

DISTRIBUTION OF HOOLOCK GIBBON (*BUNOPITHECUS HOOLOCK HOOLOCK*) IN INDIA AND BANGLADESH

J. Das ^{1,2}, M.M. Feeroz ³, M.A. Islam ⁴, J. Biswas ^{1,2}, P. Bujarborua ⁵, D. Chetry ^{1,2},
R. Medhi ^{1,2} and J. Bose ¹

¹Animal Ecology and Wildlife Biology Lab., Department of Zoology, Gauhati University, Guwahati, Assam 781014, India.

²Primate Research Centre, Northeast Centre, Post Box. No. 152, Guwahati, Assam 781001, India.

³Department of Zoology, Jahangirnagar University, Savar, Dhaka, Bangladesh.

⁴Department of Zoology, University of Dhaka, Bangladesh.

⁵Department of Botany, Gauhati University, Guwahati, Assam 781014, India.

Emails: ¹ gibbonconservation@yahoo.com; ³ feeroz@juniv.edu; ⁴ mahrukh@dhaka.net

Abstract

Western Hoolock Gibbon (*Bunopithecus hoolock hoolock*) is found in Bangladesh, India and Myanmar. In India and Bangladesh a total of 94 areas were recorded as Hoolock Gibbon habitat, of which 14 are in the north-eastern and south-eastern region of Bangladesh and 80 are in northeastern India. All these areas are severely fragmented because of encroachment, illegal logging and development.

Keywords

Bunopithecus hoolock hoolock, *Hoolock Gibbon*, *distribution*, *India*, *Bangladesh*, *threats*, *numbers*

Introduction

Geographic distribution of all 12 species of gibbons are confined to the South East Asian countries and mostly within the tropics. Hoolock Gibbon is a monotypic species and its distribution range extends well outside the tropics. The western subspecies *Bunopithecus hoolock hoolock* is found in the northeastern and southeastern region of Bangladesh, seven states of northeastern India and western Myanmar. Debang-Brahmaputra river system in the west (Tilson, 1979) and Cindwin River in the east act as barriers for the distribution of this sub-species (Groves, 1967; 1972).

Anderson, in the year 1878, first reported the presence of Hoolock Gibbon in the Chittagong Hill Tracts of Bangladesh. Prater (1971), Green (1978), Khan (1981), Gittins (1980), Gittins and Akonda (1982), and Siddiqi (1986) have also recorded the presence of Hoolock Gibbon in different forests of Bangladesh. Besides specimen collection localities, several authors have recorded the distribution in different states of northeastern India. In Meghalaya (Alfred & Sati, 1986, 1990; Choudhury, 1991), in Tripura (Mukherjee, 1984, 1986; Singh, 1989; Gupta, 1994), in Arunachal Pradesh (Tilson, 1979; Choudhury, 1991; Borang &

Thapliyal, 1993; Mukherjee *et al.*, 1988; 1991-92), in Nagaland (McCann, 1933), in Assam (Choudhury, 1987, 1988, 1990, 1991, 1996, 2000) and in Mizoram (Raman *et al.*, 1995).

Although forest destruction is a global phenomenon, its rate within the distribution range of this species is very high due to rapid population growth. Being a completely forest canopy dependent, frugivorous, brachiator and territorial species, the effects of forest destruction and fragmentation on this species is severe. Moreover, monogamous nature, small group size, slow growth rate and long parental care have multiplied the effect. In the global context this species is endangered. Before drawing a proper conservation action plan for this taxa, detailed distributional record for the species is essential. Except for a few collection localities from Myanmar no survey records are available till date. This paper deals with the distribution of the western subspecies of Hoolock Gibbon in India and Bangladesh where surveys were carried out.

Methods

Detailed surveys have been carried out in India between 1995 and 2001 (under Indo-US Primate Project) and in Bangladesh

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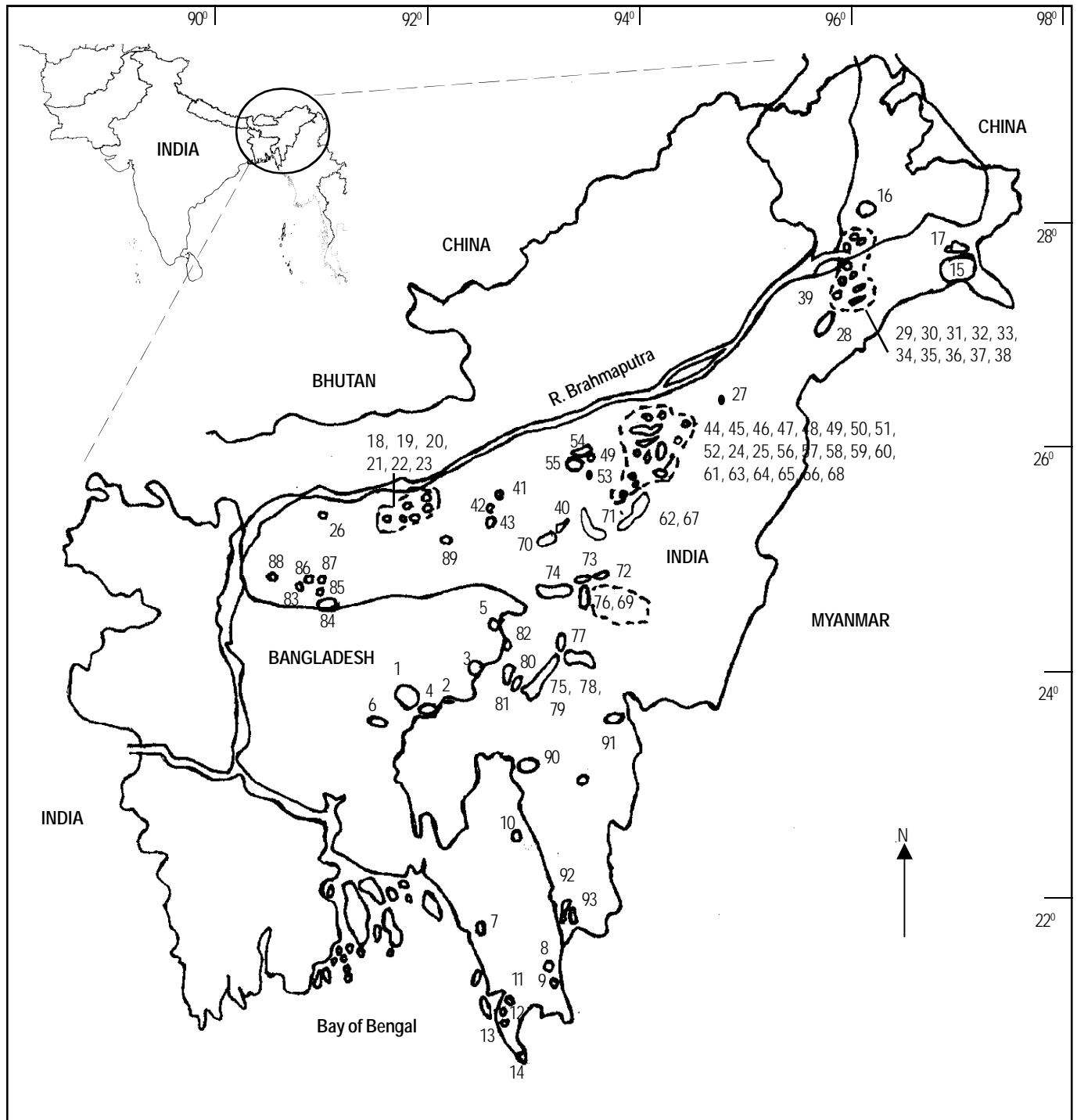


Figure 1. Map showing the distribution of Hoolock Gibbon in India and Bangladesh. See localities on facing page.

Locations of Hoolock Gibbon distribution in India and Bangladesh as per the map on opposite page.

Bangladesh

1. West Bhanugach FR
2. Adampur
3. Rajkandhi
4. Horin chara
5. Patharia
6. Shatchari
7. Chunati
8. Satghar
9. Padua
10. Hazarikhil
11. Bhomarighona
12. Ukhia
13. Himchari
14. Teknaf

India

15. Namdapha NP
16. Miao RF
17. Kamlang WLS
18. Kuwasingh RF
19. Jorsal RF
20. Rani RF
21. Gorbanga RF
22. Lulshi plantation reserve
23. Pantan RF
24. Nambar RF
25. Panbari RF
26. Moghaghar RF
27. Gibbon WLS
28. Joypur RF
29. Upper Dehing West Block RF
30. Upper Dehing East Block RF
31. Buri Dehing RF
32. Hahkati RF
33. Kakojan RF
34. Kumsang RF
35. Mesaki RF
36. Kundilkalia RF
37. Dibang Valley RF
38. Podumoni-Bherjan-Borajan WLS
39. Dibru-Saikhowa NP
40. Amreng RF
41. Amsolong PRF
42. Balasore PRF
43. Umjakini PRF
44. Mikir Hills RF
45. Kalioni RF
46. Khonbamon RF
47. Nambor North Block RF
48. Nambor West Block RF
49. Jungphung RF
50. Patradisha RF
51. Longnith RF
52. Haithapahar DCRF
53. Mahamaya DCRF

54. Borjuri PRF
55. Western Mikir Hills PRF
56. Lanlakso PRF
57. Kaziranga PRF
58. Dalamora PRF
59. Kalapahar RF
60. Bokajan PRF
61. Tikok PRF
62. Danshiri RF
63. Daldii RF
64. Disama RF
65. Englongari DCRF
66. Miyungdisa DCRF
67. Borlanfer DCRF
68. Hafjan PRF
69. Barail RF
70. Khrumming RF
71. Langting Mupa RF
72. Panimur PRF
73. Barail PRF
74. North Cachar Hills RF
75. Innerlinr RF
76. Barail RF
77. Katakhal RF
78. Innerline RF
79. Innerline RF
80. Longai RF
81. Singla RF
82. Patharia RF
83. Nokrek NP
84. Balpakram NP
85. Siju WLS
86. Rewak RF
87. Baghmara RF
88. Songsek-Tasek RF
89. Nongkhylem WLS
90. Dampa WLS
91. Murlen NP
92. Nengpui WLS
93. Nengpui RF

between 1990 and 2001. This species occurs in all the seven states of northeastern India, viz., Arunachal Pradesh, Assam, Meghalaya, Mizoram, Nagaland, Manipur and Tripura. Most of this survey was confined to Assam and parts of Meghalaya, Mizoram and Arunachal Pradesh. Most of the areas within the gibbon distribution range have been surveyed in Bangladesh except in parts of Chittagong Hill Tracts.

Locations of Western Hoolock Gibbon were recorded from transects. On an average 15km of pre-determined transects (modified pre-existing forest trails) were surveyed for locating groups while covering at least 10-15% of the total forest area. Transects were laid in a stratified random manner to cover all the representative areas of the forest (Muller-Dombois & Ellenberg, 1974; Kent & Coker, 1994). Surveys were carried out on foot, from 0600-1800 hr with a break of one hour at mid-day. Each day a distance of 10-18km was covered by walk at a speed of 1.5km hr⁻¹ or less, depending on the weather condition and habitat type, with occasional stops of one minute to look around for animals. Songs were also recorded during the transect walk. Group size and composition were recorded when groups were located. The habitat or forest type of each area was recorded as evergreen, semi-evergreen, broad leaf mixed evergreen, deciduous, etc.

Extent of occurrence and area of occupancy were calculated as defined by the IUCN Red List Criteria and Categories (IUCN, 2001).

The biomass of this species was calculated by using the average body weight of adult males and females and multiplying it by the respective individual density. Metabolic biomass was calculated by considering 0.75 of body weight, as in Eisenberg *et al.* (1979), Freese *et al.* (1982), Kohlhaas (1988), Janson and Emmons (1990), Pontes (1999) and Feeroz (1999). This allows for 50% of the group being immature, thus markedly lowering group weight. Adult body weights for males and females of this species are taken from existing literature (Chivers, 1977).

Results and Discussion

Data presented here are from 8,000km² of the surveyed areas in India (Das, 2002) and 900km² areas from Bangladesh. Surveyed areas were calculated by multiplying the length of the transect walk and twice the average visibility in transects. Total area of occupancy, number of groups, mean group size, biomass and metabolic biomass of Hoolock Gibbons found in these countries are given in Table 1.

Distribution and threats to Hoolock Gibbons in Bangladesh

Hoolock Gibbons are only found in the northeastern and southeastern evergreen and semi-evergreen forests of Bangladesh. Six areas in the northeast and eight areas in the southeast were recorded as gibbon habitats (Fig. 1). All the 14

areas are distinctly separate from each other. The area of occupancy of this species in Bangladesh has been calculated to be less than 200km². As many as 25 areas were recognized by earlier workers as Hoolock Gibbon habitats, of which only 14 areas have been confirmed by several recent surveys (Table 2). No survey has been done in other areas. A total of 118 gibbons were recorded, with the number of gibbons in each area varying from 3 to 33.

The major threat to the survival of the Hoolock Gibbons in Bangladesh is habitat destruction, which causes rapid reduction of food trees, sleeping trees and trees used for travel. Habitat destruction is primarily due to fuel wood extraction, timber extraction, edible piper leaf plantation, plantation of exotic plant species, crop cultivation, modification of undergrowth, land erosion, road expansion and construction. Unplanned intensive tourism, hunting, army training, food species shared by human and establishment of gas field are the other threats.

Distribution and threats to Hoolock Gibbons in India

Although the 'extent of occurrence' of this species has been calculated to >1,50,000km² the 'area of occupancy' is relatively very small. Moreover, the habitats are fragmented and are far apart from one another. In northeastern India, 80 areas were recorded as gibbon habitat (Table 2), (Map 1). A total of 379 gibbons were recorded, and the number varied from 1 to 25 among these areas.

As northeastern India is an assemblage of multicultural communities and land use pattern are different in different areas, threats to this species are distinct particularly in areas dominated by tribals. Area specific threats are shown in the table 2. Habitat destruction, encroachment and hunting are the major threats to this species in India. The major types of habitat destruction are 'jhum cultivation' both 'pan jhum' (edible *Piper* leaf cultivation by lopping most of the branches of all trees in cultivation area) and 'mixed jhum', expansion of agricultural lands, expansion of tea gardens and construction of roads through Reserve Forests, District Council Reserved Forests and proposed Reserve Forests. Several tribes in this region hunt Hoolock Gibbon for meat, bones, blood, etc.

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Table 1. Area of occupancy, number of groups, mean group size, biomass and metabolic biomass of Hoolock Gibbons found in India and Bangladesh.

Country	Area of occupancy sq km	No. of groups (range)	Mean group Size	Biomass	Metabolic biomass
Bangladesh	134	36	3.03±0.82 (2-5)	826	619.5
India	470	129	3.32±0.35 (2-4)	2653	1989

Table 2. Distribution and status of Hoolock Gibbon in South Asia.

Country/Area	Locality	Habitat	Threats	Total no. of individuals
BANGLADESH				
Sylhet				
Moulvibazar	West Bhanugach FR	Semi-evergreen	Habitat destruction, tourism, encroachment, gas field exploration	33
	Adampur	Semi-evergreen	Timber plantation, habitat destruction, encroachment	7
	Rajkandhi	Semi-evergreen	Timber plantation, habitat destruction, encroachment	5
	Horin chara	Semi-evergreen, tropical moist deciduous	Habitat destruction, encroachment	6
	Pathalia	Semi-evergreen, tropical moist deciduous	Habitat destruction, encroachment	7
Hobigong	Shatchari	Semi-evergreen, broad leaf mixed evergreen	Habitat destruction, encroachment	9
Chittagong				
Chittagong	Chunati	Evergreen	Habitat destruction, encroachment	19
	Satghar		Habitat destruction, encroachment	6
	Padua		Habitat destruction, encroachment	3
	Hazarikhil		Habitat destruction, encroachment, hunting	3
Cox's Bazar				
Cox's Bazar	Bhomarighona	Evergreen	Habitat destruction, selective logging, encroachment	7
	Ukhia		Habitat destruction, encroachment	6
	Himchari		Habitat destruction, encroachment	3
	Teknaf		Habitat destruction, encroachment, fragmentation	4
INDIA				
Arunachal Pradesh				
Changlang	Namdapha NP	Evergreen	Habitat destruction, hunting	17
	Miao RF	semi evergreen	Habitat destruction, encroachment, hunting	2
Lohit	Kamlang WLS	Evergreen	Habitat destruction, encroachment, hunting	1
Assam				
Kamrup	Kuwasingh RF	Tropical moist deciduous	Habitat destruction, encroachment	10
	Jorsal RF	Tropical moist deciduous	Habitat destruction, encroachment	3

Country/ Area	Locality	Habitat	Threats	Total no. of individuals
	Rani RF	Tropical moist deciduous	Habitat destruction, encroachment	12
	Gorbanga RF	Tropical moist deciduous	Habitat destruction, encroachment	2
	Kulsi Plantation RF	Tropical moist deciduous	Habitat destruction, encroachment	5
	Pantan RF	Tropical moist deciduous	Habitat destruction, encroachment	2
Golaghat	Nambar RF	Tropical semi evergreen	Habitat destruction, encroachment, hunting	3
	Panbari RF	Tropical semi evergreen	Habitat destruction, encroachment, hunting	3
Goalpara	Moghaghar RF	Tropical moist deciduous	Habitat destruction, encroachment, hunting	1
Jorhat	Gibbon WLS	Tropical wet evergreen	Habitat destruction, encroachment	20
Dibrugarh	Joypur RF	Tropical wet evergreen	Habitat destruction, encroachment, hunting	12
Tinsukia	Upper Dehing West block RF	Tropical wet evergreen	Habitat destruction, encroachment	1
	Upper Dehing East block RF	Tropical wet evergreen	Habitat destruction, encroachment	2
	Buri Dehing RF	Tropical wet evergreen	Habitat destruction, encroachment, hunting	1
	Hahkati RF	Tropical wet evergreen	Habitat destruction, encroachment	3
	Kakojan RF	Tropical wet evergreen	Habitat destruction, encroachment	2
	Kumsang RF	Tropical wet evergreen	Habitat destruction, encroachment	1
	Mesaki RF	Tropical wet evergreen	Habitat destruction, encroachment	4
	Kundilkalia RF	Tropical wet evergreen	Habitat destruction, encroachment	2
	Dibang Valley RF	Tropical wet evergreen	Habitat destruction, encroachment	3
	Podumoni- Bherjan-Borajan WLS	Tropical wet evergreen	Habitat destruction, encroachment	11
	Dibru-Saikhowa NP	Tropical wet evergreen	Habitat destruction, encroachment	4
Karbi-Anglong	Amreng RF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	1
	Amsolong PRF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	1
	Balasore PRF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	2
	Umjakini PRF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	1
	Mikir Hills RF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	5
	Kalloni RF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	3
	Khonbamon RF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	1
	Nambor North Block RF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	4
	Nambor West Block RF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	2
	Jungthung RF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	6
	Patradisa RF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	3
	Longnit RF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	7
	Haithapahar DCRF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	1
	Mahamaya DCRF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	1
	Borjuri PRF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	3
	Western Mikir Hills PRF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	8
	Lanlakso PRF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	
	Kaziranga PRF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	2
	Dalamora PRF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	1

Country/ Area	Locality	Habitat	Threats	Total no. of individuals
	Kalapahar PRF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	3
	Bokajan PRF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	1
	Tikok PRF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	1
	Danshiri RF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	10
	Daldali RF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	1
	Disama RF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	1
	Englongari DCRF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	2
	Miyungdisa DCRF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	3
	Borlanfer DCRF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	5
	Hafjan PRF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	1
North Cachar Hills	Barail RF	Tropical wet evergreen	Habitat destruction, hunting, encroachment	3
	Khrumming RF	Tropical wet evergreen	Habitat destruction, hunting, encroachment	10
	Langting Mupa RF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	15
	Panimur PRF	Sub tropical broad leaved hill	Habitat destruction, hunting, encroachment	1
	Barail PRF	Tropical wet evergreen	Habitat destruction, hunting, encroachment	3
	North Cachar Hills RF	Tropical wet evergreen	Habitat destruction, hunting, encroachment	6
Cachar	Innerlinr RF	Tropical wet evergreen	Habitat destruction, hunting, encroachment	22
	Barail RF	Tropical wet evergreen	Habitat destruction, hunting, encroachment	5
Hailakandi	Katakhal RF	Tropical wet evergreen	Habitat destruction, hunting, encroachment	3
	Innerline RF	Tropical wet evergreen	Habitat destruction, hunting, encroachment	1
Karimganj	Innerline RF	Tropical wet evergreen	Habitat destruction, hunting, encroachment	4
	Longai RF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	3
	Singla RF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	5
	Patharia RF	Tropical semi evergreen	Habitat destruction, hunting, encroachment	3
Meghalaya				
East Garo Hills	Nokrek NP	Tropical moist decidious	Habitat destruction, horticulture, hunting	25
South Garo Hills	Balpakram NP	Tropical moist decidious	Habitat destruction, encroachment, hunting	16
	Siju WLS	Tropical moist decidious	Habitat destruction, horticulture, hunting	3
	Rewak RF	Tropical moist decidious	Habitat destruction, horticulture, hunting	2
	Baghmara RF	Tropical moist decidious	Habitat destruction, hunting	2
East Garo Hills	Songsek-Tasek RF	Tropical moist decidious	Habitat destruction, horticulture, hunting	20
Ribhoi	Nongkhylem WLS	Tropical moist decidious	Habitat destruction, hunting, encroachment	3
Mizoram				
Mamit	Dampa WLS	Tropical wet evergreen	Habitat destruction, hunting, encroachment	3
Champai	Murlen NP	Tropical wet evergreen	Habitat destruction, hunting	8
Cintuipui	Nengpui WLS	Tropical wet evergreen	Habitat destruction, hunting	3
	Nengpui RF	Tropical wet evergreen	Habitat destruction, hunting	1

NP- National Park; WLS – Wildlife Sanctuary; RF- Reserved Forest; DCRF- District Council Reserved Forest; PRF- Proposed Reserve Forest; USF- Unclassified State Forest

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Dr. Chellam Balasundaram, Bharathidasan University, Thiruchirapalli, Tamil Nadu

Dr. D.B. Bastawade, ZSI, Pune, Maharashtra

Dr. B.K. Biswas, ZSI, Kolkata, West Bengal

Dr. M. Boppammal, Kongunadu Arts and Science College, Coimbatore, Tamil Nadu

Dr. A.K. Chakravarthy, R.R.S., Mandya, Karnataka

Dr. Anwaruddin Choudhury, The Rhino Foundation for Nature, Guwahati, Assam

Dr. Rema Devi, ZSI, Chennai, Tamil Nadu

Dr. Hemant V. Ghate, Modern College, Pune, Maharashtra

Dr. K.C. Gopi, ZSI, Kozhikode, Kerala

Dr. I.J. Gupta, ZSI, New Alipore, Kolkata, West Bengal

Dr. S.K. Gupta, Kolkata, West Bengal

Dr. Mohammad Hayat, Aligarh Muslim University, Aligarh, Uttar Pradesh

Dr. Sultan Ismail, Institute of Research in Soil Biology and Biotechnology, Chennai, Tamil Nadu

Dr. Salim Javed, Aligarh Muslim University, Aligarh, Uttar Pradesh

Dr. K.M. Kaveriappa, Mangalore University, Mangalore, Karnataka

Dr. M.S. Kodarkar, Vivek Vardhini College, Hyderabad, Andhra Pradesh

Dr. Sharat B. Krishna, University of Hemangothri, Hassan, Karnataka

Dr. A.N. Madhyastha, Poornaprajna College, Udipi, Karnataka

Dr. S.C. Majumdar, ZSI, South 24 Parganas, West Bengal

Dr. G. Marimuthu, Madurai Kamaraj University, Madurai, Tamil Nadu

Dr. M. Mohanasundaram, TNAU, Mettupalayam, Tamil Nadu

Dr. Muraleedharan, SACON, Coimbatore, Tamil Nadu

Dr. Tilo Nadler, Endangered Primate Rescue Center, Vietnam

Dr. P.O. Nameer, KAU, Thrissur, Kerala

Dr. Goutaham Narayan, Pygmy Hog Conservation Programme, Guwahati, Assam

Dr. R. Natarajan, Emeritus Scientist, Chennai, Tamil Nadu

Dr. H.R. Pajni, Punjab University, Chandigarh, Punjab

Dr. H. Parulekar, National Institute of Oceanology, Dona Paula, Goa

Dr. Muhammed Jafer Palot, ZSI, Kozhikode, Kerala

Dr. C. Radhakrishnan, ZSI, Kozhikode, Kerala

Dr. D. Rajagopal, GKVK, Bangalore, Karnataka

Dr. H.S. Rose, Punjabi University, Patiala, Punjab

Dr. S. Sabesan, ICMR, Pondicherry

Dr. S. Sethuramalaingam, Regional Museum of Natural History, Mysore, Karnataka

Dr. H.S. Singh, GEER Foundation, Gandhinagar, Gujarat

Dr. Mewa Singh, University of Mysore, Mysore, Karnataka

Mr. Pritpal Soorae, IUCN/SSC Re-introduction Specialist Group, Dubai

Dr. C. Srinivasulu, Osmania University, Hyderabad, Andhra Pradesh

Dr. D.B. Tembre, Nagpur University, Maharashtra

Dr. G. Thirumalai, ZSI, Chennai, Tamil Nadu

Dr. B.K. Tyagi, ICMR, Madurai, Tamil Nadu

Dr. Vishva Vasu, Punjabi University, Patiala, Punjab

Dr. P. Venkatesan, Loyola College, Chennai, Tamil Nadu