollisgteri, indicus, kamptzi, krugeri, maculates, massaicus, melanochaitus, nigra, nobilis, nyanzae, persicus, roosvelti, subakiensis, senegalensis, somalienis, suahelicus, vernayi, webbienis.*

Common name : Asiatic Lion.

Regional names : English : Indian Lion; Marathi and Gujarati : Sinh; Hindi : Sher, Babbar Sher; Kathiawari : Sawachh.

Diagnostic characters : A large powerfully built majestic and gracious cat with a very broad head. The body coat is short but uniform. Males possess almost black mane. Females are little smaller than males. Ears round with black marks on the basal part of the backside. Tail long with a long black tassel of hairs at the tip. Foot pads large. Forelimbs powerfully built than hindlimbs. Young ones spotted or striped. General coat colour varies from unpatterned pale yellowish brown to sandy grey. Underparts white. The colour of the lion's sparse mane varies from pale blonde to jet-black. Muzzle relatively long. Iris yellow or amber. A horney spur is concealed in the tuft of tail hairs.

Measurements : (in cm) : Head and body length : 140-250; tail length : 70-105; hindfoot 35.0; height at shoulders : 80-110.

Weight : (in Kg) : Males : 150-250; females : 120-185.

Intraspecific variations : Only one subspecies namely *Panthera leo persica* (Meyer) is known to occur in Indian region.

Distribution : The Lion population is at present restricted to the Gir forest in Kathiawar region of Gujarat, India.

Source : Corbet & Hill (1992)

Endemism : The subspecies is endemic to India.

Altitude : MSL-500 m, plains.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 501-2000 sq. kms.

Locations: *No. of locations* : One (One large population and 2 very small sub populations); *Type* : Contiguous.

Habit, habitat and ecology : Asiatic Lion is a less social animal and lives in small family parties. The party mostly consists of 2-5 females with their cubs. Males join the parties only to feed and mate. It hunts at night and preys on antelope, deer, pig, cattle and other livestock. There is no definite breeding season. However, mating generally takes place in October-November. 2-3 cubs are born in January-February after a gestation period of about 116 days. There is a steady increase in lion population due to improvement in its degraded habitat. Attempts are also being made to bring under control the conservation threats due to inbreeding.

Habitat structure : Acacia, teak. palas, bamboo, Semal, Jamun etc. with thorny bushy undergrowth may predominate lion habitat. It prefers dry deciduous forest, scrub jungle or dry Savannah type of forest. The habitat structure is steadily increasing.

Population : *Global population* : 251; *No. of mature individuals in all the Population* : less than 250.

Captive population : Males : 33 + females : 68 = Total : 101 in 14 Indian zoo; males : 29 + females : 36 + unsexed : 4 = Total : 69 in 29 zoo abroad (CAMP Report, 1998).

Panthera leo persica (Meyer)

Life span : (Wild) : 10-15 years; (captivity) : 15-25 years.

Population trend : Steadily increasing.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sighting records were reported during ecological, management of population and conservation status studies of Asiatic lion by Dharmakumar Sinhji (1973), Joslin (1973), Chavan and Rawal (1990), Chellam (1993), and Jhala *et al.* (1999).

Threats : Catastrophic events, disease, agriculture and farming, grazing, mining, human interference, genetic problems like inbreeding; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Commercial, international, canines and claws are used for trade; *Parts in trade* : Bones, live animals, claws, whiskers and canines (Pradhan, 1997).; *Effect of trade on population (Perceived or inferred)* : Not declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : Critically Endangered; *IUCN (2002)* (Proposed) : Critically Endangered based on Version 3.1 2001 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, genetic studies, life history studies, limiting factor research, habitat management, conservation strategies recommended, translocation in any other suitable habitats.

Remarks : Concrete attempts must be made to reduce human-lion conflict to offer full protection to the surviving population in only one Indian locality. Lion's habitat, Gir forest, has already been declared as Gir National Park to give protection to the dwindling lion population in India.

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Evaluated by : Y.V. Jhala and M.S. Pradhan

VULNERABLE

Order CARNIVORA

Family FELIDAE

Subfamily PANTHERINAE

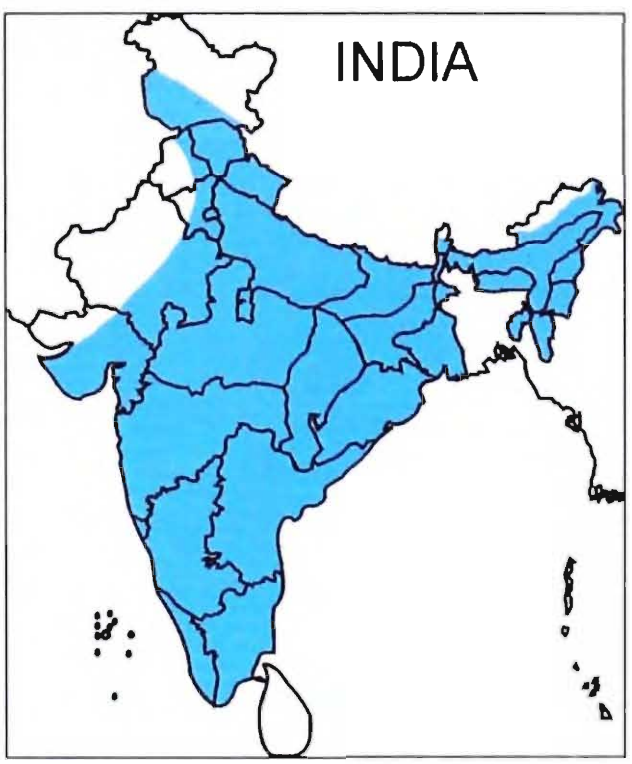
70. *Panthera pardus* (Linnaeus)
Panther or Leopard

Synonyms : *Felis pardus* (Linnaeus) and number of synonyms such as *adersi, adusta, antinorii, antiquorum, barbarus, bedfordi, brockmani, centralis, chinensis, chui, ciscaucasicus, delacauri, fontanierii, fortis, fusca, grayi, hanenss, iturensis, japonensi, jarvesi, kotiya, leopardus, longicaudata, melanotica, melas, millardii, minor, nanopardus, niger, nimr, orientalis, palearia, loecilura, poliopardus, puella, neichenowi, ruwenxorii, saxicolor, ruwenzoriii, shortrridgei, sinica, suahelicus, tulliana, variegata, varius, villosa, vulgaris* as reported by Alfred *et al.* (2002).

Common names : Panther or Leopard.

Regional names : Hindi : Tendua, Tendua chita, Chita Bagh; Telgu : Chinna pulli, Marathi : Bibtya Vagh; Kannada : Chirthe, Chitrata, Siwangi; Tamil : Chiruthai; Malyalam : Palli-Poolee; Benagli : Chita Bagh, Mizo : Kelal; Kashmiri : Khare - suh; Gujarati : Dipdo; Oriya : Pendra.

Diagnostic characters : The Panther or Leopard, though a big cat, is much smaller than a tiger even when fully grown. However, it is a powerful cat with an elegant shape. body long with comparatively short but stout legs and long tail. Head rather small with convex profile. Forepaws broad and massive. Neck thick and muscular. Muzzle rather broad and long. Rhinarium pink brown or black in colour. Iris yellow green or grey. Ears round with black back side and a conspicuous median white spot. Coat with very short and soft fur. The ground colour variable from pale yellow, warm grey, rich tawny to rufous fawn. It has numerous dark spots arranged in rosettes all over the sides of the body and tail excluding the distal part, which is ringed. The spots down the middle of the back, on the head, limbs and the belly are solid black instead of being arranged in rossetts. Underparts and inner side of the limbs white.



Source : V. Menon (2003)

Rosettes in most of the individuals without central spots. Animals from the hot drier zones are paler. Panthers from Kashmir have soft deep furred grey buff coats with small thick-rimmed rosettes. Unlike smaller cats, Leopard's pupil contract to a small circle rather than an elliptical. Melanistic forms or black panthers have been reported from number of places in India.

Measurements : (in cm) : Head and body length : 117.0-215.0; tail length : 71.00-105; hindfoot : 20.0-27.00; height at shoulders : 50.0-70.0.

Weight : (in Kg) : 39.0-80.0.

Intraspecific variations : Out of 14 subspecies following three are known to occur within Indian limits : i) *Panthera pardus fusca* (Meyer); ii) *Panthera pardus millardi* Pocock; iii) *Panthera pardus perniger* (Gray).

Distribution : Practically whole of India excluding extreme high altitudes, hot and cold deserts.

Endemism : Non-Endemic species.

Altitude : up to 3000 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Fragmented.

Habit, habitat and ecology : Leopard/Panther lives in variety of habitats. It is capable of living and thriving almost anywhere. Hence, it is most sucessful compared

Panthera pardus (Linnaeus)

to other predator species like tiger and wild dogs. Leopard's sucess is attributed largely to its ability to climb, catch and carry food on trees, survive on smaller prey, hunt even in thin cover and to survive with less water. However, leopard is nocturnal in habit and hunts at night; it has been observed during daytime also. It preys upon all kinds of animals including crabs and domestic animals. It may even attack human being. Leopard is a very courageous and bold beast. It is seen moving around human settlements. In cities like Mumbai, Pune, Hyderabad and several places Leopard even entered in the thickly populated urban areas. Leopards manage to co-exist with tigers by hunting smaller preys and carrying the caracasses up on the trees. Leopard occasionally swims but are not fond of water like tigers. They prey upon cattle, dogs and even human beings. This results in conflict with the human population and unfortunately leads to the death of Leopard due to hunting, trapping and poisoning. Leopard leads mostly solitary life and can undertake long distance of migration. Like other cats, it marks its territroy. It breeds throughout the year and gives birth to 2-4 cubs after the gestation period of 12-14 weeks.

Habitat structure : Deciduous to evergreen forest, scrub jungle, open country and fringes of human settlements. The habitat structure is steadily decreasing.

Population : *Global population* : 10,000; *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : Males : 152 + females : 130 + unsexed : 28 = Total : 310 in Indian zoo. Males : 78 + females : 98 + unsexed : 2 = Total : 178 in 80 zoo abroad (CAMP Report, 1998).

Life span : (Wild) : Generation time 10 years; (Captivity) : 23 years.

Population trend : Declining.

Museum records : Name of museum : Some of the Regional Stations and Head Quarters of the Zoological Survey of India and Bombay Natural History Society, Mumbai possess representative specimens of this species in thier collections.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sighting records have been reported from number of places in India by number of workers. Predator and prey relationships have been published by Johnsing (1983), Rice (1986) and Karnath and Sunquist (1995).

Threats : Interspecific competetion, habitat fragmentation, human interference, trade, hunting, decline in prey species, poisoning, trapping and killing due to attacks on live stock and human popultions, overexploitation, superstitious beliefs etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, domestic, commercial, international; *Parts in trade* : Skin, bones, live animals, taxidermy models, fur, organs, body parts (Pradhan, 1997); *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Vulnerable (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, population monitoring studies.

Remarks : There is a large scale demand for leopard skin, fur, body parts and organs in illegal trade. Strict implementations of provisions under Indian Wildlife (Protection) Act and strong vigilance over such activities are essential. Attempts should also be made in the direction towards reducing Leopard-Human conflict in certain areas of the country to avoid killing of Leopards due to trapping and poisioning by local residents.

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Evaluated by : M.S. Pradhan.

ENDANGERED

Order CARNIVORA

Family FELIDAE

Subfamily PANTHERINAE

71. *Panthera tigris tigris* (Linnaeus)
Tiger

Synonyms : *Felis tigiris* Linnaeus and number of Synonyms such as *altaica, amoyensi, amurensis, balica, corbetti, coorensis, lecoqui, longipilis, mandshurica, mikadoi, mangolica, nigra, regalis, septrentrionalis, sondaica, striatus, styuani, sumatrae, sumatrana, trabata, virgata* as reported by Alfred *et al.* (2002).

Common names : Tiger, Indian Tiger, Royal Bengal Tiger.

Regional names : Hindi : Sher, Bagh; Benagali/Assamese : Bagh; Marathi : Pateri Vagh, Dhanya Vagh; Telugu : Pedda puli; Tamil : Vengai puli; Malyalam : Kaduwra, Naaree; Kannada : Hulee; Orryia : Bagha.

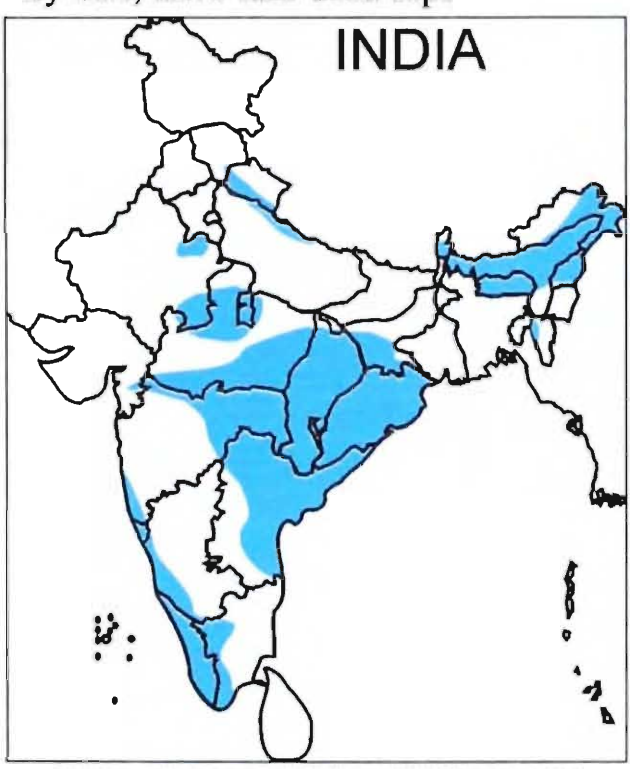
Diagnostic characters : Tiger is the large cat with majestic appearance and graceful built. It is well known and undoubtedly most charismatic animal of India and needs least introduction. It possesses rich reddish yellow to orange rufous coat with short but coarse and dense fur. The coat is marked with characteristic black stripes on the body and the black ringed tail; ventral white. Ears short and round and black on the backside with a prominent white spot. Tail long with rings and a black tip. Forelimbs more powerful than hindimbs. Foot pads large. Females smaller in size. Albinistic forms, though very rare, have also been reported.

Measurements : (in cm) : Head and body length : 140.00-300.0; tail length : 60.0-110.0; hind foot : 30.0-40.0; height at shoulders : 95.0-110.0.

Weight : (in Kg) : 135.0-230.0.

Intraspecific variations : Out of six subspecies described from this region, only one namely *Panthera tigiris tigris* (Linnaeus) is known to occur in India.

Distribution : Tiger occurs in many parts of Asia, but it is better known from India. It is found practically throughout India except in the north western regions of hot and cold deserts. Though the distribution is throughout the country, the populations are found only in favourable pockets.



Source : V. Karanth (2000) and V. Menon (2003)

Endemism : Non-Endemic species.

Altitude : 0-3600 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Fragmented.

Habit, habitat and ecology : Tiger has been reported from variety of habitats like open jungle, thorny, riverine, dry and moist decidous, semievergreen, evergreen, mangrove and swampy forests. It is also seen using tall grass, grassland-scrub mosaic and high altitude habitats. It avoids hot and cold deserts. Tiger is generally a solitary hunter and attacks all kinds of animals including live stock. However, tiger shows remarkable tolerance to variations in altitude, temperature and rainfall. Tiger, when unable to kill its natural prey, it becomes maneater for its survival. It is endowed with excellent swimming skills. It hunts between sunset, dawn, and covers long distances in the course of night hunting. It prefers to hunt large deers, preferably sambar, if available. Tiger is quite adaptable and can survive on smaller prey. Though hunt at night, tiger is cryptic in habit. It undertakes long distance migration in search of food. Like other cats, it marks its territory and defends its home range. Tiger is enormously powerful and all kinds of animals fall victim as its prey.

It mates after rains and the cubs, usually 2-6, are born in Feb-May. Tigeress looks after cubs till they are capable of killing its prey. Sighting of a tiger, family is not uncommon during this period. Sexual maturity is attained at 3-4 yrs of age in tigers. Availabilty of surface water and shade seem to be important factors for thermoregulation. Vulnerability of tiger densities may correlate to vegetation cover also in addition to the prey densities. Tigers communicate through scent markings, Vocalization and visual markers such as faecal deposists.

Panthera tigris tigris (Linnaeus)

Photo : N.S. Rathore and Sanjeev Kumar

Panthera tigris tigris (Linnaeus)

Habitat structure : Prefers to live in variety of habitat excluding hot and cold deserts. The habitat structure is definitely changing. It is decreasing with general decline.

Population : Global population : 4000-5000, while regional Population : 3000-4000; No. of mature individuals in all the populations : less than 2500.

Captive population : Males : 98 + females : 118 = Total : 226 in Indian zoo; males : 146 + females: 168 + unsexed : 1 = Total : 315 in 64 zoo abroad (CAMP Report, 1998).

Life span : (Wild) : 20 years (Prater, 1980); (Captivity) : 25 years.

Population trend : Increasing steadily.

Museum records : *Name of museum* : Some of the Regional Stations and Head Quarter of the Zoological Survey of India and Bombay Natural History Society, possess representative specimens of this species in their collections.

Sighting records : *Type of sighting* : Direct and Indirect; *Field notes* : Sighting records in wild from different localities of India have been reported by many workers. Excellent work on the observations of prey-predators (including tiger) in India has been reported by Johnsingh (1983), Rice (1986) and Karanth and Sunquist (1995). Account on poaching and illegal trade of tiger skins and body parts is also available (Pradhan, 1997). Karanth (1987, 1991) and Karanth and Nichols (2000) have reported detailed account on the ecological, management and conservation studies of tiger population in tropical Asia including India.

Threats : Interspecific competetion, habitat fragmentation, human interference, loss of habitat, trade, hunting, decline in prey species, genetic problems like breeding, corridor loss, poaching and hybridization due to mixing with zoo population, human encroachment in tiger areas etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local and international; *Parts in trade* : Skin, bones, live animals, fur, organs, body parts, whiskers, claws etc. (Pradhan, 1997; Menon and Kumar, 1999); *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Endangered (National) and Data Deficient (Global); *IUCN (2002)* (Proposed): Endangered (Global) based on version 3.1 2001 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, habitat managemant, conservation strategy recommended population census studies and *Trade* data reportings from time to time.

Remarks : The tiger population is still under constant threat of poaching and illegal Trade and hence, it needs complete protection. Studies have been carried out on the managemant of tiger population within its distributional range (Karanth, 1987). Further active implementation of management of tiger popluation programme is essential. Active involvement of public in the awareness programmes is also equally necessary.

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Evaluated by : M.S. Pradhan

ENDANGERED

Order CARNIVORA

Family FELIDE

Subfamily PANTHERINAE

72. *Uncia uncia* (Schreber)
Snow Leopard

Synonyms : *Felis uncia* Schreber, *Panthera uncia* (Schreber), *irbis*, *schneideri*, *uncoides*.

Common name : Snow Leopard.

Regional names : Hindi : Bharal-he, Bhutia : Ikar, Zig, Sachak, Himachal : Thurwagh, Garhwali : Burhel haye, Ladaki : Shan, Kashmiri : Sheen-e-suh.

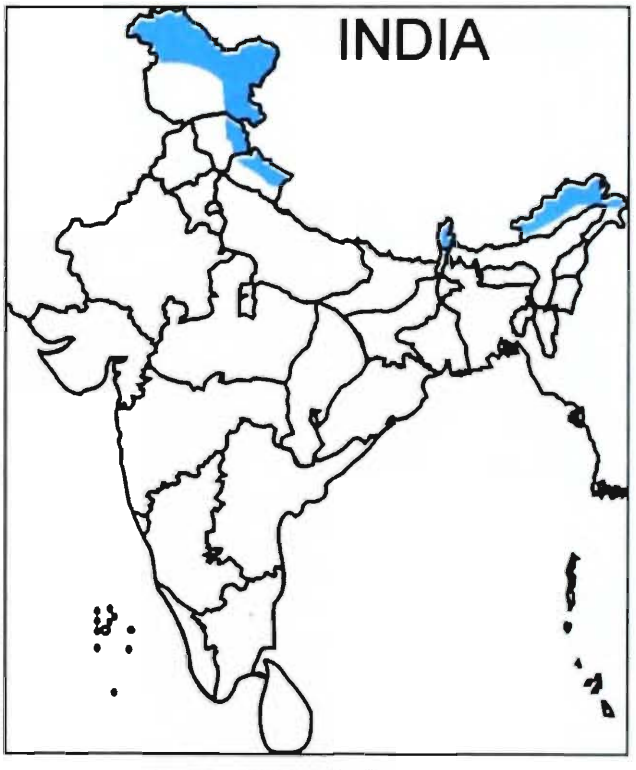
Diagnostic characters : The Snow Leopard is one of the most beautiful large cats reported from this region. It is of moderate size possesing squarish head with short muzzle, high forehead and vertical chin. It also shows possession of some traits of smaller cats. It is slightly smaller than common leopard. It has relatively short but stout limbs and a characterstically long disproportionate and upwardly curved furry tail. Iris pale yellow / grey. Ears short and round. Feet well padded. The coat is dense short, soft and tufty especially in winter. Ground colour soft grey, sometimes with rufous, buff or yellow tinge. The fur is beautiful possesing large rossetes, which may be pale and less distinct all over the body and tail. However, the head, nape and lower parts of the limbs possess solid small and darker spots. Ventrum is white occassionally with a few light spots. The ears are black wth a large yellow spots on each of them.

Measurements : (in cm) : Head and body length : 100-150; tail length : 90.0-105.0; height at shoulder : 50.0-60.0.

Weight : (in Kg) : 30.0-40.0.

Intraspecific variations : No subspecies.

Distribution : Within Indian limits Snow Leopard is distributed at very high altitudes in the Himalayas from Jammu and Kashmir to Sikkim and further east to Arunachal Pradesh.



Source : B.K. Tikader (1983)

Endemism : Non-Endemic species.

Altitude : 3000-5500 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Fragmented.

Habit, habitat and ecology : Sighting of a Snow Leopard is rare as it is extremely elusive and shy animal. Climate of the region within the distributional range of Snow Leopard is characterised by cold and arid conditions. The prey species consist of ibex, blue sheep, markhor, Himalayan tahr, deer, wild boar, gazelle, pika, marmots, rodents etc. It also lifts sheep, goats, and ponies from nearby villages however blue sheep (Bharal) appear to be major prey species of Snow Leopard. The Snow Leopard likes solitary existance and it appears to travel widely to hunt over an extensive area. Home range of snow leopard as reported in the technical report of Wildlife Institute of India (1990) is 19 sq. km.

Basically it is nocturnal in behaviour. During daytime, it takes shelter in a natural cavern or cleft beneath overhanging rocks. They are fond of sun bathing on rocks at times. Another remarkable behaviour of Snow Leopard is it emits a low 'rumble' and a coughing roar, but it never roars like other big cats. A pair of Snow Leopard may be seen during breeding seasons (January-February). 2-3 cubs are born in May to June after the gestation period of 2-3 months. The cubs accompany their mother

Photo : J.P. Sati

Uncia uncia (Schreber)

till following winter. The pre and post natal mortality may be high due to lack of food. Captive breeding program has proved to be successful recently in some zoo.

Habitat structure : The Snow Leopard inhabits the areas in Himalayas between alpine coniferous forests above tree line and snow. But sometimes it can also be seen in woodlands. Moreover, it inhabits the most inaccessible highly rugged terrains mainly in cold arid ecosystems at high altitudes. The habitat structure at lower Altitudes is decreasing with general decline.

Population : *Global population* : 5000-7000 (Roberts 1997); *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : Males : 4 + females : 4 = Total : 8 in Indian zoo; males: 222 + females : 250 + unsexed : 4 = Total : 476 in 137 zoo abroad (CAMP Report, 1998).

Life span : (Wild) : Not known; (Captivity) : Generation time : 10 years (CAMP Report, 1998).

Population trend : Population size declining with general decline.

Sighting records : *Type of sighting* : Direct/indirect; *Field notes* : Sighting and other records reported by Wildlife Institute of India (Anonymous, 1990), Anonymous (1994), Johnsingh (1986), Agrawal *et al.* (1992), Roberts, (1997) and Sharma (1998).

Threats : Interspecific competition, habitat fragmentation, human interference, hunting, trade, decline in prey species insurgency/terrorism/war, poaching for illegal Trade etc.; Effect of threats on population (Perceived or inferred) : Declining.

Trade : Local, commercial, international; *Parts in trade* : Skin, live animals, fur, body parts (Roberts 1997); *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : Endangered (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Endangered (Global) based on Version 3.1 2001 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, taxonomic studies, life history studies, population status studies etc.

Remarks : Population status studies within Indian limits are strongly recommended.

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Evaluated by : M.S. Pradhan

CRITICALLY ENDANGERED

Order CETACEA

Suborder ODONTOCETI

Family PLATANISTIDAE

73. *Platanista gangetica* (Roxburgh)

Su Su

Synonyms : Not available.

Common names : Su Su, Ganges River Dolphin.

Regional names : English : Indus River Dolphin, Hindi : Susu, Bengali : Shushu.

Diagnostic characters : The body of the Gangatic Dolphin is fusiform with head prolonged into a long and compressed beak. Dorsal fin low and situated midway of head and body length excluding beak. Fore head rising steeply. Neck distinct but short. Pectoral flippers more or less triangular. Tail fluke placed horizontally and notched in the middle. Teeth many (27-32 or even more in lower jaw) pointed and conical in both the jaws. Eyes small like pinholes. Blowhole in a shape of a longitudinal slit on the top of the head. Maxilla forming high crest on each side. Cervical (neck) vertebrae separate. body colour varies from slaty to sooty black dorsally, while lighter ventrally. Females larger in size than males. Rostrum longer in females than in males.

Measurements : (in m/cm) : Maximum length : 2-52 m; Sexually mature males : 1.7m; Width of tail fluke 46 cm.

Weight : (in Kg) : 0.76m long Dolphin weighed 3.42 Kg. and 1.99 m long weighed 84 kg (Agrawal and Alfred, 1999).

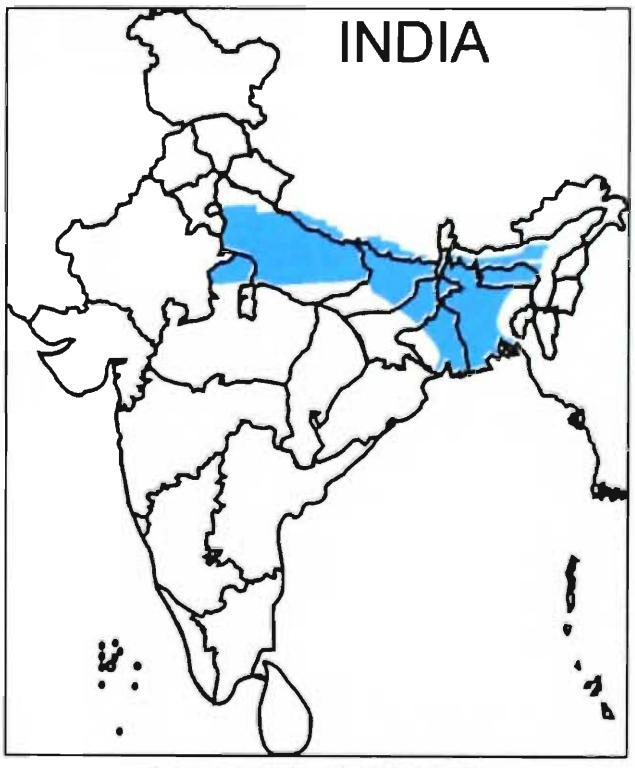
Intraspecific variations : The Dolphin population of Indus river system is considered as *Platanista gangetica minor* Owen by some authers (Corbet and Hill, 1992).

Distribution : Ganga, Bramhaputra and Meghna river systems within Indian limits.

Endemism : Non-Endemic species.

Altitude : Plains.

Area of occupancy : Greater than 2001 sq. kms.



Source : Corbet & Hill (1992)

Extent of occurence : 5001-10000 sq. kms.

Locations : *No. of locations* : Ganga, Bramhaputra, Meghna, Karnaphuli river systems of India; *Type* : Fragmented.

Habit, habitat and ecology : The dolphins have a powerful sonar mechanism and can produce high frequency echolocating clicks. The auditory senses are very well developed. It navigates and captures food with the help of ecolocation. They feed on crustaceans and fish. They undertake local migration of shorter range (20-30 km). Dolphins is usually found in small groups of 3-5.

Habitat structure : Freshwater species but may enter in tidal creeks. Deep flowing waters especially at confluence. The Habitat structure has decreased @ almost 20% in last 30 years.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : less than 2500.

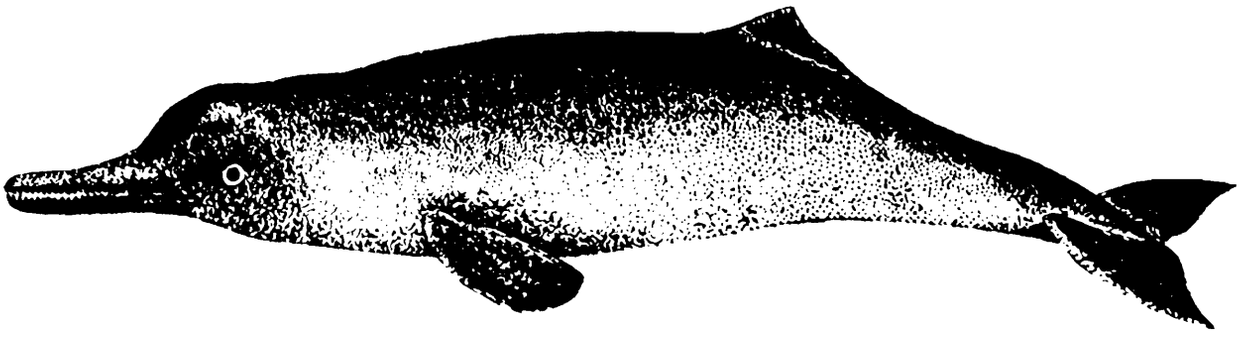
Captive population : Nil.

Life span : (Wild) : 40 Years; (Captivity) : Not known.

Population trend : General decline. The population has declined @ >20% in last 20 years.

Project specific records : Entire stretch of the Ganga and major tributaries; 1982-2002; Dr. R.K. Sinha; More than 1000 sighted, 20 collected, sightings have been systematically recorded during the period between 1982-2002;

Sighting records : *Type of sighting* : Direct; *Field notes* : R.K. Sinha and his team have been conducting field surveys on regular and systematic basis. The work has been published by IUCN in 2000. Number of Sighting records has been reported by them.



Platanista gangetica (Roxburgh)

Threats : Habitat fragmentation, human interference, loss of habitat, fishery, pesticide, pollution, hunting, decline in prey species, genetic problems like inbreeding, construction of dam across the rviers, use of gill nets, siltation etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, domestic; *Parts in trade* : Meat insurge., products, oil from the blubler; *Effect of trade on population (Perceived or inferred)* : Declining.

Photo : Gopal Sharma

Platanista gangetica (Roxburgh)

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Critically Endangered (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Endangered (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, genetic studies, taxonomic studies, life history studies, limiting factor research, habitat management, behaviour and population dynamics studies etc.

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Evaluated by : R.K. Sinha and M.S. Pradhan

ENDANGERED

Order CETACEA

Suborder ODONTOCETI

Family DELPHINIDAE

Subfamily ORCAELLINAE

74. *Orcaella brevirostris* (Gray)
Irrawaddy Dolphin

Synonyms : *Phocaena* (*Orca*) *brevirostris* Gray, *Orcaella fluminalis* Gray.

Common names : Irrawaddy Dolphin, Snub-nosed Dolphin.

Regional names : Hindi : Dolphin, Oriya : Khera Bashiyya Magar.

Diagnostic characters : A small dolphin of the size of Ganges River Dolphin with no beak but with a bulbous forehead. Flippers broad and spatula shaped. Mouth downwardly pointed with everted lips. Eyes very small. Dorsal fin small and blunt at the tip. Short but distinct neck. Teeth 12-19 on each side of both the jaws. Blowhole crescentric. Tail narrower and the fluke notched with shallow concave edge. body slaty blue or slaty grey dorsally, while paler ventrally in colour. There is no distinct colour pattern. Males slightly longer than the females.

Measurements : (in m) : Total length males : 2.75 m, females : maximum up to 2.32 m.

Weight : Not known.

Intraspecific variations : No subspecies.

Distribution : Lakes, estuaries, river and coastal waters of Indian east coast.

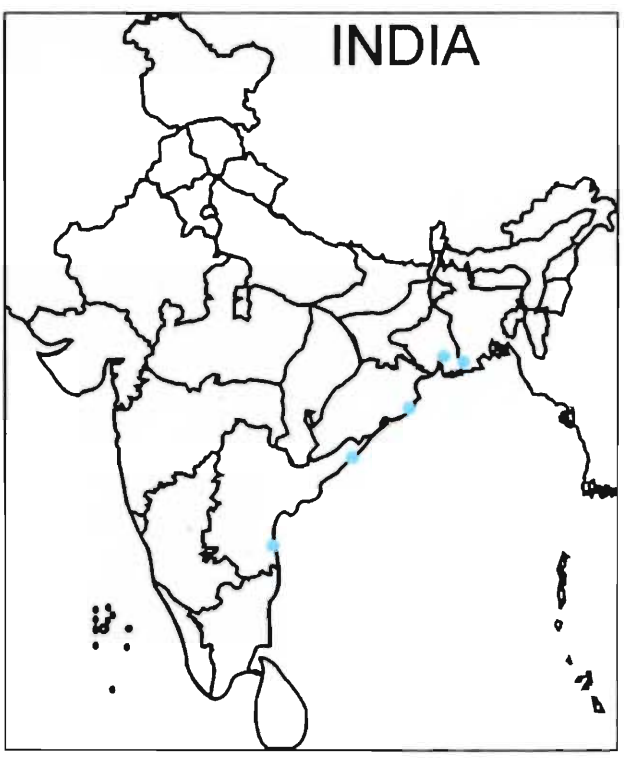
Endemism : Non-Endemic species.

Altitude : Plains.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 2001-5000 sq. kms.

Locations : No. of locations : East coast of India from Sundarban to Vishakhapatnam, Chilka Lagoon and Hugli river; *Type* : Contiguous.



Source : Corbet & Hill (1992)

Habit, habitat and ecology : Irrawaddy or Snub-nosed dolphin lives along the coasts in warm, tropical, often silty waters. It can enter inshore for more than 1000 kms from the estuary. They are generally found near the sand banks where lakes are connected to rivers. They live in small group size of 3-10 individuals. They feed largely on fishes and also on crustaceans. A sort of audible sound is produced during expiration. They closely associate themselves with fishing boats.

Habitat structure : Basically coastal areas. Habitat structure has decreased @ about >20% in last 30 years.

Population : Global population : Not known. Mature population in Chilika Lake only : <50. *No. of mature individuals in all the populations* : Not known.

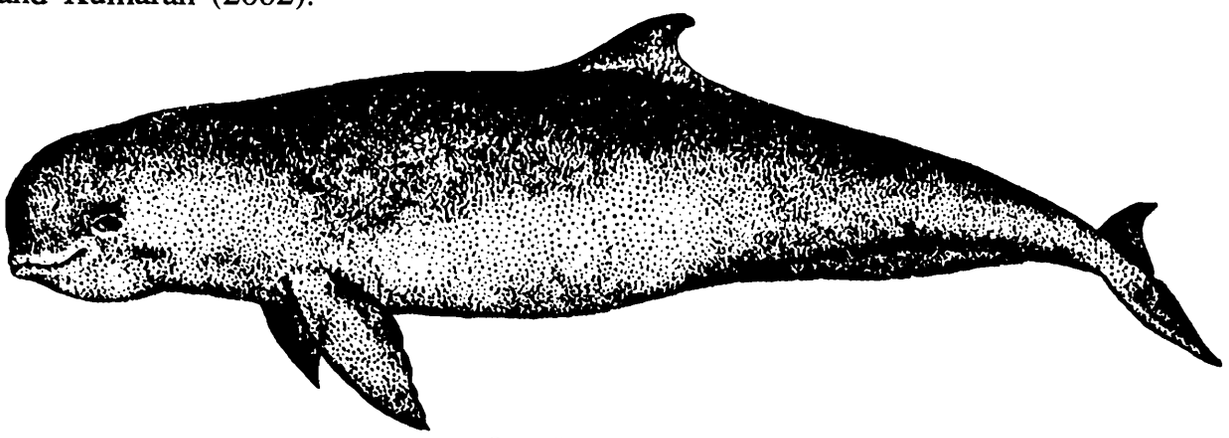
Captive population : 16 in 1978 in Indonesia, 8 lived up to 1983 (CAMP Report, 1998).

Life span : (Wild) : Maximum : 30 years; (Captivity) : Not known.

Population trend : Declining @ about more than 50% in last 20 years.

Project specific records : Chilka Lagoon; 2000-2002; Chilka Development Authority, Bhubhaneshwar; 31 sighted, 5 collected;

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Specimens were sighted during the surveys conducted in the Chilika Lagoon by the teams led by R. K. Sharma. Sighting records of four Irrawady Dolphins from Indian waters during the period between 1800 to 2000 have been reported by Kumaran (2000) and Kumaran (2002).



Orcaella brevirostris (Gray)

Threats : Loss of Habitat, pollution, hunting, decline in prey species, siltation, fishing nets, accidental deaths and incidental killings by mechnised tourist boats etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local; *Effect of trade on population (Perceived or inferred)* : Can't say.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Insufficiently known; *IUCN (1998)* (Proposed) : Endangered (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Data Deficient (Global) based on Vesrsion 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, genetic studies, habitat management, conservation strategy recommended, behaviour and population dynamic studies, captive breeding etc.

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Evaluated by : R.K. Sinha and M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order CETACEA

Suborder ODONTOCETI

Family DELPHINIDAE

75. *Delphinus delphis* Linneaus
Common Dolphin

Synonyms : *Delphinus tropicalis, Delphinus frithii, Delphinus pomeegra; Delphinus bairdi, D. capenis, D. tropicalis.*

Common names : Common Dolphin.

Regional names : Marathi : Devmasa, Hindi : Sus or Dolfin.

Diagnostic characters : Common Dolphin is a marine mammal with a sleek slender and streamlined body. Head small, snout prolonged into a narrow beak separated from head by a prominent groove. Dorsal fin well developed, triangular in shape and placed high with a backwardly directed tip. It is situated at the midpoint. Flippers with broad base and pointed tip. Teeth small, sharp and pointed. Number of teeth varies from 40-60 in each jaw. Tail fluke horizontally flattened with a deep notch in the middle. Cervical vertebrae 2-6 fused. Palate with a deep groove on each side. The V-shaped saddle on the back is one of the identifying characters in the field. body dark grey to black above, while white below. Sides with stripes of fulvous grey or white with yellowish tinge. Males slightly larger than females.

Measurements : (in meters) : Total length : male : 1.7-2.6; female : 1.5-2.3.

Weight : (in Kg) : 70-110.

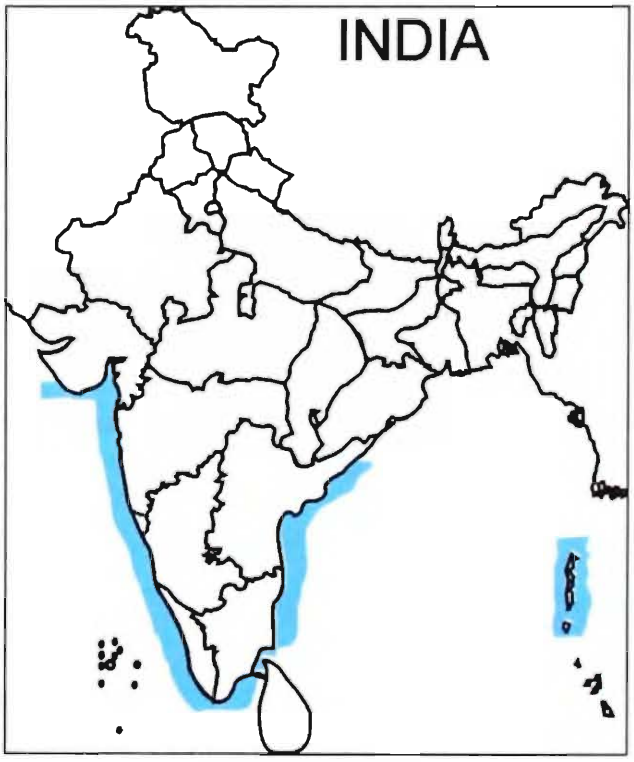
Intraspecific variations : No subspecies.

Distribution : World wide, from warm temperate to tropical waters. Coastal offshore, Indian ocean, Goa, Malabar coast, Madras coast, Andaman Islands etc.

Endemism : Non-Endemic species.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.



Source : M.S. Pradhan

Locations : No. of locations : Many; *Type* : Contiguous.

Habit, habitat and ecology : Common dolphin is an intelligent and social animal prefering to live in groups (School). School size ranges from 20 to few hundred individuals, sometimes even to several thousands, jumping one after another in oceanic water. They can dive as deep as 280 m for 8 min. Dolphins are mostly pelagic and can be found in even 100-fathom deep waters. However, they feed mainly on fishes and squids. They move with great speed and can keep pace with ship travelling at 30 knots.

Habitat structure : Marine, coastal and offshore species. Habitat structure stable.

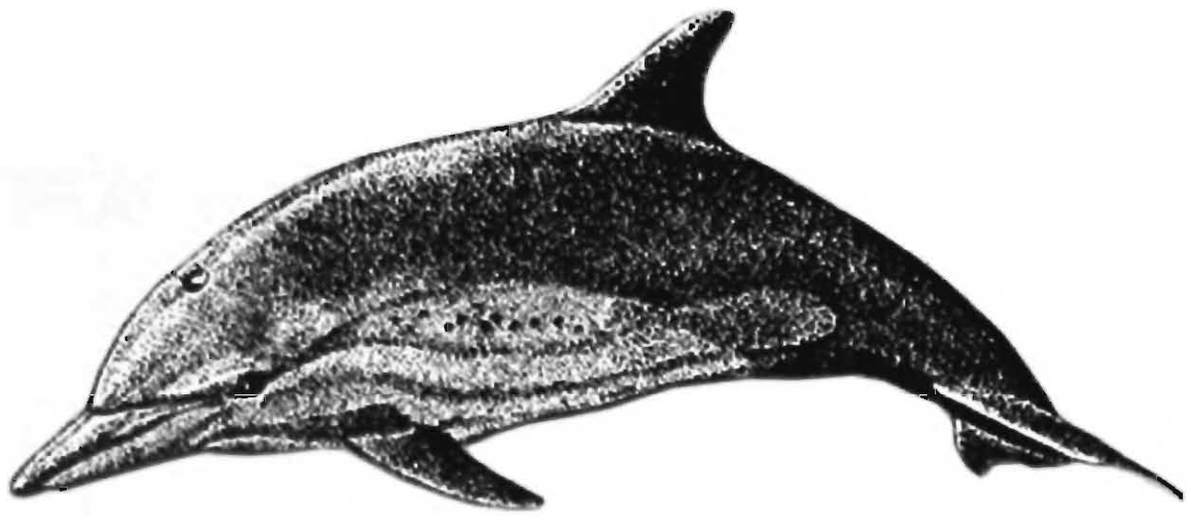
Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : 90 Dolphins all over the World.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Declining.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sightings recorded during surveys along south west coast of India from 1975-1997 by R.S. Lal Mohan. (CAMP report 1998). Further sighting records of 256 Common Dolphins from Indian waters during the period between 1800 to 2000 have been reported by Kumaran (2000) and Kumaran (2002).



Delphinus delphis Linneaus

Threats : Human interference, trade, predation, pollution, hunting, fishing, over-exploitation, accidental trapping in gillnets etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Commercial and international; *Parts in trade* : Live animals, meat insurg., body parts, animal food; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global).

Taxon related studies recommended : *Ex-situ* survey, monitoring, life history studies, captive breeding etc.

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Evaluated by : J.R.B. Alfred and M.S. Pradhan

Order CETACEA
Suborder ODONTOCETI
Family DELPHINIDAE

76. *Peponocephala electra* (Gray)
Melon-headed Whale

Synonyms : *Lagenorhynchus electra* Gray, *Delphinus fusiform* Owen, *Electra obtusa* Gray.

Common names : Melon-headed Whale, Melon-headed Dolphin, Indian Broadbeaked Dolphin.

Regional names : Not Available.

Diagnostic characters : Melon-headed Dolphin also known as melon-headed whale possesses elongated and slim body and a blunt head with no beak. It has a tall and falcate dorsal fin. Forehead rounded, steepy and sloping forward. Blowhead situated at the posterior end of the head. Pectoral flippers long, slim and falcate. Tail fluke with a notch in the middle flattened horizontally. 20-25 conical teeth on each side of the jaw. body blackish above with a white blaze mark in the pectoral region and on ventral side. Mouth cleft is in straight line. Flippers one-fifth of the total body length. Melon-headed Dolphin lives in groups. The school consists of 10-1500 individuals.

Measurements : (in meters/cm) : Total length : male : 2.12-2.73 m; females : 2.29-2.75 m. dorsal fin length : 30 cm; flipper length : 50 cm.

Weight : Not known.

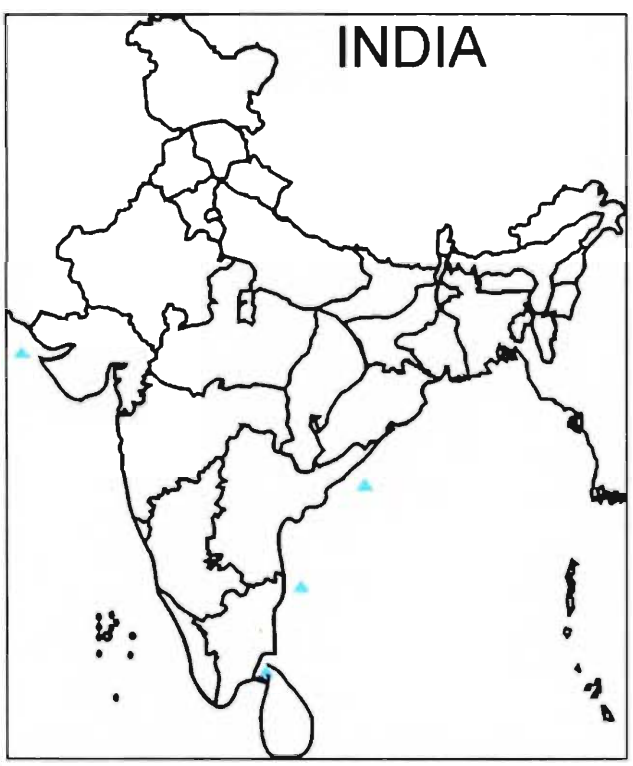
Intraspecific variations : No subspecies.

Distribution : Worldwide, Indian waters : Indian ocean, Mekran, Vishakhapatnam.

Endemism : Non-Endemic species.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.



Source : M.S. Pradhan

Locations : *No. of locations* : Many.; *Type* : Contiguous.

Habit, habitat and ecology : Basically pelagic marine form, found generally near equatorial waters. However, it may also be seen close to the shore. Newborn individuals were seen during August-December. Gestation period may last for a year. Melon-headed dolphin's feed on squids and small fishes.

Habitat structure : Warm temperate, tropical seas. Pelagic but occssionally seen close to shores also. Habitat structure : Stable.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Not known.

Life span : (Wild) : 22 years for males and 27 years for females (Roberts, 1997); (Captivity) : Survived in captivity for 30-45 days only.

Population trend : Unknown.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sightings have been reported from Mekran coast in Pakistan, Chennai, Vishakhapatnam and Palk Strait from past records (Agrawal and Alfred, 1999; Lal Mohan, 1999; Roberts, 1997 and Kumaran, 2000). Sighting records of five specimens from Indian waters during the period between 1800 to 2000 have also been reported by Kumaran (2002).

Peponocephala electra (Gray)

Threats : Use of large gillnets for fishing.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Not known; *Parts in trade* : Not known; *Effect of trade on population (Perceived or inferred)* : Can't say.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global).

Taxon related studies recommended : *Ex-situ* survey, monitoring, life history studies.

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Evaluated by : J.R.B. Alfred and M.S. Pradhan

Order CETACEA
Suborder ODONTOCETI
Family DELPHINIDAE

77. *Stenella attenuata* (Gray)
Pantropical Spotted Dolphin

Synonyms : *Dolphinus velox* Cuvier, *Steno attenuatus* Gray, *Delphinus microbrachium* Gray; *albirostrus, brevimanus, capensis, consimilis, graffamani, malayanus, pseudodelphis, punctata*, (Alfred *et al.*, 2002).

Common names : Pantropical Spotted Dolphin, Malay dolphin.

Regional names : Not available.

Diagnostic characters : A medium sized dolphin with a short and thick beak well demarcated from from forehead. body clearly divided into dark upper and light (Whitish or greyish) lower portion. A black stripe connects gape with flipper. The whole body is covered with spots. A portion of rostrum and lower jaw white. Dorsal fin tall backwardly pointed and black. It is situated in the middle. Flippers falcate and black. Tail fluke notched in the middle and black in color. Teeth 35-48. Females tend to possess longer rostrum.

Measurements : (in meters) : Total length : male : 2.0-2.57 m; female : 1.87-2.40 m.

Weight : Not known.

Intraspecific variations : No subspecies. However, overlaping variations are seen in body size, cranial measurements and colouration.

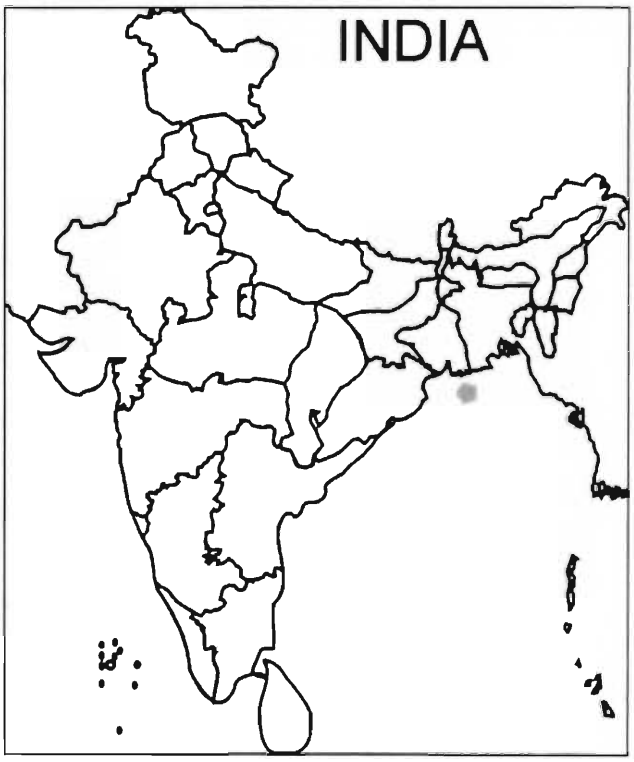
Distribution : Wordwide in tropical and subtropical waters. In Indian waters, recorded from Sundarbans.

Endemism : Non-Endemic species.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Contiguous.



Source : M.S. Pradhan

Habit, habitat and ecology : Lives offshore and coastal, both. Feeds mainly on fishes, cephalopods and crab larvae. Lives in-group size of few to several thousand individuals.

Habitat structure : Marine, offshore and coastal waters. *Habitat structure* : Decreasing with general decline.

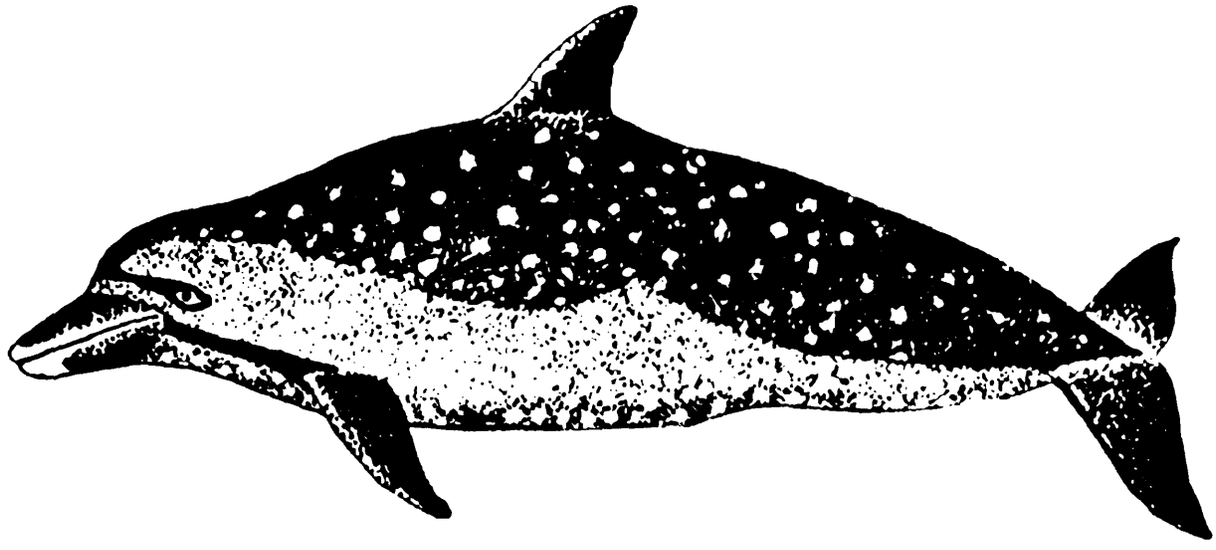
Population : Global population : Not known; No. of mature individuals in all the populations : Greater than 2500.

Captive population : More than 100 dolphins in foreign zoo.

Life span : (Wild) : Sexual maturity is attained at 10-14.7 yrs in both sexes (Agrawal and Alfred, 1999). Maximum longevity in both sexes: 45 years; (captivity): Not known.

Population trend : Unknown.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sighting at Sundarban reported by Agrawal and Alfred (1999). Sighting records of 13 specimens of Pantropical spotted dolphins from Indian waters during the period from 1800 to 2000 have also been reported by Kumaran (2000) and Kumaran (2002).



Stenella attenuata (Gray)

Threats: Human interference, trade, Incidental kills through offshore and coastal fishing activities; *Effect of threats* on *population (Perceived or inferred)* : Declining

Trade : International; *Parts in trade* : Live animals; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Not Listed; *IUCN (2002)* (Proposed) : Lower Risk-Conservation Dependent (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : Monitoring.

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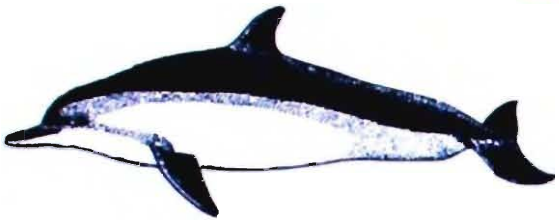
Evaluated by : J.R.B. Alfred and M.S. Pradhan



LOWER RISK-NEAR THREATENED

Order CETACEA

Suborder ODONTOCETI

Family DELPHINIDAE

78. *Stenella longirostris* (Gray)
Spinner Dolphin

Synonyms : *Delphinus longirostris, Delphinus roseiventris*. Other Synonyms as in Alfred *et al.* 2003 are *alope, centroamericana, microps, orientalis, roseiventris.*

Common names : Spinner Dolphin.

Regional names : Not available.

Diagnostic characters : Spinner dolphin possesses a distinct long and slender beak. It has a streamlined body with a narrow dark grey stripe from eye to flipper. Adults without spots on the back. Head small. Dorsal fin subtriangular in the middle of the back. Tip blunt and backwardly directed. Flippers subovate and black. Tail fluke with strongly keeled base and notched in middle. Teeth 45-65 in number on each side of jaw. body colour pattern variable. However, it is, in general, grey above and white below with pale sides. Females are smaller than males in same age group.

Measurements : (in meters) : Total length : male : 1.7-2.5; female : 1.65-2.0.

Weight : (in Kg) : 1.7 m long dolphins weighs about 55-60 Kg.

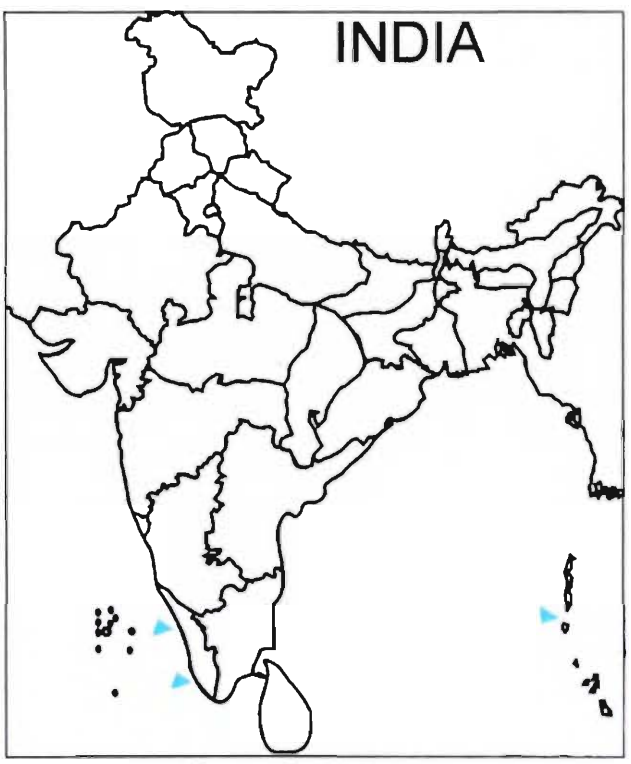
Intraspecific variations : As cited in Corbet and Hill (1992), Perrin (1990) records the nominate subspecies, *S.l. longirostris,* from Indian Ocean and West Pacific ocean.

Distribution : Worldwide including Indian Ocean. *In Indian waters* : Malbar Coast, Quilon, Lakshadweep, Andaman Islands.

Endemism : Non-Endemic species.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.



Source : M.S. Pradhan

Locations : *No. of locations* : Many; *Type* : Contiguous.

Habit, habitat and ecology : The Spinner Dolphins are seen in large schools in offshore and deepwaters. The school may contain 200 to over 1000 individuals. Feeds mainly on fishes and squids.

Habitat structure : Oceanic pelagic form of cicumtropical waters. ***Habitat structure*** : Stable.

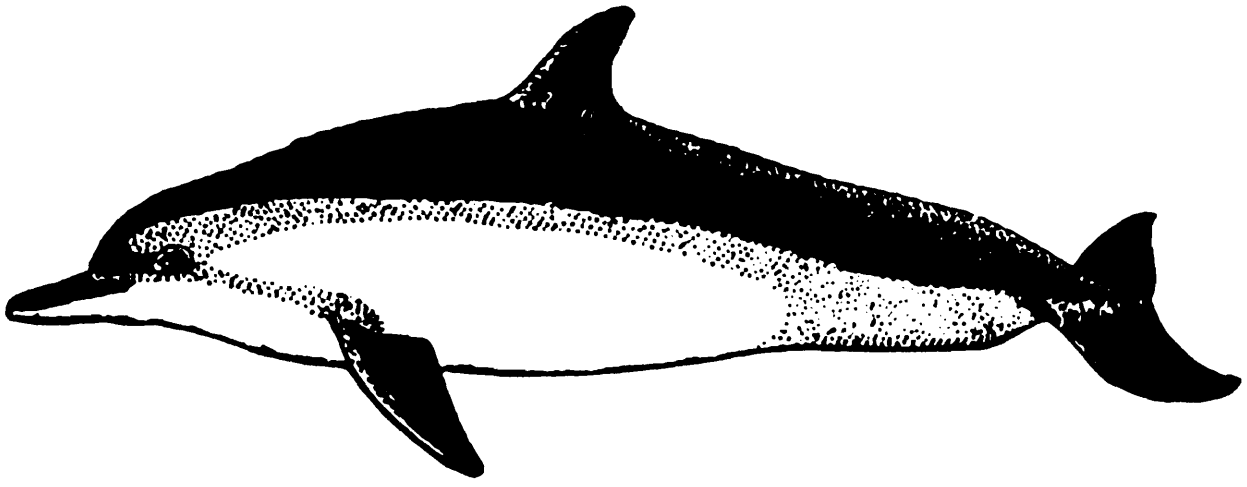
Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Less than 2500.

Captive population : None in India.

Life span : (Wild) : Not known; (Captivity) : Sexual maturity is attained at 10-12 yrs. Agrawal and Alfred (1999).

Population trend : Declining, General decline.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Direct sighting records at Calicut, Quilon, Lakshadweep islands (Lal Mohan, 1999). Sighting records of 260 Spinner Dolphins from Indian waters during the period between 1800 to 2000 have been reported by Kumaran (2000) and Kumaran (2002).



Stenella longirostris (Gray)

Threats : Human interference, trade, pollution, hunting, use of gillnets in fishery on large scale, excessive tourism in dolphin habitats (Lal Mohan, 1999).

Trade : Local, domestic and international; *Parts in trade* : Live animals; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened.

Taxon related studies recommended : *Ex-situ* survey, monitoring, habitat management, conservation strategy recommanded.

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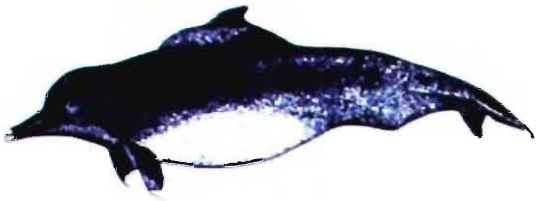
Evaluated by : J.R.B. Alfred and M.S. Pradhan



ENDANGERED

Order CETACEA

Suborder ODONTOCETI

Family DELPHINIDAE

79. *Sousa chinensis* (Osbeck)
Hump-Backed or Plumbeous Dolphin

Synonyms : *Delphinus chinensis, Delphinus plumbea, Steno lentiginosa, Sotalia fergusoni, Sotalia borneensis.*

Common names : Hump-Backed or Plumbeous Dolphin, Indo-pacific-humbacked Dolphin.

Regional names : Malyalam : Punnan adee, Marathi : Devmasa.

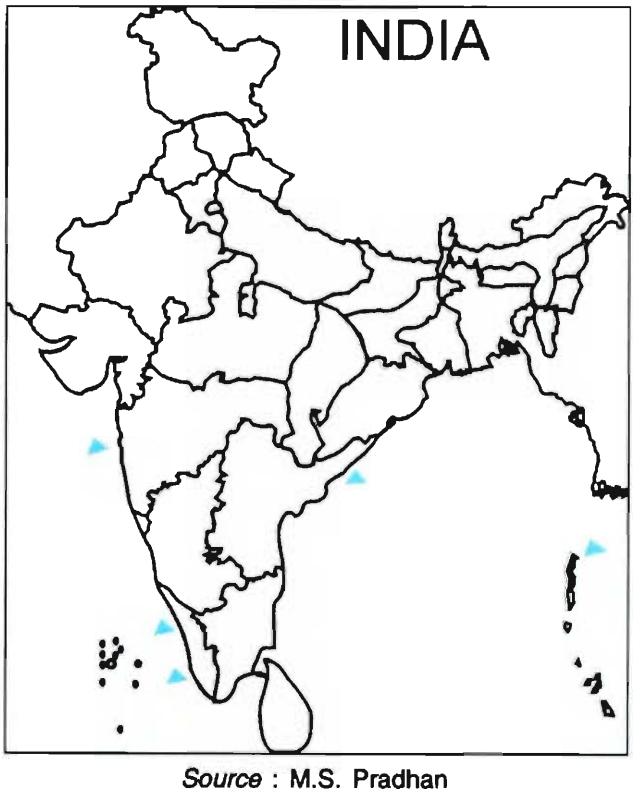
Diagnostic characters : The most distinctive character of Humpback Dolphin is a distinct long and low hump on middle of the back. Dorsal fin triangular and is on a raised platform. It is falcate. Beak slender and sharply defined from the forehead. Flippers broad near the base and tapper distally. Caudal fluke with a distinct notch. Some forms may lack the hump but posses' larger dorsal fin. body colour variable in the shades between gray to steel gray to ultimately white. Ventral side creamy white with or with out blue elongated spots. Tip of beak, base of dorsal fin and throat possess white patches. Teeth well developed in both the jaws with 68-76 teeth.

Measurements : (in m) : Total length : male : 3.25; female : 2.70; new born : 1.0.

Weight : (in Kg) : 1.0 m long Dolphin weighed 37 Kg, while 2-3 m long weighed 139 Kg.

Intraspecific variations : Nothing definite can be said due to lack of suficient material. However, Leatherwood and Reeves (1983) have considered two separate groups : i) Dark coloured with a hump on back. Distribution : West of Indonesia; ii) White coloured, lacking any hump on the back. Distribution : Chinese waters.

Distribution : Worldwide. Marine coastal and inshore waters from South Africa to west of Indonesia and Chinese sea waters through the Indian marine waters.



Source : M.S. Pradhan

Endemism : Non-Endemic species.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Contiguous.

Habit, habitat and ecology : The Humpback Dolphins, though marine forms, they are also known to occur in inshore and coastal waters of India. It has been reported from number of places off Indian coast and also from backwaters near Cochin. They are generally found concentrated near the mouths of the rivers. They feed mainly on pelagic and benthic fishes. They move in shoals near shore or inshore waters. They may live in group size of 3-30 (Agrawal and Alfred, 1999.)

Habitat structure : Coastal, estuaries and confluence of rivers with the seas. >20% Habitat structure appears to have decreased in last 20 years.

Population : Global population : Not known; No. of mature individuals in all the Populations : Greater than 2500.

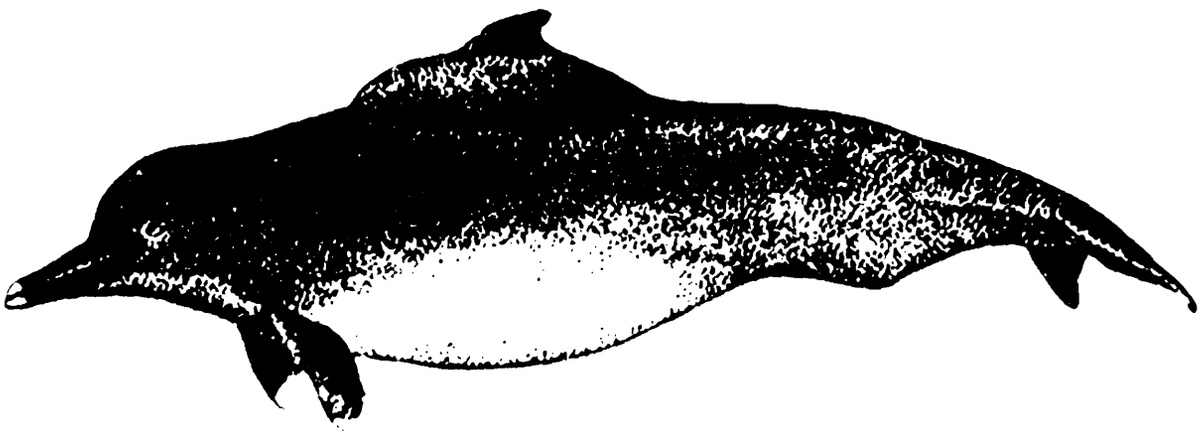
Captive population : None in India.

Life span : (Wild) : Not known; (Captivity) : 20 years (CAMP Report, 1998).

Population trend : Declining.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sighting have been recorded during recent field studies carried out from 1985-1997 by Lal Mohan at Calicut. Recorded in a tributory of Ganges 250kms from sea (Bay of Bengal) by Ghosh and Choudhary, 1986. Sighting records of 221 Humpbacked Dolphins from Indian waters during the period from 1800 to 2000 have also been reported by Kumaran (2000) and Kumaran (2002).

Threats : Human interference, pollution, loss of Habitat, destruction of Mangrove areas, siltation gillnet fishing, hunting; *Effect of threats on population (Perceived or inferred)* : Declining.



Sousa chinensis (Osbeck)

Trade : Domestic and international; *Parts in trade* : Live animals, meat Insurg., body parts, oil extraction, meat used as shark bait.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Endangered (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Data Deficient (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, limiting factor resaech, habitat mangement.

Remarks : Considereing the nature of threat and IUCN Category (Endangered), it is recomended that *Sousa chinensis* (Osbeck) be listed in schedule-I, Part-I of Indian Wildlife (Protection) Act, 1972.

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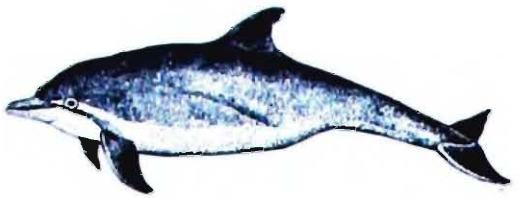
Roberts, T.J. 1997. *The Mammals of Pakistan* : 1-525. Publisher : Oxford University Press, London, U.K.

Evaluated by : M.S. Pradhan



Order CETACEA
Suborder ODONTOCETI
Family DELPHINIDAE

80. *Tursiops truncatus* (Montagu)
Bottle-nosed Dolphin

Synonyms : *Dolphinus truncatus, Delphinus aduncus, Tursiops fergusoni* other Synonyms are *aducus, gephyreurus, gilli, nesarnack, nuuman* (Alfred *et al.*, 2002).

Common names : Bottle-nosed Dolphin.

Regional names : Marathi : Devmasa.

Diagnostic characters : A robust dolphin with a moderately short but well-defined beak, which is separated by a grove from the forehead. Snout short. body tappers behind the dorsal fin. Flippers with pointed tip moderately long. Dorsal fin tall and fulcate, placed above in the middle. Horizontal tail fluke curved with a dip notch. Teeth strong and slightly curved inwards with diameter about 1 cm. 26 teeth in each row. Dorsal body colouration varies in the range from grey to black. No stripes or spots on the body. Ventrally Bottle-nosed Dolphin is pale grey to pink in colour. Lower jaw white in colour.

Measurements : (in meters) : Total length : male : 2.39 to 3.81; female : 2.33 to 3.67.

Weight : (in Kg) : Adults : 150 to 200 Kg.

Intraspecific variations : Pilleri and Gihr (1974), as cited in Corbet and Hill, 1992, treated Indian population as *Tursiops aduncus* based on small body size and spotted venter. However, Ross and Cockfort 1990, as cietd in Corbet and Hill 1992, consider its taxonomic status to be not more than a subspecies.

Distribution : Worldwide. *In Indian waters* : West coast and Andaman waters.

Endemism : Non-Endemic species.

Area of occupancy : Greater than 2001 sq. kms.

Source : M.S. Pradhan

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Contiguous.

Habit, habitat and ecology : The inshore range extends to rivermouths, bays, lagoons, esturies and 0.5-20 m deep shallow marine regions (Agrawal and Alfred, 1999). Bottle-nosed Dolphin feeds mainly on fishes or cephalopods. The food varies in inshore and offshore regions. Snatch fishes from gillnet and other gears know them. Bottle-nosed Dolphin lives in a group size of 2-18. However inshore schools of 200 and offshore schools of 500 have also been recorded (Agrawal and Alfred, 1999). Females are known to lead longer life than males.

Habitat structure : Oceanic form. Species is known to inhabit offshore and inshore temperate as well as tropical waters.

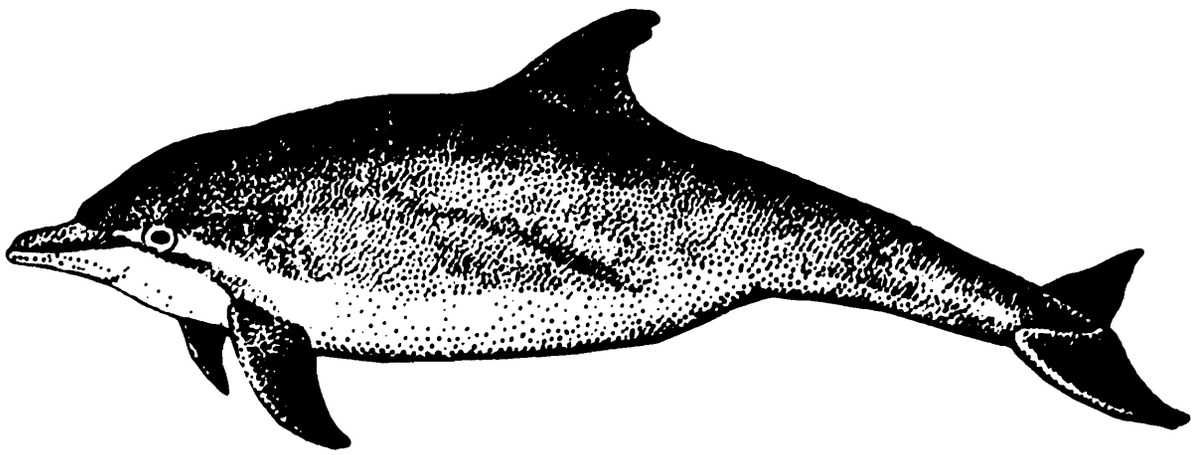
Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : About 2700 Bottle-nosed Dolphins were estimated to be taken for display in dolphinariums all over the world during the period from 1860-1983 (Lal Mohan, 1999).

Life span : (Wild) : Male : 39 years, females : 40 years (Agrawal and Alfred, 1999); (Captivity) : 35 years (Robert 1997).

Population trend : Declining, General decline.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : General field studies by Lal Mohan in 1985. Sighting records of 108 Bottle-nosed Dolphins from Indian waters during the period from 1800 to 2000 have been reported by Kumaran (2000) and Kumaran (2002).



Tursiops truncatus (Montagu)

Threats : Human Interference, loss of habitat, trade, predation, pollution, hunting, use of gillnets and gears for large scale fisheries, excessive tourism in dolphin habitat (Lal Mohan, 1999).; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, domestic and international; Parts in trade : Live animals, organs, meat insurg., products, body parts, collection for display and scientific purpose etc.;

Effect of trade on population (Perceived or inferred) : Declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Data Deficient (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *Ex-situ* survey, monitoring, taxonomic studies, habitat management, conservation strategy recomended.

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Roberts, T.J. 1997. *The Mammals of Pakistan* : 1-525. Publisher : Oxford University Press, London, U.K.

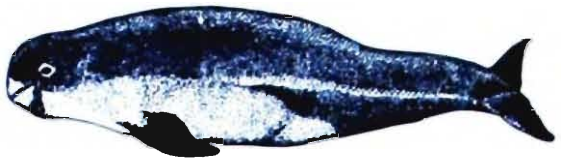
Evaluated by : M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order CETACEA

Suborder ODONTOCETI

Family PHOCOENIDAE



81. *Neophocaena phocaenoides* (Cuvier)
Black finless Porpoise

Synonyms : *Delphinus phocaenoides*, (Curvier), *Neophocaena sunameri*, Pilleri and Gihr, *Neomeris phocaenoides*, (Cuvier).

Common names : Black finless Porpoise, Little Indian Porpoise, Southeast Asiatic Porpoise.

Regional names : Marathi : Bhulga, Tamil : Molagan, Malyalam : Elian.

Diagnostic characters : All porpoises under Cetacea possessing many teeth and the single blowhole belong to suborder Odontoceti. The teeth are flattened in shape. Further, dorsal fin is absent in Phocoenid porpoises. Little Indian Porpoise is one of the smallest cetaceans with females slightly larger than males. Head blunt rounded without any distinct beak. 15-21 spade shaped teeth present in each jaw. Eyes rather well developed. Blowhole cresentric in shape. Neck slightly developed, flipper small and elliptical. There are small, hard and horny tubercles in the mid region of the back extending up to caudal penduncle. Tail compressed horizontally with a notch in the middle. body colour dark, slaty grey with purplish white patches on throad and lips. The colour changs to black after death.

Measurements : (in Meters/cm) : Total length : 1.2 to 1.6 m; pectoral fin length : 28.0 cm, tail fluke width : 55.0 cm.

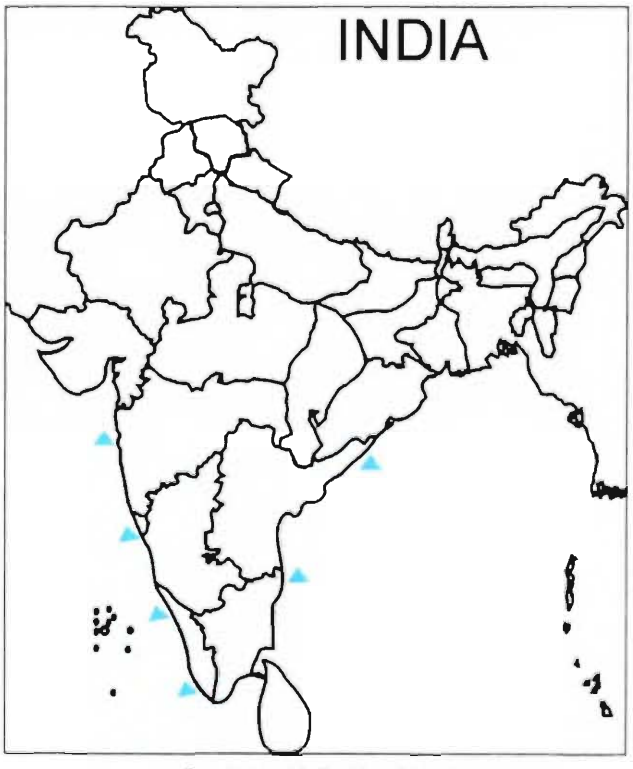
Weight : (in Kg) : 1.3 meter long pregnant female weighed approximately 26 Kg (Walker, 1968 in Agrawal and Alfred, 1999).

Intraspecific variations : No subspecies.

Distribution : World wide. *In Indian waters* : West and east costs, both. Anadaman and Nicobar coasts.

Endemism : Non-Endemic species.

Area of occupancy : Greater than 2000 sq. kms.



Source : M.S. Pradhan

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Contiguous.

Habit, habitat and ecology : Little Indian Porpoise is a pelagic form often found in tidal creeks along the reefs and Islands. Mangrove areas are also favoured. Some times, it may ascend fresh water rivers for long distances. It has travelled to 65 kms inside river Indus in Pakistan while to 1600 kms away from sea in river Yangtze in China (Agrawal and Alfred, 1999). Usually found singly or in pairs on even in small school of 1 to 13 individuals. A rather shy and sluggish animal rolling to the surface to breath. Food consists of shrimps, prawns, squids, and small fishs. In Indian waters, they breed around in October. Its mother usually carries a single young one born on the back.

Habitat structure : Little Indian Porpoise is an inhabitant of shallow coastal waters. Change with general decline in the habitat structure around mouth of the river and estuaries.

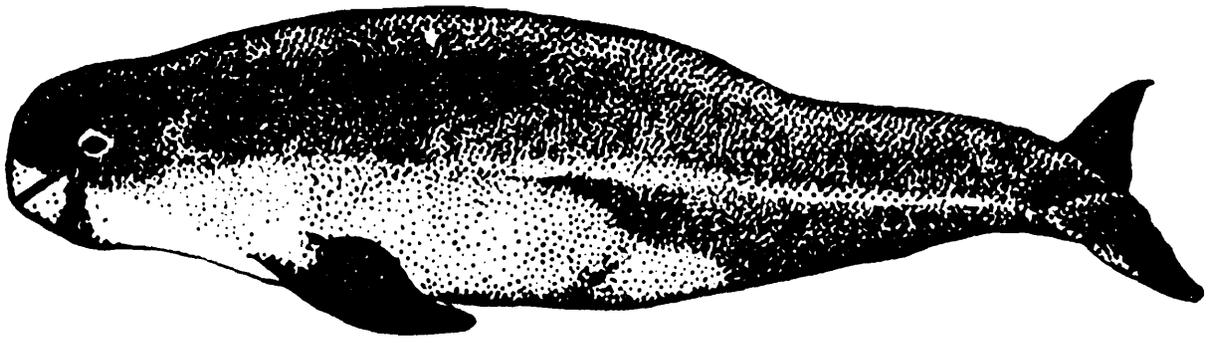
Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : 94 in Japan, 11 in China, 2 in Java (IUCN, 1984). Can breed in captivity.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Declining with general decline.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sighting records reported from Mumbai, Goa, north and South Kanara, Kozikode, Trivendrum, Chennai and Kolkata(Agrawal and Alfred, 1999 and Lal Mohan, 1999). Sighting records of 84 Little Indian Porpoises from Indian waters during the period from 1800 to 2000 have been reported by Kumaran (2000) and Kumaran (2002).



Neophocaena phocaenoides (Cuvier)

Threats : Floods, human interference, loss of habitat, trade, pesticides, pollution, hunting, use of gillnets in fisheries, accidents due to motorised fishing vessels etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, domestic and international; *Parts in trade* : Live aminals, meat insurg., body parts, oil etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Insufficiently known; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Data Deficient (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *Ex-situ*, monitoring, coservation strategy, monitoring its mortality rates in the coastal fishing gears.

Remarks : Considering the higher threat risk and increasing distruction of the habitat, it is recommended that the IUCN category status of this species should be raised to Endangered category.

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Evaluated by : M.S. Pradhan

Order CETACEA
Suborder MYSTICETI
Family BALAENOPTERIDAE

82. *Balaenoptera acutorostrata* Lace'pe'de 1804
Minke Whale

Synonyms : *Balaenoptera bonaerensis, Burmeister, davidsoni, huttoni, rostrata* as in Alfred *et al.*, 2002.

Common names : Minke Whale, Larser Rorqual, Common Rorqual, Finner Whale.

Regional names : Marathi : Devmasa.

Diagnostic characters : Minke Whale is comparatively smaller in size. The mysticet Whale possesses horny plates on upper jaw useful for filter mechanism. The plate replaces the teeth in the jaws in Whale. Baleens are flat sheaths of keratinous nature projecting down from the upper jaw to act as filters. Head narrow and 'V' shaped possessing a ridge on it. Dorsal fin relatively longer and placed at posterior one third of the back. Pectoral filppers oblong in shape, broader at the base with the white band on it. Tail fluke horizontally flattened, notched in middle and black in colour. Baleen plate size 20x12 cm with 230 -360 plates on each side. The Minke Whale is black dosally while white ventrally in colour. Baleen plates are yellowish white anteriorly, while brownish black posteriorly. There are about 50-70 ventral grooves terminating behind the end of flippers. Females slightly larger in size than males.

Measurements : (in m) : Total length : male : 6.7-9.8; female : 7.3-10.7.

Weight : (in Kg) : Whales of 6 m length weigh about 2.0 to 2.7 metric ton.

Intraspecific variations : Three subspecies namely *davidsoni*, *acutorostrata* and *bonarensis* are known to occur in Indian waters. A dwarf form, *thalmacha*, has been reported from Sri Lánka.

Distribution : World wide, found in temperate and polar waters. Gulf of Mannar in Indian waters. Report of carcasses washed off shore on west and

Source : M.S. Pradhan

southeast cost of India. Marine form.

Endemism : Non-Endemic species.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Contiguous.

Habit, habitat and ecology : The Minke Whale prefers to live in deep waters, migrates for more than 900 km distance towards equator in winter season. Feeds on palagic crustaceans, small fish etc. Lives singly or in pairs, but congregates in several hundreds within areas with abundant food. The Killer Whale is its predator.

Habitat structure : Deep water oceanic form. Habitat structure appears to be stable.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : Not known.

Life span : (Wild) : 30-50 (Agrawal and Alfred, 1999); (Captivity) : Not known.

Population trend : Unknown, general decline.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : records from carcasses found along the Indian shores (Lal Mohan, 1999). Sighting records of only four specimens of Minke whales from Indian waters during the period from 1800 to 2000 have been reported by Kumaran (2000) and Kumaran (2002).

Balaenoptera acutorostra Lace'pe'de

Threats : Trade, predation, hunting; *Effect of threats on population (Perceived or inferred)* : Can't say.

Trade : Commercial, international; *Parts in trade* : Live animal, meat insurg., body parts, oil etc. About 3300 live specimens were exported from one country to another. Japan was a major recepient (Agrawal and Alfred, 1999). in 1970. More than 8100 Whales were killed for oil extraction and meat. After depleting the stock of larger whales, attention is drawn towards rampant killing of smaller whales like

Minke Whales (Lal Mohan, 1999); *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book (IUCN, 1994)* : None; *IUCN (1998)* (Proposed): Lower Risk-Near Threatened (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Lower Risk-Near Threatened (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : Survey, monitoring, conservation strategy recommended.

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Roberts, T.J. 1997. *The Mammals of Pakistan* : 1-525. Publisher : Oxford University Press, London, U.K.

Evaluated by : J.R.B. Alfred and M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order CETACEA

Suborder MYSTICETI

Family BALAENOPTERIDAE

83. *Balaenoptera edeni* Aderson
Bryde's Whale

Synonyms : *Balaenoptera brydei* Olsen

Common names : Bryde's Whale, Piked Whale, Lesser Rorgual

Regional names : Marathi : Devmasa.

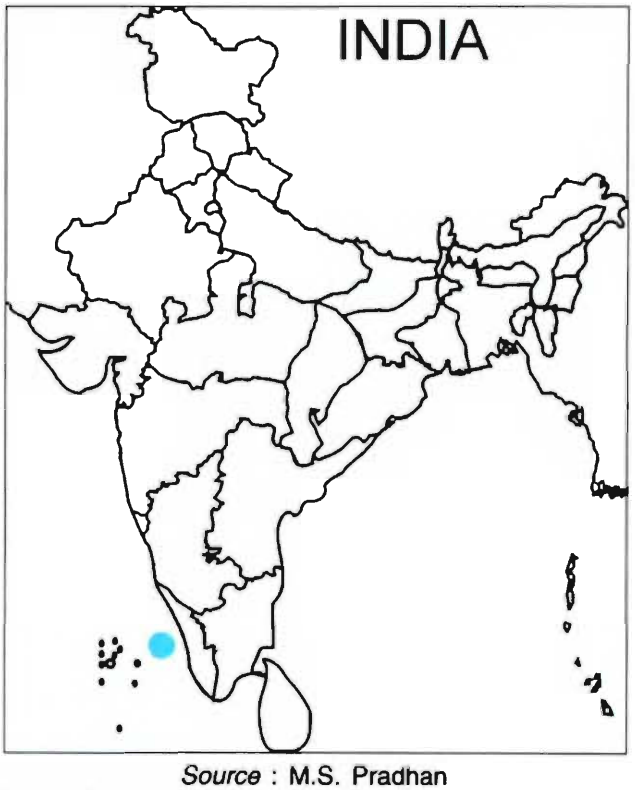
Diagnostic characters : A medium sized whale larger in size than *B. acutorostrata* but smaller than other *Balaenoptera* species. Head 'V' shaped wih three prominant ridges from the blowhole to snout. Throat grooves extent up to naval region, 40-50 in numbers. Dorsal fin moderate in size situated at the posterior end. There is a single, narrow spout. Flippers oblong and black in colour. Tail fluk, horizontal and flat. Baleen plates 42 X 24 cm in size and 230 - 370 in number. Baleen fringes coarse, stiff and thick. There are fine white bristles on baleen plates. body dark grey above, whitish below. Females are larger than males of same age group.

Measurements : (in m) : Total length : male : 12.2-14.3; female : 12.5-15.5, maximum : 15.5.

Weight : (in tons) Average : 13.6.

Intraspecific variations : None, though there is a lot of variations in the offshore and inshore populations.

Distribution : Bryde's Whale has a circum-equitorial distribution in tropical and warm waters. In Indian waters found along Arabean sea, Bay of Bengal shores and also in Indian ocean. There is a population in Bay of Bengal from Sri Lanka to straits of Malacca.



Source : M.S. Pradhan

Endemism : Non-Endemic species.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Contiguous.

Habit, habitat and ecology : Bryde's whale is a purely marine form, prefering to live along mostly off shore and sometimes in shore, both, waters (Lal Mohan, 1999; Agrawal and Alfred, 1999).

Habitat structure : Habitat structure stable.

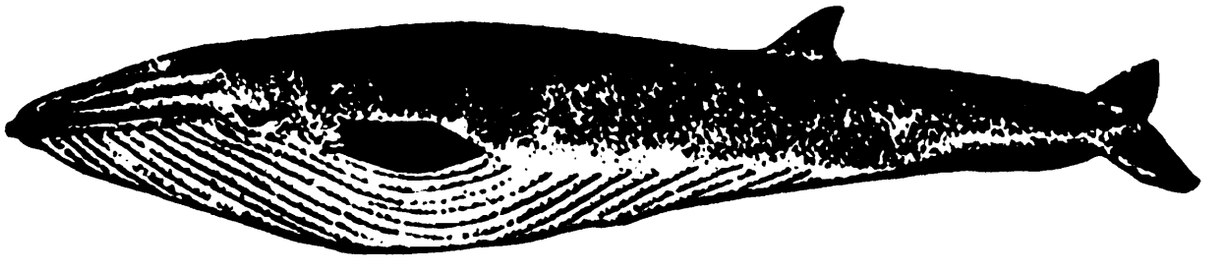
Population : *Global population* : Not known; *No. of mature individuals in all the populations* : greater than 2500.

Captive population : Not known.

Life span : (Wild) : Sexually mature males 9-13 years, females about 10 years: (Captivity) : The Bryde's whale is too large in size to be kept in captivity.

Population trend : Unknown.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sightings records of carcass near Calicut coast by Lal Mohan (1999) Sighting records of elevan specimens of Bryde's whales from Indian waters during the period between



Balaenoptera edeni Aderson

1800 to 2000 have been reported by Kumaran (2000) and Kumaran (2002).

Threats : Human interference, hunting, costal and pelagic whaling.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Commercial at international level.; *Parts in trade* : Bones, organ, meat insurg, body parts, oil extraction and blubber; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : None; *IUCN (1998)* (Proposed): Lower Risk-Near Threatened.

Taxon related studies recommended : *Ex-situ* survey, monitoring.

Remarks : Declaration of Indian Ocean sanctuary by International Whaling Commission (IWC) in 1979 has extended full protection to all Whale species in this area.

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Evaluated by : J.R.B. Alfred and M.S. Pradhan

Order CETACEA
Suborder MYSTICETI
Family BALAENOPTERIDAE

84. *Balaenoptera borealis* Lesson
Sie Whale

Synonyms : *Balaenoptera alba*, Giglioli, *Sibbaldins schlegelii*, Flowe; *B. rostrata.*

Common names : Sie Whale.

Regional names : Not Available.

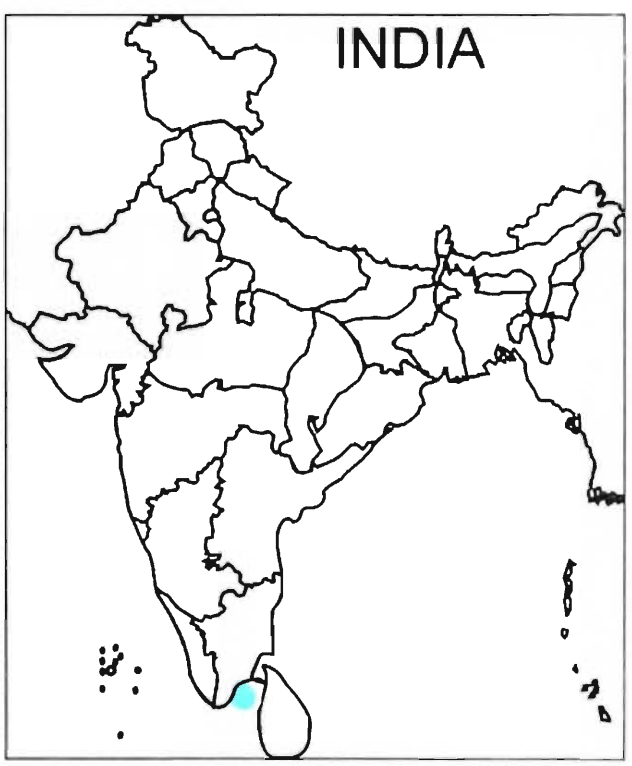
Diagnostic characters : A medium sized whale, smaller in size than Finner and Blue whales. Head 'V'shaped with only one prominant ridge on it from the blowhole. Stout throat groves extend between pectoral flippers and naval. 32-60 grooves in number terminating well before naval. Dorsal fin conspicious, errect and 25-60 cm long, strongly falcated and situated in the postrior one third of the back. Dorsal fin black in colour, pectoral flipper oblong with tips pointed, unusually short (1/11th of total body length) and totally black in colour with no white spots. Tail fluke horizontal and flat. Baleen plates 73X40 cm in size. 300-410 plates on each side, 60 bristle per sq. cm on baleen plate. body dorsally grey while ventrally light grey or white. Females slightly larger than males of same age group.

Measurements : (in m) : Total length : male : 12.7-17.7, female : 13-21.

Weight : Not known.

Intraspecific variations : No subspecies.

Distribution : Worldwide. Found in temperate as well as in sub-tropical oceanic waters. They undertake annual migration from lower altitutes (wintering zone) to higher altitude zone (feeding zone). They are found primarily south of latitude 30^0 in winter and 40^0 in summer and autumn. Indian ocean and Arabian sea form part of migratory pathway for the species, which comes to tropical waters for calving. Not very common in Indian waters (CAMP reports, 1998).



Source : M.S. Pradhan

Endemism : Non-Endemic species.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Contiguous.

Habit, habitat and ecology : Marine form. Sie whale is basically pelagic form living in small groups of 2-5 or even more individuals. Larger groups are seen in feeding zones. They feed on surface swimming planktons, krils, copepods, amphiphods etc.

Habitat structure : Ocean prefers to live in deep water but also found along cost (Agrawal and Alfred, 1999; Lal Mohan, 1999). *Habitat structure* : Stable.

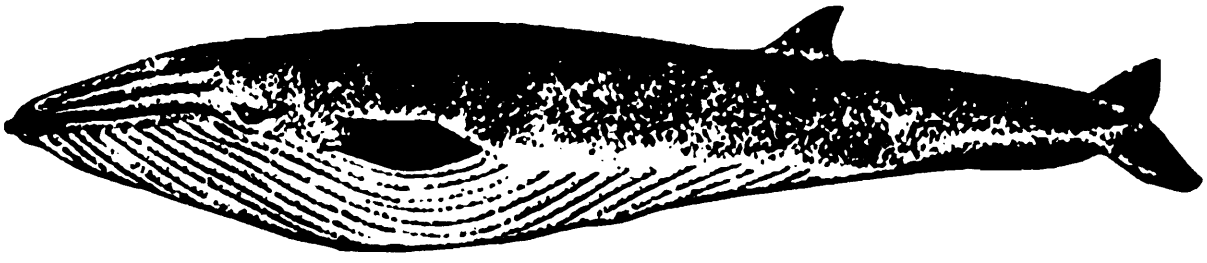
Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : Sexual maturity is attained at 5-6 years of age (Agrawal and Alfred, 1999).

Life span : (Wild) : 60 years; (Captivity) : Sie whales can not be kept in captivity due to its large size.

Population trend : Declining. Decline @ more than 20% in last 60 years (Lal Mohan, 1999).

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Most of the strandings reported along the Indian coast reported as *B. borealis* may be that of *B. edeni* (Lal Mohan, 1999). However, there are sighting records from Tuticorin, Mandapam and Naduvattaum along the east coast of India (Agrawal and Alfred, 1999). Sighting records of twelve specimens of Sie whales from Indian waters during the period from 1800 to 2000 have been reported by Sathashivam (2000) and Kumaran (2002).



Balaenoptera borealis Lesson

Threats : Trade and hunting. Whaling on large scale in pelagic region.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Commercial, internation; *Parts in trade* : Bones, live aminals, organs, meat insurg., oil extractions etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book (IUCN, 1994)* : No; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Endangered (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : Monitoring.

Remarks : International Whaling Commission (IWC) has progressively shut down Sie whaling operations in north Pacific and Southern Hemisphere during 1970's except in Iceland where hundreds of Sie Whales are caught every year.

REFERENCES

Agrawal, V.C and Alfred, J.R.B. 1999. *Handbook on Whales, dolphins and dugong* : 1-150. Publisher : Director, *Zool. Surv. India*, Calcutta.

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Evaluated by : J.R.B. Alfred and M.S. Pradhan

CRITICALLY ENDANGERED

Order CETACEA

Suborder MYSTICETI

Family BALAENOPTERIDAE

85. *Balaenoptera musculus* (Linneaeus)
Blue Whale

Synonyms : *Balaena musculus*, Linneaeus, *Balaenoptera indica*, Blyth and *B. intermedia*, Burmeister other Synonyms are *brevicauda, gigas, indica, intermedia, sibbaldii, sibbaldius, sulfurous.*

Common Names: Blue Whale, Great Blue Whale

Regional names : Marathi : Devmasa, Tamil and Malayalum : Thimingilum, Kannada : Thimingla.

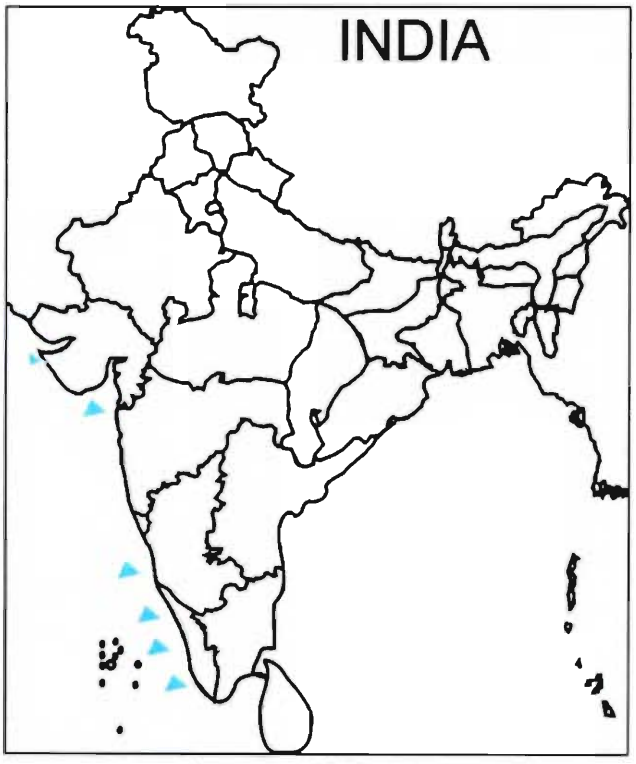
Diagnostic characters : Blue whales are largest living mammals reaching up to total body length of 34 metres weighing maximum up to 160 tons. Head 'V' shaped from above with a single ridge on it. 60 to 100 parallel plates present on the throat and chest extending up to naval. Dorsal fin small (15-45 cm in height), falcate and low placed in the last quarter of the back. Pectoral flippers small and tapering about $1/7^{th}$-$1/8^{th}$ body length. Blackish above, baleen and its fringes all black in colour. 260-400 baleen plates on each side. The plates 100x55 cm in size with up to 30 bristles per sq. cm. Blow hole situated on top of the posterior end of the head. Tail fluke dorsoventrally flat and notched in middle. In general, tail portion is narrow. The Blue whales are light blue grey or greyish mottled with white colour. Underparts lighter. Females are slightly larger than the males.

Measurements : (in m) : Total length : 20-34.

Weight : (in tons) : 80-112.

Intraspecific variations : Out of three recognised subspecies *Balanoptera musculus brevicauda* Ichihara (Pygmy Blue Whale) is known to occur in Indian waters.

Distribution : Worldwide. From polar to tropical waters. Living in polar waters during summer, migrating towards equator in winter. One population has spread and separated from the one in southern Hemisphere and lives in north Indian ocean waters at all the times of the year.



Source : M.S. Pradhan

This population has been named as Pygmy Blue Whales. They have been reported from Mangalore, Cochin, Tuticorin, Calicut, Surat, Okha and number of other places along the Indian coast. Records mostly from carcasses washed towards shore.

Endemism : Non-Endemic species.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Contiguous.

Habit, habitat and ecology : Blue whale prefers to live in cold water and open sea. It is involved in seasonal inter continental migration. Lives singally or in pairs, seldom seen in large schools. Feeds mainly on euphausids (Krills), amphipods, copepods and cephalopods.

Habitat structure : Marine forms living in open seas. Cold and open waters, oceans. (Agrawal and Alfred, 1999; Lal Mohan, 1999). Habitat structure : Stable.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : Age range between 30-80 years approximately (Lal Mohan, 1999). Sexually mature at the age of about 10 years.

Life span : (Wild) : Not known; (Captivity) : Not possible to keep and maintain this species in capitivity due to extraordinarily large size.

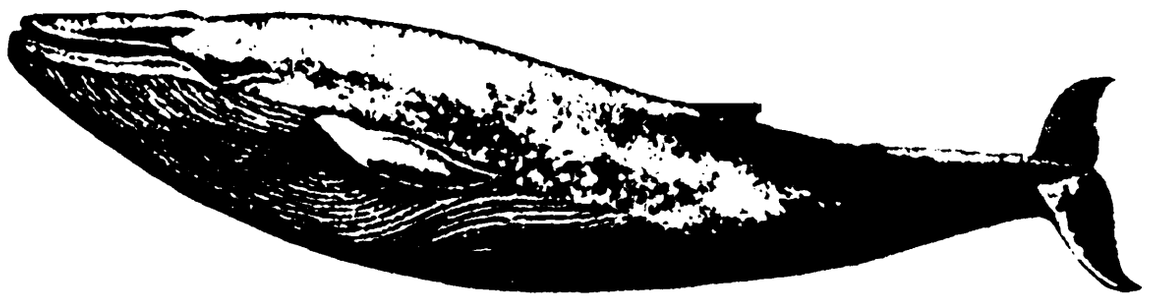
Population trend : Declining. General Decline.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sighting records of caracasses reported at number of places mostly along west coast of India (Lal Mohan, 1999). Sighting records of about fifty specimens of Blue whales from Indian waters during the period from 1800 to 2000 have been reported in details by Sathashivam (2000) and Kumaran (2002).

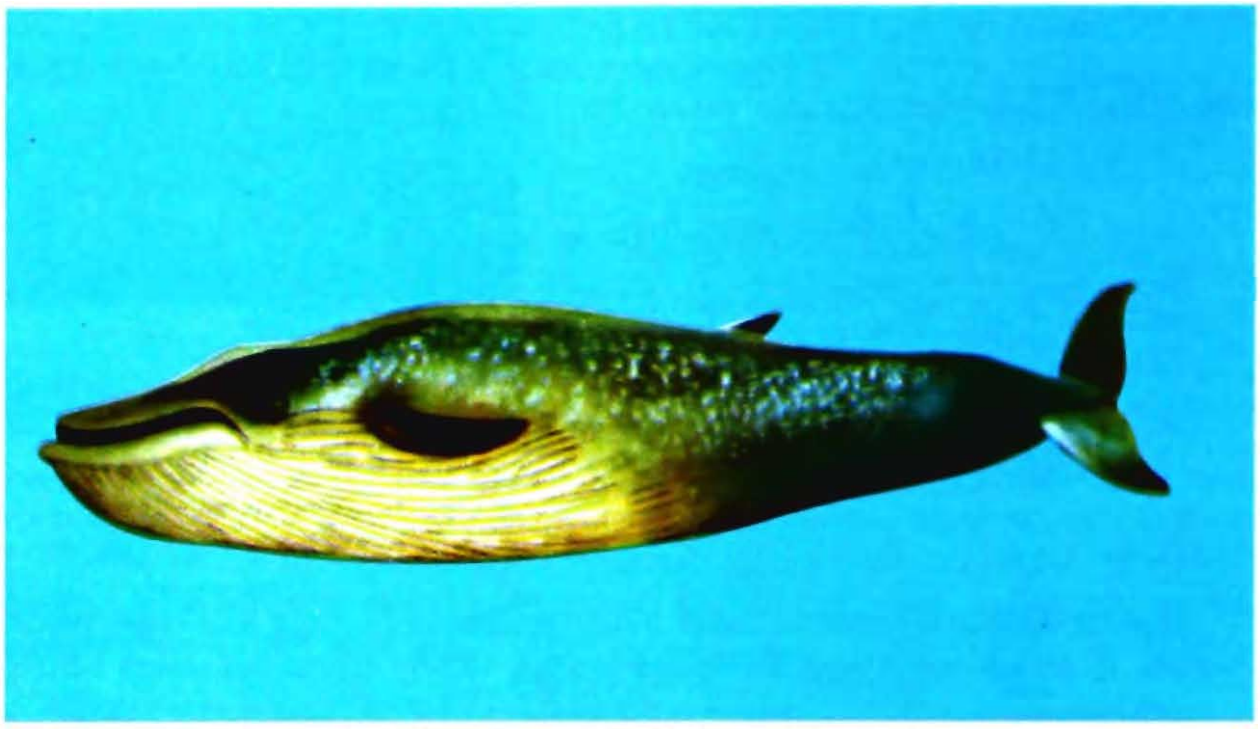
Threats : Human interference, hunting, uncontrolled whaling on large scale in open oceanic waters; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : commercial, international; *Parts in trade* : Bones, live aminals, meat insurg, body part, oil extraction; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book (IUCN,*



Balaenoptera musculus (Linneaeus)



Balaenoptera musculus (Linneaeus)

1994) : None; *IUCN (1998)* (Proposed) : Critically Endangered (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Endangered (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : Survey and monitoring.

Remarks : Declaration of Indian Ocean Sanctuary by International Whaling Commission (IWC, 1979) has extended full protection to all whale species in this region.

REFERENCES

Agrawal, V.C and Alfred, J.R.B. 1999. *Handbook on Whales, dolphins and dugong* : 1-150. Publisher : Director, *Zool. Surv. India*, Calcutta.

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Evaluated by : J.R.B. Alfred and M.S. Pradhan

Order CETACEA
Suborder MYSTICETI
Family BALAENOPTERIDAE

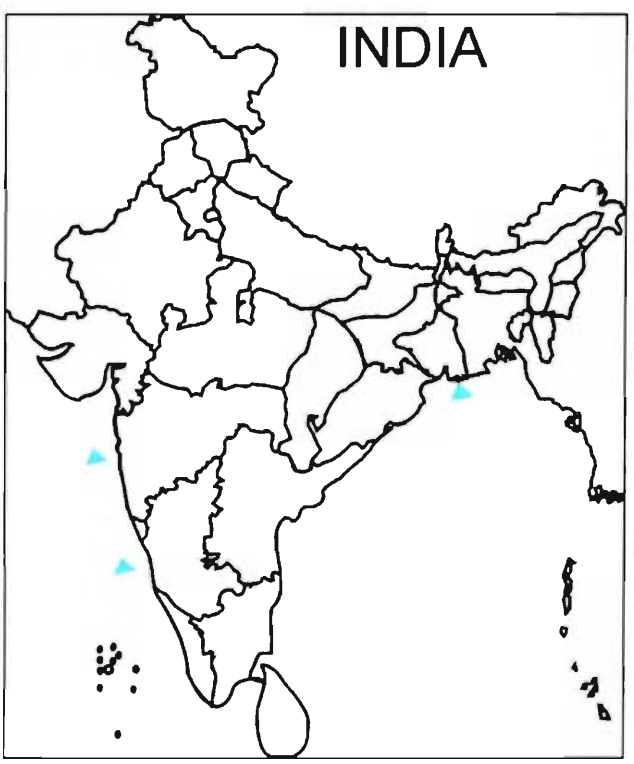
86. *Balaenoptera physalus* (Linnaeus)
Fin Whale

Synonyms : *Balaena physalus* Linnaeus; *Balaena boops* Linnaeus; *Balaenoptera swinhoii* Gray; *Swinhoii chinensis* Gray; and *Balaenoptera blythii* Anderson; *B antiquorum, boops, gibbar, patachonica, vilifera.*

Common names : Fin Whale, Common Rorqual, Fin Back.

Regional names : Marathi : Devmasa; Tamil and Malayalum : Thimingilam; Kannada : Thimingila.

Diagnostic characters : Fin whale is a second large sized whale species, which is smaller than Blue whale only. Fin whale posseses 'V' shaped head with prominant central ridge over it. There are 56-100 ventral furrows extending up to naval. Back is ridged from dorsal fin to the tail fluke. Dorsal fin distinct but small (about 60 cm) and sharply angled placed at posterior 1/3rd of the back. Pectoral filppers falcate. Tail fluke horizontally flattened. Baleen 42x24 cm in size. 230-370 plates on each side with 15-35 bristle per sq. cms. Plates are stripped with alternate yellow and blue bands. Baleen frignes coarse, stiff and thick. body colour black with no or grey mottlings dorsally while white ventrally. Dorsal fin, flippers and fluke black in colour. Flippers and fluke white below. Colour of head asymmetrical. Lower lip and palate white in colour.



Source : M.S. Pradhan

Measurements : (in m) : Total length male : 17.7-22, female : 18.3-24.

Weight : (in Tons) : 30-80.

Intraspecific variations : Some workers recognise two subspecies : *B. physalus physalus*, (Northen Hemisphere) and *B. physalus inoyi*, (Gambell) (Southern Hemisphere).

Distribution : World wide from polar to tropical waters. Migrates from

temperate feeding ground in summer towards tropics in winter. However, a few isolated resident populations are also known to occur.

Endemism : Non-Endemic species.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Contiguous.

Habit, habitat and ecology : Fin whale is a oceanic and pelagic inhabitants. It is also involved in seasonal long distance migrations. Lives in a group of 3-10 or even 20 individuals. Many form larger schools in feeding ground. Feed mainly on krills, squids and copepods. Its main predator is Killer Whale. In highly contaminated Mediterranean sea, the heavy metal ions get accumulated in Fin whale, which becomes weak and die due to collisions with boats and ships.

Habitat structure : Marine forms living in open seas. In Mediterranean sea, the *Habitat structure* is changing due to contamination of heavy metal ions.

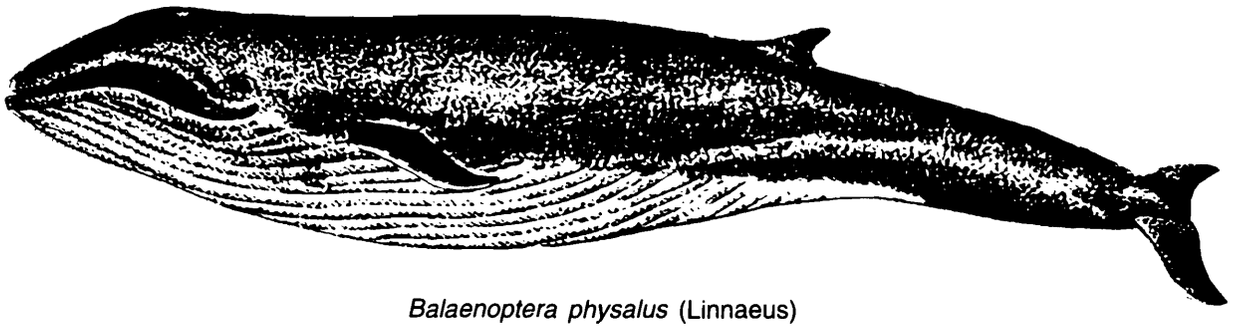
Population : *Global population* : In Indian ocean there are about 500 individuals; *No. of mature individuals in all the populations* : greater than 2500.

Captive population : Not known.

Life span : (Wild) : Sexually matures at the age of 8-12 years; (Captivity) : Not feasible to keep and maintain in captivity.

Population trend : Declining. General decline.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sightings reported off Mumbai and Kolkata coasts by de Silva (1987) (as reported in Agrawal and Alfred, 1999). Sighting records of twelve specimens of Fin whale from Indian waters during the period between 1800 to 2000 have been reported in details by



Balaenoptera physalus (Linnaeus)

Sathashivam (2000) and Kumaran (2002).

Threats : Trade, predation, pollution, hunting, whaling on large scale in open oceanic waters etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Commercial, international; *Parts in trade* : Bones, live animals, meat

insurg., oil extraction etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book (IUCN, 1994)* : None; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Endagered (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : Survey and monitoring.

Remarks : Declaration of Indian Ocean Sanctuary by International Whaling Commission (IWC, 1979) has extended full protection to all whales in the region.

REFERENCES

Agrawal, V.C and Alfred, J.R.B. 1999. *Handbook on Whales, dolphins and dugong* : 1-150. Publisher : Director, *Zool. Surv. India*, Calcutta.

Corbet, G.B. and Hill, J.E. 1992. *The Mammals of the Indomalayan region* : 1-488. Publisher : Oxford University Press, London, U.K.

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Evaluated by : J.R.B. Alfred and M.S. Pradhan

NOT LISTED

Order CETACEA

Suborder ODONTOCETI

Family ZIPHIDAE

87. *Mesoplodon densirostris* (Blainville)
Blainville's Beaked Whale

Synonyms : *Delphinus densirostris*, Blainville, and *Ziphius sechellensis*, Gray.

Common names : Blainville's Beaked Whale.

Regional names : Not known.

Diagnostic characters : Blainvilles Beaked whale is a medium sized whale with a distinct beak. Forehead low with lower jaw highly arched, especially in males. A pair of large single lobed tooth is present in the middle of the lower jaw growing from top of the heavy bulzes in males. Shape of tooth, in section, flat. No teeth in females. No tooth in upper jaw. Dorsal fin small, subtriangular and placed at the back about 2/3rd of the total length. Pectoral flippers oblong 20-50 cms in length. Tail fluke horizontally flat but without any notch in the middle. body dark grey to bluish black in colour above, while paler below. There may be some blotches or white scars on the body. A pair of teeth present in lower jaw of a male is absent in females.

Measurements : (in m) : Total length : Male : 3.5-5.8, female : 3.9-4.71.

Weight : (in Kg) : Adult 700-1033.

Intraspecific variations : None.

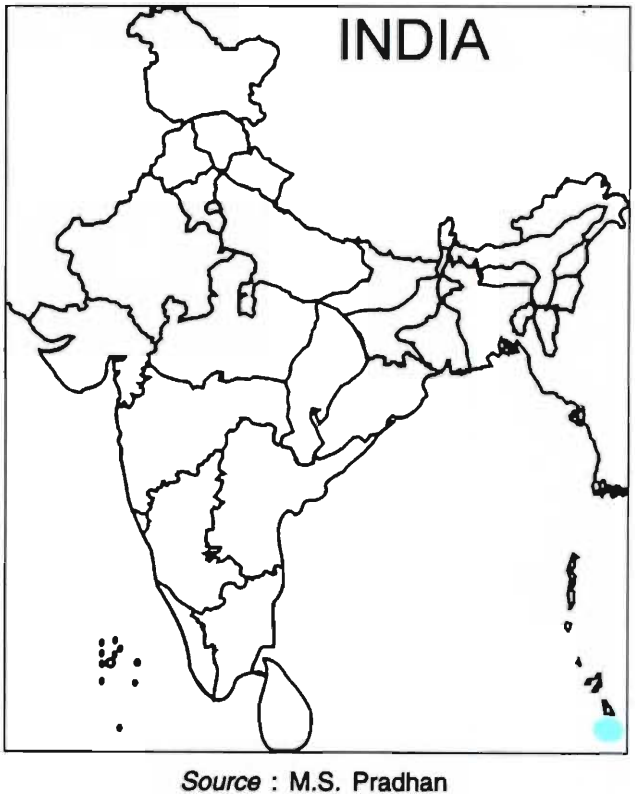
Distribution : World wide in tropical to subtropical oceanic waters. In Indian waters the species has been reported from Nicobar Islands.

Endemism : Non-Endemic species.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Only one record from Nicobar Island.; *Type* : Contiguous.



Source : M.S. Pradhan

Habit, habitat and ecology : Blainville's Beaked Whale prefers to live in deep waters (700-1000m depth) off the shore. Mostly lives in oceanic waters far away from the shore. Feeds mainly on squids and fishes. A group contains one to seven individuals, some times even more. Since no information is available on the population status of the species, it is considered to be rare or very rare.

Habitat structure : Deep waters far away from the shore. Habitat strucutre : Stable.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : None. Two attempts to keep this species in captivity failed in USA.

Life span : (Wild) : Sexual maturity is attained at 9-11 years; (Captivity) : None.

Population trend : Unknown.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sighting records near Nicobar Island reported by Agrawal and Alfred, (1999) and Kumaran, (2000).

Mesoplodon densirostris (Blainville)

Threats : Poisoning, accidental deaths in small cetacean fishery, secondary piosoning due to DDT and PCB contamination of its food (Squids).; *Effect of threats on population (Perceived or inferred)* : Can't say.

Trade : Not known; *Parts in trade* : Not known; *Effect of trade on population (Perceived or inferred)* : Can't say.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Not Listed (National); *IUCN (2002)* (Proposed) : Data Deficient (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : Survey and monitoring.

Remarks : Considering the rare population status, it is recommended that the species should be allotted one of the threat IUCN categories at global level after proper assessment.

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Agrawal, V.C and Alfred, J.R.B. 1999. *Handbook on Whales, dolphins and dugong* : 1-150. Publisher : Director, *Zool. Surv. India*, Calcutta.

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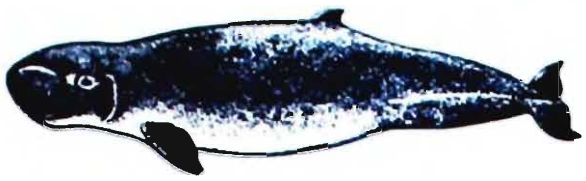
Evaluated by : J.R.B. Alfred and M.S. Pradhan



Order CETACEA
Suborder ODONTOCETI
Family PHYSETERIDAE

88. *Kogia breviceps* (Blainville)
Pygmy Sperm Whale

Synonyms : *Physeter breviceps* Blainville other Synonyms according to Alfred *et al.* (floweri, goodie, greyii).

Common names : Pygmy Sperm Whale.

Regional names : Not known.

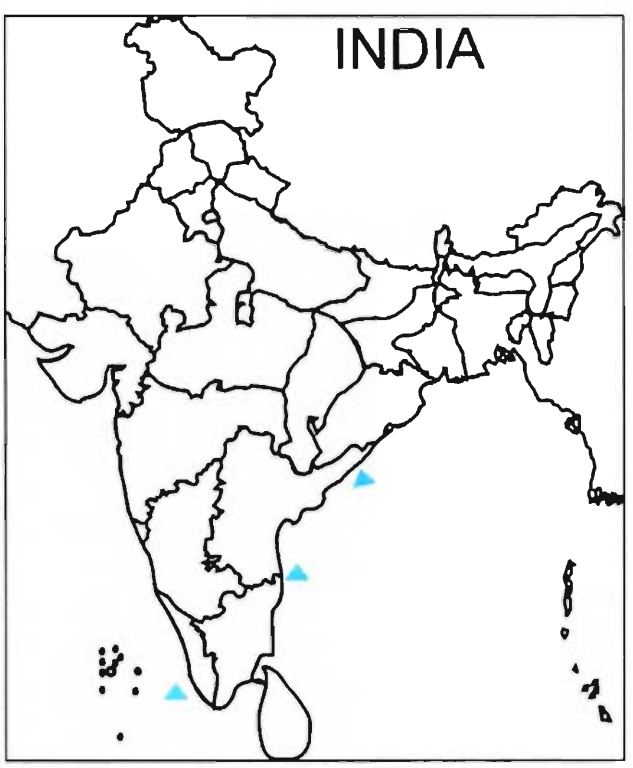
Diagnostic characters : All sperm whale species are characterised by very narrow lower jaws bearing teeth. Head is obstusely pointed with bulbus forehead. The upper jaw is high and heavily built with no teeth at all. Lower jaw is studded with 12-16 pairs of teeth. Mouth opening ventral and far short of snout. The "S" shaped blowhole is located assymentrically on the left side of the front of the head. Snout basically square shaped in profile and projecting beyond lower jaw. Dorsal fin low and located in the posterior half of the body. Pectoral flippers short and roughly triangular and about 38 cm in length. Sides of the head behind the eye bear crescentric white marks giving an appearance of fish gill slit. Flippers are situated behind the false gills. Tail fluke dorsoventrally flattened and distinctly notched teeth thin, sharp and curved inwards. Pigmy Sperm Whale is bluish grey above and whitish in colour on throat and belly.

Measurements : (in m) : Total length : 2.6-3.4.

Weight : (in Kg) : 2.9 m long Pigmy Sperm Whale weighs about 417 Kg.

Intraspecific variations : None.

Distribution : Throughout the tropical and warm temperate oceans of the world. From the Indian coast, stranding of Pigmy Sperm Whales have been reported from Chennai, Vishkhapatnam and Waltair on east coast, while from Thiruvananthapuram (Trivandrum), Kerala, on west coast.



Source : M.S. Pradhan

Endemism : Non-Endemic species.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Contiguous.

Habit, habitat and ecology : Marine and oceanic form prefering to live in open and deep waters. Occasionally seen quite close to inshore waters also. They are specialist bottom feeders preying on squids and crustaceans. Sluggish and slow swimmers resting on surface for long periods. Group size consists of 1 to 5 or even ten individuals (Robert 1997). Pregnant females have been found during the period between November-April.

Habitat structure : Inhabitants of deep oceanic waters. No change in the habitat structure.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

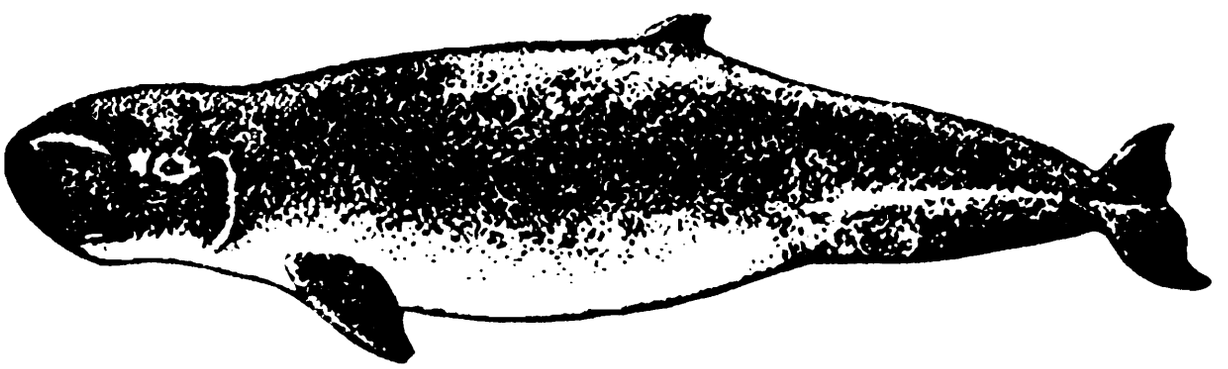
Captive population : None.

Life span : (Wild) : Sexual maturity is attained at a length of 2.6-3 m.; (Captivity) : Not known.

Population trend : Stable.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sighting records of only three specimens of Pygmy Sperm Whales from Indian waters during the period between 1800 to 2000 have been reported in details by Kumaran, (2000) and Kumaran (2002). As per Kumaran (2002) there is no sighting record of Pygmy sperm whale in Indian waters since1920. Recent field studies have been carried out by Nowak (1991) as reported by Roberts (1997) and also by Leatherwood and Reeves (1983) as reported by Agrawal and Alfred (1999).

Threats : Accidental mortality in fishing gillnets and deaths due to accidental intake of plastic bags (Lal Mohan 1999).; *Effect of threats on population (Perceived or inferred)* : Can't say.



Kogia breviceps (Blainville)

Trade : Local. However, two specimens were exported from France to U.S.A. in 1981 and 1982 (Agrawal and Alfred, 1999).; *Parts in trade* : Meat insurg.; *Effect of trade on population (Perceived or inferred)* : Can't say.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global).

Taxon related studies recommended : Monitoring and population studies.

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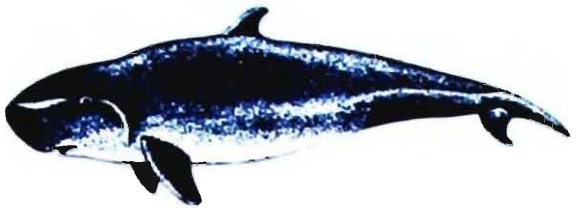
Evaluated by : J.R.B. Alfred and M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order CETACEA

Suborder ODONTOCETI

Family PHYSETERIDAE



89. *Kogia simus* (Owen)
Dwarf Sperm Whale

Synonyms : *Physeter* (*Euphysets*) *simus* Owen.

Common name : Dwarf Sperm Whale.

Regional names : Not Available.

Diagnostic characters : Dwarf Sperm Whale is similar in morphology to Pygmy Sperm Whale in having a large bulbous and blunt forehead, underslung and narrow lower jaw with 8-13 pairs of simple small teeth and possession of false gills. However, it differs in having smaller size and in possession of tall dorsal fin (more than 1/ 20th of total body length) which is placed in the anterior half of the back. Pectoral flippers obtusely falcate. Tail fluke horizontally flattened and deeply notched in the middle. Blowhole placed at the anterior end of the forehead. Dwarf Sperm Whale is dark steel grey in colour above, while pale grey or whitish below. There is a prominant gill shaped white marked on both the sides of the head. Males are usually larger than females.

Measurements : (in meters) : Total length : 2.12 to 2.7.

Weight : (in Kgs) : 180 to 350 Kg.

Intraspecific variations : None.

Distribution : Worldwide, found in temperate, subtropical and tropical waters. It is more inshore along the edge of the continental shelf than Pygmy Whale. In Indian waters it has been reported from Thiruvananthapuram (Trivandrum) and Vishakhapatnam coasts.

Source : M.S. Pradhan

Endemism : Non-Endemic species.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Contiguous.

Habit, habitat and ecology : Though inhabitants of deep oceans, Dwarf Sperm Whales are more fond of inshore waters along the edge of continental shelf. Juveniles and subadults feed closer to the inshore inside the continental shelf, though still foraging on the seabed. It is also a specialist bottom feeder, thriving on squids and crustaceans. It is capable of deep dives and of remaining for considerable periods under water. Group size does not exceed ten individuals. The group size may consist of females, calves, immatures and adults. The calf remains with its mother for about one year.

Habitat structure : Dwarf Sperm Whale is an inhabitant of deep oceanic waters. No change in the habitat structure.

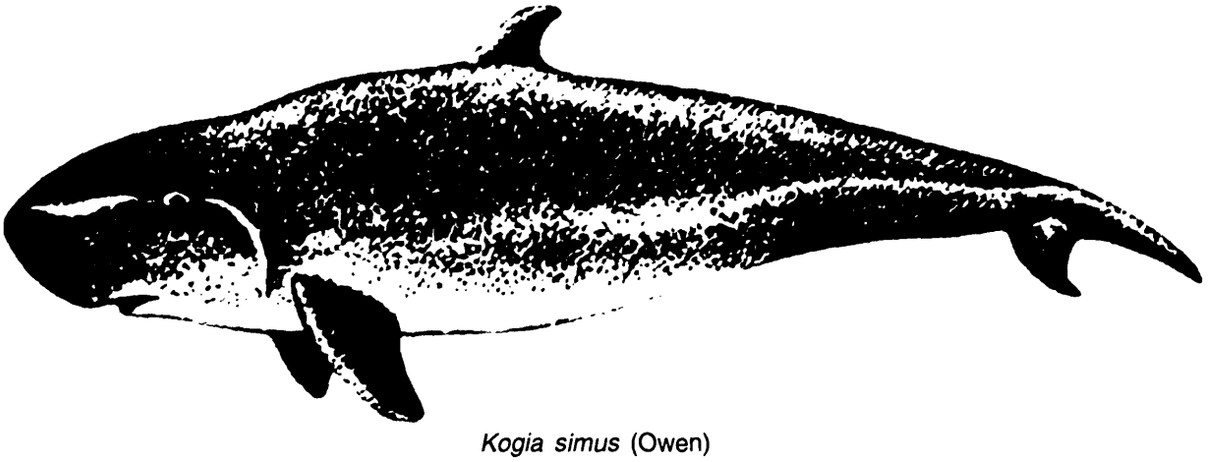
Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : None.

Life span : (Wild) : Sexual maturity is attained at a length of 2.1-2.2m; (Captivity) : Not known.

Population trend : Unknown.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sighting records from Vishakhapattanum and Trivandrum coast in Indian waters reported by Agrawal and Alfred (1999). Sighting records of only five specimens of Dwarf Sperm Whale from Indian waters during the period from1800 to 2000 have been reported in details by Kumaran (2000) and Kumaran (2002).



Kogia simus (Owen)

Threats : Human interference, hunting, fishing, accidental mortality in gill nets etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local; Parts in trade : Meat insurg.; Effect of trade on population (Perceived or inferred) : Declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book (IUCN, 1994)* : No; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global).

Taxon related studies recommended : Survey and monitoring.

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Roberts, T.J. 1997. *The Mammals of Pakistan* : 1-525. Publisher : Oxford University Press, London, U.K.

Evaluated by : J.R.B. Alfred and M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order CETACEA

Suborder ODONTOCETI

Family PHYSETERIDAE

90. *Physeter macrocephalus* Linnaeus
Sperm Whale

Synonyms : *Physeter macrocephalus* Linnaeus, *Physeter catodon* Linnaeus, *Physeter australasianus* Desmoulins.

Common names : Sperm Whale.

Regional names : Not Available.

Diagnostic characters : Sperm Whale is a large sized toothed whale with enormous truncated head. Its large sized head can easily identify it, which is almost 1/3 rd of its body size. The head accomodates a large organ filled with spermaceti. Lower jaw narrow and underslung studded with 18-27 large thick and conical teeth on each side. Upper jaw toothless. All seven cervical vertebrae are fused. The single blowhole is placed on the left of the midline near tip of the snout. The hump of the Sperm Whale is distinct, rounded and placed 2/3rd of back from tip of the snout. This is followed by a series of humps up to the tail. Dorsal fin low, small, pointed and ridge like. Pectoral flippers broad and paddle like. Tail fluke broad and notched in the middle. body colour deep bluish grey above with white marblings around lips. Under surface lighter. Males are nearly 1/2 times larger than females in size.

Measurements : (in m) : Total length : Male : 10-18; female : 8-12.

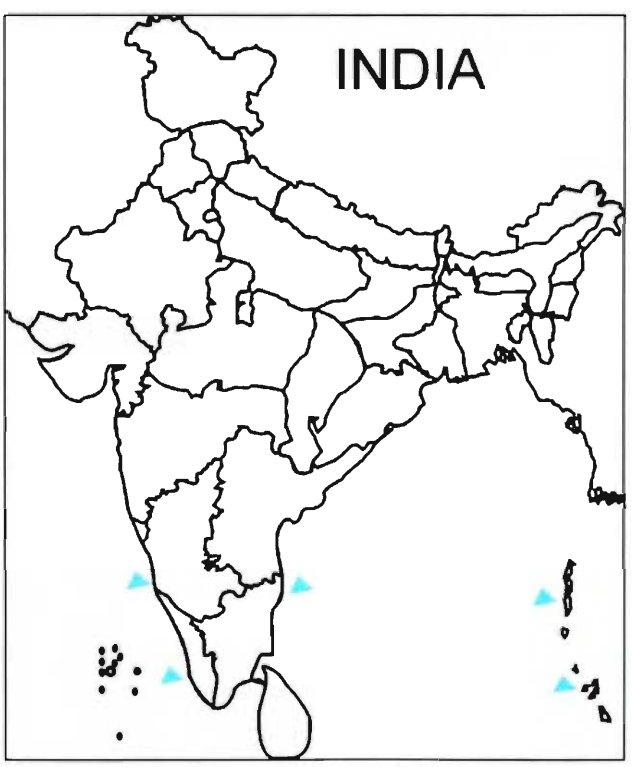
Weight : (in tons) : 35-40.

Intraspecific variations : None.

Distribution : Worldwide. Sperm Whale females and young males are confined between 45^{0}N and 45^{0}S latitudes, while mature males travel upto Arctic and Antarctic oceans. Reported from east and west coasts of India and also from Andaman and Nicobar Islands.

Endemism : Non-Endemic species.

Area of occupancy : Greater than 2001



Source : M.S. Pradhan

sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : No. of locations : Many; *Type* : Contiguous.

Habit, habitat and ecology : Sperm Whale may be found solitary or in groups. Breeding: group size 20-40, individual isolated groups may go up to 150. However, bachelor group size may contain 6-50 individuals also. Sperm Whales are migratory in habit; males may be sighted near poles. They can dive as deep as 2800 meters and be under water for more than an hour. Further, they can remain on surface and blow nearly 50 times for an hour before next deep dive. They feed mainly on squids and mesopelagic species.

Habitat structure : Deep water oceanic forms. Usually not found in areas with less than 180 m depth. No change in the Habitat structure.

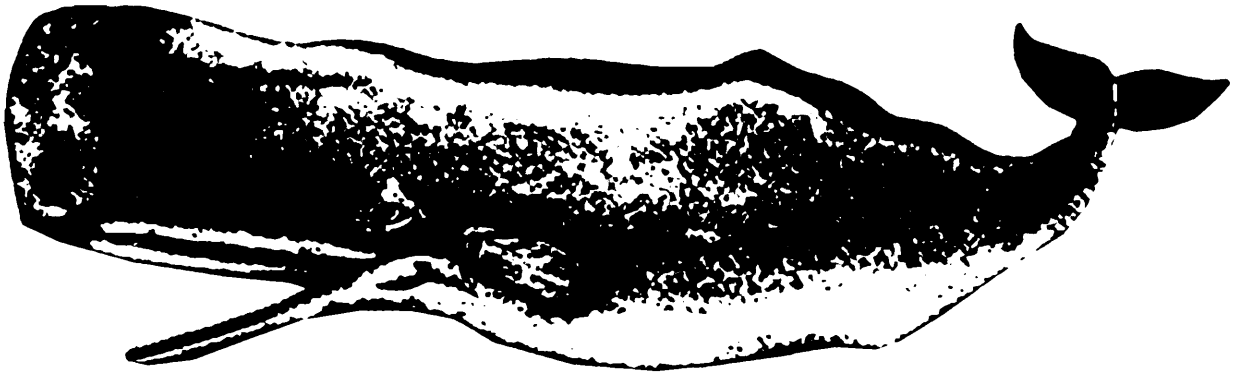
Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : None because of large size.

Life span : (Wild) : 60-70 years; (Captivity) : Not known.

Population trend : Declining with general decline.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sighting records reported from east and west coast and Andaman and Nicobar Islands in Indian waters by Agrawal and Alfred (1999). *Sighting records* of twenty-five specimens of Sperm Whales from Indian waters during the period from 1800 to



Physeter macrocephalus Linnaeus

2000 have been reported in details by Kumaran (2000) and Kumaran (2002).

Threats : Human interference, hunting, ship collisions etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Commercial and international; *Parts in trade* : Bones, live animals, oil, wax, ambergris and protein rich solid and liquid residue; *Effect of trade on population (Perceived or inferred)* : Declining.

Physeter macrocephalus Linnaeus

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global) (For *Physeter catodon*); *IUCN (2002)* (Proposed) : Vulnerable (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : Survey and monitoring.

Remarks : Since 1979 International Whaling Commission has totally banned palagic catches of sperm whales.

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Evaluated by : J.R.B. Alfred and M.S. Pradhan

Order CETACEA
Suborder ODONTOCETI
Family DELPHINIDAE

91. *Pseudorca crassidens* (Owen)
False Killer Whale

Synonyms : *Phocaena crassidens* Owen.

Common name : False Killer Whale.

Regional names : Not available.

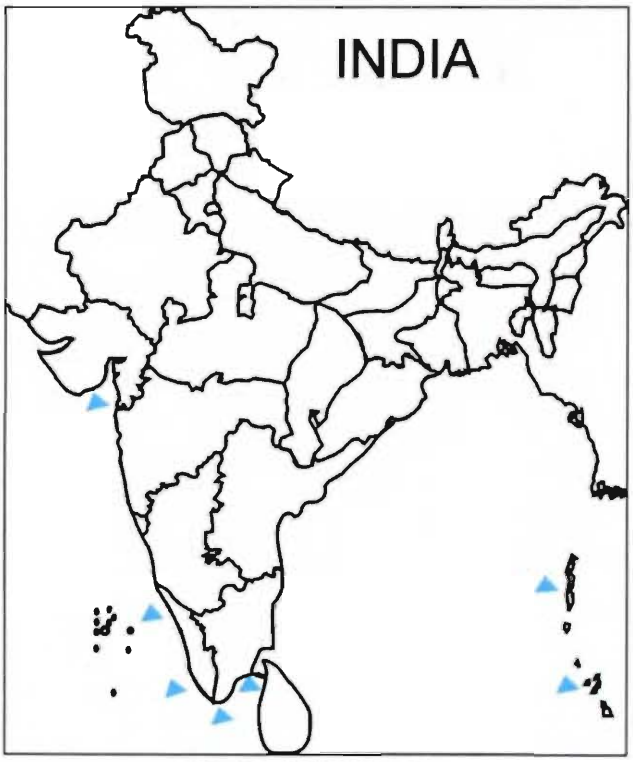
Diagnostic characters : False killer Whale possesses long slender body with smaller but bulbous head and a distinct backwardly curved dorsal fin (40 cm in height). There is no distinct beak. However, snout projects slightly beyond the lower jaw. Pectoral flippers elongated, narrow, tapering and slightly concave on inner side. False Killer Whale is a delphinid whale having large size (Total length upto 6 m) with 7-12 teeth on each side of the lower and upper jaws. Teeth are large and slightly curved. Body mainly black dorsally while white ventrally in colour. Pectoral flippers black in colour. Tail fluke dorsoventrally flattened and notched in the middle. Male are slightly larger than females.

Measurements : (in m) : Total length : male : 3.7-9.0, female : 3.5-5.0.

Weight : (in tons) : Maximum 1.5.

Intraspecific variations : None.

Distribution : World wide, in tropical and temperate oceans including Indian Ocean. Recorded from Kozikode, Thiruvananthpuram (Trivandrum), Gulf of Cambay, Cape Comorin, Port Blair and Campbell bay in Indian waters.



Source : M.S. Pradhan

Endemism : Non-Endemic species.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Contiguous.

Habit, habitat and ecology : False killer whale is mainly a deep-water oceanic form prefering to feed primarily on cephalopods and large fishes. It is gregarious in habit forming a group of some times more than hundred individuals. Strong social interactions are seen in them. They play, ride on the waves and leap above the surface. They are also known to remove fishes from commercial hook and line fishing. They even attack small cetaceans. A normal group size is generally of 8-10 individuals. They seem to breed throughout the year.

Habitat structure : Oceanic deep-water forms, but they may approach coastline near deep waters. No change in habitat structure.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

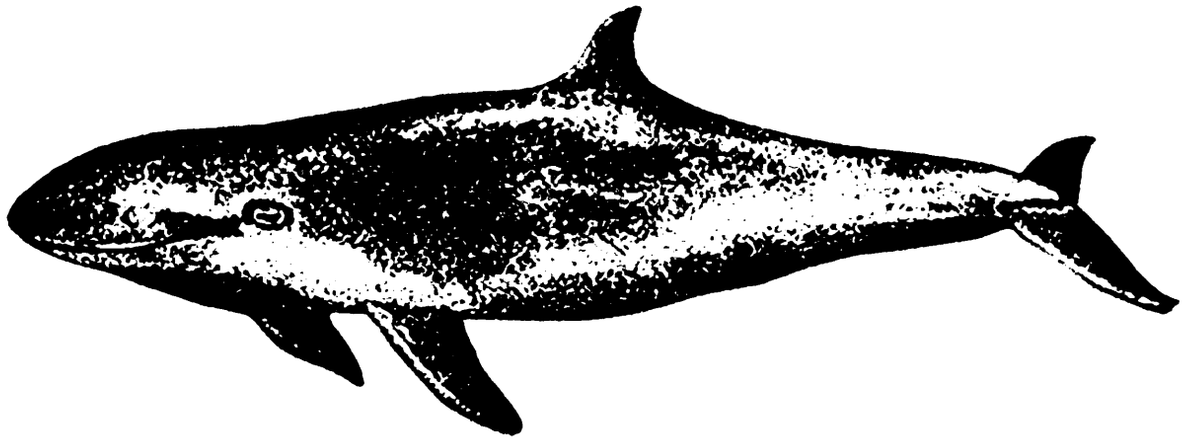
Captive population : 18 specimens were kept alive in captivity in oceanariums of different countries till 1983.

Life span : (Wild) : Sexual maturity is attained at the age of 8 years for males and 14 years for females; (captivity) : Not known.

Population trend : General decline.

Sighting records : *Type of sighting* : Direct and Indirect; *Field notes* : Sighting records of False Killer Whale individuals in Indian waters have been reported by Agrawal and Alfred, (1999). Sighting records of twenty-three specimens of False Killer whale from Indian waters during the period 1800 to 2000 have been reported in details by Kumaran (2000) and Kumaran (2002).

Threats : Trade, gillnet fishery, collision with ships etc.; Effect of threats on population (Perceived or inferred) : Declining.



Pseudorca crassidens (Owen)

Trade : Commercial, international; *Parts in trade* : Live animals; *Effect of trade on population (Perceived or inferred)* : Can't say.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule II; Part I; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global).

Taxon related studies recommended : Survey and monitoring.

REFERENCES

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Evaluated by : J.R.B. Alfred and M.S. Pradhan

CRITICALLY ENDANGERED

Order SIRENIA

Family DUGONGIDAE

92. *Dugong dugon* (Muller)
Dugong or Sea cow

Synonyms : *Trichecus dugon* Muller; *Halicore dugong* Illiger.

Common names : Dugong or Sea cow.

Regional names : Bengali : Sindhu gavi, Tamil : Kadalpasu Hindi and Marathi : Samudri Gai.

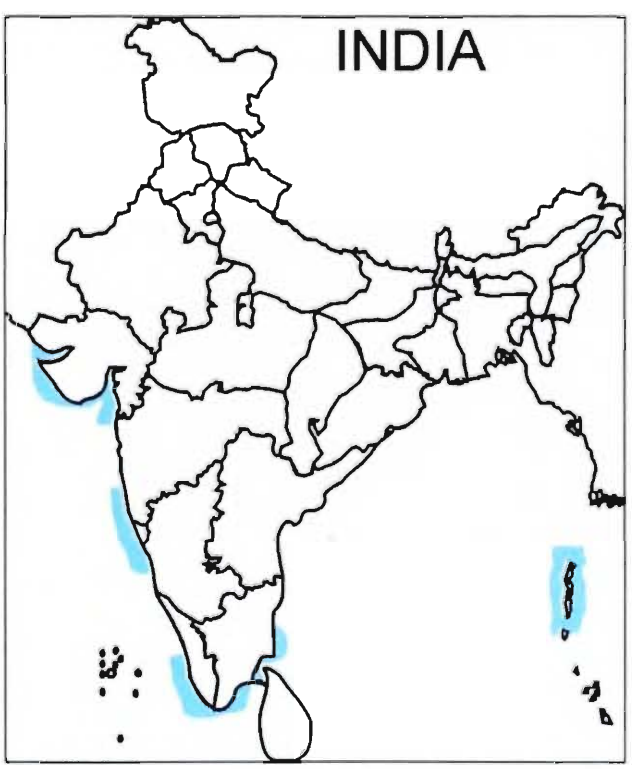
Diagnostic characters : Dugong or sea cow is a marine mammal, which is quite different from other cetacean species. All cetaceans possess a fusiform body, pectoral flippers and horizontally compressed and notched tail fluke. Streamline bodied sea cow possesses massive head, truncated anteriorly, with a fleshy upper lip which is pad like projecting over lower lip. The upper lip is provided with stiff bristles around muzzle. Mouth small, forelimbs (flippers) longer and narrower. Incisors tusk like in males 3/3 functional cheek teeth on each side. Nostrils are situated on the top of the head. Eyes small deeply sunk, while ears minute. Neck indistinguishable, body colour grey, bluish-grey or brownish-grey dorsally, whitish ventrally.

Measurements : (in m) : Total body length : 2.5-3.2.

Weight : (in Kg) : 140+ .

Intraspecific variations : None.

Distribution : Gulf of Kutch, Konkan coast, Malbar coast on west coast; Tuticorin, Dhanskodi, Rameshwaram, Krusadai, Pambam on the east coast and Andaman Nicobar Islands within Indian limits.



Source : M.S. Pradhan

Endemism : Non-Endemic species.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Contiguous.

Habit, habitat and ecology : Dugong is restricted to coastal, shallow marine habitat with ample food plants. It feeds on marine algae and grasses growing in shallow waters. Generally seen in singly or in pairs or in a small group of 3-6 individuals. They are sluggish in nature but can attain speed upto 22 km/hr. While feeding Dugong "walks"on the substratum with the help of clawed flippers. It is a nocturnal herbivorous creature. A single calf is born in a year.

Habitat structure : Close to marine shore habitat with ample food plants. It never goes far into deep-sea water. Change in habitat strucutre with general decline.

Population : *Global population* : 30,000 Indo-Pacific waters. *Regional Population* : less than 100; *No. of mature individuals in all the populations* : less than 50.

Captive population : None.

Life span : (Wild) : 10 years; (Captivity) : Not known.

Population trend : Population size declining with greater than 50 % in the last 50 years.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sighting records reported along Indian west coast, east coast and Andaman Islands by Lal Mohan (1986), Nammalwar (1993), Dandapani (1995) (All cited in Molur *et al.*, 1998). Detiled record of sightings of dugongs reported by Kumaran (2002) and Kumaran (2000).

Threats : Human interference, loss of habitat, trade, hunting, meat insurgency, poisoning, corridor loss, use of fish nets and dynamite in fishing, hurricane and trawler movements in the feeding zone; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, commercial and international; *Parts in trade* : Bones, organs, meat insurg, body parts, tusk for making ivory etc.; Effect of trade on population (Perceived or inferred) : Declining.

Dugong dugon (Muller)

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Critically Endangered (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Vulnerable (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, limiting factor research, habitat management etc.

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Evaluated by : J.R.B. Alfred and M.S. Pradhan

VULNERABLE

Order PROBOSCIDEA

Family ELEPHANTIDAE

93. *Elephas maximus* Linnaeus
Asian Elephant

Synonyms : *Elephas indicus*, *Elephas asiaticus* Blumen bach.

Common names : Asian Elephant, Indian Elephant.

Regional names : Hindi & Bengali : Hathi, Tamil : Anai, Malayalam : Ana, Marathi : Hatti, Kannada : Aane

Diagnostic characters : Asian elephants are smaller than African elephants. Asian elephant possesses double domed forehead, rounded back, relatively short ears and a trunk ending in a single tab. Elephants are massive in built with a long flexible trunk or proboscis. Four nails on hind foot. Tusks present in males. Tusks absent or present in the form of tushes in females or some males. Coat colour greyish brown. Molars are large and transversly ridged.

Measurements : (in cm) : Height at shoulders : 275-320; length of tusk : 260-300.

Weight : Few tusks weigh more than 45.5 Kg a pair.

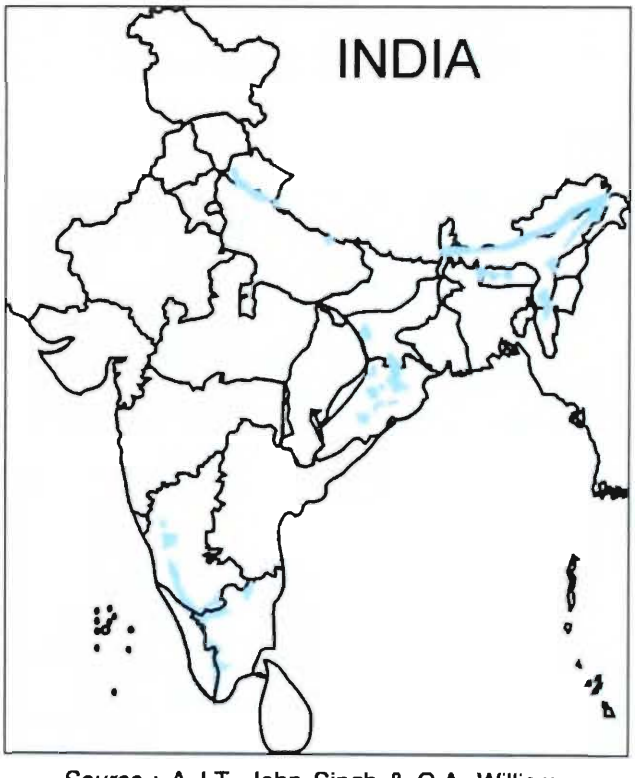
Intraspecific variations : Three subspecies of asian elephants have been recorded. *Elephas maximus indicus* is found in India while *Elephas maximus maximus* and *Elephas maximus ceylonicus* in Sri Lanka (Agrawal and Ghosh, 1994).

Distribution : Uttaranchal Pradesh, North Eastern Uttar Pradesh, Bihar, Orissa, West Bengal, Karnataka, Goa, Tamil Nadu, Kerala and North Eastern India.

Endemism : Non-endemic species.

Altitude : Can go up to 3660 m.

Area of occupancy : Greater than 2001 sq. kms.



Source : A.J.T. John Singh & C.A. Williams

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many in five zones (Atleast in 65 Indian Protected Areas); *Type* : Fragmented.

Habit, habitat and ecology : Elephants are forest dwelling animals requiring shady environment with free access to grasses and water. They live in variety of vegetation cover varying from wet evergreen forest to montane shola-grasslands, moist and dry deciduous to mixed deciduous forests, tea, coffee and cardamom plantations and thorn forest. They are seen dwelling on land at sea level, plains, and hilltracts and also at higher altitudes. They are known to migrate during scarcity to the areas with living conditions favourable to them. They spend more than 2/3rd of the day in feeding and can consume 150-270 kgs of vegetation in a day. Migration during unfavourable conditions is effected through selected corridors. A number of elephant corridors have been reported in India (Johnsing and Williams, 1999). Elephants have a complex social system with strong maternal bonds. Mature males (Tuskers) live singally or in small groups. Association with females is developed during feeding and mating seasons.

Habitat structure : Elephant prefers to live in variety of forests with free access to grassland and water throughout the year. Change in habitat structure, decreasing in less than 20% in last 20 years.

Population : *Global population* : In India : 29,000+ (ENVIS Report of Wildlife Institute of India, March, 1998); *No. of mature individuals in all the populations* : greater than 2500.

Captive population : Domesticated elephants : 1460-1660 in North Eastern India, 500-750 in northern India and 300-350 southern India.

Elephas maximus Linnaeus

Photo : Sandeep Kr. Tiwari

Elephas maximus Linnaeus

Life span : (Wild) : 60-70 years (Anonymous, 1994); (Captivity) : Not known.

Population trend : Declining in less than 20% in last 20 years.

Sighting records : *Type of sighting* : Direct and Indirect; *Field notes* : Number of sighting records in India have been reported in : (1) ENVIS Report, Vol. 1 March 1998. Published by Wildlife Institute of India, Dehradun; (2) The Asian elephant in south India 1998 report by Asian Elephant Research and Conservation Centre, Bangalore; and (3) Status and Conservation of Asian elephants in north-eastern India by Choudhury, 1999. Studies on behaviour, distribution, ecology, migration, population, conservation and management of Indian elephant population were carried out by Sukumar (1986) (Cited in Sukumar *et al.*, 1998) and Johnsingh (1986) (Cited in Johnsingh and Williams, 1999).

Threats : Habitat fragmentation, agriculture and farming, grazzing, mining, human interference, loss of habitat, trade, pollution, hunting, insurgency, corridor loss, anthropogenic pressures on the habitat, man-elephant conflict, forest fires, illegal captures of live animals etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, domestic and international; *Parts in trade* : Live animals, meat insurg, body parts, tusks for making ivory products etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Vulnerable (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Endangered (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, limiting factor research, habitat management, behavioural studies in relation to man-elephant conflict etc.

Remarks : Poaching of elephants for ivory is still a serious problem. The tuskers are ruthlessly killed for tusks. Capture for domestication and mortality due to epidemics and draughts also result in decline in the elephant population.

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Evaluated by : M.S. Pradhan

VULNERABLE

Order PERISSODACTYLA

Family EQUIDAE

94. *Equus kiang* Moorcroft
Kiang

Synonyms : *Equus hemionus kiang* Moorcroft.

Common names : Kiang, Tibetan Wild Ass.

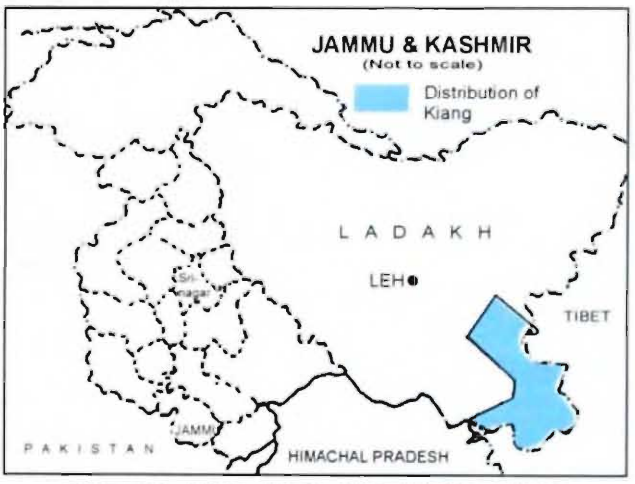
Regional names : Hindi : Ghor Khar.

Diagnostic characters : Kiang or Tibetan Wild Ass belongs to an odd toed ungulate mammalian order, Perissodactyla. Kiang is a largest of all the African and Asiatic wild assess. It is found at higher altitute and is an elegant mammalian species with no trace of the donky's dullness, stupidity and dalliance. Rather, it is a sleek and handsome rust and white coloured ass. It has a narrower mid-dorsal stripe without out a whitish border. The shoulder stripes are absent in Kiang. It has a short upright mane like horses, asses and zebras. Kiang posseses single complete toe enclosed in a large solid hoof supported by a long bone known as cannon bone. Further like horses it has large tail tuft and broad hooves. The cheek teeth are large, quadrangular and complex with numerous enamal foldings. In general colouration, it is reddish brown on the back, while white on the belly. Winter coat much longer and darker (Brown) than the reddish summer coat. Mane and tail tip deep blackish brown. Dorsal stripe runs down from mane to the tail tuft.

Measurements : (in meters) : Height at shoulders 1.05-1.5 m.

Weight : Not known.

Intraspecific variations : Some authorities in past-considered Kiang as a subspecies of *Equus hemionus* Pallas. However, Bennett (1980) separated Kiang or Onager as a distinct species of *Equus*. This view has been upheld by Wilson and Reeder, 1992, Sharma, 1994, Alfred *et al.* 2002 and Roberts, 1997. The three subspecies recognized earlier, namely *polyodon*, *kiang* and *holdereri*, have been merged in single nominate subspecies, *Equus kiang kiang* Moorecroft.



Source : J.M. Julka, J.R.B. Alfred, H.S. Mehta and R. Paliwal

Distribution : Kiang is well distributed at higher altitudes of Indian regions of Jammu and Kashmir (Ladakh), Himachal Pradesh (Kibber Valley and Spiti) and north Sikkim.

Endemism : Non-Endemic species.

Altitude : 3962-4876 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Four; *Type* : Fragmented.

Habit, habitat and ecology : Kiang is found on high open plateau regions close to salt water lakes and dry intermontane basins. Males and females move in seggregated herds ranging from 8-30 grazing in the valley throughout the day while spending the night in the mountains. On sensing danger, they gallop off neighing like a horse. Kiangs inhabit most difficult terrains. They are adapted to the harsh and extreme climatic conditions at high altitudes. It is a fine climber on difficult terrains. It feeds on Alpine grass and herbs and can remarkably sustain on little food.

Habitat structure : Tibetan Wild Ass prefers to live in the areas around salt-water lake in the cold desert at higher altitudes. Change in the habitat structure, general decline.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Less than 2500.

Captive population : None in India, while 13 males and 16 females in 8 Zoo abroad (Anonymous, 1994).

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : General decline.

Sighting records : *Type of sighting* : Direct; *Field notes* : Direct sightings records have been reported by different survey teams sent to Ladakh and Spiti in Himachal

Photo : H.S. Mehta

Equus kiang Moorcroft

Pradesh from High Altitude Field Station, Zoological Survey of India, Solan during 1993-97. ZSI teams from Kolkata surveyed Ladakh and Sikkim also.

Threats : Habitat fragmentation, human interference and insurgency/terrorism/ war; Effect of threats on population (Perceived or inferred) : Declining.

Trade : Commercial and international; *Parts in trade* : Live animal; ***Effect of trade on population (Perceived or inferred)*** : Declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : Vulnerable (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Data Deficient (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : Survey and monitoring, taxonomic studies, life history studies etc.

Remarks : Considering extreme fragmentation of populations, low population status, restricted destribution at high altitude and threat of human interference through trade etc. it is strongly recommende to list this species in higher IUCN catagory of threatened species.

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Evaluated by : M.S. Pradhan

ENDANGERED

Order PERISSODACTYLA

Family EQUIDAE

95. *Equus onager khur* Lesson
Indian Wild Ass

Synonyms : *Equus hemionus* khur Lesson; *Asinus hemionus khur* (Lesson).

Common names : Indian Wild Ass, Kulan, Asiatic Wild Ass.

Regional names : Hindi : Ghor Khar.

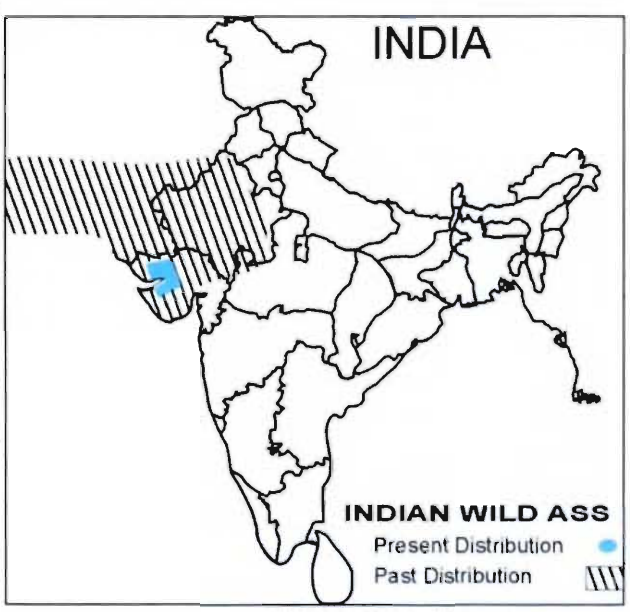
Diagnostic characters : The Indian Wild Ass, like Kiang, belongs to the horse family. It is shorter in size than horse, possesses single complete toe encased in a large solid hoof. Other morphological characters are same as those of kiang. However, it is slighlty larger than the domestic ass in size. It has a short and erect mane continuing as a dark brown stripe on the back to the root of tufted tail. It has long ears, moderately long tufted tail and small feet. Forelocks absent. Coat colour varies from reddish grey to pale chestnut on back. Nose lighter in colour. Belly and flanks are white in colour; the white extends further up to the flanks. Callosites (dark rings) are present above hooves of forelegs only. Winter pelage is short. The dorsal stripe, not extending beyond middle of the tail. Females possess two inguinal teats. The males may possess rudimentary canines. The ears possess conspecious dark brown tips on their inner margin.

Measurements : (in m/cm) : Head and body length from tip of the nose to rump : 2.00-2.10 m; height at shoulder : 110-120 cm; tail length : 42-49 cm; ears : 19.0-21.0 cm.

Weight : (in Kg) : Adult male : 238 and female : 204 (Roberts, 1997).

Intraspecific variations : Taxonomy of wild ass species is under heavy dispute and needs proper consensus. Benett (1980) and Alfred *et al.* (2002) have been followed here by retaining *onager* as a distinct species though Groves (1986) and Schlawe (1986) (Both cited in Alfred *et al.* 2002) have treated *onager* as a subspecies of *hemionus*.

Distribution : The Wild Ass ranged in past from south west Iran to north west India through Pakistan. At present, the



Source : A.K. Mukherjee(1982)

poupulation in India has been restricted to a small area in Rann of Kutchch in Gujarat. Extention of range of distribution in some adjoining areas of Gujarat has also been reported (Anonymous, 1994).

Endemism : Non-Endemic species.

Altitude : Plains to less than 100 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : 2001-5000 sq. kms.

Locations : *No. of locations* : One in India.; *Type* : Fragmented.

Habit, habitat and ecology : Indian Wild Asses live in herds, group size varying between 3-10 or even 48 individuals. It lives mostly on grass and raids nearby crops of wheat, cotton, millet and/or jowar. Large areas are covered in search of food (125 sq Km/day). The wild ass can run at an average speed of 60 Km/Hr. Rut starts in June-July. Single foal is born after gestation of 11-12 months. Sexes form different groups. The foal joins the respective group after three months. The wild ass does not interbreed with the local domestic variety. The males enter into vicious combat for the females. Wild asses have adapted to the harsh environmental conditions of hot deserts. Wild ass is a relatively silent animal but stallion can shriek a bray and round up its herd sensing a danger.

Habitat structure : Indian Wild Ass is an inhabitant of salt encrusted barren flats dotted with a few scattered islands and /or hillocks, which are the only source of open scrub vegetation and drinking water in the Runn of Kutchch. The Habitat structure is changing with general decline.

Population : *Global population* : 2940 in 1998 (Singh, 2001); *No. of mature individuals in all the populations* : greater than 2500.

Captive population : Males : 4 + females : 7 = Total : 11 in 5 Indian zoo. (CAMP, 1998).

Photo Source : Q. H. Baqri and P. Bohra

Equus onager khur Lesson

Life span : (Wild) : 17 years; (Captivity) : 35 years (Roberts, 1997).

Population trend : Declining upto 50 % since 1961. However, the poupulation is steadily increasing since 1973. (Singh, 2001). Moreover, the increase in population is also resulting in dispersal as well.

Sighting records : *Type of sighting* : Direct; *Field notes* : Ali (1986) has carried out studies on distribution and ecology of Indian Wild Ass species. He has reported extention of range of distribution in 10 more localities other than Rann of Kutchch in Gujarat. ZSI Survey party has reported a viable population in Mata Pahar area also near Sambar lake (Rajasthan) in 1994.

Threats : Habitat fragementation, human interference, loss of habitat, trade, predation, hunting,insurgency/ terrorism/war, corridor loss, disease (surra disease) etc.; Effect of threats on population (Perceived or inferred) : Declining.

Trade : Domestic commercial and international; *Parts in trade* : Live animals, fur, meat insurg., body parts etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : *Equus hemionus khur* : Not Evaluated (National); *IUCN (2002)* (Proposed) : *Equus hemionus khur* : Endangered (Global) based on Version 3.1 2001 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, taxonomic studies, limiting factor research, habitat management etc.

Remarks : In light of current available information on fast declining population of Indian wild ass species it is strongly recommended that the species be listed in the endangered category of IUCN at National Level on the basis of fast declining rate, spread of disease, habitat loss, insurgency like terrorism or war and fragmentation and isolation of the population. The entire area has been declared as Wild Ass Sanctuary (1973) due to which the wild ass has got protection to some extent. It has resulted in increase in population from few 100 to 2900+ since 1973 (Singh, 2001). Moreover, the subspecies has been assessed at global level as Endangered on the basis of latest IUCN Criteria : C2 (3.1 Version, 2001).

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Evaluated by : Q.H. Baqri, P.L. Kankane and M.S. Pradhan

ENDANGERED

Order PERISSODACTYLA

Family RHINOCEROTIDAE

96. *Rhinocerous unicornis* Linnaeus
Great One horned Rhinoceros

Synonyms : *Rhinocerous indicus* Cuvier, *Rhinoceros asiaticus* Blumenbach, and *Rhinocerous jamrachii* Sclater.

Common names : Great one horned Rhinoceros, Indian Rhinoceros.

Regional names : Hindi : Gainda, Gargadan, Bengali: Gondar, Assamese : Gor, Marathi : Genda.

Diagnostic characters : Rhino species belong to the mammalian order of odd toed ungulates, Perissodactyla. As name suggests Indian rhino posseses only one dermal horn on its snout. Further, it also possesses short and strong limbs. Indian species is largest in size among the asiatic species. The Indian rhino is a huge, hoofed creature with a fairly long and stout horn. The snout and skin folded into very prominent shields and studed with wartlike tubercules. The folds are present before, after shoulders, and in front of thigh. It has hairs only on tail and ears. Its horn is a mass of agglutinated or compressed hair made of keratin fibers forming a hard cemented mass. It is not at all connected with the skeleton. Even if the horn is knocked off accidently, a new horn grows in its place. Horns are present in both the sexes. Foot has a distinct hoof and three digits. The unusual physical appearance of the animal looks like a monster of some bygone age. The colour of the body is blackish grey.

Measurements : (in m/cm) : From snout to tip of the tail : 3.9 m; height at shoulder : 1.8m; length of horn : 30-60cm.

Weight : (in Kg) : Mature male : 1650; weight of horn : 2-2.5.

Intraspecific variations : No subspecies.

Distribution : One Horned Rhinoceros has been once known to be common and wide spread in occurence throughout Indo-Gangetic plains along the base of Himalayan ranges and its neighbouring

Source : A.K. Mukherjee (1982) & A. Choudhury (1997)

countries but by the end of 17th century it had completely disappeared from much its range except in the northern parts of West Bengal and Assam in India. Sometimes it sporadically wanders in the part of Arunachal Pradesh bordering Assam state. Total population recorded if around 1676 of which Kaziranga National Park has 1552; Orang National Park : 46 and Pabitora National Wildlife Sanctuary : 78. The last one has a highest density of population of 4/km2.

Endemism : Non-Endemic species.

Altitude : Upto 200 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 2001-5000 sq. kms.

Locations : *No. of locations* : 10; *Type* : Fragmented.

Habit, habitat and ecology : Indian One Horned Rhino prefers swamps, grassland, and Savanhas to live. It is also found in wooded jungles up ravines and low hills. As a rule the animal leads a solitory life, but several individuls may occupy the same area. The density of rhino was reported to be 2.78-3.13 per sq. km in Kaziranga, Assam (Choudhury, 1985). Some scattered parties may be seen grazing in close proximity. The calf keeps close to the cow while grazing or fleeing. Wallowing in the marshy mud-hole is a must everyday. It is a good swimmer also. It prefers to move through tall elephant grass and feeds on them. Grazing starts during the late part of the day and is continued throughout the night. Its vision is poor and is a slow breeder. It gives birth to one calf at a time in around October. Inspite of its heavy appearence it is quite agile and can run fast for a short distance. All rhinos of a particular area defecate at a fixed place; as a result the dung heap goes on enlarging in a circle.

Rhinocerous unicornis Linnaeus

Habitat structure : One Horned Rhino prefers swampy areas with tall elephant grasses to live in. Habitat struture has decreased @ of >20 % in last 50 years. Its area of range of distribution is decreasing at a faster rate.

Population : *Global population* : 1250 in India (CAMP, 1998); 1676 (Tiger Paper, March, 2004) *No. of mature individuals in all the populations* : less than 1500.

Captive population : 35 in 12 Indian zoo and 66 in 27 zoo abroad (CAMP, Report, 1998). Rhino can breed in captivity.

Life span : (Wild) : 70 yrs; (Captivity) : Not known.

Population trend : Declining.

Sighting records : *Type of sighting* : Direct and Indirect; *Field notes* : Sighting records reported based on recent field studies by Mukherjee, 1982, Choudhury in Assam (1984-97) and West Bengal (1995-96).

Threats : Floods, habitat loss, habitat fragmentation, human interference, grazing, hunting, trade, insurgency/terrorism/war, corridor loss, low breeding rate, poisoning, electrocution, transmission of foot and mounth disease from domestic cattles; Effect of threats on population (Perceived or inferred) : Declining.

Trade : Local, domestic, commercial and international; *Parts in trade* : Live animals, hair, horn, tail, meat insurg., body parts, hooves, urine and blood; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : Endangered (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Endangered (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : Survey and monitoring, limiting factor research and habitat management.

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Evaluated by : M.S. Pradhan

ENDANGERED

Order PERISSODACTYLA

Family RHINOCEROTIDAE

97. *Dicerorhinus sumatrensis* (Fischer)
Asian Two Horned or Sumatran Rhinoceros

Synonyms : *Didermoceros sumatrensis* (Fischer), *Rhinoceros lasiotis* Buncklland.

Common names : Asian Two Horned or Sumatran Rhinoceros.

Regional names : Assamese : Garh.

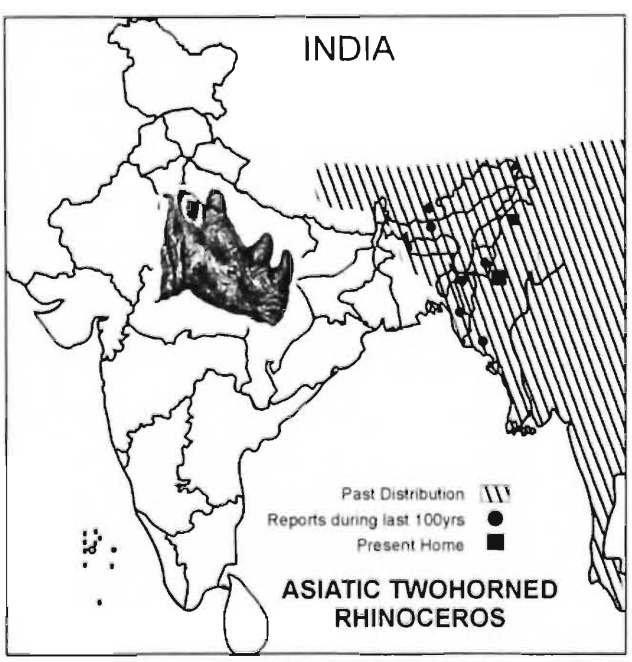
Diagnostic characters : The Asian Two Horned or Sumatran Rhinocerous possesses two horns on its snout. Front horn above the nostril is about 80 cm high, while the second horn above the eye is shorter than the first one. Female also possesses horns. It has single pair of lower frontal teeth. The skin folds are weak. The body is covered with bristles visible throughout life. The base coat colour is earthy brown. Ears small and pointed edged with thick hairs. Tail covered with long hairs. Skin granular.

Measurements : (in cm) : Head and body length : 250 cm; width : 215 cm; height at shoulder : 135 cm; front horn length : 80cm.

Weight : Not available.

Intraspecific variations : None in the region.

Distribution : Manipur and Nagaland in India. The former distribution of the species was wide extending from eastern India (Assam) to Indonesia through Myanmar. However, the species is now struggling for survival in few pockets in the subcontinent due to persistant threats. Sumatran rhino's presence has been reported in Manipur and Nagaland along India-Myanmar border on some occassions during last 40 years.



Source : A.K. Mukherjee (1982) & A. Choudhury (1996)

Endemism : Non-Endemic species.

Altitude : Less than 2000 m.

Area of occupancy : 101-500 sq. kms.

Extent of occurence : 501-2000 sq. kms.

Locations : *No. of locations* : Two in Indian regions; *Type* : Isolated.

Habit, habitat and ecology : The Sumatran rhino prefers to live in well-wooded wet tropical green forests on a hilly tact. It can go upto the elevation of almost 2000 m in summer, while it can descend down to the lower marshy and grassy areas in monsoon and winter seasons. It always prefers shade and water. It is basically a browser and includes in its diet variety of vegetations. It lives singly or in pair. It is a shy and timid animal. Little is known about its breeding season and habits. However, it is known that a calf is born at a time and it lives with the mother for fairly long time.

Habitat structure : The Sumatran rhino prefers to live in grassy and marshy areas within thickly forested inaccessible hilly tracts. The Forest type is mostly wet tropical forest. There is a change in the habitat structure. It has decreased to the extent of almost >50% during last 50 years.

Population : *Global population* : 100+ (Mukherjee, 1982); *No. of mature individuals in all the populations* : Not known.

Captive population : None in India. males : 6 + females : 12 = Total : 18 in 7 zoo abroad (CAMP, 1998).

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Declined to the extent of >50% in last 50 years.

Sighting records : *Type of sighting* : Direct and Indirect; *Field notes* : Direct/ indirect sighting records in 1996 reported in Manipur and Nagaland by Choudhury (1997).

Dicerorhinus sumatrensis (Fischer)

Threats : Habitat fragmentation, agriculture and farming, human interference, loss of habitat, trade, hunting, insurgency, corridor loss etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local and domestic; *Parts in trade* : Horn; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule : Not Listed; Part; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Critically Endangered (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Critically Endangered (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *Ex-situ* survey, monitoring, conservation strategy studies etc.

Remarks : The species was thought to be extinct in India untill 1996. Choudhury (1997) established its presence in Manipur and Nagaland. These few and isolated populations must be given the strictest protection by declaring these areas as national parks. Further, the species should be brought under Schedule-I, Part-I of Indian Wildlife Protection Act to offer complete protection to the species in India.

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Evaluated by : M.S. Pradhan

INSUFFICIENTLY KNOWN

Order ARTIODACTYLA

Family SUIDAE

98. *Sus scrofa andamanensis* Blyth
Andaman Wild Pig

Synonyms : *Sus andamenensis* Blyth.

Common name : Andaman Wild Pig.

Regional names : Not Available.

Diagnostic characters : Andaman Wild Pig is an insular form and is much smaller than the mainland wild pig, *Sus scrofa*. It measures 51-52 cm in height at shoulder. Tail with brown tuft is very short and as long as the hind feet. Andaman pig is charecterised by an indistinct mid dorsal crest. Its snout is elongated terminating in a truncated, mobile, flat, disc bearing nostrils. Ears large. Body colour is generally black with brownish grey tips. Young ones are striped.

Measurements : (in cm) : Head and body length : 110-150; tail length : 4; height at shoulders : 51-52.

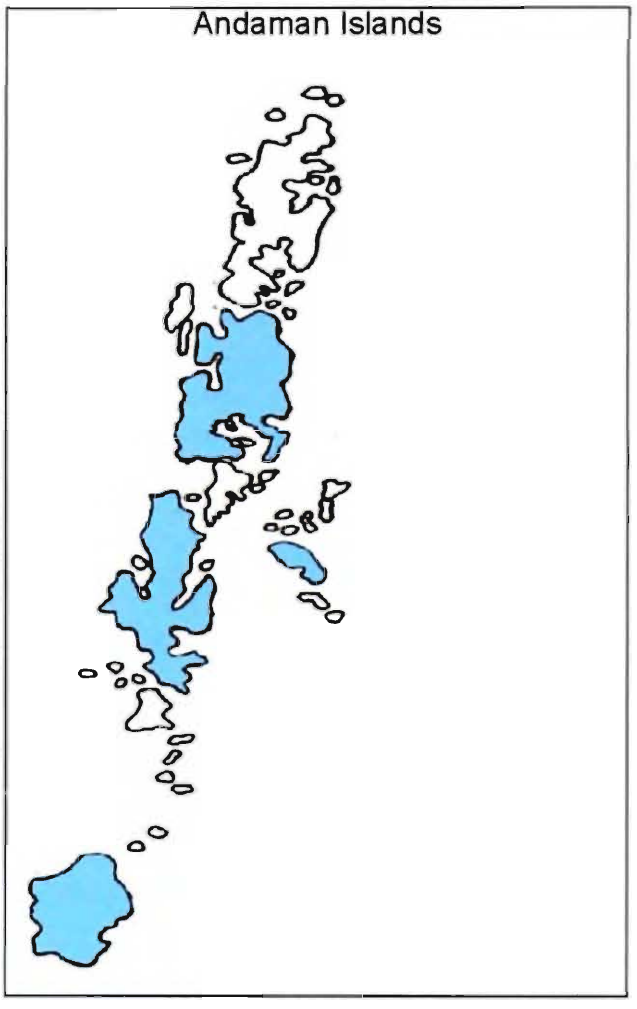
Weight : Not known.

Intraspecific variations : Corbet and Hill (1992) cosider this subspecies as a distinct feral population in absence of wild population of *Sus scrofa* on the islands. He has tentatively retained it under *Sus domesticus*, Brisson. However, Wilson and Reeder (1993) have retained it as a subspecies under *Sus scrofa* only. There are 22 subspecies of *Sus scrofa*. Andaman Wild pig, *Sus scrofa andamanensis*, Blyth, is endemic to Andaman islands only.

Distribution : Middle, south and little Andaman Islands and Havelock Island within Indian limits.

Endemism : Endemic to Andaman.

Area of occupancy : 501-2000 sq. kms.



Source : B.K. Tikader

Extent of occurence : 2001-5000 sq. kms.

Locations : *No. of locations* : Four; *Type* : Isolated.

Habit, habitat and ecology : Forest dwelling animal. However, occasionally visits cultivated fields also. Feeds mainly on roots, tubers seeds, insects, offal and carrions.

Habitat structure : Insular forests and cultivated lands near forest fringes. Change in habitat structure, general decline in 50 years.

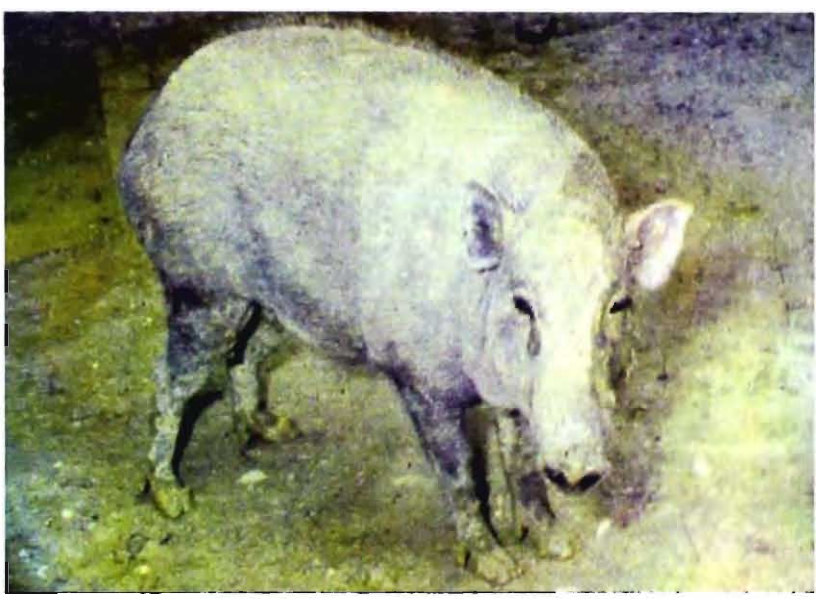
Population : *Global population* : Not known; No. of mature individuals in all the populations : Not known.

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Declined about >20 % in last 50 years.

Sighting records : *Type of sighting* : None; *Field notes* : Groves (1981a) and Corbet and Clutton-Brock (1984) (as cited in Corbet and Hill, 1992) have conducted studies on taxonomy of Sus species.



Sus scrofa andamanensis Blyth

Threats : Habitat fragmentation, agriculture and farming, human interference, loss of habitat, hunting, hybridization with introduced domestic forms etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local; Parts in trade : Meat insurg.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : None; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Insufficiently known; *IUCN (1998)* (Proposed) : Not Listed; *IUCN (2002)* (Proposed) : Not Listed.

Taxon related studies recommended : *In-situ* survey, genetic studies, limiting factor research, conservation strategy studies etc.

Remarks : Considering threats of restricted distribution, forced inbreeding with introduced domestic forms, hunting and habitat loss, it is recommended that the subspecies should be allotted endangered status under IUCN category.

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Evaluated by : M.S. Pradhan

CRITICALLY ENDANGERED

Order ARTIODACTYLA

Family SUIDAE

99. *Sus salvanius* (Hodgson)
Pygmy Hog

Synonyms : *Porcula salvania* Hodgson.

Common name : Pygmy Hog.

Regional name : Napalese : Sano banel.

Diagnostic characters : The Pygmy Hog is the smallest of all the known species of wild pigs. Head and body length measures up to 65 cm with tail length only up to 4 cms (very short in length). Body covered with blackish brown coat with coarse bristly hairs. Mid dorsal crest on the back is absent. The ears are small and without hairs. Upper truncated tusk and snout short in length. Fourth, toe present. Eyes comparatively small. Jaws with 40 teeth. There are white bands on the cheeks. Young ones possess longitudinal rufous bands on the body. Females possess three pairs of mammae. Beard on the lower jaw small.

Measurements : (in cm/mm) : Head and body length : 50-70 cm; tail length : 3-4 cm; height at shoulder : 25-30 cm; greatest skull length (males) : 180+ mm.

Weight : Not available.

Intraspecific variations : No subspecies.

Distribution : North Assam in India.

Endemism : Non Endemic species.

Altitude : Less than 500 m.

Area of occupancy : 101-500 sq. kms.

Extent of occurence : 2001-5000 sq. kms.

Locations : *No. of locations* : 8-9; *Type* : Isolated.

Habit, habitat and ecology : Pygmy Hog is basically nocturnal in habit, but

Source : B.K. Tikader (1983)

many times it is active at dawn and sunset also. It lives in groups of 5-20 individuals. It feeds on roots and bulbs. The diet also includes insects and bird nests. Nest building habit for neonatal care and protection is seen in Pygmy Hog. Litter size varies from 2-6. Its other habits are same as those of Wild Boar.

Habitat structure : Pygmy Hog prefers to live in marshy places with tall grasses near riverine habitats along the East Himalayan foothills. Change in habitat structure : >20% decrease in last 20 years.

Population : *Global population* : Less than 500; *No. of mature individuals in all the populations* : less than 250.

Captive population : 12+ in Barnadhi Wildlife Sanctuary in Assam (CAMP, Report, 1998).

Life span : (Wild) : 10 years; (Captivity) : Not known.

Population trend : General Decline.

Sighting records : Type of sighting : Direct/indirect; *Field notes* : Oliver and Mallinsin (1977) conducted studies on breeding biology of Pygmy Hog. Oliver (1985) conducted further studies on distribution and status of Pygmy Hogs in Northeast India.

Threats : Habitat fragmentation, agriculture farming, grazing, loss of habitat, hunting, developmental activities near Manas Sanctuary etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Sus salvanius (Hodgson)

Trade : Local; *Parts in trade* : Meat Insurg., body parts; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : Critically Endangered (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Critically Endangered (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, limiting factor research, captive breeding etc.

Remarks : Larger area near Manas Sanctuary in Assam should be brought under protection to conserve the dwindling population of Pygmy Hog.

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Evaluated by : M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order ARTIODACTYLA

Family TRAGULIDAE

100. *Moschiola meminna* (Erxleben)
Mouse deer

Synonyms : *Tragulus meminna* Erxleben.

Common names : Mouse deer, Indian Chevrotain, Kooray.

Regional names : Hindi : Pisora; Kannada : Koorandi; Tamil : Kooran Panni; Telugu : Sarugu Marn, Kuran Pandi; Marathi : Pisori, Aheda.

Diagnostic characters : Mouse deer is a little deer with very slender limbs and high hind quarters. The antlers are totally absent. Like muskdeer, mouse deer posseses a pair of tusks, which are well developed in males. Unlike other ruminants, mouse deer possesses three-chambered stomach. Further it posseses four well-developed toes on each foot with the bones of side toes complete. Its coat colour is brown minutely speckled with yellow. Undersurface white. The flanks of the deer are marked with rows of buff or white spots, which are enlarged further into logitudinal bonds. Throat has three white stripes.

Measurements : (in cm) : Head and body length : 45-56; tail length : 2-4; hindfoot length : 125-155; height at shoulder : 25-31.

Weight : (in Kg) : About 5-6 Kg.

Intraspecific variations : No subspecies.

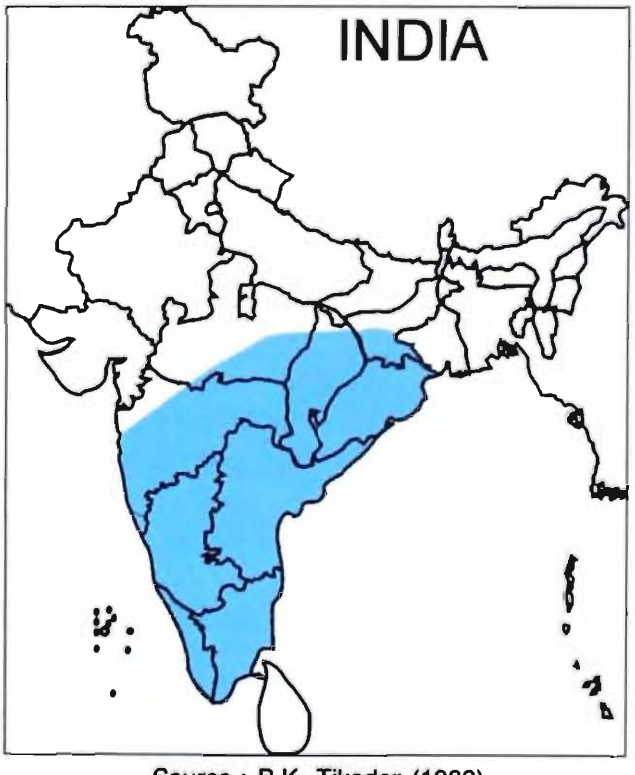
Distribution : Peninsular India with northern limit extending upto Gujarat, Madhya Pradesh, Southern Bihar and Orissa within Indian limits.

Endemism : Non-Endemic species.

Altitude : Elevation upto 2000 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.



Source : B.K. Tikader (1983)

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, habitat and ecology : Mouse deer is a shy and timid animal preferring to live in dense forests. It takes shelter in grass-covered rocky hillsides or deep in forest. It conceals itself in rocky crevices and never comes out in open glades. It leads a solitary life or may live in small parties. It is a seclusive creature with crepuscular in habit. Comes out to feed in morning or at dusk and never ventures far out in the open. Mouse deer can easily be tamed. The rutting season falls from June to July. Females give birth to one or two fawns in their hideouts at the begining of the winter. Larger carnivores predate upon mouse deers. When alarmed, the mouse deer bolts itself extremely quickly into its hiding place. Due to its small size and shy nature, it easily eludes the observations of the hunters and trappers.

Habitat structure : Dense forests. Wet, moist and dry deciduous types of forests. *Change in habitat structure* : Decreasing with general decline.

Population : *Global population* : *Regional population* : Greater than 3000 (Anonymous, 1994); *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : Males : 4 + female : 1 + unsexed : 1 = Total : 6 in four Indian zoo (CAMP Report, 1998).

Life span : (Wild) : 10 yrs; (Captivity) : Not known.

Population trend : General Decline.

Museum Records : *Name of museum* : Some registered specimens are available in the collections of Regional Stations and Head Quarter of Zoological Survey of India and Bombay Natural History Society, Mumbai.

Sighting records : *Type of sighting* : Direct; *Field notes* : Pradhan sighted mouse deer individuals in the dense forests of Pune and Thane Dists. in Western Ghats in 1981 and 1983 respectively.

Moschiola meminna (Erxleben)

Threats : Habitat fragmentation, interspecific competition, agriculture and farming, grazing, human interference, predation, hunting, corridor loss etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Not known; *Parts in trade* : Not known; *Effect of trade on population (Perceived or inferred)* : Not declining.

Conservation status : *CITES APPENDIX* : No; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies etc.

Remarks : Considering the nature and higher levels of threats, it is strongly recommended to include mouse deer in one of the threatened categories of IUCN.

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Evaluated by : M.S. Pradhan

CRITICALLY ENDANGERED/ENDANGERED

Order ARTIODACTYLA

Family CERVIDAE

Subfamily CERVINAE

101. *Cervus duvaucelii* (Cuvier)
Swamp Deer

Synonyms : *bahrainja, diamorphe, elaphoides, euceros, eucladoceros, smithi* (Alfred *et al.*, 2002)

Common name : Swamp Deer.

Regional names : Hindi : Barasingha, Gond, Marathi : Barasingha; Assamese : Bhelimji pohu, Dol karnia, Nepalese : Baraya Ghos.

Diagnostic characters : Swamp Deer is a splendid deer lighter in body colours and smaller in size than sambar. The stag has much branched antlers and long narrow muzzle. The brow tine is nearly at right angle to the beam. The beam remains unbranched for more than half its length, and then it divides and subdivides into 10-14 tines. Its coat is fine and wooly. The neck is maned. The colour varies to a large extent from brown to yellowish brown in winter and chestnut in summer. The hind is lighter in colour and the fawns are spotted. Inner part of the legs, rump and underside of the tail is creamy white in colour. The adults may develop white spots along the whole length of the spine.

Measurements : (in cm) : Head and body length : 180 (approx.); height at shoulder : 105-140; tail length : 20-33; average antler length along the curve : 75; girth of antler at midpoint : 13.

Weight : (in Kg) : 180-200.

Intraspecific variations : Two subspecies have been distinctly recognised. The swamp-dwelling form which has splayed hooves to negotiate the swamps in north and eastern India (*Cervus duvancelii duvaucelii*, Cuvier) and the other which lives in hard open ground and which possesses well-knit hooves (*Cervus duvancelii branderi*, Pocock in central India). There is a third subspecies namely *Cervus duvaucelii ranjitsinhi* as reported by Alfred *et al.* (2002).

Distribution : The swamp deer is currently found in the Terai and Duras

Source : M.S. Pradhan

of the northern and Eastern India from Uttaranchal Pradesh to Assam. There is another populatiopn found in Kanha National Park in Madhya Predesh extending further southwards towards Bastar in Madhya Pradesh.

Endemism : Non-Endemic species.

Altitude : 100-200 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : 6-7 in India and 4 in Nepal; *Type* : Isolated.

Habit, habitat and ecology : Swamp Deer feeds mainly on freshly growing grass during daytime. It rests at noon and feeds again in the evening. Swamp Deer forms groups according to sex and age and moves separetely in schools. At the beginning of winter they form large herds. Its rutting season is divided into three separate region- wise periods during the months of Nov. to May. During rut season, one may see two stags in combat with their antlers for a short period. The "Peck Order" determines the strength of a stag. The winner becomes master of harem that may include 20-30 hinds. The hind gives birth to single young one. Swamp Deer is extremely alert with keen sense of smell. The main predator of Swamp Deer is tiger.

Habitat structure : In northern India the Swamp Deer is associated with water and lives in marshes but in eastern India it prefers dry thatched land near water. The central Indian population is almost confined to dry forest and is fewer dependants on water. It is a deer of swamps and dry/hard grassland and avoids thick forest. *Change in habitat structure* : Decreased @ about >80% in last 50 years.

Population : *Global population* : *Regional population* : 1500-2000; *No. of mature individuals in all the populations* : less than 2500.

Captive population : Males : 36 + female : 46 + unsexed : 2 = Total : 84 in 8 Indian zoo (CAMP Report, 1998).

Cervus duvaucelii (Cuvier)

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Declining, >80% in last 50 years.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Qureshi (1990-95) and Ravishankar (1994) (Both cited in CAMP Report, 1998) conducted field and population studies in Swamp Deer habitats in India.

Threats : Habitat fragmentation, human interference, loss of habitat, floods, predation, competition from exotics, disease, hunting, insurgency/terrorism/war, corridor loss, genetic problems like inbreeding etc.; *Effect of threats on population (Perceived or inferred)* : Declining

Trade : Local; *Parts in trade* : Taxidermy models, horn, meat insurg etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : For *Cervus duvaucelii branderi* : Critically Endangered and for *Cervus duvaucelii duvaucelii* : Endangered (Both National). Data Deficient (Global) for *Cervus duvaucelii duvaucelii* only. Third subspecies *Cervus duvaucelii ranjitsinhi* was not assessed at national level; IUCN (2002) (Proposed) : For *Cervus duvaucelii branderi* : Endangered; for *Cervus duvaucelii duvaucelii* : Vulnerable and *Cervus duvaucelii ranjitsinhi* : Critically Endangered (All assessments based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, genetic studies, taxonomic studies, life history studies, limiting factor research, habitat mangement, conservation startegy studies etc.

Remarks : The Swamp Deer population of Central India needs stricter conservation strategies to save it from total extinction.

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Evaluated by : A.R. Rahmani and M.S. Pradhan

CRTICALLY ENDANGERED

Order ARTIODACTYLA

Family CERVIDAE

Subfamily CERVINAE

102. *Cervus elaphus hanglu* (Wagner)
Kashmir stag

Synonyms : *Cervus elaphus wallichi.*

Common names : Kashmir stag, Kashmir barasingha, Hangul, Red deer of Kashmir.

Regional names : Kashmiri : Hangul (Male) Minyamas (Female).

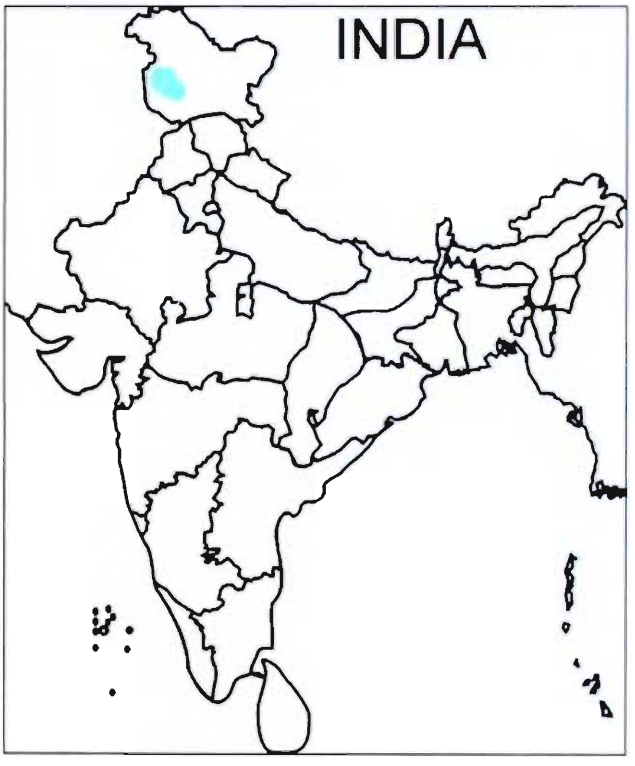
Diagnostic characters : Kashmir stag is the only surviving but critically endangered subspecies of the Red Deer species (*Cervus elaphus*). It is a large deer with a pair of magnificently spreading antlers. It is related to European Red Deer and Wapti. It is smaller than Sambar (*Cervus unicolor*). Each anter has generaly 5 or 6 tines (branches), sometimes even more (total 10 to 16 points or tines) with brow tines curved upwards. The second tine exceeds the first tine considerably in length. The general colour of the Kashmir Stag is light to dark brown in winter, which fades to white on lips, chin and underparts in summer. The white rump patch or "Caudal disc" which extends for a very short distance over tail. The white rum patch is divided by a broad median stripe extending down to the base of the tail or even to its extremity. The tail is short. Fawns are spotted.

Measurements : (in cm) : Head and body length : 190-232; height at shoulder : 120-130; length of the antlers : 100-130.

Weight : (in Kg) : About 180.

Intraspecific variations : Out of 23 global subspecies of Red deer only one *Cervus elaphus hanglu* is found in India. The Indian subspecies is light in colour and possesses simple antlers. The subsepcies at present is endemic to India.

Distribution : In past Kashmir Stag was distributed in Jammu & Kashmir and to some extent in north Chamba district in Himachal Pradesh. At present it is now restricted to northern and eastern valleys in Kashmir. The distributional range now



Source : B.K. Tikader (1983)

has been confined to Dachigam National Park near Srinagar and possibly to some adjoining valleys.

Endemism : Endemic to India.

Altitude : 1450-2480 m in Winter\3000-4000 m in Summer.

Area of occupancy : 11-100 sq. kms.

Extent of occurence : 101-500 sq. kms.

Locations : No. of locations : One; *Type* : Fragmented.

Habit, habitat and ecology : Kashmir stag prefers to live in dense riverine forests in Dachigam National Park. However, it also undertakes seasonal altitudianl migration. It lives in broad-leaved forest between 1450-2480 m altitudes in winter, while in coniferous forest to subalpine grassland between 3000-4000 m altitudes in summer. It lives in small parties of 2-18 individuals. During winter, it may gather in lager herds. The stag sheds antlters in around March and are replaced by fully grown new ones by September. The rut begins by mid-September and lasts till October end. Single young one is born. The stag lives with harem. Stag is very shy and takes to quick flight at the slightest alarm. After shedding their antlers in March- April, the stags go uphill and congregate near snowline. Kashmir stags can undertake migration up to 15 Km. in the valley. The main predators sharing the biotope of hangul are Black Bear, Brown Bear, Snow Leopard and Leopard.

Habitat structure : Dense forest, Riverine habitat areas of Dachigam National Park between 1450-4000 m altitudes. Lives in broad-leaved forest in winter, while in coniferous forest to subalpine grassland in summer. Habitat structure has decreased >20% in past.

Population : *Global population* : *Regional population* : 482 in 1983 (Anonymous, 1994); *No. of mature individuals in all the populations* : less than 2500.

Captive population : One in Indian Deer Park (CAMP Report, 1998).

Life span : (Wild) : 10 years; (Captivity) : Not known.

Population trend : Increasing stedaily and slowly.

Cervus elaphus hanglu Wagner)

Sighting records : *Type of sighting* : Direct and Indirect; *Field notes* : Dhanze (1997), Inayatullah (1981, as cited in Anonymous, 1994) and Kurt (1978, as cited in Sharma, 1994) reported sightings of hangul in Dachigam National Park.

Threats : Habitat fragmentation, inerspecific competition, disease, human interference, loss of habitat, trade, hunting, predation and corridor loss; Effect of threats on population (Perceived or inferred) : Declining.

Trade : Domestic; *Parts in trade* : Horn, meat insurg.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : Critically Endangered; *IUCN (2002)* (Proposed) : Endangered based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, limiting factor studies.

Remarks : The subspecies at present is endemic to India.

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Evaluated by : M.S. Pradhan

CRIICALLY ENDANGERED

Order ARTIODACTYLA

Family CERVIDAE

Subfamily CERVINAE

103. *Cervus eldii eldii* (McClelland)

Thamin

Synonyms : *Cervus eldi cornipes* Lydekker

Common names: Thamin, Manipur Brow-antlered Deer Manipur Thamin, Eld's Deer.

Regional names : Hindi : Thamin, Manipuri : Sangai.

Diagnostic characters : Sangai or Brow-antlered Deer or Manipur Thamin belongs to the Sambar family with shaggy, dark brown coat in males during winter and fawn in summer; Females lighter in colour than males. The pelage colour changes from reddish fawn to dark brown in the rutting season and the neck becomes massive. The fawns are spotted. Markings reappear during moult especially along the spinal column and lower parts of the body. The remarkable feature of this deer is the unique development of stag antlers. Antlers arise from almost erect closely set pedicels, browtine extremely long forming a continuous arc with the beam. The distinguishing angular joint of browline with the main beam is absent in Sangai, hence it is also called as "Brow-antlered Deer". Terminal tines vary in number from 2 to 10. The stags are slightly longer than the females. The coat is coarse and sparse. Since it moves on boggy floating mat, it has developed hairless horny hind pasterns and slightly splayed hooves to prevent from sinking in swamps.

Measurements : (in cm) : Head and body length : about 180; tail length : 20; height at shoulders : 105-120; length of antlers along the beam : 100-108.

Weight : (in Kg) : About 100.

Intraspecific variations : Out of three subspecies, only nominate subspecies is known to occur within the Indian limits (*Cervus eldi eldi*, McClelland).

Distribution : The Indian subspecies population is confined to the swamps of the Manipur valleys. Currently it is restricted to a very small swampy area of the Logtak Lake in Keibul Lamjao National Park (40 Sq. Km. area), Manipur.

Source : B.K. Tikader (1983)

Endemism : Endemic to India.

Area of occupancy : 11-100 sq. kms.

Extent of occurence : 11-100 sq. kms.

Locations : *No. of locations* : One; *Type* : Isolated.

Habit, habitat and ecology : Brow-antlered Deer or Sangai avoids hills and thick forest. The shores of Logtak lake is comprised of unique moss of floating organic humus called "phum" or "phumdi". It consists of dead and decaying vegeatation, mosses, algae, humus, tall grasses, sedges and reeds. The grassy vegetation on such a floating swamp forms a ideal and favourite habitat for sangai. Four-fifth part of "phumdi" is submerged in water. Sangai feeds in early morning and late evengings. It forms small herds of 4 to 7 sometimes even more. Rut period is between March to May. Only single fawn is born.

Habitat structure : Scrub jungle or flat undualting land between rivers and hill ranges. Swampy areas in Keibul Lamjao National Park in Manipur. Habitat structure is decreasing with general decline.

Population : *Global population* : Regional population : Stag : 54 + Hind : 76 + Fawn : 32 = 162 (Alfred and Ramakrishna, 2005); *No. of mature individuals in all the populations* : less than 250.

Captive population : Males : 41 + females : 76 + unsexed : 7 = Total : 124 in 14 Indian zoo (CAMP Report, 1998).

Cervus eldii eldii (McClelland)

Life span : (Wild) : 20 years; (Captivity) : Not known.

Population Trend : Increasing steadily and slowly.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Chakraborty (1989) and Census conducted by Forest Department authorities during 1994-1997 report sightings of Brow-antlered Deer population in Kaibul Lamjao National Park in Manipur.

Threats : Interspecific competetion, disease, habitat fragmentation, grazing, loss of habitat, hunting, fishing in lake, siltation etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : No; *Parts in trade* : Not known; *Effect of trade on population (Perceived or inferred)* : Not declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Critical; *IUCN (1998)* (Proposed) : Crtically Endangered; *IUCN (2002)* (Proposed) : Critically Endangered based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, limiting factor research, habitat management, captive breeding etc.

Remarks : Considering the steady increase in the whole population in recent past due to protection of its unique swampy habitat, still stricter and strigent conseravtion measuers should be adopted to save the Indian subspecies population from extinction.

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Evaluated by : M.S. Pradhan

CRITICALLY ENDANGERED

Order ARTIODACTYLA

Family MOSCHIDAE

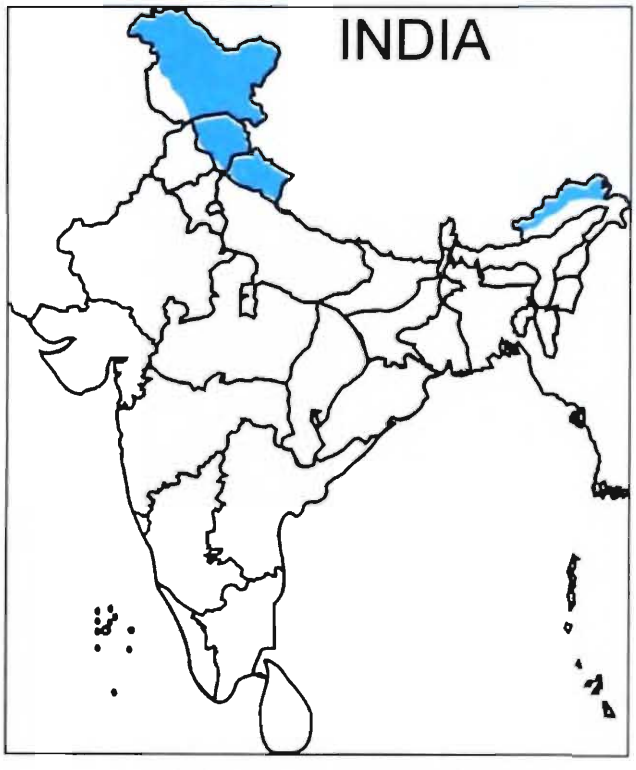
104. *Moschus chrysogaster* (Hodgson)
Himalayan Musk Deer

Synonyms : *Moschus sifanicus, Moschus fuscusfi.*

Common name : Himalayan Musk Deer.

Regional names : Hindi : Kastura or Kasturi Mrug; Kashmiri : Raos or Raos.

Diagnostic characters : The musk deer holds a place between the true deer and antelope. It is a small deer with no antlers and facial glands, but with pointed face, large rounded and prominant ears and a short but flat tail. Hind limbs considerably longer than the forelimbs. Rump higher than shoulders. Hooves adapted to move on snow covered rocky ground. Male posseses a upper canines in the form of tusks. A globular musk gland present beneath the abdominal skin near the naval region. Hair peculiarly speckled, coarse and brittle. Females with single pair of teats. Its peculair small tail is completely burried in long hairs of anal region and is for the most part naked except for a tuft at the tip. The gall bladder is absent. The colour of the dorsal coat is rather variable from dark sepia-brown to iron-grey through golden red. Newly born fawns are spotted white. The lower cheeks, throat and belly whitish. Summer coat tends to be darker with two-three indistinct horizontal rows of pale creamy spots extending from behind shoulder to the pelvic region. Underwool hairs are lacking in the Musk Deer. The variation in colouration of this deer from different parts of the Himalayas has been a subject of contraversy among the taxonomists for many years. The tusks are laterally compressed and grow even below the lower jaw.



Source : B.K. Tikader (1983)

Measurements : (in cm) : Head and body length : 80-100; tail length : 3.8-5.00; height at shoulder : 50-70; ear length : 9.4 and length of tusk : 7.5-8.5.

Weight : (in Kg) : 10-11.

Intraspecific variations : Taxonomy of Himalayan musk deer is extremely disputed. Earlier workers mention only

one species *M. moschiferous* with number of subspecies. Grover (1975 in Roberts, 1997) recognised two species from India, *M. chrysogaster* (alpine form) and *sifanicus* (forest form) on the basis of pelage colour variations observed in Museum specimens. However, later studies showed no correlation between colour variation forms and skull dimensions (Roberts, 1977). Thus the two Indian species becomes synonymous and the name *M. chrysogaster* remains valid. Similar view has been followed by Green (1986) based on current consensus arrived amongst the IUCN Deer specialist group. As per this view, *M. berezovskii* is restricated to southern China and northern Vietnam only.

Distribution : From the southern slopes of the Himalyas from Northern Pakistan through India, Nepal, and Bhutan to Northern Myanmar. In India Himalayan musk deer occurs in Jammu & Kashmir, Himachal Pradesh, Uttar Pradesh, Sikkim and Arunachal Pradesh (Green, 1986 in Anonymous, 1994).

Endemism : Non-Endemic species.

Altitude : 2500-4500 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, habitat and ecology : Himalayan Musk Deer favours rugged terrain in Himalayas and occupies both alpine forest and forest at lower altitude. It is very shy, secretive noctural and unsocial deer, normally living solitary life maintaining a territory of its own. However, may be seen in pairs during rut seasons. Feeds on grasses, herbs, mosses, ferns and lichens. Mating takes place in December and January. It gives birth to one or two fawns in April-June. It gives a loud hissing call. It may undertake seasonal altitudinal migration. Man is the most serious predator for this species, because of its possession of high valued musk pods. Snow Leopards, Leopards and Wolves are also its enemies. The species is being exploited for the extraction of musk. It is priced at $ 40,000- 50,000 per Kg. in the international market. It is used in prepartion of medicines and perfumes, both.

Habitat structure : Rugged terrain in alpine, birch and broad-leaved forests. Habitat structure has decreased @ >20% in the past.

Population : *Global population* : 30,000 (Roberts, 1997); *No. of mature individuals in all the populations* : Greater than 2500.

Moschus chrysogaster (Hodgson)

Moschus chrysogaster (Hodgson)

Captive population : Males : 12 + females : 9 = 21 in 3 Indian zoo (CAMP Report, 1998).

Life span : (Wild) : 10 years; (Captivity) : 20 years (Roberts, 1997).

Population trend : Declining.

Sighting records : *Type of sighting* : Direct/Indirect; *Field notes* : While reporting sighting records, Green (1986) and Holloway (1973) (Both cited in Anonymous, 1994), Satyakumar since 1990 (Cited in CAMP Report, 1998) and Roberts (1997) have carried out studies on various aspects of Himalayan Musk Deer.

Threats : Disease, grazing, human interference, loss of habitat, trade, predation, hunting, corridor loss, extraction of musk etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, domestic, commercial and international; *Parts in trade* : Meat insurg., body parts, extraction of musk from musk pods etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Critically Endangered (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Lower risk-Near Threatened based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, taxonomic studies, life history studies, captive breeding, musk extracting from live captive bred animals etc.

Remarks : Export of musk is totally banned. Extraction of musk from captive bred animals without sacrificing the animals be encouraged. Most of the Musk Deer

habitat has been brought under National Parks and other Protected Areas to offer full protection.

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Evaluated by : M.S. Pradhan

LOWER RISK-LEAST CONCERN

Order ARTIODACTYLA

Family BOVIDAE

Subfamily ANTILOPINAE

105. *Antilope cervicapra* (Linnaeus)
Blackbuck

Synonyms : *Capra cervicapra* Linnaeus.

Common names : Blackbuck.

Regional names : Hindi : Mrig, Hiran; Sanskrit : Krishna Mrig; Bengali : Krishnasar; Oriya : Bahmainharan; Marathi : Kalvit; Kannada : Chigri; Telugu : Jinka and Tamil : Veliman.

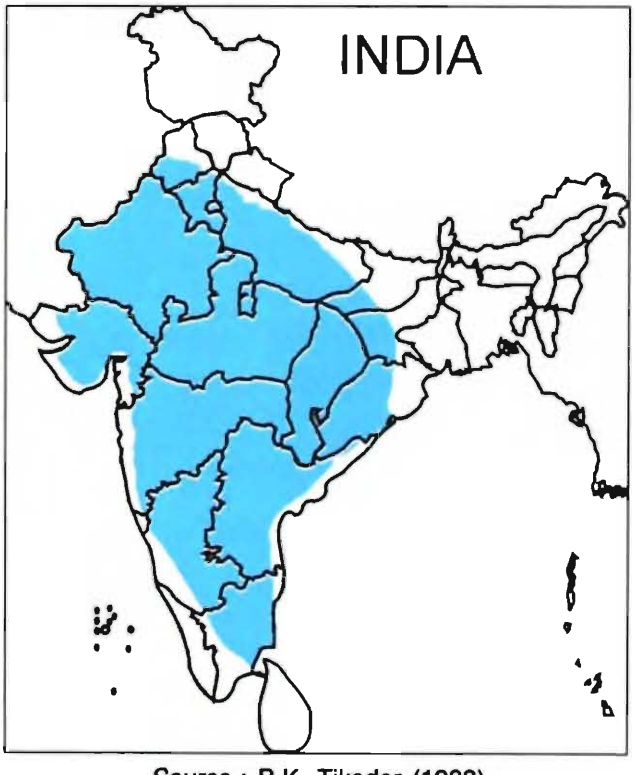
Diagnostic characters : The Blackbuck is monotypic genus and is of the subcontinent's better-known species. These beautiful antelopes possess prounced sexual dimorphism. Adult males with long spiralled horns are black dorsally, with white on throat and the ventrum. Females, fawns and subadults are reddish fawn in colour dorsally, while white ventrally with prominant white streaks alongside. Usually females are hornless. However, occassional femine individuals can bear thin backwardly curving spikes. A pronounced white ring round each eye is present in male. The spirales of the horn start developing during second year of the growth. The horns bear prominant rings or ridges. The fawn colour of the young and subadult male starts changing gradually to balck and becomes blacker with advancing of the age. There are white hairs around muzzle in both sexes. Ears long and narrow fringed with white hairs. Males possess suborbital pit glands.

Measurements : (in cm) : Head and body length : 120-130; tail length : 16-18; height at shoulders : 74-83; length of horns : 46-65.

Weight : (in Kg) : 33.00-42.0.

Intraspecific variations : Four subspecies have been reported from Indian Region : *Antilope cervicapra cervicapra, Antilope cervicapra centralis, Antilope cervicapra rajputanae* and *Antilope cervicapra rupicapra.*

Distribution : Within Indian limits, Blackbuck occurs throughout the plains, to east it is found upto West Bengal, to



Source : B.K. Tikader (1983)

south upto Point Calimore, to west upto Surat and Rajasthan and to north upto Punjab. However, it has not been recorded from Malbar Coast.

Endemism : Non-endemic species.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20,000 sq. kms.

Locations : *No. of locations* : >100 in 13 Indian States; *Type* : Fragmented.

Habit, habitat and ecology : Blackbuck was once the most numerous wild ungulate in the arid and semi-arid regions of India. It is a gregarious and social animal primarily using grassland habitat for grazing. Primarily it is a grazer but do occassionally browse depending on the need and when appropriate browse is available. They ocassionally need drinking water. Blackbucks are diurnal in feeding activity being able to tolerate the hottest sunrays. Generally, they rest in the tree shades for only 2-3 hours in the midday. Blackbucks live in the herds of 10-50 individuals composing a dominant male, females, fawns and young males. Late winter and spring are the rutting times. The male is polygamous. Females give birth to single offspring. Blackbucks seem to rely largley upon eyesight in detecthing danger. Their defence lies mainly on fleetness of the foot. They are certianly capable of attaining great speed through series of sepctacular leaps, rising high in the air with each bound. This action is known as spronking. They cover a distance of 19-22 ft., between each stride. It has been claimed that they have achived maximum speed of 95 km/hr., with a normal speed of 64 km/hr. The mature buck establishes its territory by marking of faecal matter during rut. In certain areas, Blackbucks invade cultivated fields and hence are considered as agricultural pests by local farmers. The Bishnoi community in Rajasthan offers protection to the Blackbucks. Wolves and panthers prey upon blackbucks and jackals in India attack fawns.

Habitat structure : Blackbucks prefer open grasslands and wastelands and avoid thick cover. The habitat is characterised by low and highly variable rainfall with markedly poor seasonal forage quality. Habitat structure is changing. It has decreased >80% in past.

Antilope cervicapra (Linnaeus)

Population : *Global population* : *Regional Population* : 29,000-38,000 (Rahmani, 1991); *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : Males : 262 + females : 302 + unsexed : 290 = Total : 854 in 78 Indian zoo (CAMP Report, 1998).

Life span : (Wild) : 10 Years; (Captivity) : Maxium reported 18 years.

Population trend : Increasing.

Museum records : *Name of museum* : Some of the Regional Stations and Head Quarters of the Zoological Survey of India and Bombay Natural History Society, Mumbai, possess representative specimens of this speices in their collections.

Sighting records : *Type of sighting* : Direct and Indirect; *Field notes* : Rahamani (1991), Jhala 1993, 1997, Ranjitsingh (1989) have reported Blackbuck sightings in number of Indian localities.

Threats : Interspecific competetion, agriculture and farming, grazing, loss of habitat, trade, hunting.; *Effect of threats on population (Perceived or inferred)* : Not declining.

Trade : Local and domestic; *Parts in trade* : Skin, antlers, meat insurg., etc.; *Effect of trade on population (Perceived or inferred)* : Not declining.

Conservation status : *CITES APPENDIX* : III (Nepal); *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Lower Risk-Least Concern (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Near Threatened based on Version 3.1 2001 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies etc.

Remarks : Blackbucks have been offered protection in more than 21 Wildlife Sanctuaries and National Parks in India.

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Evaluated by : A.R. Rahmani and M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order ARTIODACTYLA

Family BOVIDAE

Subfamily ANTILOPINAE

106. *Gazella bennettii* (Sykes)
Chinkara or Indian Gazelle

Synonyms : *Gazella gazella bennettii* (Sykes), *Gazella dorcas bennettii* (Sykes).

Common names : Chinkara or Indian Gazelle.

Regional names : Hindi : Hiran, Chinkara; Marathi : Chinkara, Kalsipi, Harin; Kannada : Tiska, Budari, Mudari; Telugu : Burudu junka.

Diagnostic characters : Indian Gazelle is a slender bodied antelope with horns in males relatively longer than in females. The horns are sinuous and closely ringed. Indian Gazelles are slender limbed and adapted to living in arid conditions. The pit glands are well developed on all the feet. Sub-orbital and inguinal glands present. Tuft of hair on knees present. Male horns cylindrical and lyrate in outline bearing ridge annulations. The coat colour varies from sandy brown to light chestnut. The fur is smooth and highly glossy, an adaptation for reflecting sun's rays and minimizing heat absorption during daytime. The belly is white which extends up to the base of the tail on the rear side. The tail is medium in length and covered with a dorsal crest of black hairs. There are indistinct whitish stripes on the flanks. The sides of the face bear broad dark chestnut stripes from the corner of the eye to the muzzle. The stripes are bordered with white colour on both the sides. The horns appear to be straighter from the front view. Female horns are straight with smooth thin spikes with no annulations.

Measurements : (in cm) : Head and body length : 100; height at shoulders : 52-65; horn length along the curve : male : 25.5-30.5; female : 7.5-13.

Weight : (in Kg) : 21-23.

Intraspecific variations : *Gazella bennettii* was included in *G. gazella* (Pallas) and later in *G. dorcas* (Linnaeus). Currently it is treated as a distinct species with only nominate subspecies (*G. b. bennettii* (Sykes)) occuring in India (Alfred *et al.* 2002).

Source : B.K. Tikader (1983)

Distribution : Within Indian limits, Chinkara occurs in northwestern and Central India, extending southwards to a little south of Krishna river.

Endemism : Non-Endemic species.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : 11 States, more than 200 sites in India; *Type* : Fragmented.

Habit, habitat and ecology : Food of Indian Gazelle consists of grass, leaves and succulent fruits like pumpkin and melon. They prefer to live in small herds of 10-20 or even less individuals. It is a very shy animal with keen sense of sight, scent and hearing. When alarmed Chinkara runs at wild pace till it finds a cover behind bushes. It is able to meet its water requirement from the sap of vegetation or even from dew. Chinkara is almost nocturnal in foraging habit. Thy can also raid the nearby crop fields for foraging. It is better browser than grazer. It can survive for many days without water. Chinkara name has been derived from its frequent calls, which sound something like "Chik". Not much information is available on its reproductive and breeding habits. It gives birth to one or two fawns. Wolves, jackals, caracal, cats etc. are known predators of Indian Gazelle.

Habitat structure : Chinkara is an animal of plains and low hills preferring to live in thinly covered dry forested and rocky scrub covered areas. They also live in sand dune areas with scattered vegetation in deserts. Change in habitat structure with more than 20% decrease in the last ten years.

Gazella bennettii (Sykes)

Population : Global population : >50,000; *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : Males : 48 + females : 69 + unsexed : 40 = Total : 154 in 24 Indian zoo (CAMP Report, 1998).

Life span : (Wild) : 8-10 years; (Captivity) : 10 years.

Population trend : Stable.

Museum records : *Name of museum* : Some of the Regional Stations and Head Quarters of the Zoological Survey of India possess representative specimens of this species in thier collections.

Sighting records : *Type of sighting* : Direct; *Field notes* : Rahmani sighted number of Gazelle populations in India since 1982. Pradhan sited small gazelle population in Dhulia District in 1985 and in Pune District in 1990.

Threats : Interspecific competition, agriculture and farming, grazing, human interference, loss of habitat, predation, hunting, trade etc.; *Effect of threats on population (Perceived or inferred)* : Not declining.

Trade : Local; Parts in trade : Horn, meat inurg skin etc.; *Effect of trade on population (Perceived or inferred)* : Not declining.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Lower Risk-Least Concern (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, limiting factor research, habitat management, conservation strategy study etc.

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Evaluated by : A.R. Rahmani and M.S. Pradhan

CRTICALLY ENDANGERED

Order ARTIODACTYLA

Family BOVIDAE

Subfamily ANTILOPINAE

107. *Procapra picticaudata* (Hodgson)
Tibetan Gazelle

Synonyms : Not available.

Common names : Tibetan Gazelle.

Regional names : Ladakhi : Goa; Tibetan : Ragao.

Diagnostic characters : Tibetan Gazelle is slightly smaller than Tibetan Antelope. The beautiful gazelle is grey in colour. The summer coat is pale in colour with slaty grey hairs. The winter coat is denser with pale or sandy fawn hairs. There is a distinct white patch on rump, which extends all around the base of the tail forming a sort of caudal disc. The tail is short with blackish tip. The underparts are white but do not contrast sharply with the back. Horns, in bucks, rise vertically; curve sharply backwards after a short distance. The horn may possess 25-30 rings. Females without horns.

Measurements : (in cm) : Head and body length : 100-110; height at shoulders : 60; length of horns : 30-39.4.

Weight : Not available.

Intraspecific variations : No subspecies (Alfred *et al.*, 2002).

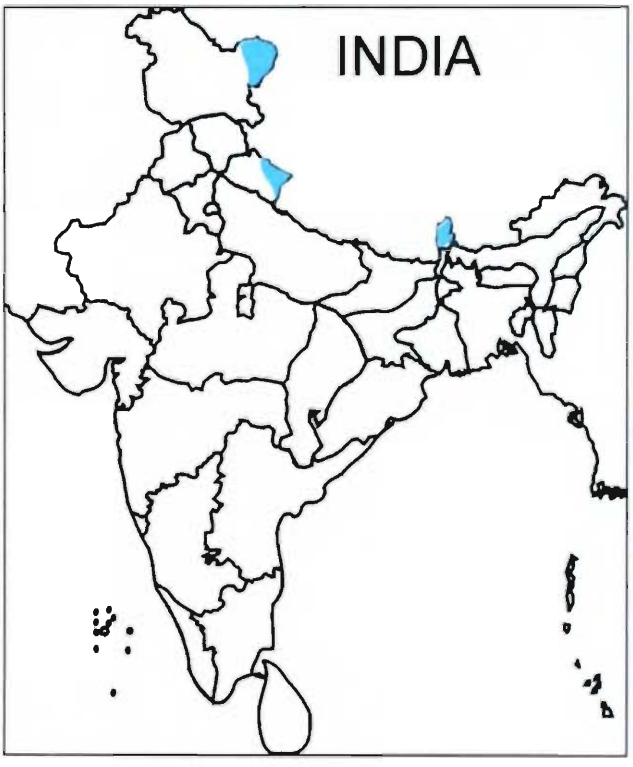
Distribution : Tibetan Gazelle is known to occur in northeastern Ladakh, hills north to Kumaon and Sikkim in India.

Endemism : Non-Endemic species.

Altitude : High Altitude : 3950-5500 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 2001-5000 sq. kms.



Source : B.K. Tikader (1983)

Locations : No. of locations : Three (Ladakh, Kumaon and Sikkim) in India; *Type* : Fragmented.

Habit, habitat and ecology : The Tibetan Gazelle inhabits the Tibetan plateau at altitudes from 3950-5500 m in small groups varying from 2-12 individuals. The gazelle is an antelope of high-altitude temperature biotopes. It prefers grass valleys and plateau. Unlike other gazelles, it is a very shy animal and can be startled by any noise. It feeds in areas of scanty vegetation. The gazelle breeds in December and gives birth to one or two young ones in May.

Habitat structure: grassy valleys and plateau at higher elevation. The habitat structure is decreasing with general decline.

Population : *Global population* : *Regional Population* 150 in Ladakh (Sharma, 1998); *No. of mature individuals in all the populations* : Less than 250.

Captive population : None in India

Life span : (Wild) : Not known; (Captivity) : Not Known

Population trend : Declining

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sighting records from Ladakh reported by Ranjitsinh (1981) and Bedi (1983) (Both cited in Sharma, 1998) and Rahamani (1997) (as cited in CAMP Report, 1998).

Procapra picticaudata (Hodgson)

Threats: Disease, habitat fragmentation, human interference, trade, predation and hunting; *Effect of threats on population (Perceived or inferred)* : Declining

Trade: Local and domestic; *Parts in trade* : Fur, meat insurg., winter wool etc.; *Effect of trade on population (Perceived or inferred)* : Declining

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Insufficiently known; IUCN (1998) (Proposed): Critically Endangered (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, limiting factor research, habitat mangement etc.

Remarks : Thorough intensive survey is strongly recommended for assessing the existining populations in the wild. Otherwise this magnificient gazelle will be wiped out and likely to be extinct from its distributional range in India in coming years. Further, captive breeding programme and behavioural studies may also be taken up urgently.

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Evaluated by : M.S. Pradhan

CRTICALLY ENDANGERED

Order ARTIODACTYLA

Family BOVIDAE

Subfamily ANTILOPINAE

108. *Pantholops hodgsonii* (Abel)
Tibetan Antilope

Synonyms : *Antilope hodgsonii*, Abel.

Common names : Tibetan Antilope.

Regional names : Hindi : Chiru, Chuku; Tibetan : Tsus (Male), Chus (Female).

Diagnostic characters : Remarkable feature of Tibatan Antilope or Chiru is its swollen muzzle, more peculiarly in males. The inflation of the nose may perhaps be due to its habit of living at such a high altitude to aid in normal breathing. Each nostril is furnished with a large lateral sac assisting in breathing the rarified air at high altitudes. Chiru is a rufous brown or fawn coloured beautiful antelope, slightly larger than the Blackbuck with a black face and white underparts. A black stripe runs down the front of each leg. It possesses unusally-developed scent glands in hooves and also in inguinal region. It does not possess any facial glands. The body is covered with dense wool. Its coat colour is variable in shades. It is known to lie and conceal in shallow pits prepared by them in the sand. Horns, in males are long and erect arising out close to each other. They are slightly curved forward and ringed in front (15-29 rings) only. Females are hornless with no stripes on the body.

Measurements : (in cm) : Head and body length : 130-140; height at shoulder: 83 (approx.); horn length : 60-70.5.

Weight : (in Kg) : 36 (Approx.).

Intraspecific variations : No subspecies.

Distribution : Tibetan antilope or Chiru occurs on the northern side of Tibetean Plateau. The only place in Indian territory where chiru is found is Changchenmo valley of Northern Ladakh. It comes here and on Dopsang plain in summer while descending down Lanak-la-Pass near Tibet border. Dar and Gaur (1984) (as cited by Sharma, 1998) have reported its occurrnce above 5000 m in

Source : B.K. Tikader (1983)

Aksaichin also.

Endemism : Non-Endemic species.

Altitude : 3600-5500 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 2001-5000 sq. kms.

Locations : *No. of locations* : One (Changchenmo Valley in Ladakh); *Type* : Contiguous.

Habit, habitat and ecology : Chiru is the only antelope species of the higher temperate biotopes. It is a shy and wary animal in nature and prefers to lead a solitary life or forms small groups of 3-4 individuals. Sometimes, it may be seen in larger herds, particularaly on Tibetean plateau. Chiru's favourite haunt is a grassy flat bordering the plains of Chanqchenmo river valley. The Chiru grazes on grasses grown on the river flats. They scent the ground with secretions to guide other members of the herd. They graze in morning and retire to rest in higher terrains. It digs or scrapes out a shallow pit in sand/gravel and lie inside for concealment. They rely heavily on sense of sight and smell. Towards evening, these antelopes descend once again to feed on grass patches. The rut occurs during winter. A single young one is born in summer.

Habitat structure : Grassy flats bordering the plains of Chanchenmo river valley in the cold desert of Ladakh.

Population : *Global population* : *Regional population* : Less than 200 mature individuals in Ladakh (CAMP Report, 1998); No. of mature individuals in all the populations : less than 250.

Captive population : None in India.

Life span : (Wild) : 10 years; (Captivity) : Not known.

Population trend : General Decline.

Sighting records : *Type of sighting* : *Field notes* : Sharma (1998) and Fox *et al.* (1991) have reported sighting records from the single known Indian locality.

Threats : Human interference, predation, hunting, insurgency/ terrorism/war.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, domestic, commercial

Pantholops hodgsonii (Abel)

and international; Parts in trade : Fur, hair, meat insurg., wool used for preparing Kashmiri Shahtoosh woolen shawls; Excessive poaching etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Insufficiently known; *IUCN (1998)* (Proposed) : Critically Endangered (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Endangered (Global) based on Version 3.1 2001 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, habitat mangement, limiting factor resaerch, captive breeding etc.

Remarks : Famous Kashmiri shahtoosh shawls are prepared from the wool of Chiru. These shawls are the soft, light and warm and hence, costlier shawl in the international market. Therefore, excessive poaching and disturbance in the natural habitat of Chiru is in progress which must be stopped urgently for conservation of this wonderful mammal species of the Trans-Himalayan region.

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Evaluated by : M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order ARTIODACTYLA

Family BOVIDAE

Subfamily BOVINAE

109. *Tetracerus quadricornis* (Blainville)
Four-horned antelope

Synonyms : *Cerophorus quadricornis* Blainville, *Tetracerus subquadricornis* Gray.

Common names : Four-horned antelope.

Regional names : Hindi : Chousingha; Marathi : Chousingha, Gujarati : Bhokra, Kannada : Koondoo, Koorepoki, Tamil : Narikomboo maru.

Diagnostic characters : The Four horned antelope as its name signifies possesses four horns on the head. Despite the unusual characteristics of possessing two pairs of horns, it has received little scientific attention. The Four horned antelopes are distinctly different in number of respects from true antelopes. The horns are not ringed, but they are keeled only in front. The females are hornless. Of the two pairs, the front ones are always shorter. The posterior pair is about 8-10cm in length, while anterior pair about 2-3 cm or even less in length. The anterior pair is located between and above eyes. At times they may not be more than studs on bony knobs under skin. Chowsingha possess a pair of well-developed glands between the false hooves of the hindlegs of both the sexes. The fur is thin, harsh and short. Its coat colour varies from brown to rufous brown above, while white below. A dark stripe runs down the front of each leg. The old bucks are yellowish in colour. The four horned antelope is smaller than blackbuck in built.

Measurements : (in cm) : Head and body length : 80-110; height at shoulder : 55-65; length of anterior horns 2-3 cm, length of posterior horn : 8-10.

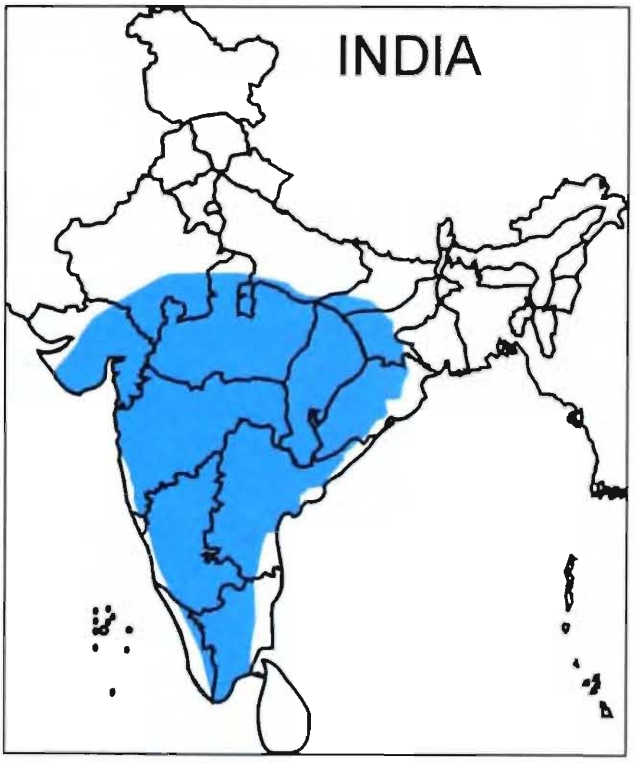
Weight : Not available.

Intraspecific variations : No subspecies.

Distribution : Peninsular India except for southwestern and northeastern regions. Outside Indian limits it is reported from Nepal only.

Endemism : Non-Endemic species.

Altitude : Plains.



Source : M.S. Pradhan

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : More than 100 localities in India; *Type* : Fragmented.

Habit, habitat and ecology : Four horned antelope is found singly or in pairs in wooded country near water. It is nocturnal in habit, shy in nature and difficult to locate since it camouflages with the grasses and scrubs while walking and running. It moves with jerky actions with its head in forward direction. It behaves more like a deer than antelope. It ruts during rainy season and gives birth to one or two fawns in around Jan-Feb. These antelopes are water dependent and drink water regularly.

Habitat structure : The four horned antelope does not favour dense forest but prefers to inhibit scrub and open forests, thin bamboo-mixed jungles, scrub and ravines in the undulating and hilly terrains. It is mostly seen in open patches with short grasses in the forest. Habitat structure : Stable.

Population : Population in 7 Indian Tiger Reserves and Gir Lion Sanctuary : 4300 (Rashid, 1986 as cited in Anonymous, 1994); *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : Males : 30 + females : 24 + unsexed : 21= Total : 85 in 20 Indian Zoo (CAMP Report, 1998).

Life span : (Wild) : 10 years; (Captivity) : Not known.

Population trend : Stable.

Museum records : Name of museum : Some of the Regional Stations and Head Quarters of the Zoological Survey of India, possess representative specimens of this speices in thier collections.

Tetracerus quadricornis (Blainville)

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Four horned antelopes were sighted in Tansa wildlife sanctuary, Melghat Tiger Reserve, Pench National Park and Tadoba-Andhari Tiger Reserve by ZSI survey parties from WRS, Pune since 1980. Surendravarman and Sukumar have also sighted it in Madumalai Wildlife Sanctuary since 1988.

Threats : Habitat fragmentation, human interference, grazing, hunting; *Effect of threats on population (Perceived or inferred)* : Can't say.

Trade : Domestic; Parts in trade : Meat insurg.; *Effect of trade on population (Perceived or inferred)* : Not declining.

Conservation status : *CITES APPENDIX* : Not listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Lower Risk-Near threatened (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Vulnerable (Global) based on Version 3.1 2001 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, genetic studies, life history studies, habitat management, conservation strategy studies etc.

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Evaluated by : A.R. Rahmani and M.S. Pradhan

ENDANGERED

Order ARTIODACTYLA

Family BOVIDAE

Subfamily BOVINAE

110. *Bos grunniens* Linnaeus
Wild Yak

Synonyms : *Bos mutus* Przewalski.

Common names : Wild Yak.

Regional names : Hindi : Chamri gai, Ban Chour; Tibetan : Dong (Wild), Paqu (Domesticated).

Diagnostic characters : Wild yak is a massive and short-legged blackish brown gaur-like animal with a drooping head, high humped shoulders and straight back. Body covered with heavy, long, shaggy and coarse mostly black-fringed hairs hanging from its flanks, chest, shoulders, thighs and lower half of the tail. The hairs between the horns form bushy tuft, while those on the neck region form a prominent mane. Tail long and extraordinarily bushy. During winter season yak grows a dense underfur, soft and closely matted. The wild bull's horns are much more massive than those of the domestic variety. The massively built body is mostly blackish brown with little white about the muzzle. The dewlap is absent. The tamed yaks usually have patches of white on the chest or back of the tail. The piebald colouring is always absent in wild varieties.

Measurements : (in cm) : Height at shoulder of adult yak : 170-185; length of curved horns : 65-75; Distance between the tips of the curved horns : 75-90.

Weight : (in Kg) : 545-600.

Intraspecific variations : None. *Bos grunniens*, Linnaeus, has been retained here instead of *Bos mutus* following Wilson and Reeder (1993)

Distribution : Wild Yak is found in northern Ladakh (Changchenmo Valley) and some passes of the eastern Kumaon hills within Indian limits. They may stray in to Sutlej valley also. However, tamed Yak is also seen throughout the high altitudinal Himalayan region.

Source : B.K. Tikader (1983)

Endemism : Non-endemic species.

Altitude : 4270-6100 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 2001-5000 sq. kms.

Locations : *No. of locations* : Four for Wild Yak; *Type* : Fragmented.

Habit, habitat and ecology : Wild Yak is one of the species dwelling at highest altitudinal Himalayan range. Yak is seen in the coldest, most desolute and rugged snow-covered terrains of the Indian Himalayas. In such extreme climatic region, availabilty of forage is obiviously scanty. Yaks do not descend down below 4000 m even in harsh cliamtic conditions. Generaly yaks move in small herds, but in spring such herds may assemble together in the grazing fields. It lives on grass and shrubs. It can also take frozen snow salt encrusted earth. Melting snow is its usual liquid nourishment. Yaks move on snow carefully in a single file stepping on imprints left by the leader. Rut takes place in autumn and young ones are born in April or May. It breeds freely with domestic animals also. Yak forages during early mornings and evenings. The herds wander for a considerable distance in search of food.

Habitat structure : Coldest, wildest and most desolate mountainous terrains in the Himalayan region. Habitat strucutre : Stable.

Population : Global population : Total Indian population of Wild Yak is not known. Feral and domesticated yaks also occupy the wild terrains and makes it dificult to asceratin wild populations (Mukherjee, 1982). *No. of mature individuals in all the populations* : Less than 2500.

Captive population : Males 4 + females 2 = Total : 6 Wild Yaks in 5 Indian zoo (CAMP Report, 1998).

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : General decline.

Sighting records : *Type of sighting* : Direct; *Field notes* : Sighting records in past reported by ZSI survey parties from High Altitude Field Station, ZSI, Solan, Northern Regional Station, ZSI, Dehra Dun and ZSI, Kolkata.

Bos grunniens Linnaeus

Threats : Interspecific competition, disease, human interference, trade, hunting, insurgency/terrorism/war, genetic problems like breeding, hybridization etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local; Parts in trade: Skin, bones, hair, horn, meat insurg, milk, fat, hides, hooves, hairy tail etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Critical; *IUCN (1998)* (Proposed) : Endangered (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Vulnerable (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, limiting factor research, conservation startegy studies etc.

Remarks : Since tamed populations can mix with wild varieties, there is a constant threat of spread of contageous diseases.

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Evaluated by : M.S. Pradhan

VULNERABLE

Order ARTIODACTYLA

Family BOVIDAE

Subfamily BOVINAE

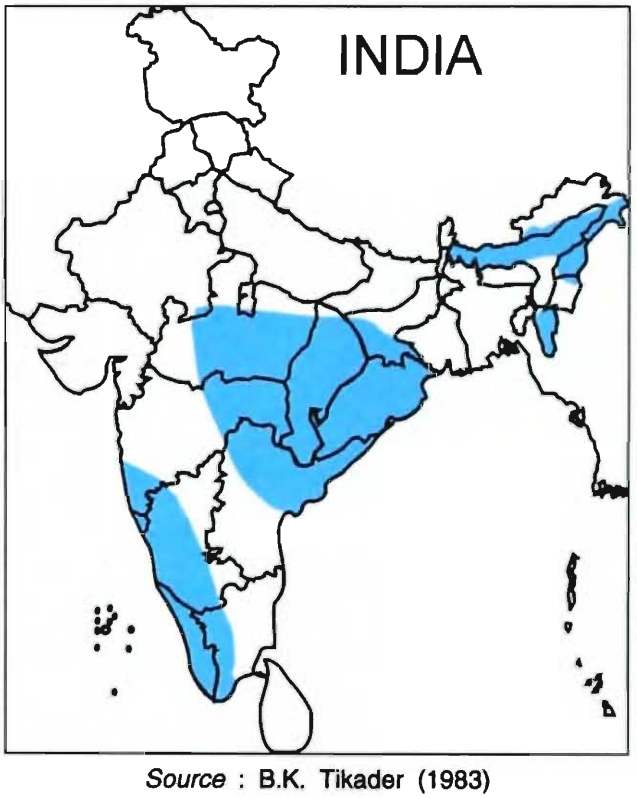
111. *Bos gaurus* Smith
Gaur

Synonyms : *Bos frontalis gaurus* Smith, *B. gour.*

Common names : Gaur, Indian Bison.

Regional names : Hindi : Gaur, gaur gai; Marathi : Gawa, gaur; Kannada : Kadu yethu, kartee; Tamil : Kattu erumai; Malayalam : Katu poth

Diagnostic characters : Indian Bison or Gaur is the largest of all the wild bovine species possessing an elevated hump like a characteristic ridge on the back, which ends abruptly in the middle of the back. The males bear strong curved horns which are flattened at the base and which curves first outwards and then inwards. The female horns are smaller and lack girth and heaviness. Tail reaching the hocks. With its huge head, massive body and sturdy limbs, the gaur is representative of vigour and strength. The limbs are short and possess white stockings. The colour varies with age and sex. A newly born gaur is a light golden yellow, which changes to fawn, then to light brown further to coffee or reddish brown. These are the colours seen in the young bulls and females, which possess short hairs on the body. Older bulls are mostly hairless and jet black colour in colour. The forehead is ashy in colour. The gaur has no white patch behind the thighs. The colour of the eyes is brown. Occurrance of albino varieties has also been recorded from Peninsular India.



Source : B.K. Tikader (1983)

Measurements : (in cm) : Height at shoulders : males : 175-220; females : 160-170; spread of horns in males : 80-90.

Weight : (in Kg) : Adult bull : upto 900.

Intraspecific variations : Though Wilson and Reader (1992) and Alfred *et al.* (2002) have retained the name *B. frontalis* for Indian Gaur, Corbet and Hill (1992) have rightly considered the name *Bos gaurus gaurus* for Indian gaur population on the basis of karyological and

morphological studies carried on by Simons (1984), Corbet and Clutton-Brock (1984) (Both cited in Corbet and Hill, 1992). Therefore, the name *Bos gaurus* has been retained here. Out of the three subspecies, *Bos gaurus gaurus* is known to occur in India.

Distribution : In Indian region Gaur was found throughout the hilly forests of Himalayan foothills and Peninsular India in past. At present Gaur remains only in some pockets of West Bengal, Assam, Bihar, Madhya Pradesh, Maharashtra, Goa, North eastern and southern Indian States.

Endemism : Non-Endemic species.

Altitude : Upto 1830 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Fragmented.

Habit, habitat and ecology : In Himalayas Gaur keeps itself to foothills but in Peninsular India it is found at an altitude of even 2000 m. Generally lives in small herds of 5-20 individuals. However, the herds may unite with other families in large open areas. It is both a grazer and browser. It also visits salt licks regularly. Main rutting period is Dec-Jan and peak season of birth is Aug-Sept. Basically it is extremely shy and retiring animal. It has an acute sense of smell and hearing. Foraging activity is seen from late evening to ealy morning. Feeds chiefly on grass but may browse on leaves and bark of trees also. Bullls when adult may lead solitary life till rutting season. It rejoins the herd during rut and fight for possession of the cows. Master bull with a group of females marks its foraging territory. When rut is over the bull leaves the herd and again leads solitary life. The care and upbringing of the

Photo : Shaikh Iqbal

Bos gaurus Smith

young and leadership of the herd is then left entirely to the cow.

Habitat structure : Gaur is essentially an animal living on hill slopes, dwells in dense tropical forest interspersed with glades or open meadows. Habitat structure has changed with general decline in its habitat.

Population : Global population : Population in India : 4000-6000; *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : Males : 8 + females : 7 = Total : 15 in Indian zoo and males : 33 + females : 65 + unsexed : 1 = Total : 99 in zoo abroad (CAMP Report, 1998).

Life span : (Wild) : 24 years (Anonymous, 1994); (Captivity) : Not known.

Population trend : General decline.

Sighting records : *Type of sighting* Direct and indirect both; *Field notes* : Number of sighting records have been reported by various authorities. One of the authentic records is Tiger Project Reports published from time to time by various agencies in India.

Threats : Interspecific competition, disease, floods, habitat fragmentation, cattle grazing, human interference, loss of habitat, trade, hunting, corridor loss, competition with domestic stock or food; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local and domestic; parts in trade : horns, meat insurg., skin, body parts etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Vulnerable (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : For *Bos frontalis* : Vulnerable (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : Monitoring, taxonomic studies, limiting factor research, habitat management, studies on checking spread of Rinderpest disease in gaur population etc.

Remarks : Gaur plays an imporatnt role in Nature's economy by checking the overgrowth of various types of grasses and returns the nutritive material to the forest through faecal matter. Compulsory innoculation of domestic cattle moving in the peripheral areas is strongly recommended because of spread of Rinderpest and Foot and Mouth diseases. Intermitant outbreaks have directly affected its population from time to time causing heavy mortality. Serious outbreaks have been reported from Protected Areas resulting in heavy losses in the past.

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Evaluated by : M.S. Pradhan

ENDANGERED

Order ARTIODACTYLA

Family BOVIDAE

Subfamily BOVINAE

112. *Bubalus bubalis* (Linnaeus)
Wild Water Buffalo

Synonyms : *Bubalus arnee* Kerr.

Common names : Wild Water Buffalo, Indian Wild Buffalo, Wild buffalo, Asiatic Wild Baffalo.

Regional names : Hindi : Arna (Male), Arni (Female), Jangali Bhainsh; Marathi : Jangali Mhais; Kannada : Kadu kona, Kartee; Assamese : Moh; Benagali : Tangli Mosh; Cachari : Misip; Kuk : siloi; Manipuri : Iroi; Naga : Gubui, Rili, Le; Gond : Gera erumi.

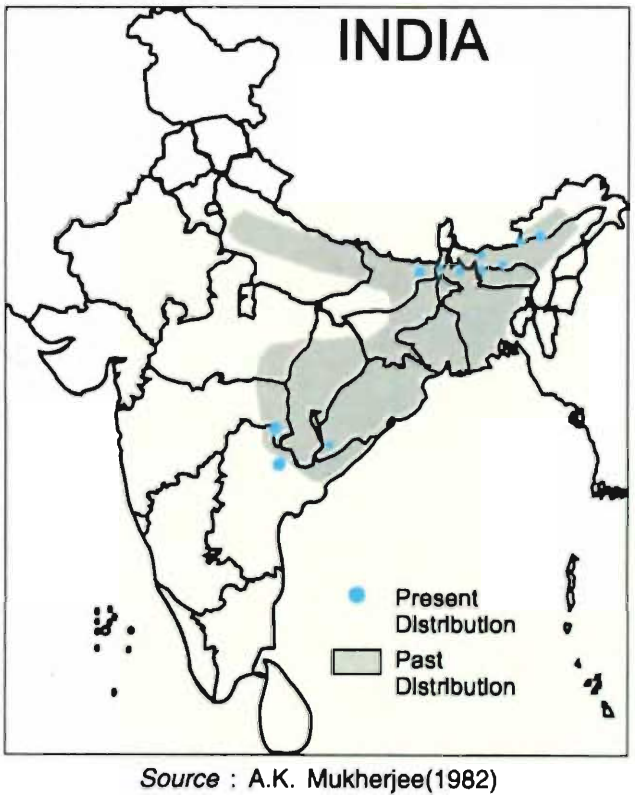
Diagnostic characters : The wild buffalo is of the size of domestic buffalo, but more robust and heavier. It is formidable looking powerful bovine. It bears large sized wide spreading flat-fronted horns, which are almost semicircular or sometimes straight, turned up at the ends. The horns may turn outwardly horizontal. The cows possess longer horns, while the bull have thicker ones. The horns are triangular in cross section, transversely ridged and excedding 92 cm in length. The coat is dark slaty with black short hairs. Tail long with tufted end that almost reaches the hocks. Legs dirty white just above the hocks and knees. Ears small, while hooves large and splayed. The newborn calf is light colured almost yellow.

Measurements : (in cm) : Head and body length : 250-300; height at shoulders : 150-200; tail length : 60-100; length of horn along the curve : 185-197.

Weight : (in Kg) : 900-1000.

Intraspecific variations : Two subspecies occur in India *viz. B. bubalis bubalis* and *B. bubalis fulvus*. The first one is found in central India, While the later is reported from Mishimi Hills, Arunachal Pradesh.

Distribution : Found in the grass jungles of Arunachal Pradesh,



Source : A.K. Mukherjee(1982)

Meghalaya, Orissa, Madhya Pradesh and for quite recent past eastern Maharashtra (Choudhury, 1994, Daniel and Grubh, 1966). However, Divekar, Grubh and Shekhar (1983) have concluded that the wild buffalo has disappeared from Maharashtra State, while Choudhury (2002) has reported local extinction of the species from Manipur and Mizoram States since 1970.

Endemism : Non-Endemic species.

Altitude : 650-2000 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Locations : *No. of locations* : 11; *Type* : Fragmented.

Habit, habitat and ecology : Wild baffaloes are distributed along with the rivers and their tributories in some of the districts of Madhya Pradesh and Orissa. They are also largely seen in the Brahmaputra plains as well. Lush grasses and vegetations growing besides the riverbed and lake form the major part of their favourite diet. Sometimes they may attack the cultivations. They are very selective feeders. These animals live in herds. Sometimes solitary bulls are also found far away from the herds. The bulls again associate with the herds during rut. They feed at dusk and dawn wandering long distances in the course of grazing and retiring in to the cover or to their wallows during hot part of the day or at night. Basically, they are very shy in nature; however bulls are aggressive in their attitude. The wild bull ocassionally approaches domesticated herd and takes possession of cows during the rut. In this process, it may drive away or even kill the rival bull. Main period of rut is spread over several months and not confined to autumn alone. Generally one or two calves are born. Tiger is the only predator capable of killing buffaloes.

Bubalus bubalis (Linnaeus)

Habitat structure : Low swampy ground, riverine tall grass jungle and mixed forest. Habitat structure is decreasing with general decline in habitat.

Population : *Global population* : 3000-3500 in northeast India (Choudhury, 1994), while 400-500 in Peninsular India (Daniel and Grubh, 1966); *No. of mature individuals in all the populations* : less than 2500

Captive population : None.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : General decline.

Sighting records : *Type of sighting* : Direct; *Field notes* : Sighting records reported by Daniel and Grabh (1966), Divaker *et al.* (1983), Choudhary (1994) and ZSI survey teams in Assam and Madhya Pradesh (Ghosh, 1995).

Threats : Disease, floods, habitat fragmentation, human interference, loss of habitat, trade, hunting, corridor loss, poaching etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local; Parts in trade : Skin, horn, meat insurg, body parts etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : III; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : For *Bubalus arnee* : Endangered; *IUCN (2002)* (Proposed) : Endangered (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : Monitoring, taxonomic studies, life history studies, limiting factor research, habitat mangement etc.

Remarks : Most of the wild buaffalo habitat in its distributional range has been brought under Protected Areas. However to save wild populations from dreaded diseases like rinderpest, foot and mouth diseases etc. due to its mixing with domesticated populations, it is strongly recommended that complusory innoculation programm of domestic populations living in such peripheral areas be implemented urgently.

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Evaluated by : M.S. Pradhan

NOT LISTED

Order ARTIODACTYLA

Family BOVIDAE

Subfamily CAPRINAE

113. *Budorcas taxicolor* (Hodgson)
Takin Goat-antelope

Synonyms : Not available.

Common names : Takin Goat-antelope.

Regional names : Not available.

Diagnostic characters : Takin is a clumsy looking heavily built animal with large head, convex face, heavy mouth and thick neck. The heavy body is supported by extraordinarily short and thick legs slightly raised withers and arched spines. The muzzle, thick neck and stout limbs are hairy. Long shaggy hairs drooping particularly from the neck and flanks. Lateral hooves support the legs. The horns in male are thick arising close togther curving outwards and then making a sharp turn pointing bcakwards. The horns of females are smaller. The body colour varies greatly from golden yellow to deep dark brown with a dark stripe on the back in males. Females are grey with no trace of yellow. Head black, while withers conspicuously lighter in tone. Subadult males are reddish brown in front merging into black, while calves are black in colour.

Measurements : (in cm) : Head and body length : 120-198; tail length : about 100 cm; height at shoulder : 80-110.

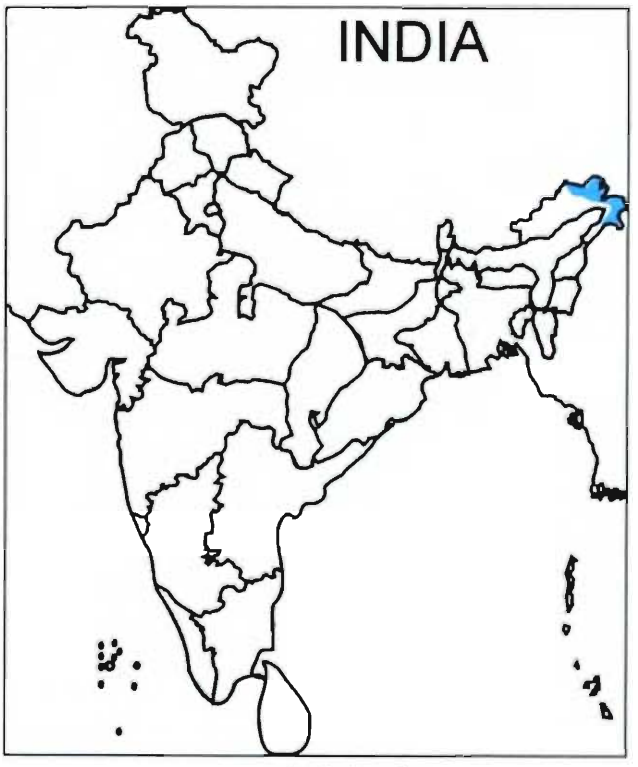
Weight : (in Kg) : Adult bull may weigh up to 300 kg.

Intraspecific variations : Out of three sub-species, only nominate subspecies (*Budorcas taxicolor taxicolor* Hodgson) has been known to occur in the distributional range within Indian Limit.

Distribution : Eastern Himalaya from Bhutan to north Burma through Mishmi Hills in Arunachal Pradesh.

Endemism : Non-Endemic species.

Altitude : 900-4000 m.



Source : M.S. Pradhan

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 5001-10000 sq. kms.

Locations : *No. of locations* : Three; *Type* : Contiguous.

Habit, habitat and ecology : Found mostly in the altitudinal range of 2500-4000 m. However, animals have been recorded at the altitudes as low as 900 m (Anonymous, 1994) and 1300m (Schaller, 1985). Takin has been recorded to live in thickly wooded montane forest with under storey of Rhododendron and Bamboo species of about 5 m in height. Conifer forest predominates at 3000 m altitude. Takin moves in small parties (5-25) in the winters but may congregate in large numbers during summer months. Takins are browsers and feed mainly on leaves and shrubs. They are known to mate in July-Aug. A single young one is borne in March-April. Like most of the high altitude mammals, Takins show seasonal altitudinal movements. Grouping behaviour around sulphur springs has also been reported (Prater, 1980). Takins have keen sense of smell and they disappear at the slightest hint of human presence.

Habitat structure : Thickly wooded montane forest type or Rhododendron Bamboo and Conifer forests. Can also be seen in grassland patch. Habitat structure changing with general decline in the habitat.

Population : Global population : Not known; No. of mature individuals in all the populations : Not known.

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : General decline.

Budorcas taxicolor (Hodgson)

Sighting records : *Type of sighting* : No direct sighting record; *Field notes* : Indirect sighting evidences reported by Katti *et al.* (1990) and Sharma *et al.*, (1995).

Threats : Human interference, loss of habitat, trade, hunting, corridor loss, hybridisation, logging, jhum cultivation, deforestation, developmental activites like road construcation activites etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local; *Parts in trade* : Fur, horn and meat insurg.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Insuffciently known; *IUCN (1998)* (Proposed) : Not Listed; *IUCN (2002)* (Proposed) : Vulnerable (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey and monitoring, hybridisation, life history studies, habitat management, detailed status survey studies etc.

Remarks : Taking into consideration the levels of threat to the survival of the species, it is strongly recommended to include the species in one of the threatened categories of the ICUN. It has already been included in Vulnerable category of IUCN at Global level. (2003). The species has been offered protection by declaring most of its distributional range as Protected Areas.

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Evaluated by : M.S. Pradhan

CRITICALLY ENDANGERED

Order ARTIODACTYLA

Family BOVIDAE

Subfamily CAPRINAE

114. *Capra falconeri* (Wagner)
Markhor

Synonyms : *Aegoceros (Capra) falconeri* (Wagner).

Common names : Markhor, Astor, Flare horned Markhor, Kashmir Markhor, Pir Panjal Markhor (Male).

Regional names : Ladakhi : Raphoche (Male) or Rawache (Female); Punjabi and Kashmiri : Markhor.

Diagnostic characters : The Markhor is a long thick, silky haired heavy mountain goat. The magnificient horns of the male spread out in a heavy corkscrew and serpentine twist. The horns curve in two planes. The anterior face of the horns keeled. There apperas to be cline linking small animals with short ruffs and straight tightly twisted horns in southern *Capra falconeri cashmiriensis* with those which are large ones with longer ruffs and horns with an open spiral in the northern *C. falconeri falconeri* (Corbet and hill, 1997 and Roberts, 1997). Markhor posseses short and thick legs with broad hooves. There is a dorsal crest in the form of shaggy spectacular grey mane down the neck. The mane falls from the neck and shoulder to the knees. Beard present in both the sexes. The body is reddish grey in colour, rusty grey in winter and reddish buff in summer. Belly and legs are creamy white with a conspicuous dark brown pattern on fore part of shank and a white patch on carpel. A mid- dorsal, dark- brown stripe extends from below the shoulder to the base of the tail. Tail covered with long black hairs.

Source : B.K. Tikader (1983)

Measurements : (in cm.) : Head and body length : 130-186; height at shoulder : 72-101; horn length along the keel : 120-165; basal girth of horn : 25-34.

Weight : (in Kg) : 80-100.

Intraspecific variations : Out of seven subspecies two have been reported from Indian region, namely *Capra falconeri falconeri*, Wagner and *Capra falconeri cashmiriensis*, Lyddeker. Roberts (1997)

expresses doubts about the range of occurrence of the species *Capra falconeri* within Indian limits. However, Sharma (1994) reported sightings of Markhor in Poonch sector of Kashmir and also reported its occurrance in three more localities at higher altiitudes in Kashmir, thus confirming the range of distribution of the species within the Indian Limits.

Distribution : Himachal Pradesh and Kashmir (Pir Panjal range, Astor valley, Gilgit in Western Himalayan region) within Indian limits.

Endemism : Non-Endemic species.

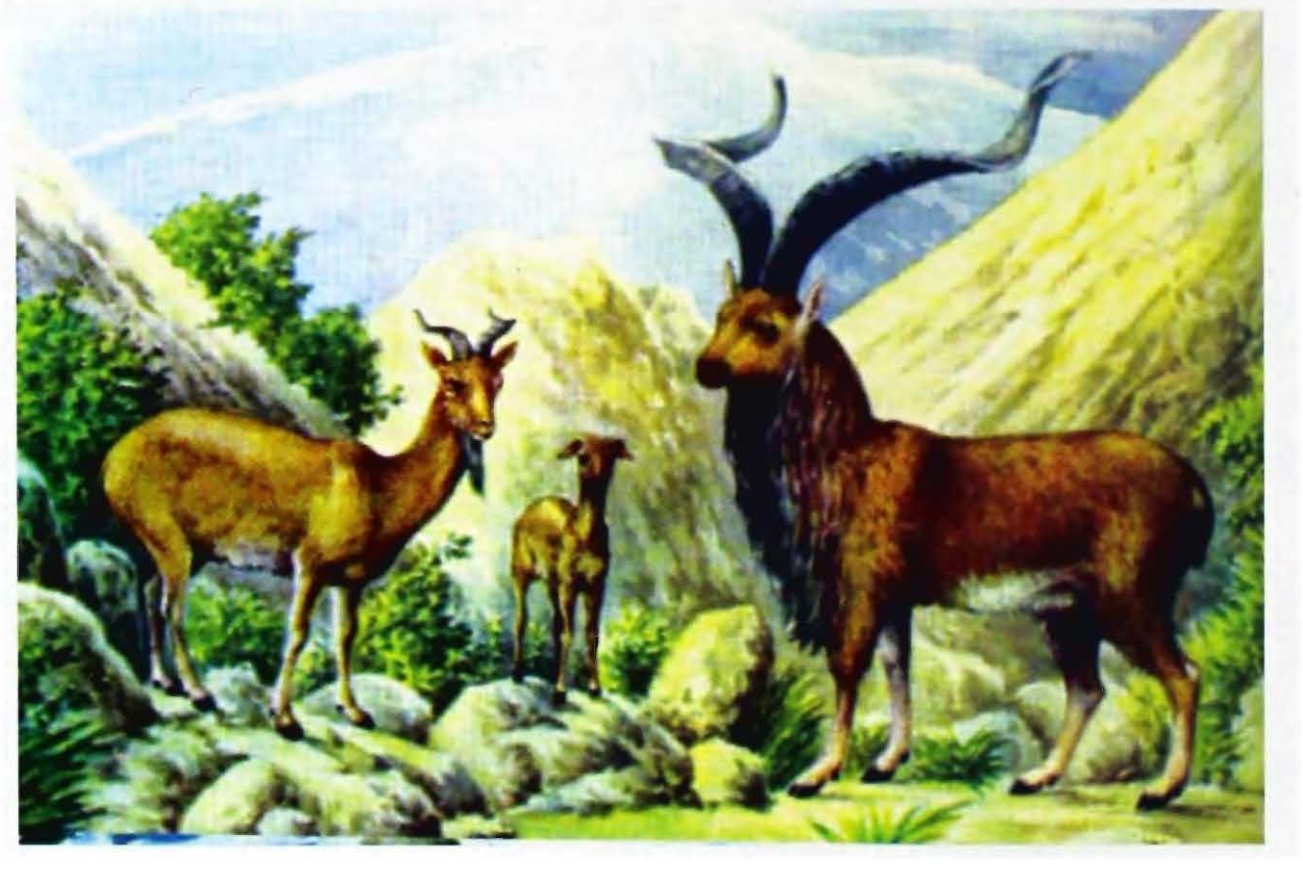
Altitude : 2200-4000 m.

Area of occupancy : 101-500 sq. kms.

Extent of occurence : 2001-5000 sq. kms.

Locations : *No. of locations* : Four; *Type* : Contiguous.

Habit, habitat and ecology : The Markhor in Indian limits is an inahabitant of the dense pine and birch forests and grassy glades. It inhabits dificullt steep, precipitous high rocky cliffs and can climb the most difficult terrains to avoid predators. It is known as the king of wild goats. No wild goat can excel Markhor in climbing difficult and dangergous terrains. This is possible because of their soft padded hooves. Earlier observors tend to belive that Makhor, due to non-availability of underwool, cannot tolerate snow and cold and hence migrate to lower altitudes. However, Roberts (1997) observed a small herd of Markhor at elevation of 3660m where there was thick snow cover and temperature dropped below 7 degree Celcius.Therefore he feels that their migration to vallely mouths and lower altitudes



Capra falconeri (Wagner)

is mostly due to rutting activity rather than aversion to cold. The rut last for a month in December. At that time male possesses a typical pungent goat odour. Fighting occurs between the rival males. The male uaually lives a solitary life except during rutting season. They give birth generally to twins. They are diurnal in feeding activity with greatest activity in early morning and late evenening. But during winter season it may take place during day time also. They principally graze on tussocks of grass, but they can browse on leaves and twigs of bushes also. The rate of mortality amongst subadults is high due to stress factor because of lack of suitable forage, cold conditions etc. Markhors may live in small herds (4-6) or even in large herds of 12-60. They are predated upon mostly by snow leopard. However, man is the most serious predator hunting them for meat and body parts. Markhor and Himalayan ibex are reported to have died on large scale due to Rinderpest disease introduced by domestic goats. Though Markors and Himalyan Ibex are parapatric in foraging range, they do not seem to show any interspecific interactions between the two.

Habitat structure : Pine, Juniper and Birch scrub and grassland forests at higher altitudes. Frequents steep monutainous and most difficult terrains and prefers movement through inaccssible crags. Habitat structure is changing with >20% decrease in last 30 years (Roberts, 1997).

Population : Global population : Less than 2500; Regional population : Less than 1000 (In Himalyan rage, Roberts, 1997); No. of mature individuals in all the populations : less than 2500.

Captive population : None in India. Males : 27 + females : 44 + unsexed : 2 = Total 73 in 10 zoo abroad (CAMP, 1998).

Life span : (Wild) : 10-12 yaers (Roberts, 1997); (Captivity) : 18 years.

Population trend : Decreasing : >20% in last 30 years (Roberts, 1997).

Sighting records : *Type of sighting* : Direct/indirect; *Field notes* : Behavioural studies in field and capitivity have been carried out and reported by Schaller (1977) (in Robert 1997) Ranjitsinh (1981) (In Sharma 1994) Roberts (1997) and Sharma (1994).

Threats : Interspecific competition; disease; habitat fragmentation; human interference; loss of habitat; trade; predation; hunting; insurgency/terrorism/war; genetic problems like inbreeding; corridor loss, competation with live stock for food etc.; Effect of threats on population (Perceived or inferred) : Declining.

Trade : Local and domestic; Parts in trade: Fur, horn, meat insurg. etc.; Effect of trade on population (Perceived or inferred) : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : Critically Endangered (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Endangered (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, genetic studeis, taxonoic studies, life history studies, limiting factor reserch, habitat mangement etc.

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Evaluated by : M.S. Pradhan

VULNERABLE

Order ARTIODACTYLA

Family BOVIDAE

Subfamily CAPRINAE

115. *Capra ibex* (Linnaeus)
Himalayan or Asiatic Ibex

Synonyms : *Ibex sibericus, Capra sibirica.*

Common names : Himalayan or Asiatic Ibex.

Regional names : Kashmir : Kail; Ladakhi : Skin or Sakin (Male), Dabmo or Danmo (Female); Kulu : Tangrol.

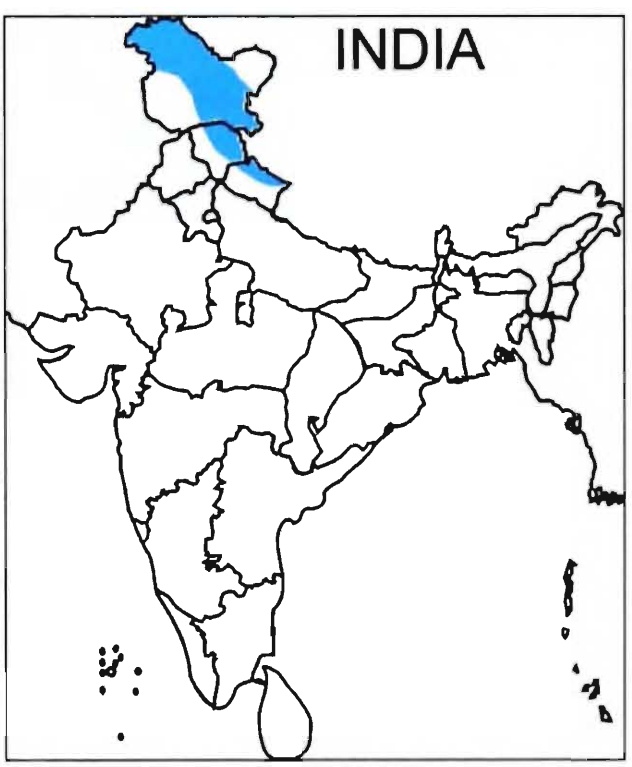
Diagnostic characters : The Himalayan or Asiatic ibex is a beautiful, thickset and sturdy built goat with log beard under chin of male ibex. The male ibex possesses sweeping long horns curving backwards. The male possesses goatish smell and a coat of strong hard hairs. A dense underwool helps the animal to withstand the severe climatic conditions. The scimitar-shaped horns of the buck are flat with strong widely spaced rings in front. In general the winter coat is yellowish white tinged slightly with brown and grey. In summer the colour is dark brown and insignificant to look at. The limbs are strong. Suborbital and inguinal glands absent, while pit glands present in the forefeet only. Sexual dimorphism present. Mature rams possess almost silvery white furred body, while females and immatures are yellowish brown to reddish grey. The female is slightly smaller than the male.

Measurements : (in cm) : Height at shoulders : males : 100-102; females : 70; length of horns along the curves : 100-115 (maximum 147.3 cm of Gilgit specimen).

Weight : (in Kg) : Adult male : 70-90; adult female : 50-55.

Intraspecific variations : Out of five recognised subspecies, only one is known to occur within Indian limit : *Capra ibex siberica.*

Distribution : Within Indian limits the Himalayan ibex is known to occur on both the sides of North-western Himayalas. Shyok valley in Ladakh, Sutlej gorge, slopes of Pir Panjal range in Kullu Dist. of Himachal Pradesh and Kumaon



Source : B.K. Tikader (1983)

region of Uttar Pradesh.

Endemism : Non-Endemic species.

Altitude : 3650-6700 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Contiguous.

Habit, habitat and ecology : A wide range of altitudinal biotopes are inhabited by Himalayan ibex between an altitude of 3500 and 6710 m. They are highly adapted to live in this range and occupy the highest altitude amongst the mountain goats. They live in suitable habitats between tree line and snow line. However, ibex have been reported from forested regions as low as 500 m also. At high altitudes, the vegetation is scarce and restricted to limited species only. They show high degree of preference of precipitous rocks and cliffs for roaming. Sharma (1994) reports that the salient features on ecology and behaviour of the ibex has been studied by Schaller (1977). These animals do not descend down in winter to avoid cold climate. They are gifted with fine sense of smell and sight. They are at home on cliffs as well as in the upland pastures. They subsist mainly on tussocks of grass. In spring they are attracted by new grass at lower altitudes. They may live singly or in small groups of 3-4. However, during rut they may rejoin the main herd of about 20-50 individuals. Their main predators are snow lopard wolf and red fox. On sensing the danger, an alarming shrill is blown by a sentinel reulting in flock dashing down and upwards for shelter in inaccessible areas. Grazing is done mainly in the morning

Capra ibex (Linnaeus)

and evening on sunny days. Mating takes palce in winter and one or two young ones are born in May or June.

Habitat structure : Alpine Scrubs or dry alpine steppe vegetations between treeline and snow line. The Habitat structure is decreasing with general decline in habitat.

Population : *Global population* : *Regional population* : 12000-15000; *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : None in India.

Life span : (Wild) : Males : 16 years; females : 14 years (Johnisigh *et al.*, 1999); (Captivity) : 22 years (Roberts, 1997).

Population trend : General Decline.

Sighting records : *Type of sighting* : Direct/Indirect; *Field notes* : Johnsigh *et al.* (1999) (In India) and Roberts (1997) (in Pakistan), while reporting sighting records, carried out status survey studies.

Threats : Interspecific competetion, disease, grazing, human interference, loss of habitat, predation, hunting, insurgency/terrorism/war, genetic problems like inbreeding, excessive tourism etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local and domestic; *Parts in trade* : Fur, hair, horn, meat insurg, underwool for making shawls, gloves etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : Vulnerable (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, montioring, genetic studies, taxonomic studies, life history studies, habitat mangement etc.

Remarks : Taking into considerations high levels of threats, it is strongly recommended to include *Capra ibex siberica* in one of the Threatened categories of IUCN. Further, Ibex sometimes breed with domestic goats.

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Evaluated by : M.S. Pradhan

NOT LISTED
Order ARTIODACTYLA
Family BOVIDAE
Subfamily CAPRINAE

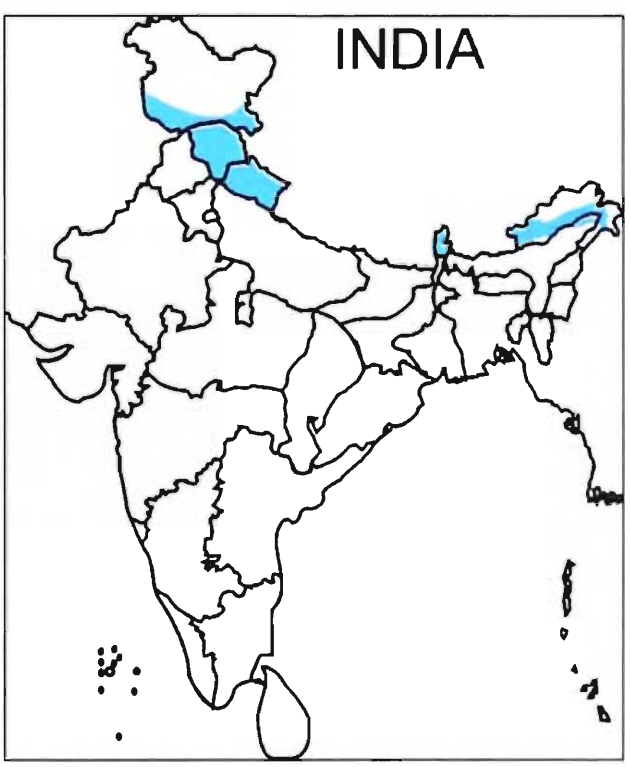
116. *Naemorhedus goral* (Hardwicke)
Himalayan Goral

Synonyms : *Antilope goral* Hardwicke; *Urotragus bedfordi* Lydekker; *Antilope duvaucellii* Smith.

Common names : Himalayan Goral.

Regional names : Hindi : Goral; Kashmiri : Pij, Pijur, Rai, Rom; Sikkimese : Ro Giyu; Assamese : Deochagal.

Diagnostic characters : Goral is small antelope goat, smaller than the domestic goat. This shy goat does not possess large horns but still looks attractive. The small horns are marked with rings. It has a large bell shaped ears and deer like face. Its tail is relatively longer than that of a wild goat, however, barely extending below the level of belly. The ears are thickly fringed inside with white hairs. The eyes with dark iriis. Males possess poorly developed suborbital glands. The profile of head is somewhat complex with the black rhinharium. The naked area around nostrils is more like cervids than true goats. The legs are sturdy with broad hooves. Hindlegs appear longer than forelegs and rump higher than shoulders. There is a distinct black mark in front on the fore legs. Male goral has horns slightly more divergent and thicker at the base than that of female goral. The body colour of goral varies from yellowish grey to rufous brown mixed with black. There are however white patches on the upper lip, chin, throat and the cheeks. Older buck looks like more brownish and also develop, in winter coat, a rough crest of longer black and grey hairs down the back of the neck and over shoulders. The summer coat has smooth and short hairs. In absence of crest, there will be black line of hairs down the back of the neck. Both sexes have pit glands in the pasterns of all the feet. Females possess four mammae.



Source : B.K. Tikader (1983)

Measurements : (in cm) : Head and body length : 100-105; height at

shoulders : 65-71; length of horns : 12-15.

Weight : (in Kg) : 25-35.

Intraspecific variations : Two subspecies namely *Naemorhedus goral goral* (Hardwicke) and *N. goral hodgsoni* Pocock occur within Indian limits.

Distribution : Within Indian limits : The Himalayas from Jammu and Kashmir to Arunachal Pradesh through Himachal Pradesh, Uttar Pradesh, Sikkim and northeastern states of India.

Endemism : Non-Endemic species.

Altitude : 450-4250 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : No. of locations : Many; *Type* : Isolated.

Habit, habitat and ecology : The goral prefers to move on steep slopes with low snow depth and extremely less human disturbance. They are grazers as well as browsers. They feed and show migratory movement in early morning or late evening (Crepuscular). However, they may show, later, habit of nocturnal feeding also. Gorals move in small parties of 3-6 individuals. They emerge immidiately after sunrise and just before sunset. They are seen frequently standing on a rock crest or a ridge for a quite a long time. Basically, they are sensitive animals. Gorals chiefly live on tussocks of grasses. The gorals conceal themselves very clearly. They are true ruminants with four chambered stomach. The rut appears to be in November-December extending further in the early winter. Female possesses four mammae. Only single offspring is born. Panthers, and jackals prey upon Gorals. The gorals

Naemorhedus goral (Hardwicke)

emits hissing sound when alarmed.

Habitat structure : Rugged grassy hillsides or rocky ground in forests on mountain ranges.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : 17 years 7 months (Roberts, 1997).

Population trend : General decline.

Sighting records : *Type of sighting* : Direct/Indirect; *Field notes* : Number of sighting records have been reported by Cavallini (1992) and Roberts (1997) within the distributional range of Himalayan Goral.

Threats : Interspecific competition, disease, habitat fragmentation, grazing, human interference, loss of habitat, trade, hunting, insurgency/terrorism/war, corriodor loss etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local and domestic; *Parts in trade* : Body parts, meat insurg., horn etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule III; Part; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Not Listed; *IUCN (2002)* (Proposed) : Lower Risk-Near Threatened (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : Survey, monitoring, life history studies etc.

Remarks : At global level Goral has been assessed at Lower Risk-Near Threatened category. However, considering the levels of threats resulting in declining trends of wild populations, it is strongly recommended that the species be included in the Threatened category of IUCN at National level also.

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Evaluated by : M.S. Pradhan

VULNERABLE

Order ARTIODACTYLA

Family BOVIADE

Subfamily CAPRINAE

117. *Naemorhedus sumatraensis* (Bechstein)

Serow

Synonyms : *Capricornis sumatraensis* (Bechstein); *Capricorins sumatraensis rubidus* (Blyth).

Common names : Serow, mainland serow.

Regional names : Hindi : Sarao; Kashmiri : Ramu, Holj, Salabhir; Sikh : Gya.

Diagnostic characters : The Serow is larger than a goat in size. It possesses large head, large like ears, thick neck, short limbs, naked rhinarium and straight face profile. Both sexes possess black conical horns closely wrinkled in their basal three-fourth quarters of the length. It stands in an awkward appearence with forelegs astraddle, hooves widely splayed and head facing downwards. Preorbital gland in serow is large with a deep cavity. Dorsal stripe present. The coat is coarse and thin. Its colour varies extremely in various shades. It ranges from grizzled black or blackish grey to red on dorsal side. Darker animals are grizzled black on head, neck and nape region. Flanks and lower thighs are rusty red, while innersides of limbs and belly dirty grey in colour. There is a varying amount of white on muzzle, throat and chest. Both sexes are similar in built.

Measurements : (in cm) : Head and body length : 140-150; tail length : 8-12; height at shoulders : 85-110; length of horns : 15-25; girth of horns at base : 13-15.

Weight : (in Kg) : 90+.

Intraspecific variations : Within Indian Limits four subspecies have been recognised *viz.* *Naemorhedus sumatraensis humei* Pocok; *N. s. thar* (Hodgson); *N.s. rodoni* Pocock and *N. s. jamrachi* Pocock.

Distribution : The Himalayas from Jammu and Kashmir to Arunachal Pradesh through Nepal. However, Hilaluddin

Source : Corbet & Hill (1992)

(1994) reports unknown status of serow in Jammu and Kashmir. Further, the populations in Himachal Pradesh and Nepal have been reported to the very low (Anonymous, 1992 and Shreshtha 1997).

Endemism : Non-Endemic species.

Altitude : 300-4000 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Fragmented.

Habit, habitat and ecology : Serow lives at on elevation of 500-4000 m in the recesses of thickly wooded gorges whose boulder strewn slopes and shallow caves provide shelter to this species. They come out to graze in the morning and evening. They lead mostly solitory life except during rut when they are seen in small parties of 4-5. When disturbed serow dashes away with hissing snort. Basically, it is a hill forest dwelling species, although it may be seen in grass banks also. It prefers leaves and shoots of aromatic plant species as food. Not much information about its ecology and breeding habit is available. The rut commences at the end of October and young ones born in May and June. The female gives birth to single or occasionally twin kids.

Habitat structure : Hill forest-dwelling species moving through grassbanks, cliffs, gorges rocky slopes etc. The habitat structure is decreasing with general decline.

Population : *Global population* : *Regional population* : 5000-10,000 (CAMP Report, 1998); *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : Male : 1 + females : 2 = Total : 3 in one Indian zoo (CAMP Report, 1998).

Life span : (Wild) : Not known; (Captivity) : More than 10 years.

Photo : Bishwajit Roychowdhury

Naemorhedus sumatraensis (Bechstein)

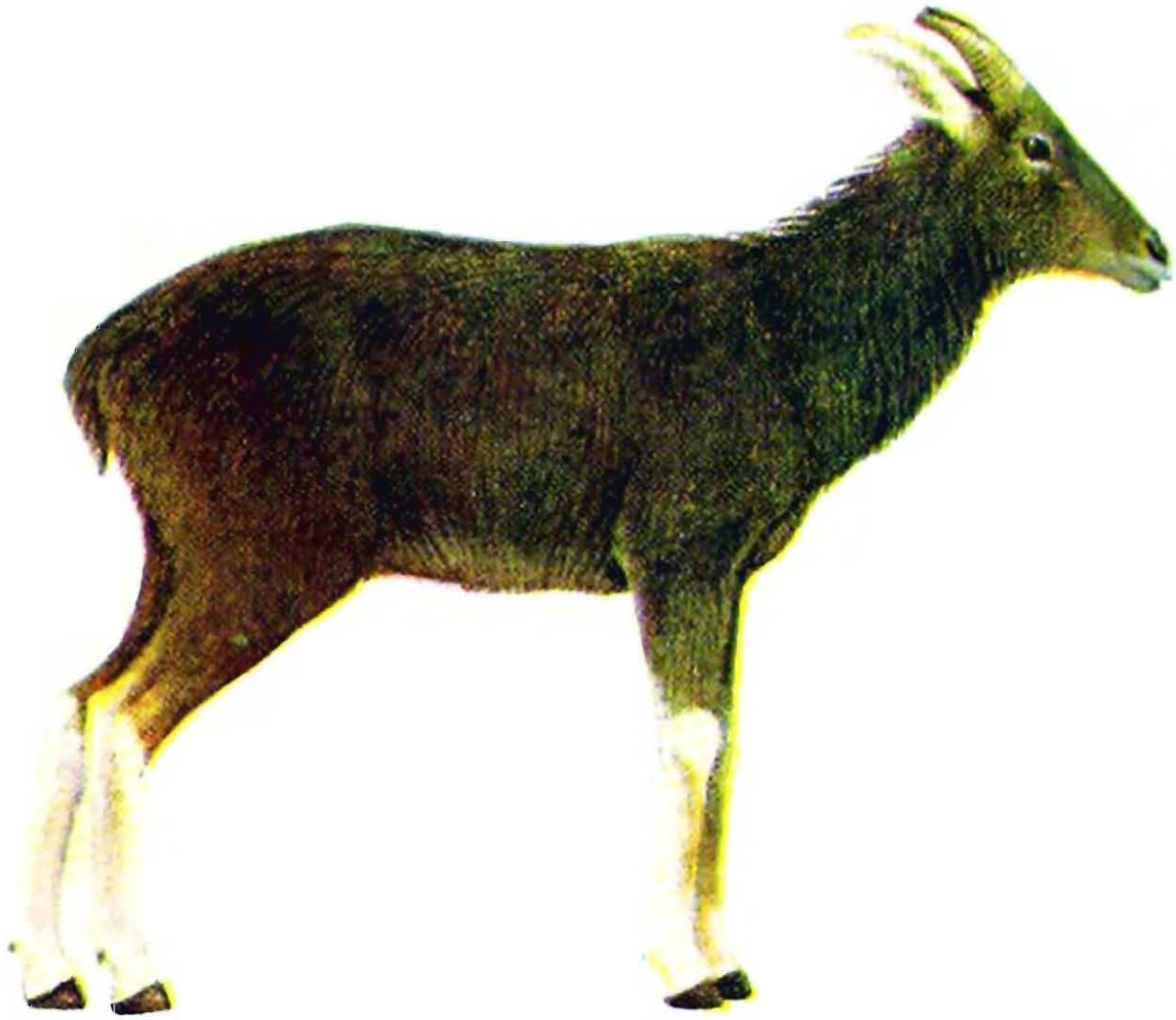

Photo : BNHS, Mumbai

Naemorhedus sumatraensis (Bechstein)

Population trend : General decline.

Sighting records : *Type of sighting* : *Field notes* : Chakraborthy and Sen (1991) (In Anonymous, 1994), Johnsingh (1993) (In CAMP Report, 1998) and Choudhury (2003) have recorded sighting reports of Serow within Indian limits.

Threats : Interspecific competition, disease, habitat fragmentation, grazing, human interference, loss of habitat, hunting, insurgency/terrorism/war; *Effect of threats on population (Perceived or inferred)* : Declining

Trade : Local and domestic; *Parts in trade* : Meat insurg; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Vulnerable (National) and Data Deficient (Global).

Taxon related studies recommended : Survey and monitoring, taxomic studies, life history studies etc.

Remarks : Serow is said to hold an intermediate position between goats and antelopes. Hence, the species is important from scientific point of view. Further, considering the threats, it is strongly recommended that serow may be alloted one of Threatened catogories of IUCN.

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Evaluated by : M.S. Pradhan

VULNERABLE

Order ARTIODACTYLA

Family BOVIDAE

Subfamily CAPRINAE

118. *Hemitragus hylocrius* (Ogilby)
Nilgiri Tahr

Synonyms : *Capra (Ibex) warryato* Gray.

Common names : Nilgiri Tahr, Nilgiri Ibex.

Regional names : Tamil : Warri-adu, Warri-atu; Malayalum : Mulla-atu; Kannada : Kardadu.

Diagnostic characters : Nilgiri Tahr is the only endemic wild goat species of India. It is largest of all Tahr species. The Nilgiri Tahr is distinguished from its Himalayan relatives by possession of short crisp coat, round outer surface of horns with keels inside, flat horns and single pair of mammary glands. Coat is dark yellowish brown above and pale below. Does and young bucks are grey in colour. With age, males become very deep brown above with a distinctive white 'saddle patch' on the loin region. Therefore, they are also known as Saddle bucks. A pale streak runs from each ear down the sides of the muzzle. There is a light coloured ring around each eye.

Measurements : (in cm) : Height at shoulders : fully grown male : 95-106; female : less than 95; fully grown horns : 40; girth of horn : 22.

Weight : (in Kg) : Male with 100 cm height at shoulder weighs 80-100 kg and is considerably larger and heavier than female.

Intraspecific variations : No subspecies.

Distribution : The species is known from southern Indian mountain ranges from Nilgiris to Anaimalai through Palni Hills in Western Ghats.

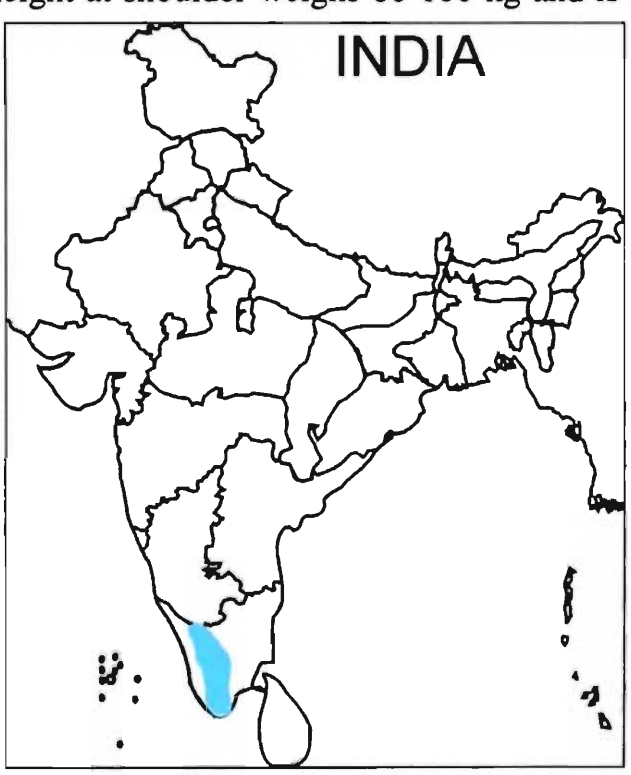
Endemism : Endemic to Western Ghats in India.

Altitude : 600-2900 m.

Area of occupancy : 101-500 sq. kms.

Extent of Occurence : 2001-5000 sq. kms.

Locations : *No. of locations* : 20; *Type* : Fragmented.



Source : M.S. Pradhan

Habit, habitat and ecology : Nilgiri Tahr is restricted currently to hilly tracts of southern parts of Western Ghats. Occasionally these mountain goats graze in the grassy uplands in herds of 5-6 or even bigger herds of 60-150 animals. Rice (1986) reported largest population of 550 in Eravikulam National Park. They are seen foraging intermittantly from dawn to late evening amongst the rock precipices. In dryer low land habitats, they are primarily browsers feeding on variety of grasses, herbs and shrubs. They are adapted to movements on the steep slabs and cliffs. Tahr generally avoids Shola forest but forages along their periphery. Adult males are separated from the mixed group outside the rut. Most Tahrs are born in January-February. However, they may give birth to one young one in early spring or during monsoon. When disturbed they set off to the nearest cliff at a gallop. An alert Thar stands in an erect posture with the neck raised above the normal posture. Leopards and wild dogs are the predator species for Nilgiri Tahr.

Habitat structure : Open terrain, cliff and grass covered hills, which lie above the forest level (sholas or montane forest) at high altitudes in south Western Ghats. The Habitat structure is decreasing with general decline.

Population : Global population : Total population : 2500 (Chakraborty, 2000); No. of mature individuals in all the populations : less than 2500.

Captive population : Males : 2 in one Indian zoo. males : 17 + females : 17 = Total : 34 in 6 Zoo abroad (CAMP Report, 1998).

Life span : (Wild) : 16-18 years (Anonymous, 1994).; (Captivity) : Not known.

Population trend : General Decline.

Sighting records : *Type of sighting* : Direct; *Field notes* : Numer of sighting records have been reported in the studies carried out on various aspects by Davidar (1971, 1976, 1978) (all cited in Anonymous, 1994); Surendravarman (1995); Chakraborty (1999) (Both cited in CAMP Report, 1998); Bedi and Bedi (1984); Rice (1986, 1988); Chakraborty (2000) and Pradhan (2002).

Threats : Habitat fragmentation, human interference, loss of habitat, predation, hunting, genetic problem like inbreeding, corridor loss, low fecundity, birth defects etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Hemitragus hylocrius (Ogilby)

Hemitragus hylocrius (Ogilby)

Trade : Not known; Parts in trade : Not known; *Effect of trade on population (Perceived or inferred)* : Not declining.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As ammended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Endangered.

Taxon related studies recommended : *In-situ* survey, moniotoring, life history studies, limiting factor research, habitat management etc.

Remarks : Conservation measures like habitat management, part exchange of population, captive breeding and release in the areas of past distribution etc. are suggested.

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Evaluated by : M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order ARTIODACTYLA

Family BOVIDAE

Subfamily CAPRINAE

119. *Hemitragus jemlahicus* (H. Smith)
Himalayan Tahr

Synonyms : *Capra jemlahicus, Hemitragus jemlahicus schaeferi.*

Common names : Himalayan Tahr, Tahr.

Regional names : Hindi : Tehr, Jehr; Kashmiri : Kras, Jagla; Nepali : Jharal.

Diagnostic characters : Himalayan Tahrs are the heavy bodied, well-built, wild mountain goats with long robust limbs, narrow errect ears, curved horns and strong body odour. The body is covered with a tangled mass of coarse long and flowing hairs. The hairs on the face and head are short. However, those on neck and head are modified into a shaggy mane, which sweeps to the knee. Short horns are close-set, laterally compressed and sharply covered backwards. They are keeled and transversely wrinkled except at the tip. The hoof pads are very soft, slightly convex and surrounded by a hard horny rim that enables a firm grip on the rock. Coat is, in general, deep reddish brown often with dark mid dorsal streak. However, the colour in variable to some extent. Old bucks are darker on the back and hindquarters. Ewes and young males are lighter brown and the kids are much paler in colour.

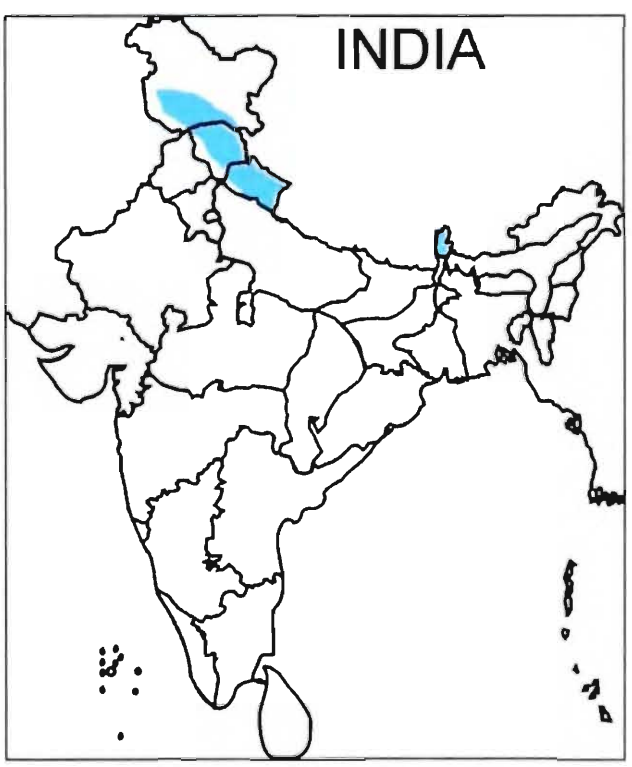
Measurements : (in cm) : Head and body length: 90-100; height at shoulders : 91-105; tail length : 17; length of horn along the curve : 30-45.

Weight : (in Kg) : Adult Tahr : 90 (Approx.).

Intraspecific variations : No subspecies (Alfred *et al.*, 2000). Phenotypically the Himalayan tahr appears to be an evolutionary link between rupicaprid antelope and the true goat of the Genus *Capra*.

Distribution : Western and Central Himalayas from Pir Panjal range in Kashmir to Bhutan and Tibet.

Endemism : Non-Endemic species.



Source : B.K. Tikader (1983)

Altitude : 2500-4400 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Contiguous.

Habit, habitat and ecology : Tahr selects the most inaccessible ground to live in. It is essentially a goat of the forests and selects inaccessible habitats and steep rocky slopes covered with oak trees. Like other goats, it lives in herds of 2 to 23. They may occasionally come out in open for grazing. In their altitudinal range, these goats inhabit several vegetation types ranging from broad-leaved forests to alpine meadows. However, they always prefer shady areas. The heards are mostly seen in grass-covered cliffs, towering precipitious cliffs and also patches of dense scrub forests. They are excellent climbers. They emerge out in the evening for feeding and return back to the hiding place before sunrise. They can browse rapidly on the young leaves of overhanging branches by standing on its hindlegs and holding the branch with the forelegs. They do not reach sexual maturity before the age of 2-3 years. Mating period is between October to January, while young ones are borne in May-July. They give birth to single young one.

Habitat structure : Most inaccessible habitats on steep rocky slopes covered with oak trees at very high altitudes. *Habitat structure* : Stable.

Population : *Global population* : Not Known, though number of herds was sighted by ZSI survey parties in Darjeeling Dist. and Sikkim during 1979-1983 (Anonymous, 1994). It is very difficult to carry out census studies of Himalayan tahr due to its inaccessible habitat and habit of going out of sight in the thicket. Schaller (1973)

Hemitragus jemlahicus (H.Smith)

Hemitragus jemlahicus (H.Smith)

counted 45 individuals in Kangchu valley of Nepal. They have been introduced in New Zealand where they have adapted remarkably well. At present, there are more Himalayan tahrs in New Zealand than in entire Himalayas (Sharma, 1998). At present they are regarded as pest species in New Zealand. *No. of mature individuals in all the populations* : Not known.

Captive population : Male : 1 + female : 1 = Total : 2 in one Indian zoo; males : 78 + females : 139 + unsexed : 4 = Total : 221 in 22 zoo abroad (CAMP Report, 1998).

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : General decline.

Sighting records : *Type of sighting* : Direct; *Field notes* : Sighting records reported in Sikkim, Darjeeling, Himachal Pradesh, Kashmir and U.P. by ZSI survey parties (Anonymous, 1994). Studies have also been carried out by Sharma (1998), Sathyakumar (1994) (Cited in CAMP Report, 1998) and Caughley (1970) (Cited in Anonymous, 1994).

Threats : Habitat fragmentation, human interference, trade, hunting, insurgency/ terrorism/war, reluctant to change the original habitat, hunting on large scale etc.; *Effect of threats on population (Perceived or inferred)* : Declining

Trade : Local; *Parts in trade* : Meat insurg., body parts, horns etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Vulnerable (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, genetic studies, taxonomic studies, to intoduce farming and captive breeding programmes etc.

Remarks : Considering high-level threats to the survival of Himalayan population,

it is strongly recommended to include this species in any of the Endangered catagories of IUCN at National Level.

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Evaluated by : M.S. Pradhan

ENDANGERED

Order ARTIODACTYLA

Family BOVIDAE

Subfamily CAPRINAE

120. *Ovis ammon hodgsoni* Blyth

Argali

Synonyms : *Capra ammon* Linnaeus.

Common names : Argali, Tibetan Argali, Great Tibetan sheep, Nayan.

Regional names : Hindi : Nayan (Male); Nayanmo (Female).

Diagnostic characters : Tibetan Argali or Nayan is the largest of all the living sheep of Himalaya. It is a true sheep and a close relative of the well-known Marco Polo ship (*Ovis ammon polii*) but with somewhat shorter and massive horns. In built it resembles antelope with long legs and with graceful light coloration. The horns in males are massive, coarsely wrinkled, and sub-triangular in section and never exceeded single circle. Adult ram has massive curled horns with the tips pointing forward and often flaring outward. Hairs short, coarse and close. Males light brown, darker on withering. Rump, caudal disc, throat, chest and inner sides of legs white. Adult rams develop longhaired white ruff about the neck. The ruff is very well developed in winter. It abruptly terminates near greyish brown shoulders. The body is dark greyish brown above, lighter on sides and white below. A dark lateral stripe divides the upper part from white belly. The black tipped tail is small. In many individuals the rump or caudal is indistinguishable.

Measurements : (in cm) : Length from tip of nose to the rump : 183-198; height at shoulders : 104-122; length of horn along the curve : 102-145; average circumference of horn : 39.4.

Weight : (in Kg) : 68-105.

Intraspecific variations : Out of 15 recorded subspecies of *Ovis ammon,* only one subspecies *Ovis ammon hodgsonii* is known to occur currently within Indian limits (Roberts, 1997). Except for some seasonal and sexual variations in pelage colours, no other variations are evident in 15 subspecies.

Distribution : Within Indian limits Nayan or Tibetan Argali is known to occur in northern Ladakh (Jammu and

Source : B.K. Tikader (1983)

Kashmir), Lahaul and Spiti (Himachal Pradesh), Kumaon (Uttar Pradesh) and Sikkim.

Endemism : Non-Endemic species.

Altitude : High altitude 3700-5500 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 5001-10000 sq. kms.

Locations : *No. of locations* : Four in India; *Type* : Fragmented.

Habit, habitat and ecology : Argali is known to still occur throughout the low rolling mountains. Nayan is the king of the Tibetan and trans-Himalayan plateau. The typical habitat consists of desolate plains and low undulating hills, scorched in summer and swept by icy winds during winter. The herbage begins to sprout on melting of the ice and forms the food for Argali. They frequent snow-line borders and enter ravines with low bushes and herbage. They feed on grasses, flowers, young plants and leaves. Rut begins in late autumn. Young one is borne in May or June. They move in the herds of 3-15 individuals. During non-rut season, the males form separate small herds of 2-9 individuals. Argali is known to possess poor dispersal ability. However, they do undertake altitudinal migration in summer and winter. Wolves and/or snow leopards generally predate them upon.

Habitat structure : Steep but not too rugged habitat at high altitudes. Frequents desolate plains, low undulating hills and ravines. *Habitat structure* : Stable.

Population : *Global population* : 7000, Indian population 200-300, Tibet popultion 400-500; *No. of mature individuals in all the populations* : Less than 2500.

Captive population : Not known.

Life span : (Wild) : 10 years; (Captivity) : Not known.

Population trend : General decline.

Sighting records : *Type of sighting* : *Field notes* : Fox *et al.* (1991) carried out studies on a new small population established near Indus valley in Ladakh.

Threats : Interspecific competition, disease, human interference, trade, predation, hunting,

Ovis ammon hodgsoni Blyth

insurgency/terrorism/war, extreme fragmentation of populations and poor dispersal ability etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local and domestic; Parts in trade: Taxidermy models, fur, horn, meat insurg, body parts etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Insufficiently known; *IUCN (1998)* (Proposed) : Endangered (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Vulnerable (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, limiting factor research, conservation strategy studies etc. recommended

Remarks : The domestic sheep has originated through interbreeding within *Ovis* species. Thus nayan or argali can be considered as one of the ancestors. Regular vigilance on the curio shops in Hill stations is equally essential.

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Evaluated by : M.S. Pradhan

ENDANGERED

Order ARTIODACTYLA

Family BOVIDAE

Subfamily CAPRINAE

121. *Ovis vignei vignei* Blyth
Urial or Shapu or Ladakh urial

Synonyms : *Ovis orientalis vignei* Blyth.

Common names : Urial or Shapu or Ladakh urial.

Regional names : Punjabi : Urial; Ladaki : Sha, Shapo (Male), Shamo (Female).

Diagnostic characters : Unlike the Nayan or Argali, Shapu or urial is a small size sheep with comparatively slender and well-wrinkled horns curved round in circular sweep along the sides of the face, with no upward turn. In eastern Asia it is the smallest sheep. The horns are transversely wrinkled throughout their length with deeper grooves marking annular growth. Preorbital glands present. The ram is one of the most handome animals of Himalayas. It wears a great black or grizzled ruff growing from sides of the chin. It meets below and extends down the throat. In older ram the ruff is grey or white in front passing into black behind. The winter coat of the ram is greyish brown or rufous on the back. The ventral side is creamy white. The summer coat increases reddish tinge. All ewes and young ones are greyish. The horns of ewes are shorter with less curvature. Tail lacks long hair or tuft. There is no extensive white area in the caudal region.

Measurements : (in cm) : Height at shoulders : 90+; length of horn : 50-99.1.

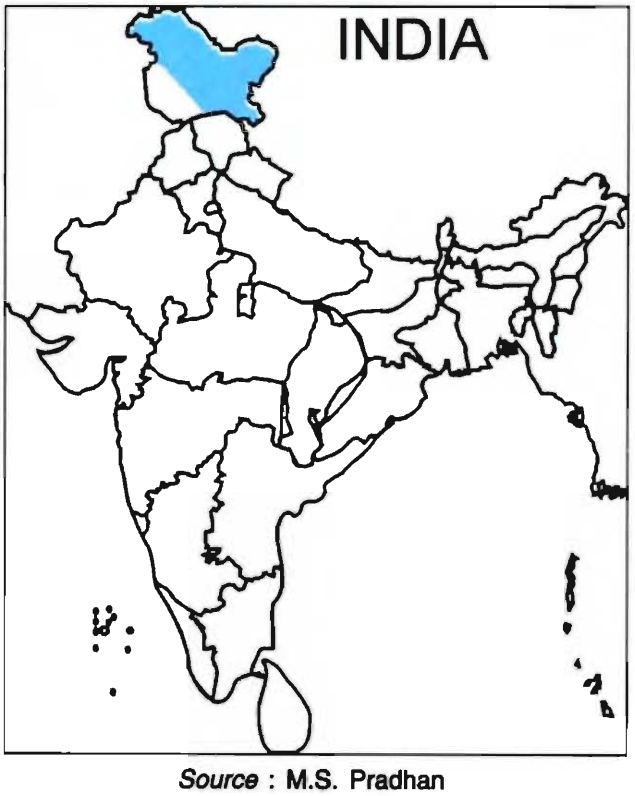
Weight : (in Kg) : 85.

Intraspecific variations : Earlier *vignei* was considered to be subspecies of *Ovis orientalis* but Honacki *et al.* (1982) treated *vignei* as a separate species. However, Indian population has been treated, here, as *Ovis vignei vignei* Blyth.

Distribution : Gilgit, Astor, Ladakh and Eastward towards North Tibet.

Endemism : Non-Endemic species.

Altitude : High altitude 1000-5000 m.



Source : M.S. Pradhan

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Four; *Type* : Fragmented.

Habit, habitat and ecology : Being member of the sheep family urial avoids rocky mountainous terrains. It is adapted to most varied conditions of life. Rams form separate groups in non-rut seasons. Grazers and browsers in habit. Breeds in September-October. The litter consists of one or two young ones. Urial is a prey species for wolves, leopards and snow leopards. Urial lives in groups of 3-30 sheep. In summer, they live in the areas with gentle to steep slopes. While in winter they occupy the monutain deserts at lower elevation. It has a high degree of climbing efficiency. Shapu is agile but very shy and avoids snow bound biotopes. Feeding activity is restricted to early mornings and evening in the summer months.

Habitat structure : Urial or Shapu prefers to inhabit treeless hill slope areas covered with grasses, rocky scrubs and barren stony landmasses. Also avoids forests. Habitat strucutre is decreasing with general decline.

Population : *Global population* : Less than 1500; *No. of mature individuals in all the populations* : Less than 2500.

Captive population : Not avaiable for Indian zoo.

Life span : (Wild) : 10 years; (Captivity) : 11 years.

Population trend : General delcine.

Sighting records : Type of sighting : Direct; *Field notes* : Sighting records, population and behavioural studies of Ladakh Urial have been reported by Rasool (1996), Roberts (1997), Mallon (1984) (cited in Anonymous, 1994) and Chundawat and Rawal (1994) (cited in CAMP Report, 1998).

Threats : Interspecific competition, disease, habitat fragmentation, grazing, human interference, loss of habitat, trade, predation, hunting, corridor loss, insurgecy/ terrorism/war etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Ovis vignei vignei Blyth

Trade : Local and domestic; *Parts in trade* : Taxidermy models, fur, horn, meat insurg etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : For *Ovis orientalis* : Endangered (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : For *Ovis orientalis vignei* : Endangered (Global) based on Version : 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, taxonomic studies, life history studies, limiting factor research, habitat management etc.

Remarks : Rasool (1996) has reported that Ladakh Urial population is on the verge of extinction and hence it needs urgent protective measures to save it from complete wiping out of the population from the region. Some protection has been given to Urial population and its habitat in Hemis National Park (Area about 20 sq. kms) in Jammu and Kahsmir.

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Evaluated by : M.S. Pradhan

LOWER RISK-LEAST CONCERN

Order ARTIODACTYLA

Family BOVIDAE

Subfamily CAPRINAE

122. *Pseudois nayaur* (Hodgson)
Blue ship or Bharal

Synonyms : *Ovis nayaur* Hodgson.

Common names : Blue ship or Bharal.

Regional names : Hindi : Bharal, Bharar, Bharut; Ladakhi : Na, Sna.

Diagnostic characters : Bharal is not a true sheep. It shows characteristics of sheep and goat together. They are more closely related to *Capra* (Goat) than to *Ovis* (Sheep). They possess smooth cylindrical backwardly covered horns over neck but lack sub-orbital pit glands. They have goat like ability in climbing. Bharals are similar in size and shape to Shapu or Urial except being short legged and more stockily built. Males without beard but possess massive horn diverting widely. Females with small compressed horns. Mature rams possess a strickingly handsome slaty blue coat in winter off set by white legs and belly. A conspecious blue-black stripe runs back on the fore part of the shank and another horizontal stripe divides the white belly from grey flanks. Chest, fore part of neck, and face bluish black. Females smaller and never develop the black pattern on chest and flanks. Bharal may have glands between the hooves of both the forefeet. Bharal's dorsal colour blends perfectly with blue shale and rock of the hillsides. The typical 'goaty' smell is absent.

Measurements : (in m/cm) : Head and body length : 1.3-1.4 m; tail length : 13-20 cm; height at shoulders : 70-90 cm; horn length : 58-61 cm; maximum recorded length of horns : 84.5 cm; basal girth of horn : 33 cm.

Weight : (in kg) : 40-80.

Intraspecific variations : Out of the two recorded subspecies, *Pseudois nayaur nayur* (Hodgson) occurs in Himalayas.

Distribution : Within Indian limits Bharal has been reported from Ladakh (Jammu and Kashmir), Himachal Pradesh and Sikkim. In other words it is confined to the northen range of the Himalayas and Karakoram at higher elevations.

Source : M.S. Pradhan

Endemism : Non-Endemic species.

Altitude : 4500-6500 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Four; *Type* : Fragmented.

Habit, habitat and ecology : Bharals are found at great elevations. They are rarely seen below 4500 m and in summer, they may regularly climb upto 6500 m. Here they feed on the rich and varied vegetation of wild grasses and never enters in the scrub patches. They graze like sheep on open grassland slopes. In summer mixed flocks of rams and ewes consists of 10 to 50 individuals are seeen grazing. On rare occasssions, a large herd of 200 Bharals can also be noticed. In summer, older rams get seperated in small groups of 3-6 individulas. Bharals are active in morining and for short period during midday and in the evening. They are grazers. They are highly gregarious and diurnal in feeding habits. Rut appears to last during the period of October to January. Young ones are born in June-July and birth of twins is a common phenomenon. They are generaly predated upon by wolves and snow leopard.

Habitat structure : Bharals live in relatively arid mountain steppe country and above the treeline. They are typically associated with broad stony valleys and shale ridges at the foot of high mountain peaks. They stay between treeline and snowline zone. *Habitat structure* : General decline.

Population : *Global population* : *Regional population* : 11,000 (CAMP Report, 1998); No.of mature individuals in all the populations : greater than 2500.

Captive population : Male : 1 in one Indian zoo; Males : 7 + females : 7 = Total : 14 in zoo abroad (CAMP Report, 1998).

Life span : (Wild) : 10 years (CAMP Report, 1998); (Captivity) : 20 years.

Population trend : General decline.

Sighting records : *Type of sighting* : *Field notes* : Fox *et al.* (1991), Roberts (1997), and Johnsingh *et al.* (1999) have reported sighting of Blue sheep populations at very high altitudes of Trans-Himalayan ranges.

Threats : Diseases, interspecific compition, habitat fragmentation, grazing, human interference, loss of habitat, predation, hunting, insurgency etc.;

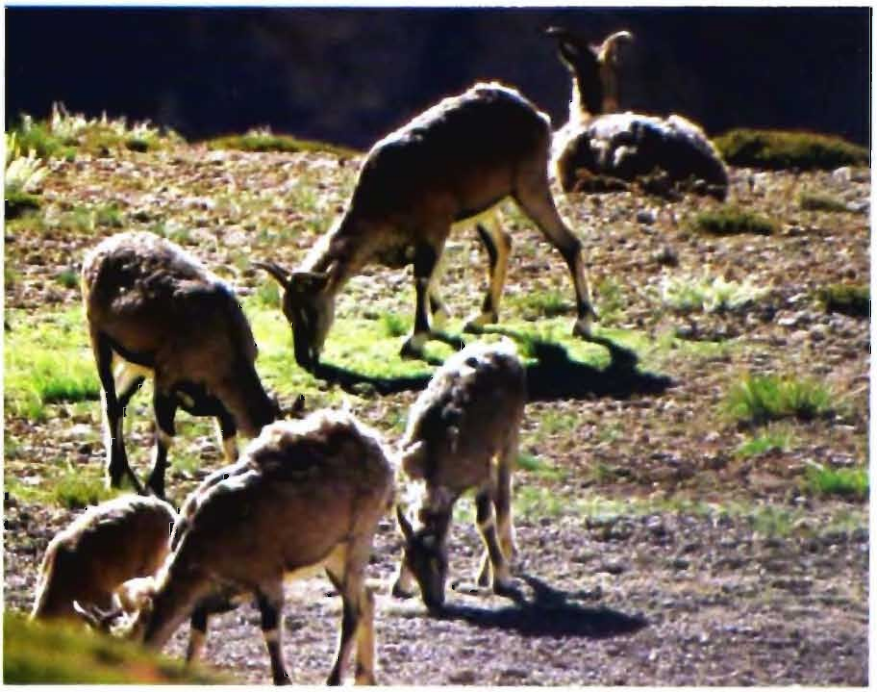

Photo : R.M. Sharma

Pseudois nayaur (Hodgson)

Effect of threats on population (Perceived or inferred) : Declining.

Trade : Local and domestic; Parts in trade : Taxidermy models, horns, meat insurg etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Lower Risk-Least Concern (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Lower Risk-Near Threatened (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, limiting factor reseach etc.

Remarks : Roberts, 1997 reported fast decline in Bharal population in Karakoram range in Pakistan. The population within Indian limits also apperas to be declining and hence, it is recommended that blue sheep may be included in one of the Threatened catagories of IUCN. It has already been offered protection through its inclusion in schedule I (Part I) of the Indian Wildlife (Protection) Act. At global level Baharal has been assessed at Lower Risk-Near Threatened which also needs to be reassessed.

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Evaluated by : M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order PHOLIDOTA

Family MANIDAE

123. *Manis crassicaudata* Gray
Indian Pangolin

Synonyms : Not Available.

Common names : Indian Pangolin, Scaly ant-eater.

Regional names : Hindi : Suraj Mukhi; Marathi : Khawalya manjar; Kannada : Chippu Handhi; Bengali : Bonrui, Keyot Mach; Tamil and Malayalum : Alongu, Alugu.

Diagnostic characters : The Pangolin is middle sized mammal with an elongated tapering body, covered with large overlaping scales or scutes except on snout, chin, sides of face, throat, belly and inner surface of limbs. Scales are considered as enromously modified flattened hairs or spines. The movable scales with sharp edges are attaches at the base to the thick skin from where they grow. The number of longitudinal rows of scales around the body varies from 11 to 13. Sclaes along the edge of the tail are 14-15. The scales are larger in size. Eyes are small. Ear conch is less prominent and snout is also less elongated than that of Chinese Pangolin. Feet possess curved blunt claws for digging. Tounge tiny, thin, long, protrusible and sticky.

Measurements : (in cm) : Head and body length : 60-75; tail length : 38-45. *Weight* : not available.

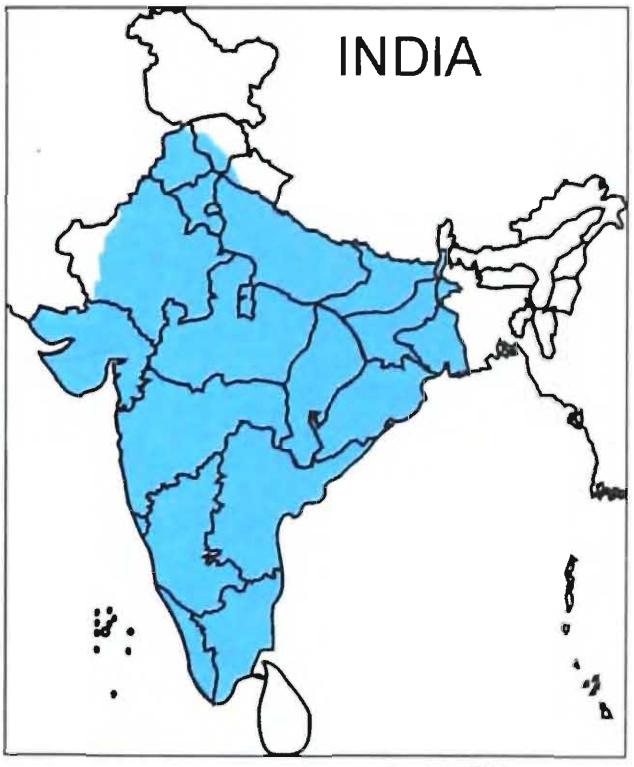
Intraspecific variations : No subspecies.

Distribution : Indian scaly anteaters or Pangolins occurs sporadically throughout the plains and lower slopes of hills from south of Himalayas to Kanyakumari except north eastern region within Indian limits.

Endemism : Non-Endemic species.

Altitude : Up to 1500 m.

Area of occupancy : Greater than 2001 sq. kms.



Source : Chakraborty *et al.* (2002)

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, habitat and ecology : Pangolins are terrestrial, nocturnal and fassorial in behaviour. During daytime pangolins are curled up like a ball in burrows with many sealed outlets. Burrows are usually made under rocks and boulders. They are also excellent climbers using 'catterpiller motion'. The tail provides auxillary support. They are highly specialized in feeding habit. They feed mainly on egges, youngones and adults of termites and ants by digging upon their nest and sending the thin sticky tongue into ant galleries. Sense of smell is strongly developed. Pangolin breeds in January to March giving birth to one or two young ones. Male and female are known to occupy the same burrow. Though shy in behaviour, they are offensive in nature.

Habitat structure : Variety of habitats on plains and grasslands. They may also live in barren and wasteland near human settlements. Habitat strucutre is decreasing with general decline in habitat.

Population : *Global population* : No population estimates are available. However, they are frequently sighted at different places; *No. of mature individuals in all the populations* : Not known.

Captive population : Total 22 in six Indian zoo (CAMP Report, 1998).

Life span : (Wild) : Recorded life up to two and half years (Lal Mohan, 1993 in Chakraborty *et al.*, 2002); (Captivity) : Not known.

Population trend : General decline.

Manis crassicaudata Gray

Museum records : *Name of museum* : Some representative specimens of Indian Pangolins are available in the National Zoological Collection of Head Quarters and some of the Regional Stations of the Zoological Survey of India.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Number of direct and indirect sighting records has been reported at different Indian localities during past over 50 years by Chakraborthy *et al.* (2002).

Threats : Human interference, loss of habitat, trade, hunting.

Trade : Local, domestic; *Parts in trade* : Body part, meat insurge, Scutes; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Vulnerable; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened

Taxon related studies recommended : Monitoring, life history studies, research in capitive breeding.

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Tikader, B.K. 1983. *Threatened Animals of India* : 1-307. Publisher : Director, *Zool. Surv. India*, Calcutta.

Evaluated by : S. Chakraborty, Ramakrishna, M.S. Pradhan and R. Chakraborty

LOWER RISK-NEAR THREATENED

Order PHOLIDOTA

Family MANIDAE

124. *Manis pentadactyla* Linnaeus
Chinese Pangolin

Synonyms : Not Available.

Common names : Chinese Pangolin, Chinese Scaly ant-eater.

Regional names : Assamese and North East India: Hochik, Salak.

Diagnostic characters : Basically Chinese Pangolin, *Manis pentadactyla*, is like Indian Pangolin. However, Chinese Pangolin is smaller more or less slender and elongated with tapering body. The body is covered with large overlaping 15-18 longitudinal rows of armour of 14 scales or scutes. These scales are clothed on under side with coarse and bristly hairs. There are 16-19 scales along the edge of the tail. Tail tip necked, posterior margin of the mid dorsal scale most truncated. Post anal sack present in male, ear-conch well developed, the snout is longer than that of Indian Pangolin. Colour varies in different shades of brown to yellow.

Measurements : (in mm) : Head and body length : 480-580; tail length : 330-380.

Weight : Not known.

Intraspecific variations : No subspecies (Corbet an Hill, 1992).

Distribution : Within Indian limits : Meghalaya, Nagaland, Sikkim, Arunachal Pradesh, Assam, Manipur, Tripura, Mizoram and northern parts of west Bengal. A close relationship exists between range of destribution of *Manis pentadactyla* and abundance of termite species *Captotermes formosaus*.

Endemism : Non-Endemic species

Altitude : Plains and lower slopes of hills.

Area of occupancy : Greater than 2001 sq. kms.

Source : B.K. Tikader (1983)

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, habitat and ecology : Chinese Pangolin is a terrestrial, fossorial and nocturnal animal. Its habits of climbing, curling up like a ball; feeding and breeding are all similar to those of Indian Pangolins.

Habitat structure : Chinese Pangolin mainly inhabits subtropical broad leaf forests, tropical wet semievergreen, and moist forest. They also inhabit hilly countries. Habitat structure is decreasing with general decline in habitat.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known

Captive population : None in Indian zoo but nine in zoo abroad (Chakraborty *et al.*, 2002).

Life span : (Wild) : No information is available; (Captivity) : Not known

Population trend : General decline.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sighting records reported by Anonymous, (1994) and Chakraborty *et al.* (2002).

Threats : Loss of habitat, pesticides, trade, hunting, apathy towards the species, superstitious beliefs etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade: Local and domestic; *Parts in trade* : Body parts, meat insurg., scutes etc.; *Effect of trade on population (Perceived or inferred)* : Declining

Manis pentadactyla Linnaeus

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Insufficiently known; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global); IUCN (2002) (Proposed) : Lower risk-Near threatened (Global).

Taxon related studies recommended : *In-situ* and *ex-situ* survey and monitoring, breeding habits etc.

Remarks : Chinese Pangolin is one of the few mammalian species in which teeth are entirely absent and the body is covered with scales. Because of the highly specialised feeding habit, it helps to keep the number of termites and ants under control. Its scutes are supposed to possess medicinal value (Anonymous, 1994).

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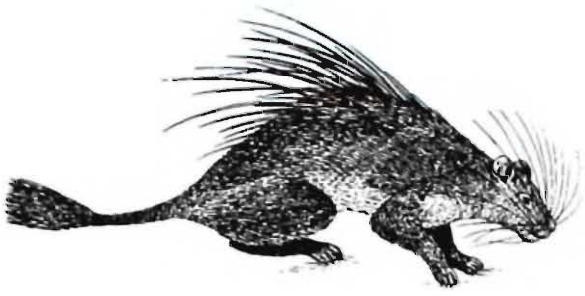
Evaluated by : S. Chakraborty, Ramakrishna, M.S. Pradhan and R. Chakraborty



ENDANGERED

Order RODENTIA

Suborder HYSTRICOGNATHI

Family HYSTRICIDAE

125. *Atherurus macrourus* (Lin.)
Asiatic Brush-tailed Porcupine

Synonyms : *Atherurus assamensis* Thomas, 1921.

Common names : Asiatic Brush-tailed Porcupine.

Regional names : None.

Diagnostic characters : Asiatic brush-tailed Porcupine possesses spines on the back of the body. Tail long more than 1/3rd of the head and body length and bears a cluster of expadanded alternately and contracted broom like papery hairs on its tip. Molars less crowned and rooted. Brush-tailed Porcupine is smaller than Quilled Indian Porcupine (Genus *Hystrix*). No crest on head. Neck, shoulders and underparts covered with soft flattened spines. Spines on lumber region longer and mixed with white bristles. Body dark brown above with tips of spines whitish. Under part paler. Tail brown all round. Skull large. Angular process of mandible strongly distorted outward. Infraorbital foramen large. Cheek teeth 4/4 in number.

Measurements : (in mm) : Head and body lenght : 380-570; tail length : 160-200 : hind foot : 65-70; ear : 33-40; occipitonasal length : 86.5-95.5; palate : 40.5-44.0; upper molar tooth row : 14.8-17.2.

Weight : Not known.

Intraspecific variations : Agrawal (2000) considered *Atherurus macrourus* (Linnaeus, 1758) as a monotypic species and synonymised "*assamensis*" with it.

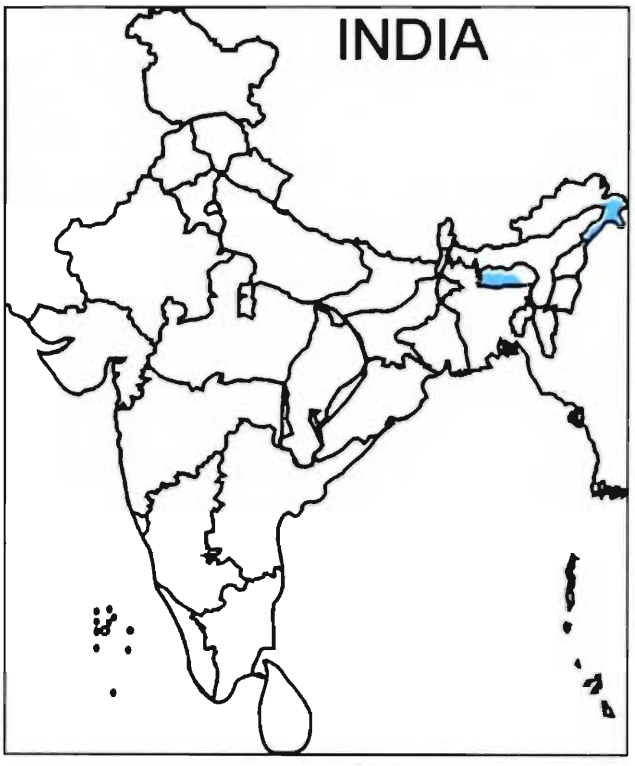
Distribution : Namdapha Biosphere Reserve, Arunachal Pradesh, and Khasi Hills, Meghalaya.

Endemism : Non-endemic species.

Altitude : 1500+ m.

Area of occupancy : 101-500 sq. kms.

Extent of occurence : 2001-5000 sq. kms.



Source : M.S. Pradhan

Locations : *No. of locations* : Four; *Type* : Isolated.

Habit, habitat and ecology : Asiatic Brush-tailed Porcupine is a terrestrial, fossorial and nocturnal animal. It burrows among rocks in hills. It lives in a colony of 6-8 animals. Feeds on vegetable matter, tree barks, and insects and also on carrion. It gives birth to only one young one at a time.

Habitat structure : Asiatic Brush-tailed Porcupine prefers to live in evergreen rain forests. Habitat structure : No change in habitat.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Stable at least in Arunachal Pradesh in India.

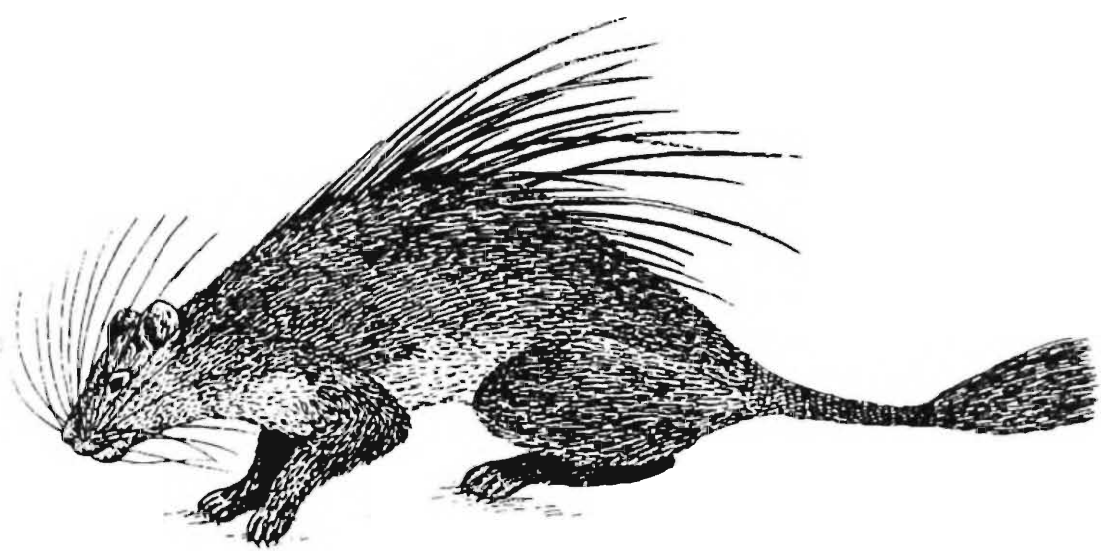
Museum records : *Locality* : Gandhigram and 65 mlie camp in Namdapha Biosphere Reserve in Arunachal Pradesh; *Year* : 1987 and 1988; *Collector* : S.S. Saha and S. Biswas; Number of examples studied or collected : Collected five specimens; *Name of museum* : Zoological Survey of India, Kolkata.

Sighting records : *Type of sighting* : Direct; *Field notes* : Observed in uninhabited hill top at Gandhigram, Namdhapha Biosphere Reserve. Fairly common. Five specimens could be collected in two nights by ZSI survey parties.

Threats : Catastrophic events, human interference, hunting etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : No; Parts in trade : None; *Effect of trade on population (Perceived or inferred)* : Not declining.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-I; *Indian Red Data Book*



Atherurus macrourus (Lin.)

(IUCN, 1994) : Not Listed; *IUCN (1998) (Proposed)* : Endangared; *IUCN (2002)* (Proposed) : Endangered based on Version 2.3 1994 (IUCN Report, 2003).

Taxon related studies recommended : *In-situ* survey and, monitoring and taxonomic studies.

Remarks : The status does not appear to be as rare as was thought. Five specimens of this species were collected within two nights near Namdhapha Biosphere Reserve (Agrawal, 2000). Further, it does not appear to be Indian endemic species since its distributional range within Indian limits borders countries like Bangla Desh and Myanmar in east.

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Evaluated by : S. Chakraborty

VULNERABLE

Order RODENTIA

Suborder SCIUROGNATHI

Family SCIURIDAE

Subfamily RATUFINAE

126. *Ratufa bicolor gigantea* (M'clelland)
The Large Malaya Squirrel

Synonyms : *Sciurus macroroides* Hodgson, 1849; *Ratufa gigantea stigmosa* Thomas, 1923.

Common names : The large Malaya Squirrel, Black Giant Squirrel.

Regional names : Bhotia : Satheu; Lepcha : Leng-thek; North Bengal : Malsaproo.

Diagnostic characters : The large Malayan or black giant squirrel is a large squirrel with head and body length more than 300 mm, tail longer than head and body length usually more than 120% of head and body length, ears tufted but not heavily like those in *Ratufa indica*. There are black marks on the chin. Hands broad and with four fingers with fourth finger longest. Feet very broad. Hindfeet black with white patches. Mammae 4 or 6. Dorsal side black or blackish brown. Tail black or dark brown throughout. Limbs with same colour as that on dorsal side. Ventral side pale buff in colour. Throat often lighter than chest and belly. Inner side of forearm usually yellow but usually not extending beyond the wrist.

Measurements : (in mm) : Head and body length: 325-450; tail length : 431-555; hind foot : 70-94; ear : 25-39; occipitonasal length : 68.2-78; maxillary tooth row : 13.7-15.2; interorbital width : 26-34; nasal : 20.3-24.6.

Weight : (in Kg) : 2.0-2.5.

Intraspecific variations : Only one subspecies namely *Ratufa bicolor gigantea* occurs in India.

Distribution : Jalpaiguri, Kochbihar and Darjeeling Dists. (W.B) and Arunachal Pradesh.

Endemism : Non-Endemic species.

Altitude : Up to 2000 m.

Area of occupancy : Greater than 2001 sq. kms.

Source : M.S. Pradhan

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Fragmented.

Habit, habitat and ecology : Malayan Giant Squirrel is terrestrial and arboreal in habit and diurnal in behaviour. It remains confined to high trees with nests in narrow branches. It lives in deep forests as well as along the forest fringes.

Habitat structure : Dense forest with thick undergrowth. Prefers to live in Tropical moist deciduous, semi- and evergreen forests with trees like sal, siso etc often covered with different species of orchids. Habitat structure has changed with decrease of >20% in last 15 years.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : Males : 3 + females : 3 + unsexed : 1 = Total : 7 in three indian zoo. males : 7 + females : 3 + unsexed : 1 = Total : 11 in seven zoo abroad.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Declining population size > 20% in last 15 years.

Museum records : *Locality* : Khasi Hills, Garo Hills (Meghalaya), Samagooting (Nagaland), Sibsagar,, Kamrup, Mishimi Hills (Assam), Khutimari, Chilapota, Sangseer, Rungbee (West Bengal) and many other localities; *Year* : From 1869 to Sept. 1989; Collector: L. Mandal, J. Anderson, C.A. Crump, N.A. Baptista, H. Khajuria, G. C. Shortridge, S. Chakraborty and others; *Number of examples studied or collected* : 205; *Name of museum* : Zoological Survey of India, Kolkata, and Bombay Natural History Society, Mumbai.

Project specific records : Jalpaiguri, Koch Behar and Darjiling Dists. in West Bengal under the project : Field observations of *Ratufa bicolor gigantea* in North Bengal.; S. Chakraborty; Examples studied : 205 in 1983, 1995, 1996 and 2002; Jalpaiguri, Darjiling; 1983, 1995, 1996, 2002; S.Chakraborthy; 100+/5/10+.

Sighting records : *Type of sighting* : Direct sighting as well as collection records; *Field notes* : Number of direct sighting and collection records have been reported by various authorites from large number of localities as detailed in museum records.

Type of sighting : Direct; *Field notes* : Lives along with other two species of diurnal squirrel but

Photo : BNHS, Mumbai

Ratufa bicolor gigantea (M'clelland)

showsdistinct zonation in respect of vertical distribution

Threats : Habitat fragmentation, agricuture and farming, human interference, loss of habitat, hunting, insurgency/terrorism/war; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local and Domestic; *Parts in trade* : Skin, taxidermy models, meat insurg., body parts; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Vulnerable (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, limiting factor research, habitat management etc.

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Evaluated by : S. Chakraborty

EXTINCT

Order RODENTIA

Suborder SCIUROGNATHI

Family SCURIDAE

Subfamily RATUFINAE

127. *Ratufa indica dealbata* (Blandford)
Large Indian Giant Squirrel

Synonyms : None.

Common names : Large Indian giant squirrel.

Regional names : Gujrathi : Motikhiskholi; Dangi : Shekut.

Diagnostic characters : Amongst the unstriped squirrels, the giant squirrel of the Genus *Ratufa* is largest in size (as large as hare). The giant Squirrels are rodents, which are characterized by possession of combination of characters like single pair of evergrowing chisels shaped incisors in both the jaws, incisors separated from molars by a long diastema. Molars 4-5/4 (Upper–lower) in number. Tail long and bushy. Ears with tuft of hairs. *Ratufa indica dealbata* is a distinctive separate colour form with a uniform pale creamy buff to almost white reported from northern most part of Western Ghats (Dangs Dist. In Gujrat). Hindfeet like dorsum in colouration. Nape with transverse pale band. Ellerman (1961) tried to treat this subspecies as an albinistic form of *Ratufa indica* due to its characteristic whitish fur.

Measurements : (in mm) : Head and body length : 370; tail length : 408-417; hindfoot : 69-75.

Weight : Not known.

Intraspecific variations : A considerable colour pattern variations in *R. indica* has been reported by Abdullah and Daniel (1952). There is a stepped cline in Western India from a uniformly pale buff or white form (*R.i. dealbata*) in the north, through the forms with increasing amounts of reddish brown (*R.i. indica*) to forms with considerable amount of black in the extreme southwest (*R.i.maxima*) (Corbet and Hill 1992). Moore and Tate (1965) grouped them in four subspecies. Out of these, the above-mentioned three subspecies occur in Western Ghats, while the fourth one (*Ratufa indica centralis*) is known to occur in Central India.

Source : M.S. Pradhan

Distribution : Surat, Navsari and Dang Dists., Gujarat, India.

Endemism : Indian Endemic species.

Altitude : Up to 900 m.

Area of occupancy : 101-500 sq. kms.

Extent of occurence : Less than 10 sq. kms.

Locations : *No. of locations* : Two; *Type* : Fragmented.

Habit, habitat and ecology : Giant Squirrel lives only in forests and they are truely arboreal in nature. It keeps to the canopy of high trees and rarely ever seen on ground. It is considered to be an indicator species of a good forest. It moves from tree to tree taking amazing leaps. Active in morning and evening hours. Its loud rattling repeated calls reveal its presence. It lives alone or in pairs. They build large globular nests of twigs and leaves on slimmer and weak branches of a tree. An individual can build nests in several trees within a small area. One such nest of twigs and leaves was sighted in a mixed deciduous forest in a valley near Mhaskatri in Dangs Dist. during status survey tour conducted in May 2002 by Sujit Chakraborty and M.S. Pradhan.

Habitat structure : Dry deciduous to slightly moist deciduous forests on a hill slopes. Teak, bamboo, haldu, ain and jamun trees dominated the forest. Indian Giant squirrel occupies the area between middle to top canopy. Habitat structure has drastically decreased (>80% in last 50 years).

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : less than 50.

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Declining with 80% decline in last 50 years.

Museum records : *Locality* : Songadh (Navsari), Mahal and Mhaskatri (Dangs) Gujarat; *Year* : 1946, 1948 and some undated; Collector : R.C. Wroughton and Salim Ali; *Number of examples studied or collected* : Eight specimens; *Name of museum* : British Museum, BNHS.

Project specific records : Surat, Navsari, Dang Dsits. in Gujarat were surveyed under project studies on status survey of *Ratufa indica dealbata* 2002.; Nil; Reports of sighting of one live specimen each was received from local people in 2000 in Mhaskatri and in 2001 in Dangs forests.;

Photo : N. Chaturvedi, Curator, BNHS, Mumbai

Sighting records : *Type of sighting* : Indirect; *Field notes* : Local people and forest staff reported the occurrence of this species in recent past. It is confined to relatively moist inaccessible area near the riverbed.

Threats : Habitat fragmentation, human interference, loss of habitat, hunting, corridor loss, destruction of original forest, introduction of monocrop (Sorgum), increasing constrction work in the region etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : No; *Effect of trade on population (Perceived or inferred)* : Not declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Extinct; *IUCN (2002)* (Proposed) : Critically Endangered based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* intensive status survey and monitoring, habitat management, taxonomic studies etc.

Remarks : According to Singh (2001), IUCN Redlist 2000 has confirmed that this subspecies is extinct, as it was not seen for last 50 years. However, Chakraborty and Pradhan have received indirect sighting reports from local people and Forest Department authorities in 2000-01 in Mhaskatri and Dang area. Further, they have sighted one globular nest in the forest near Mhaskatri during the status survey conducted in May 2002.

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Evaluated by : S. Chakraborty and M.S. Pradhan

ENDANGERED

Order RODENTIA

Suborder SCIUROGNATHI

Family SCIURIDAE

Subfamily RATUFINAE

128. *Ratufa macroura dandolena* Thomas & Wroughton
Grizzled Giant Indian Squirrel

Synonyms : *Ratufa macroura sinhala*, Phillips, 1931.

Common names : Grizzled Giant Indian Squirrel.

Regional names : Tamil : Peria - anathan.

Diagnostic characters : The Grizzled Giant Indian Squirrel is smaller than the other Indian giant squirrel species. The tail is slightly longer than head and body in length. Ears hairy but not tufted. Dorsum and tail brownish grey grizzled with white in colour. Hindfeet pale with black digits. Nape with transverse pale band. The white on the lower parts of the hind legs and on hindfeet contrasting with black on atleast the distal parts of hind digits is a unique character in this species. Head blackish, more on top, underparts buffy white in colour. Shoulders blackish brown in colour. Upper molars (cheek teeth) 4 in numbers.

Measurements : (in mm) : Head and body length : 280-410; tail length : 325-400; hindfeet : 61-76; ear : 22-25; occipitonasal length : 63.1-66.8; nasal : 19-22; maxillary toothrow : 12.5-14.4.

Weight : Not known.

Intraspecific variations : Out of the three known subspecies, one has been reported from South India.

Distribution : Muthodi (Bhadra Tiger Reserve, Karnataka); Ayyanarkoil, Viriyankoil, Alogarkoil, Pulavukoil, Sunderamahalingammkoil (all in Shrivilliputtur Wildlife Sanctuary, Tamil Nadu), Kudirayar (Tamil Nadu), Chinnar (Kerala), Mittatti (Kerala).

Endemism : Non-Endemic species.

Altitude : 200-2300 m.

Area of occupancy : 101-500 sq. kms.

Extent of occurence : 2001-5000 sq. kms.

Source : M.S. Pradhan

Locations : *No. of locations* : Many (10+); *Type* : Isolated.

Habit, habitat and ecology : The grizzled giant squirrel is a terrestrial, diurnal and arboreal in habit. It lives on tall trees and rarely comes on the ground. It prefers boulder-strewn hills covered by dense mixed forests. Its diet consists of fruits, nuts, leaves, barks, insects etc. Gestation period is about 28 days and litter size consists of one or two young ones.

Habitat structure : Deciduous to semievergreen riverine forests. The Habitat structure has decreased @ <20% in last 10years.

Population : *Global population* : Wildlife Institue of India reports the occurrence of about 300 individuals within Indian limits. Ramchandran (1989) reports about 75 individuals in Chinnar Wildlife Sanctuary alone; *No. of mature individuals in all the populations* : Less than 2500.

Captive population : Males : 3 + females : 5 + unsexed : 2 = Total : 10 in Indian zoo.

Life span : (Wild) : Not known; (Captivity) : 16 years.

Population trend : General decline.

Museum records : *Locality* : Anchetti (Tamil Nadu), Dharmapuri (Tamil Nadu) and Palni Hills (Tamil Nadu) and others from Sri Lanka; *Year* : 12-8-1913, 3-9-1913, 28-4-1914, 7-10-1930, 30-9-1930, 2-10-1930, 30-9-1930, 2-10-1930 and others; Collector : E.W. Mayor, N.A. Baptista, J.R. O'Brien; *Number of examples studied or collected* : Studied and sighted : 27 in two localities; *Name of museum* : Zoological Survey India, Kolkata.

Project Specific Records : Kudirayar (Tamil Nadu), Srivilliputur Wildlife Sanctuary (Tamil Nadu), Cauvery valley (Karnataka), Bhimeshvari (Karnataka), Muthodi (Karnataka) and Chinnar Wildlife Sanctuary (Kerala); July, 1988, January and April, 1989, April, 1991; 10+.

Sighting records : *Type of sighting* : Direct; *Field notes* : Seven hybrids observed in Ayyaanarkoil valley, Tamil Nadu (Joshua, 1996). Tribals regularly hunt *Ratufa macroura* for meat in Muttati area (Karthikeyan *et al.* 1992). Inhabit riparian forest and possible predators are grey-headed fishing eagle and crested serpent eagle (Karthikeyan *et al.*, 1992).

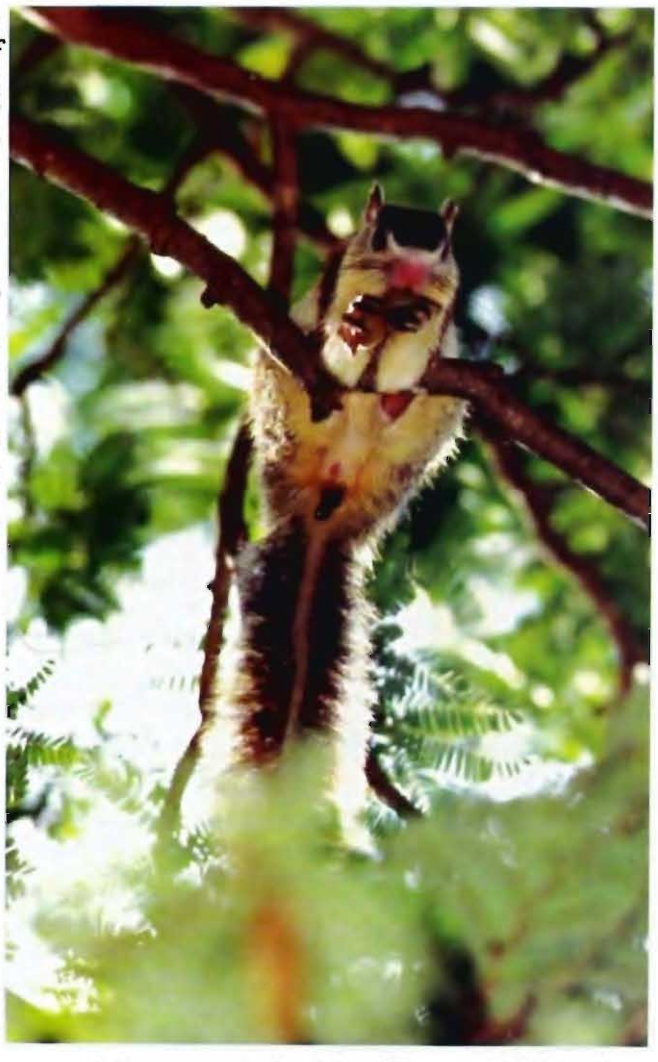

Photo : Cheruvat, D.; Radhakrishna, C. and Alfred, J.R.B.

Ratufa macroura dandolena Thomas & Wroughton

Threats : Human interference, loss of habitat, trade, predation, hunting, hybridisation; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local and international; *Parts in trade* : Live animals, meat insurg, trade of 6 live specimens was recorded during 1972-82 by CITES parties; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : II; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : Endangered (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Vulenerable (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, genetic studies, habitat management etc.

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Evaluated by : S. Chakraborty

VULNERABLE

Order RODENTIA

Suborder SCIUROGNATHI

Family SCIURIDAE

Subfamily PETAURISTINAE

129. *Petinomys fuscocapillus* (Jerdon)
Small Travancore Flying Squirrel

Synonyms : *Sciuropterus fuscocapillus* Jerdon and *Scuropterus layardi* Kelaart.

Common names : Small Travancore Flying Squirrel.

Regional names : Malyalam : Paran, Parayannan; Tamil : Parravanil.

Diagnostic characters : Small Travancore Flying squirrel is a medium sized squirrel with thick fur, long brushy tail and pencil of soft hairs at the base of outer ear conch greatly exceeding the ear in length. Septae in auditory bullae 5-7 in number and are arranged in honeycomb pattern. The auditory bullae are more inflattened than the other Petinomys species. Body reddish brown above, while sides darker than back. Cheeks and sides on the belly white. Tail possesses central line of black hairs. Molar teeth not excessively wrinkled.

Measurements : (in mm) : Head and body length : 296-322; tail length : 244-310; hind foot : 55.

Weight : Not known.

Intraspecific variations : Out of two subspecies the nominate subspecies occurs in India, while the other has been recorded from Sri Lanka.

Distribution : Thiruananthapuram, Pathanamthitta, Peechi (Thrissur) Dist. in Kerala, India.

Endemism : Non-Endemic species.

Altitude : Up to 700 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Locations : *No. of locations* : Seven; *Type* : Fragmented.

Source : M.S. Pradhan

Habit, habitat and ecology : It is nocturnal in habit. Keeping itself in a tree hole in forest during daytime. The animal feeds on fruits, shoots, leaves and bark of tree. Females give birth to two young ones.

Habitat structure : Tropical and moist deciduous forest, evergreen-semievergreen forests and plantations like coconut, arecanut and coca plantations. 20% habitat structure has decreased in the past.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : General decline.

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Sighting records reported by Kurup in Western Ghats in 1989, Ashraf et. al in Western Ghats in 1993, Ramachandran in Schdwiney Wild Life Sanctuary in 1995, Xavier *et al.* in Vazhathacad in 1996, and Zacharias and Christoffer in Periyar Tiger Reserve in 1996 (CAMP Reports, 1998).

Threats : Habitat fragmentation, human interference, loss of habitat, limiting factors in its distribution etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Not known; Parts in trade : Not known; *Effect of trade on population (Perceived or inferred)* : Not declining.

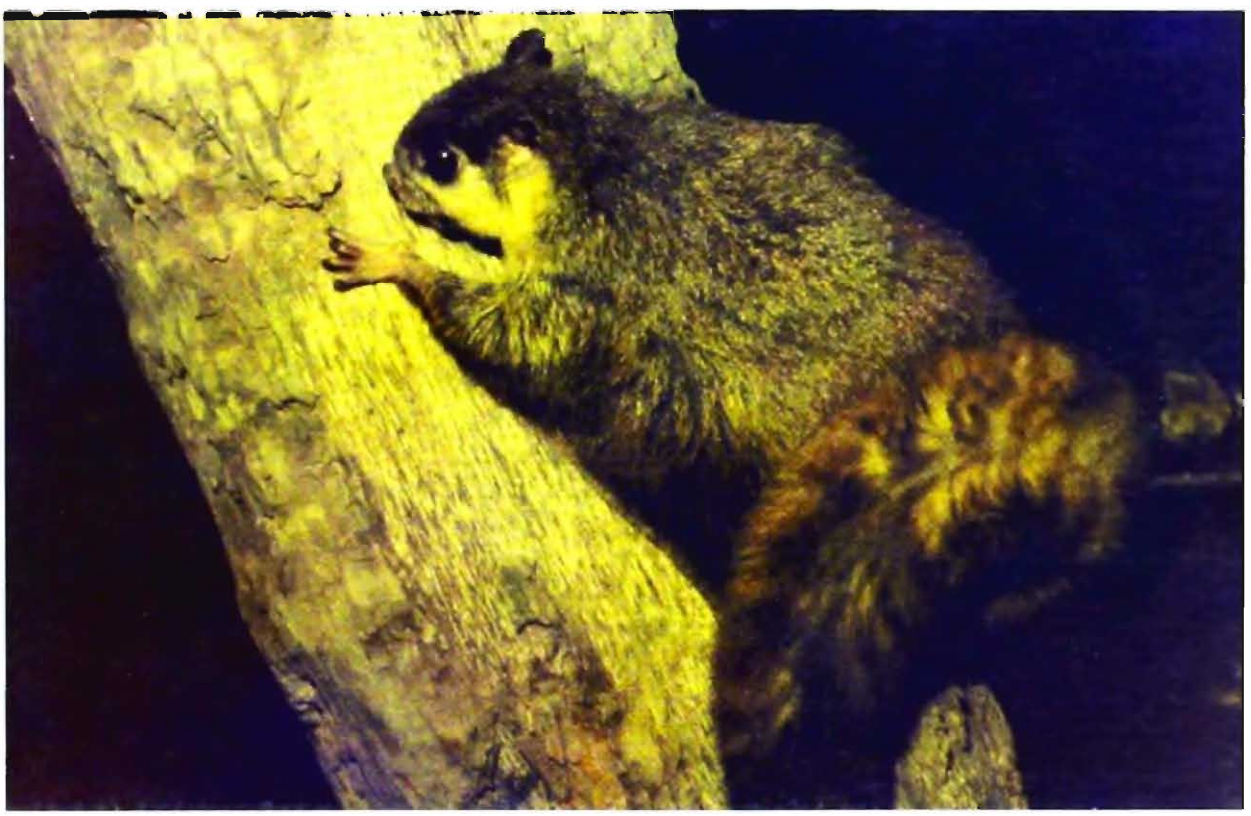

Photo : Cheruvat, D.; Radhakrishna, C. and Alfred, J.R.B.

Petinomys fuscocapillus (Jerdon)

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Endangered; *IUCN (1998)* (Proposed) : Vulnerable; *IUCN (2002)* (Proposed) : Vulnerable based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, habitat management etc.

Remarks : IUCN endangered category is strongly recommended for *Petinomys fuscocapilus fuscocapilus* Indian subspecies on the basis of restricted distribution, extreme fragmentation, limited number of localities and threats due to loss of habitat and corridor loss etc.

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Evaluated by : M.S. Pradhan

CRITICALLY ENDANGERED

Order RODENTIA

Suborder SCIUROGNATHI

Family SCIURIDAE

Subfamily PETAURISTINAE

130. *Biswamoypteras biswasi* Saha
Namdhapa flying squirrel

Synonyms : None.

Common names : Namdhapa flying squirrel.

Regional names : Not available.

Diagnostic characters : Large-sized flying squirrel with thick and soft pelage. The cheekteeth are simpler and incisors not pigmented. Septae multiple in auditory bullae and sometimes honeycomb shaped with 10 to 12 cells in it. Pelage morocco red grizzled with white above. The crown is pale violet grey in colour. There is a faint orange-rufous tint on the patagium. Underparts characterstically white in colour.

Measurements : (in mm) : Head and body length : 405; tail length : 605; hindfoot length : 78; ear : 46 mm (measurement of only one specimen, holotype).

Weight : Not known.

Intraspecific variations : No subspecies.

Distribution : Namdhapha Biosphere Reserve, Tirap Dist., Arunachal Pradesh.

Source : S.S. Saha

Endemism : Indian Endemic species.

Altitude : 350-3000 m.

Area of occupancy : 11-100 sq. kms.

Extent of occurence : 101-500 sq. kms.

Locations : *No. of locations* : One; *Type* : Contiguous.

Habit, habitat and ecology : Namdhapha flying squirrel is terrestrial and arboreal in habit and nocturnal in behaviour. Prefers to live on lofty trees (*Mesua ferrea*) in tropical rain forest on hill slopes.

Habitat structure : Catchment area of

Noa Dihing river particularly on the western slope of Patkoi range. No change in habitat structure in past. However, <20% decline can be predicted in next 15 years.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : <20% decline in last 15 years.

Museum records : *Locality* : Deban, Alt : 350+ m; *Year* : 27.04.1981; *Collector* : S. Biswas; *Number of examples studied or collected* : One (Holotype); *Name of museum* : Zoological Survey of India, Kolkata.

Sighting records : *Type of sighting* : Direct; *Field notes* : Collection record. Found foraging along with another species of flying squirrel, *viz. Petaurista pentaurista candidula.*

Threats : Catastrophic events, interspecific competetion, habitat fragmentation, loss of habitat etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Not known; *Parts in trade* : Not known; *Effect of trade on population (Perceived or inferred)* : Not declining.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule : Not Listed; Part; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Critically Endangered; *IUCN (2002)* (Proposed) : Critically Endangered based on Version 2.3 1994 (IUCN,

Photo : S.S. Saha

Biswamoypteras biswasi Saha

2003).

Taxon related studies recommended : *In-situ* survey and monitoring.

Remarks : Considering the extreme fragmentation of the only population in Namdhapha, it is strongly recommended to include the species in Schedule-I, Part-I of Indian Wildlife (Protection) Act so as to offer complete protection to the species.

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Evaluated by : S. Chakraborty

NOT EVALUATED

Order RODENTIA

Suborder SCIUROGNATHI

Family SCIURIDAE

Subfamily PETAURISTIANE

131. *Petaurista petaurista* (Pallas)
Giant Red Flying Squirrel

Synonyms : *Sciurus petaurista* Pallas, *Petaurista fulvinus,* Wroughton, *Pteromys inornatus* Geoffroy.

Common names : Giant Red Flying Squirrel, Himalayan Flying Squirrel.

Regional names : Not known.

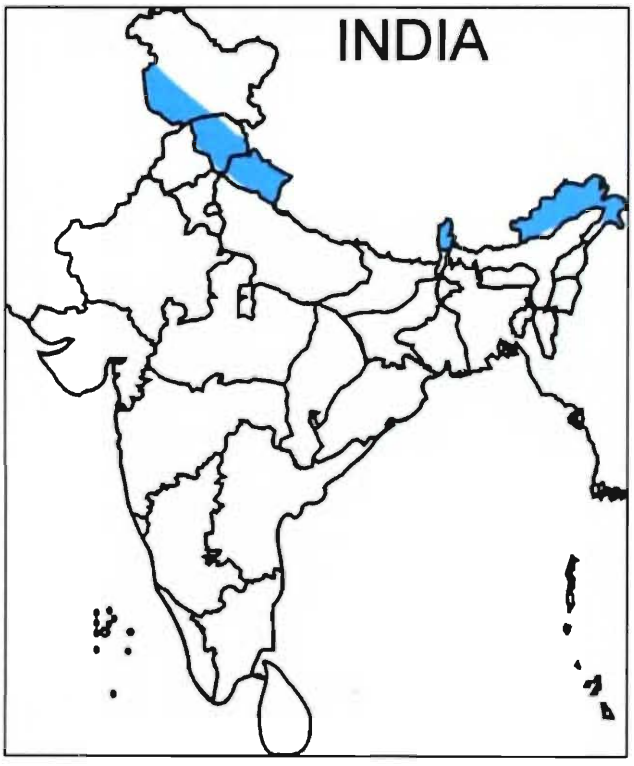
Diagnostic characters : The Giant Flying Squirrels, like all the flying squirrels, have developed a broad parachute-like flap of furred skin extending on either side of the body between the limbs. This structure helps them to glide through tha air for considerable distances. Interfemoral mambrane present. Tail normal in shape and with discrite black tip. Upper incisors orange reddish in colour. Hindfoot with completely naked sole. It is basically a large handsome squirrel with the hairs on the upper part of the body long dark mahogany-red in colour. There are scatterered creamy white guard hairs on dorsal region. Head rounded with blunt muzzle. Underparts tend to be rather coarse and sparse and are orange-buff in colour. Throat usually white. Females possess six mammae. All digits bear sharp recurved claws.

Measurements : (in mm) : Head and body length : 320-470; tail length : 360-490; hindfoot length : 65-82; ear : 39-50; occipitonasal length : 64-72; palate : 31-36; nasal : 19.4-21; bullae : 12-13.1; maxillary tooth row : 14.6-6.97.

Weight : Not known.

Intraspecific variations : Only one subspecies has been recorded from India : *Petaurista petaurista albiventer* (Gray).

Distribution : Himalayan foothills from Jammu and Kashmir to Nagaland through Himachal Pradesh, Uttar Pradesh (Kumaon), Sikkim and Meghalaya (Cherrapunji) in India.



Source : M.S. Pradhan

Endemism : Non-Endemic species.

Altitude : 150-3050 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, habitat and ecology : It is seldom seen, since it is strictly nocturnal. It spends the day lying curled up asleep in a tree hole. While moving on the ground, it looks clumsy. Its movements are frequently seen in deodar (*Cedrus deodara*) and sub-tropical pine (*Pinus roxburghi*) forests. It could not extend its range upto Himalyan dry coniferous forest. It is sympatric with small Kashmir Flying Squirrel (*Hylopetes* spp.) in moister forest regions. Melanistic form of this species has been collected from Kashmir. Though it lives away from human habitats, it is not a shy species. It feeds on young green leaves in summer while on fir pine cones, nuts and tree buds in winter. It supplements its diet with insects and bird eggs. It also feeds on acorn of hill oak, Chestnut and Walnut. It can be reared in captivity. Red squirrels are known to undergo limited altiudinal migration. It appears to be a slow breeder. A nest with two young ones was reported in the month of late July in Pakistan (Roberts, 1997). Females are known to build a rough nest. Flying squirrels are quite vocal at night.

Habitat structure : Being arboreal in nature it keeps confined itself to mosit temperate. forest areas of Himalyan chains in Indian subcontinent. Habitat structure is decreasing with general decline in habitat.

Population : Global population : Not known; *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : None in Indian zoo.

Life span : (Wild) : Not known; (Captivity) : 16 years (Roberts, 1997)

Population trend : General decline.

Sighting records : *Type of sighting* : Sighting records not known within Indian limits.

Threats : Habitat fragmentation, loss of habitat, trade, hunting, insurgency/ terrorism/war, genetic problems like inbreeding, corridor loss; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local, domestic; *Parts in trade* : Fur, live animal, meat insurg. etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Photo : T.J. Roberts

Petaurista petaurista (Pallas)

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Not Evaluated; *IUCN (2002)* (Proposed) : Not Listed.

Taxon related studies recommended : Status survey and monitoring.

Remarks : Considering the nature of threat to the survival of species, it is strongly recommended to include this species in one of the IUCN Threatened categories.

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Evaluated by : M.S. Pradhan

NOT EVALUATED

Order RODENTIA

Suborder SCIUROGNATHI

Family SCUIRIDAE

Subfamily PETAURISTINAE

132. *Petaurista magnificus* (Hodgson)
Hodgson's Giant Flying Squirrel

Synonyms : *Sciuroptera magnificus* Hodgson, *Petaurista albiventer magnificus* (Hodgson) and *Pteromys magnificus* (Hodgson).

Common names : Hodgson's Giant Flying Squirrel.

Regional names : Naepalese : Lokharkee.

Diagnostic characters : This is one of the largest flying squirrels which can be easily recognised by its slender built with long bushy discrete black tipped tail. The coat colour is deep maroon with black and whitish grizzling. Saturn red with golden hue or creamy buff shoulder patches are confined to pectorals only. Underparts orange buff to chestnut orange. Limbs and flying membranes lighter than back. The claws are hard and sharp. Eyes are large, dark and protuberent suited for night vision.

Measurements : (in mm) : Head and body length : 359-490; tail length : 415-522; hind foot length : 72-85; ear : 41.5-51; occipitionasal length: 65-75.5; palate : 34-39.8; nasal : 19.5-23.0; upper tooth row : 14.9-18.0; bullae : 11.2-12.2.

Weight : (in Kg) : Average body weight : 1.35.

Intraspecific variations : Out of two subspecies *Petaurista magnificus hodgsoni*, Ghose and Saha have been reported from India.

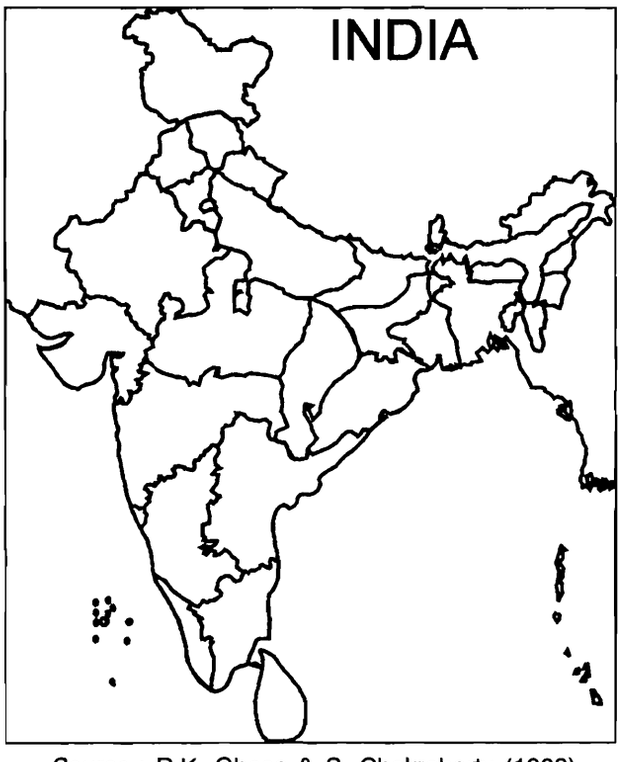
Distribution : *In India* : Darjeeling Dist, West Bengal, India.

Endemism : Non-Endemic species.

Altitude : 2117-3000 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 10001-20000 sq. kms.



Source : R.K. Ghose & S. Chakraborty (1983)

Locations : *No. of locations* : One in India; *Type* : Fragmented.

Habit, habitat and ecology : The species prefers to live in deciduous to evergreen forests. The species is strictly nocturnal and is, hence, not seen so easily during daytime. It lives in chamber situated deep in the tree hole. The call of the squirrel is booming low and monotonous. Other than nuts and young tree barks, the flying squirrel feeds on insects, especially termites. They are also known to nibble on fresh grass. Not much infromation is avialable on its reproductive biology.

Habitat structure : Dry deciduous to evergreen forests at higher altitude. Habitat structure is decreasing with general decline in habitat.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : General decline.

Museum records : *Locality* : Ghoombhanjan, Darjeeling Dist., West Bengal, India. *Year* : 30th March, 1975; *Collector* : R.K. Ghose; *Number of examples studied or collected* : One holotype; *Name of museum* : Zoological Survey of India, Kolkata.

Sighting records : *Type of sighting* : Direct and collection record; *Field notes* : R.K. Ghose of the Zoological Survey of India, Kolkata has collected one specimen from Ghoomabanjan, Darjeeling Dist in March, 1975.

Threats : Habitat fragmentation, human interference, loss of habitat, trade, predation, hunting, corridor loss; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local; Parts in trade: Live animals, fur, meat insurg. etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Not Evaluated; *IUCN (2002)* (Proposed) : Lower Risk-Near Threatened (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : Survey and monitoring, taxonomic studies, life history studies.

Remarks : Ghose and Chakraborty (1983) and Shresta (1997) consider the status of the species in India and Nepal as rare. On the basis of the nature of threats and restricted distribution, it is strongly recommended to include this species in one of the Threatened categories of IUCN.

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Shrestha, T.K. 1997. *Mammals of Nepal* : 1-371. Publisher : Mrs. Bimala Shrestha, G.P.O. Box 6133, Khatmandu, Nepal.

Evaluated by : M.S. Pradhan

NOT EVALUTAED

Order RODENTIA

Suborder SCIUROGNATHI

Family SCIURIDAE

Subfamily PETAURISTINAE

133. *Petaurista nobilis* (Gray)
Gray's Giant Flying Squirrel

Synonyms : *Sciuropterus nobils* Gray, *Sciuropterus chrysotrix* Hodgson, *Petaurista magnificus*, *Pteromys nobilis nobils* (Gray).

Common names : Gray's Giant Flying Squirrel.

Regional names : Not available.

Diagnostic characters : It is a medium sized beutifully coloured flying squirrel species with tail longer than head and body in length. Characteristically the shoulder patches seen on the dorsal side extends beyond pectorals along the sides of the body seperating a distinct saddle. Dorsal saddle dark and rich maroon coloured with a middorsal thin pale stripe in the Indian subspecies. Under surface salmon buff to flesh-ochre in colour. Parachute and sides orange rufous or orange buff in colour. Colour of limbs same as that of parachute.

Measurements : (in mm) : Head and body length : 347-420; tail length : 378-510; hind foot length : 70.5-80.0; ear : 39-46; occipitionasal length : 65.0-74.5; nasal : 20.5-23.5; palate : 34.5-38.0; maxillary tooth row : 15.0-16.8.

Weight : Not known.

Intraspecific variations : Out of two one subspecies, *Petaurista nobilis nobilis* (Gray) has been reported from India.

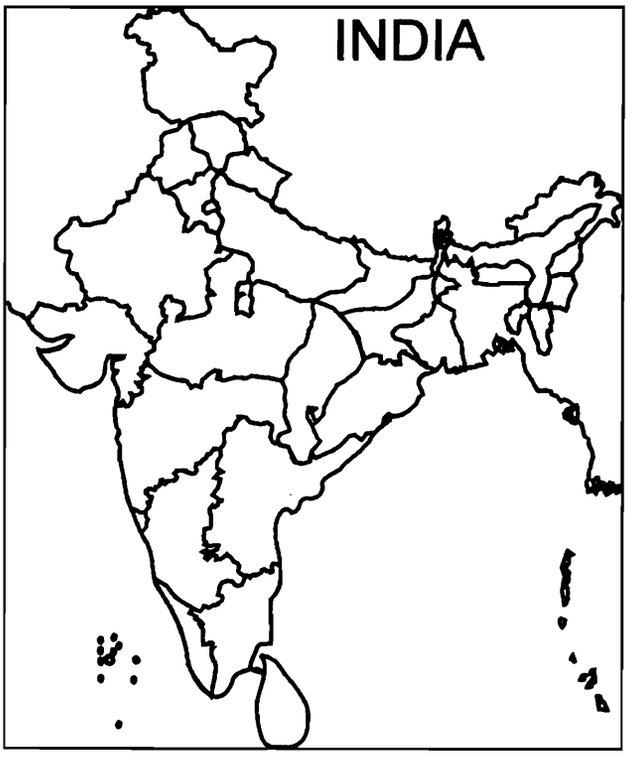
Distribution : *In India* : Darjeeling Dist. in West Bengal and Sikkim in India.

Endemism : Non-endemic species.

Altitude : 1670-3000 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : 10001-20000 sq. kms.



Source : M.S. Pradhan

Locations : *No. of locations* : Many in Darjeeling Dist and Sikkim in India; *Type* : Contiguous.

Habit, habitat and ecology : Though these flying Squirrels are known to live in dry deciduous to evergreen forests, they are also seen flying from one tree to another in the heart of Darjeeling town. Basically, they are arboreal in habit and nocturnal in behaviour. Being nocturnal, not much information is available on its habits and breeding bilogy. However, their living and feeding behaviour is same as that of the other flying squirrels inhabiting in this region. Two females, one collected in June and other in February was pregnant, each carrying an embryo in the right horn of the uterus (Agrawal *et al.*; 1992).

Habitat structure : Dry deciduous to evergreen forests and gardens in towns. Habitat structure is changing with general decline in the habitat.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : General decline.

Museum records : *Locality* : Ghoombhanjan and Selimbong in Darjeeling Dist., West Bengal.; *Year* : 1974, 1975 and 1978. *Collector* : R.K. Ghosh and T.D. Soota.; *Number of examples studied or collected* : Males : 9 and Females : 6; *Name of museum* : Zoological Survey of India, Kolkata.

Sighting records : *Type of sighting* : *Field notes* : Ghose and Saha (1981), Ghose and Chakraborty (1983) and Agrawal *et al.*; (1992) carried out detiled taxonomic and status survey of this species.

Type of sighting : Direct; *Field notes* : Sighting and collection records reported from localities within Indian limits by Ghose and Saha (1981), Ghose and Chakraborty (1983) and Agrawal *et al.* (1992) carried out detailed taxonomic and status survey of this species.

Threats : Habitat fragmentation, human interference, loss of habitat, trade, predation, hunting, corridor loss.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local and domestic; *Parts in trade* : Live animals, fur, meat insurg. etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Not Evaulated; *IUCN (2002)* (Proposed) : Lower Risk-Near Threatened (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey and monitoring, taxonomic studies, habitat management etc.

Remarks : Ghose and Chakraborty (1983) consider rare status for this subspecies in India. On the basis of the nature of threats, restricted distribution and human interference, it is strongly recommended to include this species in one of the IUCN Threatened categories.

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Shrestha, T.K. 1997. *Mammals of Nepal* : 1-371. Publisher : Mrs. Bimala Shrestha, G.P.O. Box 6133, Khatmandu, Nepal.

Evaluated by : M.S. Pradhan

LOWER RISK-NEAR THREATENED

Order RODENTIA

Suborder SCIUROGNATHI

Family SCIURIDAE

Subfamily PETAURISTINAE

134. *Petaurista phillippensis* (Elliot)
Large Brown flying Squirrel

Synonyms : *Petynomys phillippensis* Elliot, *Pteromys oral* Tickell, 1842, *Petaurinta cindrella* Wroughton, 1911.

Common names : Large Brown flying Squirrel, Indian Giant flying squirrel.

Regional names : Marathi : Pakya, Udnari Khar; Malayalam : Parachaten.

Diagnostic characters : Indian gaint flying squirrel is dinctinctive in possessing gliding membrane on each flank from wrist to ankle. Possession of gliding membrane is the characterestic feature of the family Pteromyidae amongst all rodents. Tail normal and not distichous. Interfemoral membrane present. Pattern of cheek teeth complex. Tail always longer than head and body. Dorsally the giant flying squireel is dark brownish grey or tending to be greyer but without any reddish tinge and with underparts usually whitish grey or buff coloured. Greater part of tail uniformaly black. Two pairs of mammary glands present.

Measurements : (in mm) : Head and body length : 430-490; tail length : 480-575; hindfoot length : 65-90; ear : 41-47; occiptionasal length : 66-74.7; palate : 34.3-37.5; nasal : 20.9-22.5; maxillary tooth row : 15.0-17.8; bullae : 12.8-14.7.

Weight : Not known.

Intraspecific variations : Out of number of subspecies only nominate subspecies *viz*; *Petaurista phillippensis phillippensis* (Elliot) occurs in India, while rest are extralimital in distribution.

Distribution : Peninsular India north to Bombay, Rajasthan and south Bihar. Also reported from Orissa West Bengal and some parts of north-east India near Myanmar.

Endemism : Non-Endemic species.

Altitude : 50-1800 m.

Area of occupancy : Greater than 2001 sq. kms.

Source : M.S. Pradhan

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Fragmented.

Habit, habitat and ecology : Reguraly sighted during night in all the shady areas. Fairly common in suitable habitats in forest and also on village trees or orchards. Could easily be located during its glide; frequent calls as well as glowing eyes in search light. During day time hides in tree holes.

Habitat structure : Evergreen, semi-evergreen, moist deciduous and dry deciduous forests. habitat structure declining with general decline in its habitat.

Population : *Global population* : Not known. However, the species is quite frequently seen in gliding and feeding conditions in their habitats; *No. of mature individuals in all the populations* : Not known.

Captive population : There was one live specimen in captivity in Chikhaldara zoo (Melghat Tiger Reserve) for more than one year in past.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Declining with general decline.

Museum records : *Locality* : Puruliya (West Bengal), Kalahandi (Orissa), Polarka Pandy (Kerala), Nagpur Dist. (Maharashtra) and Kodai Kanal (Tamil Nadu) and many others; *Year* : 1912, 1921, 1922, 1972, 1976; *Collector* : G.C. Shortridge, C. Mecann, J.R.O'Brien, W. Theosold, P.K. Das, A.K. Mondal; *Number of examples studied or collected* : 21 specimens in the Zoological Survey of India, Kolkata, and some more in Bombay Natural History Society, Mumbai; *Name of museum* : ZSI, Kolkata and BNHS, Mumbai.

Project Specific Records : Dangs (Gujarat,) Bhadra (Karnataka), Mayurbhami, Sambalpur, Kalahandi, (Orissa); 1972, 1973, 1976; P.K. Das and A.K. Mondal; Many; Throughtout the year.

Petaurista philippensis (Elliot)

Sighting records : *Type of sighting* : Direct; *Field notes* : Sighting records reported from Udaipur (Rajasthan), Melghat Tiger Reserve, Pench National Park, Tadoba-Andhari Tiger Reserve (Maharashtra) and Bhagawan Mahaveer Sanctuary (=Molem Sanctuary) Goa.

Threats : Habitat fragmentation, agriculture and farming, mining and exploration, human interference, loss of habitat, hunting and trade; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local; *Parts in trade* : Skin, fur, meat insurg.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, mointoring, life history studies and habitat management.

Remarks : Considering the fragemented distribution of the speices and threats to the survival of the species, it is strongly recommended to include this species in one of the Threatened categories of IUCN.

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Evaluated by : S. Chakraborty and M.S. Pradhan

VULNERABLE

Order RODENTIA

Suborder SCIUROGNATHI

Family SCIURIDAE

Subfamily PETAURISTINAE

135. *Hylopetes alboniger* (Hodson)
Particoloured Flying Squirrel

Synonyms : *Sciuropterus turnbulli* Gram, 1837; *Pteromys leachii* Gram 1837; *Pteromys (Hylopetes) albonigerorinus* Allen, 1940.

Common names : Particoloured Flying Squirrel.

Regional names : None.

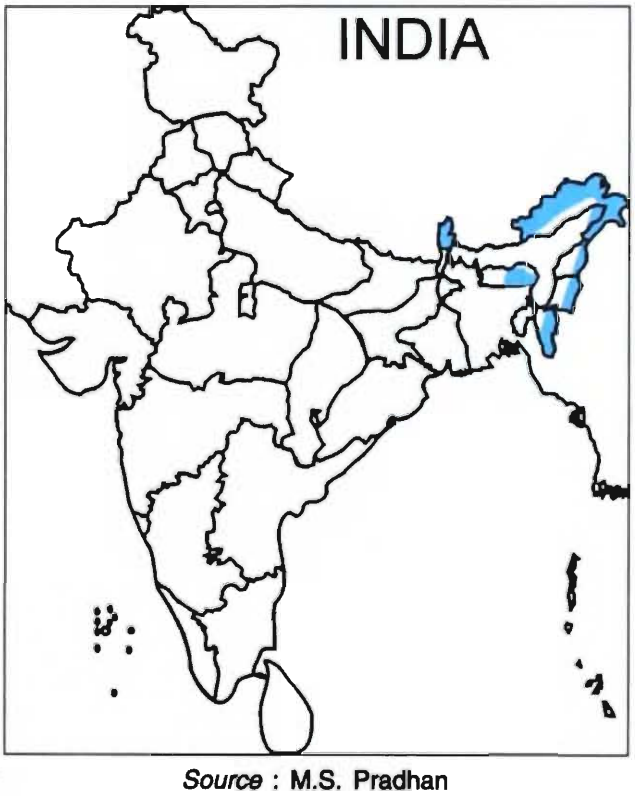
Diagnostic characters : A medium-sized flying squirrel with flying membrane present on both the sides. Tail distichous. Interfermoral membrane absent. Surface pattern of lower molar teeth simple with a depression in the centre. There are only 2 septae in auditory bullae. Cheeks below eye grey while throat white in colour. Dorsal colour varying in the range from greyish to reddish brown. White or light coloured patches may be present on shoulders. Occipitionasal length mostly over 42 mm.

Measurements : (in mm) : Head and body length : 175-225; hindfeet : 36-45; occipitionasal length : 42-51; maxillary tooth-row : 8.5-10.5.

Weight : Not known.

Intraspecific variations : No subspecies.

Distribution : West Bengal (Darjeeling and Jalapiguri Dists.), Arunachal Pradesh, Manipur, Meghalya, Nagaland and Sikkim in India.



Source : M.S. Pradhan

Endemism : Non-Endemic species.

Altitude : 1000-2500 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Locations : No. of *locations* : Many; *Type* : Fragmented.

Habit, habitat and ecology : Particoloured Flying Squirrel like all

flying squirrels, is wholly arboreal in habit and nocturnal in behaviour. Lives in tree holes and/or under roof of deserted bungalows in forests. Nothing much is known about its habits.

Habitat structure : Temperate forest. Habitat structure has decreased @ about >50% in last 30 years.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Declining.

Museum records : Locality : Imphal, Ukhrul (Manipur), Khezhobama (Nagaland), Shillong, Khonshong, Garo (Meghalaya), Chuntang (Sikkim), Darjeeling (West Bengal.), Dening (Arunachal Pradesh); *Year* : 1914, 1915, 1920, 1921, 1977; *Collector* : H.W. Wells, C.A. Crump, Primrose, R.K. Ghose; *Number of examples studied or collected* : 13/2/10 and other dates; *Name of museum* : Zoological Survey of India, Kolkata.

Project specific records : Neora valley and other parts of Darjeeling, Urkhrul (Manipur); 1977; R.K. Ghose, Th. Bhagirath; 2/2/10 and others in 1974-1982, 1990-1992 and 1995; Night.

Sighting records : *Type of sighting* : Direct; *Field notes* : Sighting and collection records from Manipur reported by Ghose *et al.* (1983).

Threats : Catstrophic events, agricultural and farming, human interfernce, loss of habitat, trade, hunting etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local and Domestic; *Parts in trade* : Skin, fur, meat insurg.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Vulnerable (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Endangered (Global) based on

Photo : BNHS, Mumbai

Hylopetes alboniger (Hodgson)

Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, habitat management studies etc.

Remarks : Considering the decline in the population trends and nature of threats, it is strongly recommended to include this species in the Endangered category at National level of IUCN.

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Evaluated by : S. Chakraborty

DATA DEFICIENT
Order RODENTIA
Suborder SCIUROGNATHI
Family SCIURIDAE
Subfamily PETAURISTINAE

136. *Hylopetes baberi* (Blyth)
Larger Kashmiri Flying Squirrel

Synonyms : *Sciuropterus baberi* Blyth; *Hylopetes fimbriatus baberi* (Blyth).

Common names : Larger Kashmiri Flying Squirrel.

Regional names : Not Available.

Diagnostic characters : A large sized flying Squirrel of Genus *Hylopetes* with flying membrane present on both the sides. The species has been recorded within Indian limits at higher altitudes in Kashmir. Tail distichous. Surface pattern of lower molar teeth simple. There are two septae in bullae. Fur on the back tricoloured, basaly salty grey, medially woody brown and terminally black. This gives general appereance as blackish brown. Cheeks below eyes grey. Ventral side white with sometimes-grey bases. Throat with same colour as that of venter. Occipito-nasal length 62 mm and more. Mammae : 8 Nos.

Measurements : (in mm) : Head and body length : 280-318; tail length : 325-384; hind foot length : 55-62; ear : 40-48; occipitional length : 61.2-63.3; nasal : 19.7-22; bullae : 11.6-12.6; upper tooth row : 11.5-12.5; palate : 30.6-33.8.

Weight : Not available.

Intraspecific variations : None.

Distribution : Jammu and Kashmir in India.

Endemism : Non-Endemic species.

Altitude : 1500-3050 m.

Area of occupancy : 101-500 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Fragmented.

Habit, habitat and ecology : The Larger Kashmiri Flying Squirrel is found

Source : M.S. Pradhan

at higher altitudes. It is terrestrial, arboreal in habit, and nocturnal in behaviour. This species generally prefers to live in the vicinity of human habitats. They live in pairs in nests built on tree tops. It may be seen in the roof of huts and houses near forest fringes. Range of its movement is very limited. Feeds on leaves, pine cones, Walnut and bark of trees.

Habitat structure : Coniforous and Oak forests upto tree line at higher altitudes. The habitat structure is changing with general decline in the habitat.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Greater than 2500.

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : General decline.

Museum records : *Locality* : Shikargarh, Dakmum Chaprot, Ladakh all in Jammu and Kashmir; *Year* : August-September, 1974; *Collector* : S Chakraborty; *Number of examples studied or collected* : 5 collected sighted more than 50 in 1974; *Name of museum* : Zoological Survey of India, Kolkata.

Project Specific Records : Shikargarh, Dakmm in Jammu and Kashmir. August-September, 1974; S. Chakraborty; Five collceted, sighted more than 50; post monsoon.

Sighting records : Type of sighting : Direct; *Field notes* : Observed in all the forests tracts on hilly slopes. Eaisly noticed from evening to late night in the forested tract particularly near human habitation. Drawn attention by "Chik-il-Chick" call and droppings of seeds, twigs etc.

Threats : Catastrophic events, habitat fragmentation, loss of habitat; hunting; insurgency/ terrorism/ war, corridor loss; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Domestic; *Parts in trade* : Skin, meat insurg etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Data Deficient (Both at National and Global levels).

Taxon related studies recommended : *In-situ* survey, monitoring, taxonomic studies etc.

Remarks : Considering the nature of threats and trade to the survival of the species, it is strongly recommended to include this species in one of the Threatened categories of IUCN on the basis of the currently reported information.

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Evaluated by : S. Chakraborty

Order RODENTIA
Suborder SCIUROGNATHI
Family SCIURIDAE
Subfamily PETAURISTINAE

137. *Hylopetes fimbriatus* (Gray)
Small Kashmir Flying Squirrel

Synonyms : *Sciuropterus fimbriatus* Gray.

Common names : Small Kashmir Flying Squirrel.

Regional names : Not available.

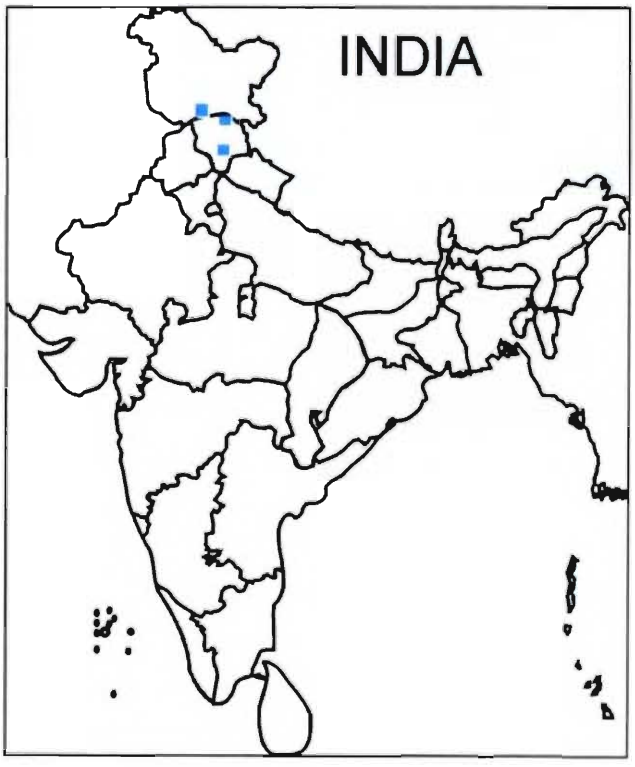
Diagnostic characters : Small Kashmir Flying Squirrel is slightly smaller than *Hylopetes baberi*. Further, the tail length is also smaller than head and body length. It is flattened (distichous) and bushy narrowing towards the tip. Hands with four functional fingers and feet with five toes, all having well developed claws. Skull smaller with occipitional length in the range of 55.2-60.2 mm, and maxillary tooth row in the range of 10.5-12.3 mm. There are two septae in the auditory bullae. Surface of the fourth premolar crown is smaller than that of the first molar. Colouration pattern of *H. fimbriatus* is almost similar to that of *H. baberi.* Basal three- fourth or more of the dorsal hair dark ashy, terminal portion light brown but extreme tip of long hairs black. Underpart of parachute brownish. Venter in *H. fimbriatus* is white with grey bases. Overall *H. fimbriatus* is lighter in colour than H. baberi. Outer surface of the ear, area around eyes and palms are normal coloured.

Measurements : (in mm) : Head and body length : 234-290; tail length : 230-280; hind foot : 50-62; occipitional length : 55.2-61.3; palate : 28.1-31.8; nasal : 17.0-20.2; frontal : 11.6-15; orbit : 19.8-21.9; maxillary tooth row : 10.5-12.3; antero-posterior length of upper fourth premolar : 204-2.6; antero-posterior length of first molar : 206-3.2; lateral length of upper premolar; 2.6-3.2; lateral length of upper first molar : 3.3.

Weight : Not known.

Intraspecific variations : None.

Distribution : Jammu and Kashmir, Himachal Pradesh and Uttar Pradesh.



Source : Corbet & Hill (1992)

Endemism : Non-Endemic species.

Altitude : 900-4000 m.

Area of occupancy : Greater than 2001 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Fragmented.

Habit, habitat and ecology : Small Kashmir flying squirrel can be seen in tree holes and under roofs during their rest. They can eaisly be noticed at night during their glides. They also draw attention by dropping partly eaten fruits, twigs etc. and frequent calls. Observed inside a belfry of a church in Nathia Goli and also found sleeping inside cave, inside vertical or near vertical cliffs and under roof of a occupied house in Murre. They are basically terrestrial and nocturnal. Principal predators are Yellow throated Marten (*Martes flavigula*) and Scully's wood owl (*Strix aluco*).

Habitat structure : Himalyan moist, temparate forest with mixture of coniferous and deciduous tree species. Habitat structure is changing with general decline.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : General decline.

Museum records : *Locality* : Gilgit/Sardalla, Jammu & Kashmir.; *Year* : 17.10.1923 others undated. *Collector* : J. Sailly, C.H. Stockley and P. Singh.; *Number of examples studied or collected* : Six; *Name of museum* : Zoological Survey of India, Kolkata.

Project specific records : Chitral, Dir, Swat Kohistan, Murre Hills (Pakistan,), Daksum (Jammu & Kashmir); Undated; Many sighted by ZSI survey parties during the period between 1964-1977 and 1981; summer, monsoon, post monsoon.

Sighting records : *Type of sighting* : Direct; *Field notes* : Observed in trees during their foraging and also in treeholes and under roofs during their rest period.

Photo : BNHS, Mumbai

Hylopetes fimbriatus (Gray)

Threats : Catastrophic events, habitat fragmentation, human interference, loss of habitat, hunting, insurgency/terrorism/war; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local; *Parts in trade* : Skin, fur and meat insurg.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As ammended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies.

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Evaluated by : S. Chakraborty

LOWER RISK-NEAR THREATENED

Order RODENTIA

Suborder SCIUROGNATHI

Family SCIURIDAE

Subfamily PETAURISTINAE

138. *Eupetaurus cinereus* Thomas, 1888
Wooly Flying Squirrel

Synonyms : None.

Common name : Wooly Flying Squirrel.

Regional names : Not available.

Diagnostic characters : As name suggests pelage of Wooly Flying Squirrel is very dense and woolly. This handsome species is larger in size than all other flying squirrels but with comparatively shorter distichous tail. The hairs may reach maximum length upto 7-6 cms. (3 Inches). These squirrels' posseses hypsodont molars, which is the most striking feature of the species. Incisors pale yellow in colour. Interformal membrane present. The claws are comparatively blunter than those seen in other flying squirrels. The dorsal fur is grizzled brownish-grey with scattering of pale buff tipped hairs. In general appearance, it looks blue grey. The tail lacks terminal black tip. Muzzle slightly longer. The throat is with creamy white hairs and ears with thickly fringed pale buff hairs. Strong and well developed black vibrissae present. Soles densly furred but pads extensively naked.

Measurements : (in mm) : Head and body length : 515-610; tail length : 380-480; ear : 27-29; hind foot : 85-87.

Weight : Not avialable.

Intraspecific variations : None.

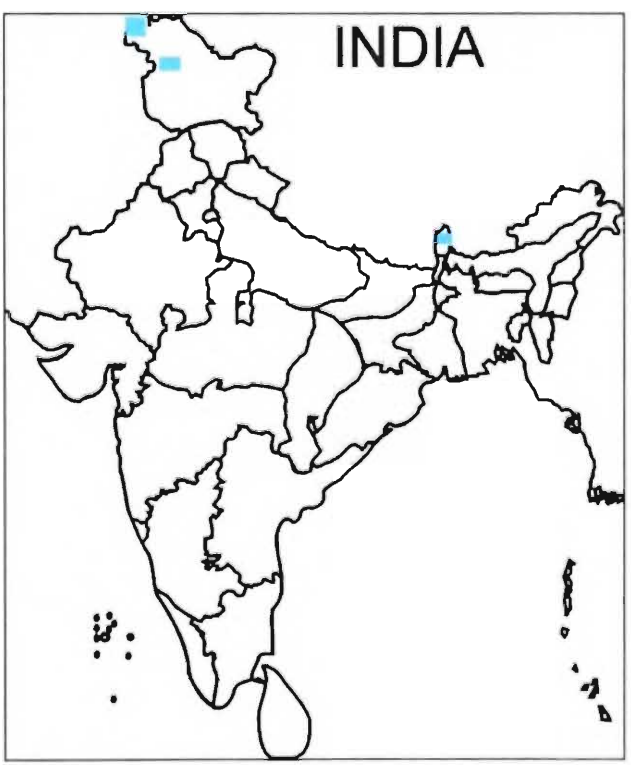
Distribution : Sikkim and Jammu & Kashmir within Indian limits and Pakistan.

Endemism : Non-Endemic species.

Altitude : 1800-3500 m.

Area of occupancy : Not known.

Extent of occurence : Greater than 20000 sq. kms.



Source : Corbet & Hill (1992)

Locations : *No. of locations* : Many; *Type* : Isolated.

Habit, habitat and ecology : Woolly Flying Squirrel lives partly amongst tumbled rocks, cliffs and coniferous forest and isolated forest mainly composed of Blue pine. The species can undoubtedly adapt itself to live in barren rocky areas and can supplement its diet during winter months by eating many varities of lichens which cover the rocks.

Habitat structure : Rocks, cliffs at the edge of forest and coniferous and blue pine forest. Habitat structure is changing with general decline.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Unknwon.

Museum records : *Locality* : Hunja, Antor, Giloit, Chitral, North Sikkim, Gyantse Bazar (Tibet); *Year* : 1887, 1916, 1924. *Collector* : G.M. GILES, H.T. Fulton, D. Lorimer and G.D. Macpherson; *Name of museum* : British Museum, Bombay Natural History society, Zoological Survey of India.

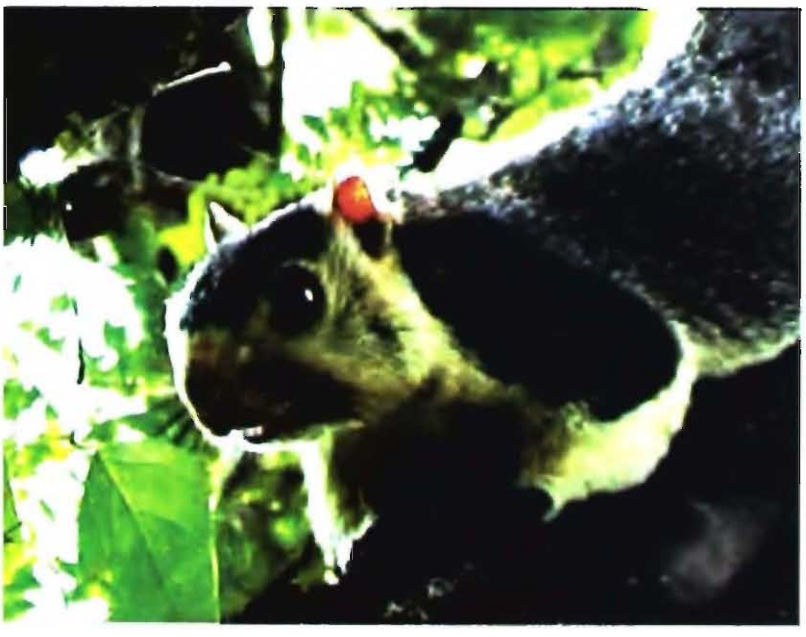
Locality : Hunja, Astor, Gilgit, Chitral, Gyantse Bazar (Tibet) and North Sikkim; *Year* : 1887, 1916, 1924; *Collector* : G.M. Giles, H.T. Fulton, D. Lorimer, G.D. Macpherson; *Number of examples studied or collected* : Ten specimens; *Name of museum* : Brtish Museum, London, Bombay Natural History Society, Mumbai and Zoological Survey of India, Kolkata.

Sighting records : Type of sighting : Direct; *Field notes* : ZSI collection records.

Threats : Catastrophic events, grazing, predation by Eagle, Owl (*Bubo bubo*), Collection of "Silajit" for commercial purpose from its rocky habitat etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : No; *Parts in trade* : None; *Effect of trade on population (Perceived or inferred)* : Not declining.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* :



Eupetaurus cinereus Thomas 1888

Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Lower Risk-Near Threatened (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Endangered (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, montioring, life history studies etc.

Remarks : Roberts (1997) considers this species as a rare species while IUCN (2003) treats this species as Endangered. Therefore, it is strongly recommended that the species be shifted to schedule-I, Part-I of Indian Wildlife (Protection) Act and also be included in one of the IUCN Threatened categories to offer complete protection. Further its inclusion in CITES APPENDIX is also recommended to prevent trade at international level.

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Zahler, P. and Karim, A. 1998. New Distribution, elevation, Habitat and diurnal refuge for the Kashmir flying squirrel, *Eoglaucoys fimbriatus. Mammalia* **62** : 588-591.

Evaluated by : S. Chakraborty

ENDANGERED

Order RODENTIA

Suborder SCIUROGNATHI

Family SCIURIDAE

Subfamily SCIURINAE

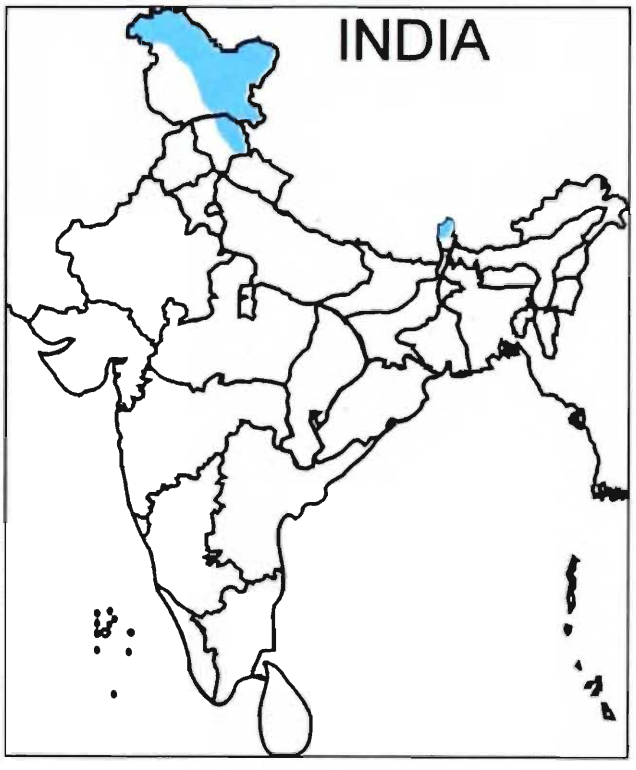
139. *Marmota himalayana* (Hodgson)
Eastern Himalayan Marmot

Synonyms : *Arctomys himalayana* Hodgson; *Marmota bobak himalayana* (Hodgson); *Arctomys hemachalanus* Hodgson; *Marmaota himalayana hemachalanus* Hodgson; *Marmota himalayana robusta* (Milne-Edwards) and *Marmota himalayana tibetanus* (Gray).

Common names : Eastern Himalayan Marmot, Himalayan Marmot.

Regional names : Kashmiri : Brin, Sikkimese : Chibi.

Diagnostic characters : Marmots are the nonflying squirrels with a stout built and shorter tail. They always live in colder regions at high altitudes of Himalayas. They have small rounded ears, which are thickly furred with hairs on both sides. Himalayan marmot is not so brightly coloured as the long tailed marmot. It possesses shorter, harsher and thick body fur grizzled with buffy grey. The general tone of the face is darker brown than the rest of body with a pale buff orbicular ring. The Himalayan marmot is about 60 cm long with 13 cm long black tipped tail. Tail is less than one third of head and body length. Incisors are broad and coated with white enamel. The marmots have slightly developed cheek pouches. All marmots are compartively large rodents with heavy body and a bushy tail. They are adapted to terrestrial and burrowing habits in colder regions at high altitudes. Brain case flattened with heavy sagittal crest. Ventral fur buff, sandy, or even dark brown coloured. Its dorsal pelage is banded on each hair with black, but there is no solid black dorsal area on top as in long tailed marmot. Himalyan marmot has slightly larger rostrum, enlarged nasal passage, massive molars and shorter condylobasal length than other Indian marmot species. There are six pairs of mammae extending from axial to groin region.



Source : M.S. Pradhan

Measurements : (in mm) : Head and body length: 350-590; tail length : 110-200; hind foot : 70-102; ear : 20-28;

occipitonasal length: 93.2-110; palate : 52.5- 61.9; nasal length : 40.5-46.4; upper tooth row : 22.1-25.00 and bullae : 17-17.3.

Weight : Not known.

Intraspecific variations : Only one subspecies *Marmota himalayana himalayana* (Hodgson) is known to occur in India.

Distribution : Himalayas from Ladakh and Kashmir to sikkim in India. Species adapted to live at higher altitudes.

Endemism : Non-Endemic species.

Altitude : 3965-5490 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Contiguous.

Habit, habitat and ecology : Since Himalayan Marmots prefer to live at high altitudes; they live in colony of 10 to 14 individuals. They may occupy same burrow and sleep tightly close in bodily contact close together. They inhabit the exavated burrows in crowded conditions especially in winter season. The burrows are seen in steep bush dotted slopes. The marmot is diurnal in habit and with onset of spring it emerges from the burrow until autum and find sufficient food for sustenance. It basks in open sun. An adult male heads the group. It makes hissing calls after sensing the danger and sends the companions hastily into the burrows. It ascends a prominent rock and remains vigilant. The marmot feeds on roots, leaves, grasses and various plant seeds. Marmots are known to give birth to a young one in spring. They are vulnerable to wolves, foxes, weasels and even golden eagle.

Photo : R.M. Sharma and P.C. Tak

Marmota himalayana (Hodgson)

Habitat structure : Alpine cold desert conditons in areas of low temperature, rainfall etc. Seen on bleak and dry plateau at higher elevations. *Habitat structure* : decreasing with general decline in habitat.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Not known.

Life span : (Wild) : Eight years (Lachungpa and Sharma, 2002); (Captivity) : Not known.

Population trend : General decline.

Sighting records : *Type of sighting* : Direct; *Field notes* : Recent sightings in Ladakh region reported by R.M. Sharma and P.C. Tak during the field surveys conducted by them from Zoological Survey of India, High Altitude Field Station, Solan (Himachal Pradesh) (Photograph).

Threats : Interspecific competetion, human interference, loss of habitat, trade, predation, hunting, insurgency/terrorism/war etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Local and domestic; *Parts in trade* : Live animals, fur, meat insurg, body parts etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : III; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule for *Marmota bobak himalayana* : II; Part-II; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : for *Marmota bobak* : Endangered (National) and Data Deficient (Global).

Taxon related studies recommended : Survey and monitoring, taxonomic studies, life history studies, limiting factor research, habitat mangement etc.

Remarks : Indian Wildlife (Protection) Act Schedule and IUCN Threatened categories have been assigned to the regional population of *Marmota bobak himalyana* which has now been raised to the specific status and the Indian population is now treated as its subspecies *viz. Marmota himalayana himalayana*. Needs necessary corrections in the Act and IUCN.

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Evaluated by : M.S. Pradhan

VULNERABLE

Order RODENTIA

Suborder SCIUROGNATHI

Family SCIURIDAE

Subfamily SCIURINAE

140. *Marmota caudata* (Geoffroy)
Long-Tailed Marmot

Synonyms : *Arctomys caudata* Geoffroy and *Arctomys caudatus* Jacquemont.

Common names : Long-Tailed Marmot, Kashmir Marmot, Red Marmot, Golden Marmot.

Regional names : Kashmiri : Brin.

Diagnostic characters : Like porcupine, giant squirrel and flying squirrel the marmots are also large and heavy rodent species reported from this region. In size, it is about as large as the himalayan Marmot, except for its long tail and richly coloured fur. The tail may measure more than 25 cm in length. It is bushy throught its length with the terminal part solidly black in colour. In general appearance, they are short limbed and bulky animal. The hindfeet possess naked black soles. The ears are small, round and thickly fringed with hairs. The muzzle is deep and broad with the divided upper lip showing the powerful dull white coloured incisors. Females possess 8-10 mammae. Males possess inguinal testes. The fur is yellowish tawny or deep orange, rufous, or even golden coloured. The dorsal side is covered chiefly with black hairs sometimes wholly black. Sometimes even some of the crown of head is in black colour. Belly fur is more sparse and golden orange in colour. Unlike Himalayan marmots, which live at very high altitudes the longtailed, marmots are generally seen at levels between 8000 ft. (2400 m) and 14000 ft. (4300 m).

Source : M.S. Pradhan

Measurements : (in mm) : Head and body length : 456-554; tail length : 213-275; ear : 90-105; occipionasal length : 86.5; palate : 46.5; nasal : 35.5; bullae : 14.1.

Weight : (in Kg) : Adult male in June : 4.1 Kg (9 lb), Lactating female : 6+ Kg (13+lb).

Intraspecific variations : Alfred *et al.* (2002) have reported two subspecies,

Mamota caudata caudata and *Mamota caudata aurea*, from this region.

Distribution : High altitude species found in Ladakh within Indian lilmits.

Endemism : Non-Endemic species.

Altitude : Between 2400-4300 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Locations : *No. of locations* : Many; *Type* : Fragmented.

Habit, habitat and ecology : The Marmot is gregarious, living always in colonies which are well scattered. They exacavate extensive underground burrow systems the begining of which is underneath a large boulder or overhanging rocks. They also prefer to live in rocky terraorty. The burrow systems includes deep underground chambers in which they undergo hibernation. Females also use them for giving births to young ones. They are diurnal and emerge out shortly after sunrise. They are herbivorous in nature. On seeing the danger they give lound ringing alarm call. They donot flee, but become alert sit upright and remain motionless until the danger has passed. They are very swift in running. They hibernate in cool season for six to seven months in deep underground burrows. They are predated upon by Wolves, Snow lepord, Red Fox etc. They breed generaly after hibernation period is over. Litter size varries from 2-6. The winter burrows of these marmots are much deeper than the summer burrows. The marmots congregate in-group of 10-15 individuals during hibernation period huddling together in one subterranean chamber.

Habitat structure : Rocky green alpine meadows above tree line.

Population : *No. of mature individuals in all the populations* : Not known.

Photo : © Otto Pfister

Marmota caudata (Geoffroy)

Life span : (Wild) : 8-9 years; (Captivity) : 6 years in London zoo.

Population trend : Declining.

Sighting records : *Type of sighting* : Direct; *Field notes* : ZSI Survey teams to Ladakh from HAF Station, Solan, have sighted this species in Ladakh , while Roberts (1997) has sighted this species and conducted some studies in Pakistan.

Threats : Interspecific competetion for food, human interference, loss of habitat, trade, predation, hunting, insurgency/terrorism/war, corridor loss etc.; Effect of threats on population (Perceived or inferred) : Declining.

Trade : Local and Domestic; *Parts in trade* : Live animal, fur, meat insurg., body parts etc.; *Effect of trade on population (Perceived or inferred)* : Declining.

Conservation status : *CITES APPENDIX* : III; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-II; Part-II; *Indian Red Data Book (IUCN, 1994)* : None; *IUCN (1998)* (Proposed) : Vulnerable (National) and Data Deficient (Global); *IUCN (2002)* (Proposed) : Lower Risk-Near Threatened (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : Survey and monitoring, habitat management, conservation strategy studies recommended.

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Roberts, T.J. 1997. *The Mammals of Pakistan* : 1-525. Publisher : Oxford University Press, London, U.K.

Sharma, B.D. 1998. Wild Animals of Ladakh. *In* : *Wild Animals of Ladakh* : 18-111. Publisher : Asiatic Publishing House, New Delhi. Editor : B.D. Sharma.

Evaluated by : M.S. Pradhan

ENDANGERED

Order RODENTIA

Suborder SCIUROGNATHI

Family MURIDAE

Subfamily MURINAE

141. *Niviventer brahma* (Thomas)
Thomas's Chestnut Rat

Synonyms : *Epimys bratima* Thomas.

Common names : Thomas's Chestnut Rat.

Regional names : Not available.

Diagnostic characters : A medium sized rat with tail longer than head and body (150-160 %) sometimes tuffed at the tip. Pelage dense with long guard hairs. Thomas Chestnut rat is essentially like *Niviventer fulvescens* in size and appearance but differs from it in having soft long and dense haired pelage. Dorsum orange brown and venter grayish. Basal half grey, while apical half white. Tail hairy and poorly bicoloured (dark above). Maxillary tooth row long. Mammae three pairs. Palate short, less than half of occipitonasal length. Bulla small, less than 15% of occipitonasal length. Anterior palatal foramina long and narrow. Temporal ridges prominent.

Measurements : (in mm) : Head and body length : 140-155; tail length : 215-240; hind foot : 21-32; ear : 24-25; occipitonasal length : 35-38; palate : 17.5-18.5; apical palatal foramina : 6.5-7.3; maxillary teeth row : 6.3-6.8.

Weight : Not known.

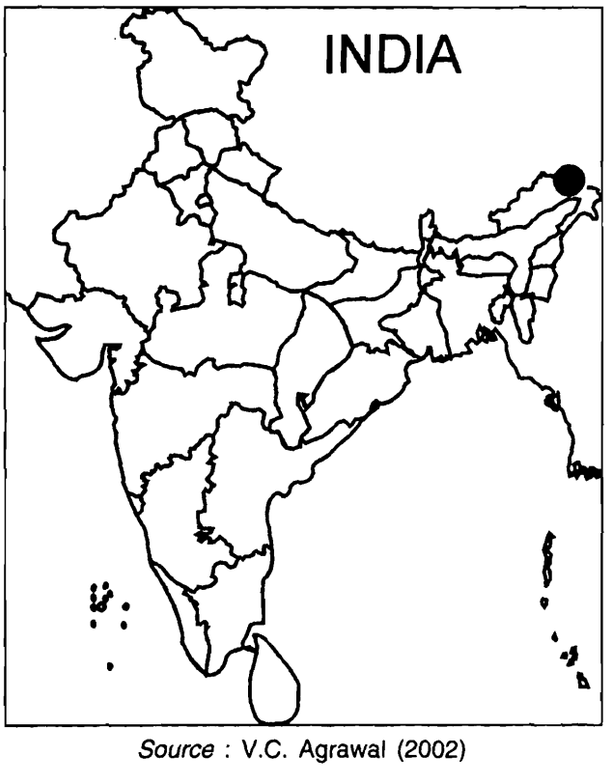
Intraspecific variations : No subspecies Ellerman (1961) treated *Epimys brahma* as a subspecies of *Rattus fulvescens* but Musser (1970) considered it as a full species.

Distribution : Mishimi Hills in Arunachal Pradesh in India and further east.

Endemism : Non-Endemic species.

Altitude : 1815-2623 m.

Area of occupancy : 101-500 sq. kms.



Source : V.C. Agrawal (2002)

Extent of occurence : 2001-5000 sq. kms.

Locations : *No. of locations* : At least 4 in India, Two in Myanmar; *Type* : Isolated.

Habit, habitat and ecology : Cool, moist space in between rocks and below leaf litter. Round shaped nests are made with bamboo leaves at the base of bamboo thickets.

Habitat structure : Dense highland temperate forests. Change in habitat structure : Not known.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Unknown.

Museum records : *Locality* : Anzong Valley in India; *Name of museum* : British Museum (Natural History), London.

Project specific records : Mayodi in Mehao Wildlife Sanctuary, Dibang Valley, Aruchal Pradesh; Feb. 1988; 2; Night.

Sighting records : *Type of sighting* : Direct; *Field notes* : Seen in bamboo thickets near rocky bed. However, small in size can be seen easily, due to thier bright reddish colouration in search light at night.

Threats : Agricultural and farming and catastrophic events; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : Not known; *Parts in trade* : Not known; *Effect of trade on population (Perceived or inferred)* : Not declining.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-V; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Endangered (National) and Data Deficient (Global).

Taxon related studies recommended : Survey, monitoring and taxonomic studies.

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Evaluated by : S. Chakraborty

ENDANGERED
Order RODENTIA
Suborder SCIUROGNATHI
Family MURIDAE
Subfamily MURINAE

142. *Berylmys bowersii* (Anderson)
Bower's Rat

Synonyms : *Rattus wellsi* Thomas 1921.

Common names : Bower's Rat.

Regional names : Not available.

Diagnostic characters : Rats of Genus *Berylmys* are charcterized by dense, crisp, iron grey pelage, long palate (Up to the third upper molar), diastema more than 28% of occipitionasal length and M' with five roots. A large sized rat-having tail slightly longer than head and body. One fifth of portion of the tail white all round. Body dark brown to brownish grey above, while white below. Hind feet brown with white toes. Mammae 4 pairs. Bullae less than 15% of occipitionasal length. Upper incisors orthodont, yellow and plain.

Measurements : (in mm) : Head and body length : 236-285; tail length : 249-292; hindfoot : 52-61; ear : 32-36; occipito-nasal length : 52.1-58.5; diastema : 15.4-18.2; palate : 27.3-30.0; apical palatal foramina : 10.2-11.8; upper molar toothrow : 9.4-10.6.

Weight : Not known.

Intraspecific variations : No subspecies.

Distribution : Dibang valley (Arunachal Pradesh), Mizoram, Meghalaya, Nagaland and Manipur in India.

Endemism : Non-Endemic species.

Altitude : 600-2500 m.

Area of occupancy : 501-2000 sq. kms.

Extent of occurence : Greater than 20000 sq. kms.

Source : M.S. Pradhan

Locations : *No. of locations* : Many; *Type* : Contiguous.

Habit, habitat and ecology : Fossorial and nocturnal in habit. Lives in complex burrow system as well as amoung rocks and boulders. Can also go to trees. Feeds mainly on vegetable matters. Can also take insects and land molluscs. Litters, four..

Habitat structure : Raniforest (primary, secondary forests, montane forests, scrub montane forests). They have been sighted in the fields as well.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Less than 2500.

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Stable.

Museum records : *Locality* : Teworigaon, Mehao Wildlife Scanturay, Arunachal; *Year* : 02/02/1988; *Collector* : S. Chakraborty; *Number of examples studied or collected* : Collected : 1 and sighted : 3; *Name of museum* : Zoological Survey of India, Kolkata.

Project specific records : Teworigaon in Mehao Wildlife Sanctuary, Arunachal Pradesh; 02/02/1988; S. Chakrabarty; *Collected* : 1, Sighted : Many.

Sighting records : *Type of sighting* : Direct; *Field notes* : Collected in trap/ Seen by digging burrows. Common in forests as well as in the cultivated fields.

Threats : Catastrophic events, habitat fragmentation, agriculture and farming, loss of habitat, poisoning etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : No; *Parts in trade* : No; *Effect of trade on population (Perceived or inferred)* : Not declining.

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-V; *Indian Red Data Book (IUCN, 1994)* : Not Listed; *IUCN (1998)* (Proposed) : Endangered (National) and Data Deficient (Global).

Taxon related studies recommended : *In-situ* survey, taxonomic studies, life history studies.

Remarks : In light of the latest information available about this species, it is recommended that the conservation status of this species should be reviewed.

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Evaluated by : S. Chakraborty

ENDANGERED

Order RODENTIA

Suborder SCIUROGNATHI

Family MURIDAE

Subfamily MURINAE

143. *Mus famulus* Bonhote

Bonhote's Mouse

Synonyms : *Mus (coelomys) famulus*, Bonhote.

Common name : Bonhote's Mouse.

Regional names : Not Available.

Diagnostic characters : A medium sized Bonhote's mouse is a soft furred field mouse possessing the tail smaller than head and body length and very small eyes. Body reddish to chocolate brown above, chestnut with grey bases below sharply demarcated along the flanks. Tail wholly dark, while hindfoot dark brown. Mammae three pairs. Skull comparatively larger. Diastema exceeds one-fourth of occipitonasal length. Interorbital width less than 4mm, while anterior palatal foramina short. Genus *Mus* is cahracterized by the first upper molar being enlarged, usually reaching about half the length of maxillary tooth row. Its antero-internal cusp distorted inwards to be in line with the second lamina. The third upper molar tooth extremely reduced.

Measurements : (in mm) : Head and body length : 80-95, tail length : 79-85, hindfoot : 20-21, ear : 14-16, occipitonasal length : 23.5-24.0, palate : 12.0-12.2, diastema : 6.0-6.5, anterior palatal foramina : 5.0-5.2, maxilary toothrow : 3.6-3.8, interorbital width : 3.9-4.1.

Weight : Not known.

Intraspecific variations : No subspecies. Agrawal (2000) synonimised subgenus *Coelomys* in Genus *Mus* and treated *M. famulus* as an independent species.

Distribution : High altitude species found in Nilgiri, Palni, Annamalai Hills in South India.

Endemism : Indian Endemic species.

Altitude : 1500-2500 m.

Area of occupancy : 501-2000 sq. kms.

Source : M.S. Pradhan

Extent of occurence : 2001-5000 sq. kms.

Locations : *No. of locations* : 4+; *Type* : Isolated.

Habit, habitat and ecology : Bonhote's mouse is a terrestrial murid which is fossorial in habit and nocturnal in behaviour. It may come out during daytime as well. Appears to be out door mouse. It may also live among rocks and decaying logs. It occurs at higher altitude in Western Ghats and can sustain extreme climatic and wet condtions. Not much information is available on its breeding habits.

Habitat structure : Hill slopes and gorges covered with grassland, shola, montane and isolated evergreen forest patches. Habitat structure has decreased with with general decline inlast 20 years.

Population : *Global population* : Not known; *No. of mature individuals in all the populations* : Not known.

Captive population : None.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : Unknown.

Museum records : *Locality* : Eravikulam National Park, Kerala, Coonoor, Upper Bhawani,Kalapatti, Avalanchi etc.; *Year* : ZSI, WRS, Pune, Collection : Feb, 1993 and April, 1994; *Collector* : M. S. Pradhan and R. M. Sharma; *Number of examples studied or collected* : 4+2; *Name of museum* : B.M., AMNH, Z.S.I., Kolkata, ZSI, WRS, Pune.

Project Specific Records : Upper Bhavani, in Tamil Nadu; 1994; Kartik Shankar; Two; Trapped at night.

Sighting records : *Type of sighting* : Direct collection records; *Field notes* : Present habitat in Eravikulam National Park and other parts of Nilgiris (Upper Bhawani etc.) appears to be favourable to hold fairly good viable populations.

Threats : Agricultural farming and plantation, grazing, human interference, loss of habitat, pesticides etc.; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : No; *Parts in trade* : No; *Effect of trade on population (Perceived or inferred)* : Not declining.

Mus famulus Bonhote

Conservation status : *CITES APPENDIX* : Not Listed; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-V; *Indian Red Data Book (IUCN, 1994)* : Not listed; *IUCN (1998)* (Proposed) : Endangered; IUCN (2002) (Proposed) : Endangered based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, mointoring, taxonomic studies, life history studies, limiting factor research etc.

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Evaluated by : S. Chakraborty and M.S. Pradhan

ENDANGERED

Order LAGOMORPHA

Family LEPORIDAE

144. *Caprolagus hispidus* (Pearson)
Hispid Hare

Synonyms : *Lepus hispidus.*

Common names : Hispid Hare, Assam Rabbit.

Regional names : Not Available.

Diagnostic characters : The hispid hare belongs to the order of Rabits and Hares (Lagomorpha) due to possession of short bushy tail, long hindlimbs and four incisors in the upper jaw. The testes are permnantly external. The hispid hare is comparatively shorter in tail, hind foot and ear lengths. The pelage texture is harsh. The hindlimbs are longer than the forelimbs. Skull with prominent supra-orbital bones and long nasals. Tail much shorter. The ears are also shorter with round tip than those of the hares and rabits. The coarse bristly coat is dark brown above while brown on thorasic and white on abdominal regions. The short tail is uniformly brown in Colour.

Measurements : (in mm) : Head and body length : 470-520.; tail length : 30-40; ear : 60-64.; hindlimb : 190-220.; greatest skull length : 85+; palate : 11.

Weight : (in Kg) : 2.6-3.3.

Intraspecific variations : No subspecies.

Distribution : Jaldapara (West Bengal), Valmiki (Bihar), Pilphit and Dudhawa (Uttar Pradesh), Manas, Goalpara, Kochugaon, Subankhata, Khalingdor, Barandi, Gohpur, Orang, Haltugaon (All last nine localities in Assam) in India.

Endemism : Non-Endemic species.

Altitude : Foot hills.

Area of occupancy : 101-500 sq. kms.

Extent of occurence : 10001-20000 sq. kms.

Source : B.K. Tikader (1983)

Locations : No. of locations : Eleven +; Type : Fragmented.

Habit, habitat and ecology : Found generally in tall riverine grassland along the edge of the foothills. Sympatric with rufous tailed hare (*Lepus nigricollis*) but separated by habitat. They burrows in Terrai grassland and sal forests and the heavy forest undergrowth provides concealment.

Habitat structure : Hispid hare is a terrestrial and fossorial hare preferring to live in well-drained tall Savannahs or scrub jungles interspersed with dense forest predominated by sal. The Habitat structure has changed and the decrease is >80% in last 50 years.

Population : *Global population* : Not known., Maheswaran (2002) reported 25-30 individuals in Jaldapara Wildlife Sanctury in West Bengal.; *No. of mature individuals in all the populations* : Not known.

Captive population : Not known.

Life span : (Wild) : Not known; (Captivity) : Not known.

Population trend : More than 80% population has declined in last 50 years.

Museum records : *Locality* : 1) Royal Sukla Phanta Wildlife Sanctuary (Nepal), Valmiki, Wildlife Sanctuary (Bihar); Kochagaon, Holtgan, Nanas Organg, Darrangling (Assam); *Year* : From 1970 till date; *Collector* : Collection and sighting records by survey teams from ZSI, Kolkata.; *Number of examples studied or collected* : Sighted and counted more than 20 live individuals in Jaldapara Sanctuary by Maheswaran (2002).

Project specific records : Jaldapara Wildlife Sanctury in West Bengal; Sighting records by Maheswaran from BNHS, Mumbai; Sightings of 20-25 live specimens in Jaldapara Wildlife Sanctuary, West Bengal, reported by Maheswaran (2002).

Sighting records : *Type of sighting* : Direct and indirect; *Field notes* : Two of the three females reported by Bell (1986) were pregnant showing that the species is breeding in January-February in Nepal. Single foetus was found. Maheswaran (2002) reported to have collected two differnt-sized pellets from same place in April 2001 in Jaldapara Wildlife Sanctuary.

Caprolagus hispidus (Pearson)

Threats : Catastrophic events, floods, habitat fragmentation, agriculture and farming, garzing, human interference, loss of habaitat, hunting, insurgency/terrorism/

war, dry season burning of grassland, exploitation of typical thatched land grass and extensive flood control operatipons; *Effect of threats on population (Perceived or inferred)* : Declining.

Trade : No; Parts in trade : No; *Effect of trade on population (Perceived or inferred)* : Not declining.

Conservation status : *CITES APPENDIX* : I; *Indian Wildlife (Protection) Act (1972) (As amended upto 2002)* : Schedule-I; Part-I; *Indian Red Data Book (IUCN, 1994)* : Critical; *IUCN (1998)* (Proposed) : Not Evaluated; *IUCN (2002)* (Proposed) : Endangered (Global) based on Version 2.3 1994 (IUCN, 2003).

Taxon related studies recommended : *In-situ* survey, monitoring, life history studies, limiting factor reaserch, habitat mangement.

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