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## COMMUNICATION

### A REVIEW ON STATUS OF MAMMALS IN MEGHALAYA, INDIA

Adrian Wansaindor Lyngdoh, Honnavalli Nagaraj Kumara, P.V. Karunakaran & Santhanakrishnan Babu

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## A REVIEW ON STATUS OF MAMMALS IN MEGHALAYA, INDIA

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**Abstract:** In this paper we present an updated checklist of mammals found in Meghalaya. Using online databases and search engines for available literature, we provide the scientific names, accepted English names, conservation status as per IUCN Red List, Indian Wildlife (Protection) Act schedules, appendices in CITES, local distribution status, endemism, last reported sighting, an account of previous studies carried out relative to mammals and a tentative bibliography of the mammalian species found in Meghalaya. A total of 162 species were found to be existing in the state with Chiropterans forming the largest group and 27 species found to be threatened, seven Near Threatened and seven Data Deficient.

**Keywords:** Checklist, CITES, Indian Wildlife (Protection) Act, IUCN, mammalian species, northeastern India.

**Abbreviation:** BBL—Balpakram Baghmara Landscape; CEPF—Critical Ecosystem Partnership Fund; CITES—Convention on International Trade in Endangered Species of Wild Fauna and Flora (Appendix I, II and III); EGH—East Garo Hills; EJH—East Jaintia Hills; EKH—East Khasi Hills; GBIF—Global Biodiversity Information Facility; GH—Garo Hills; ISFR—Indian State Forest Report; IUCN—International Union for Conservation of Nature; IUCN Red List of Threatened Species: Categories (CR—Critically Endangered; EN—Endangered; VU—Vulnerable; NT—Near Threatened; LC—Least Concern; NA—Not Assessed); IWPA—Indian Wildlife (Protection) Act, 1972 (Schedule I, II, III, IV, and V); JH—Jaintia Hills; KH—Khasi Hills; MBSAP—The Meghalaya State Biodiversity Strategy and Action Plan; NP—National Park; RB—Ri-Bhoi; RF—Reserved Forest; SGH—South Garo Hills; WGH—West Garo Hills; WJH—West Jaintia Hills; WKH—West Khasi Hills; WS—Wildlife Sanctuary; WWF—World Wide Fund for Nature; ZSI—Zoological Survey of India.

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## INTRODUCTION

The global mammalian fauna is represented by 6,495 species, of which 6,399 are extant and 96 are extinct (Mammal Diversity Database 2019). India has a total of 423 species, which accounts for 7.81% of the global mammalian species (Sharma et al. 2015). A majority of these species are distributed in the four biodiversity hotspots of India—the Western Ghats and Sri Lanka, the Himalaya, Indo-Burma, and Sundalands biodiversity hotspots (Myers et al. 2000; CEPF 2016). The state of Meghalaya (25–26°N, 89.5–93°E; Figure 1) is part of the Indo-Burma biodiversity hotspot along with other parts of northeastern India south of the Brahmaputra River. This hotspot also includes parts of Bangladesh, Myanmar, Thailand, Vietnam, Cambodia, Laos PDR, southern China and touches a small portion of peninsular Malaysia and extends over two million square kilometers (Myers et al. 2000; Mittermeier et al. 2004). The Indo-Burma biodiversity hotspot has been considered to be one of the most important regions in the world and is ranked among the top 10 hotspots for irreplaceability due to high species diversity and endemism (Myers et al. 2000; Mittermeier et al. 2004). Its forests, freshwater and coastal ecosystems not only support many globally threatened species but also the region's human population. It houses about 430 mammalian species of which 73 species are endemic to the hotspot. Its natural habitat has been reduced to about 5% of its original extent due to human activities such as shifting cultivation, conversion to farmland, plantations, logging, deliberate forest fires, mining, damming and poaching (Tordoff et al. 2012). This has earned the hotspot a rank in the top five for most threatened (Mittermeier et al. 2004; Tordoff et al. 2012).

Meghalaya, nestled in the northeastern India biogeographic zone is a conflux of the Indo-Malayan and Indo-Chinese biogeographic realms (Palni et al. 2011) and as such is considered one of the richest habitats of Asia with a high diversity of mammals, birds, and plants (Rodgers & Panwar 1988, as cited in WWF 2019). Its diverse landscapes with gentle slopes in the north, steep slopes in the south forming deep valleys and a central plateau (Mani 1974; MBSAP 2017) has resulted in a diversification of its forests and wildlife. About 76.45% of its total geographic area is under forest cover (ISFR 2017) and is composed of tropical evergreen forests, tropical semi-evergreen forests, tropical moist and deciduous forests, grasslands and savanna, temperate forests and subtropical pine forests (Haridasan & Rao 1985). Meghalaya is also a part of the Meghalaya

subtropical forests ecoregion and has been described as the gateway to the Malayan fauna and as such houses closely related species with different distributional ranges such as the Indian and Chinese pangolins (WWF 2019). In recognition of its important position of harbouring diverse mammalian species, we attempt to update the list of mammalian species found in the region.

One of the earliest accounts of mammals in the state of Meghalaya dates back to the 19<sup>th</sup> century surveys that covered British India and other neighbouring regions (Harlan & Burrough 1834; McClelland 1841; Blyth 1852; Dobson 1874; Jerdon 1874; Sterndale 1884; Blanford 1888–91). Between 1847 and 1875, numerous collectors had also visited the region and documented the mammals found in the state (Alfred 1995). During the early decades of the 20<sup>th</sup> century, many mammalian specimens were collected from various parts of the state and a description of some of the species was done (Allen 1906; Kemp 1924; Hinton & Lindsay 1926). From the second half of the century, the Zoological Survey of India (ZSI) has also published numerous works on the fauna of the state (Alfred 1995). Apart from the work done by ZSI, other authors have also compiled lists of mammals found in Meghalaya as part of a wider effort to document mammals of the entire Indian subcontinent (Pocock 1939, 1941; Ellerman & Morrison-Scott 1951; Ellerman 1961; Prater 1965; Corbett & Hill 1992).

Between 1989–94, ZSI conducted a systematic survey of all fauna in the state including mammals through specimens available in its repository and secondary literature, and published a checklist of mammals (Das et al. 1995). A total of 139 mammal species were reported, representing 83 genera and 27 families in the state. This list, however, had also erroneously cited species that were not historically found in the region. Since then, many mammalian species have been discovered and an updated checklist is warranted. Recently, Choudhury (2013) compiled a comprehensive checklist and systematic review of all mammals found in northeastern India including Meghalaya based on primary as well as secondary sources, which serves as an important source of information for the mammals of northeastern India. Kakati and Kabra (2015) reported 51 mammalian species in Balpakram-Baghmara Landscape, Garo Hills, while Goswami (2015) documented 20 mammalian species in Jaintia Hills. Meghalaya's extensive karst topography provided the ideal settings for the diversification of bats with a tentative list of about 65 bat species having been reported from the state (Saikia et al. 2018). Considering all the new additions to the state in recent years

by surveys and records from all available literature, we provide an updated checklist of mammals for Meghalaya along with their distribution, conservation and management status.

## METHODS

We collected all published and gray literature available about the mammals of Meghalaya and thoroughly reviewed them to prepare a comprehensive list of mammals that have been reported to occur in Meghalaya. Online databases, web portals, websites and sites such as Google Scholar, ResearchGate, Biodiversity Heritage Library, Shodhganga, GBIF, and IUCN Red List were accessed for collecting the literature. Technical Reports and unpublished literature were also collected from the authors through personal communication. Conservation status as per IUCN Red List, schedule

category in Indian Wildlife (Protection) Act 1972 (IWPA), Appendices in Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and last reported sighting in the state were compiled to highlight the importance of the landscape for mammal conservation (Image 1). The taxonomic arrangement of the species follows Wilson & Reeder (2005) and Wilson & Mittermeier (2009).

## RESULTS AND DISCUSSION

A total of 162 species of mammals belonging to 31 families were reported from the state of Meghalaya (Table 1; Figure 2). Chiropterans formed the largest group of mammals with 65 species (40%). This was followed by rodents with 35 (22%) and carnivores with 34 species (22%). The rest of the groups constituted less than 20% of the total mammal diversity in the state

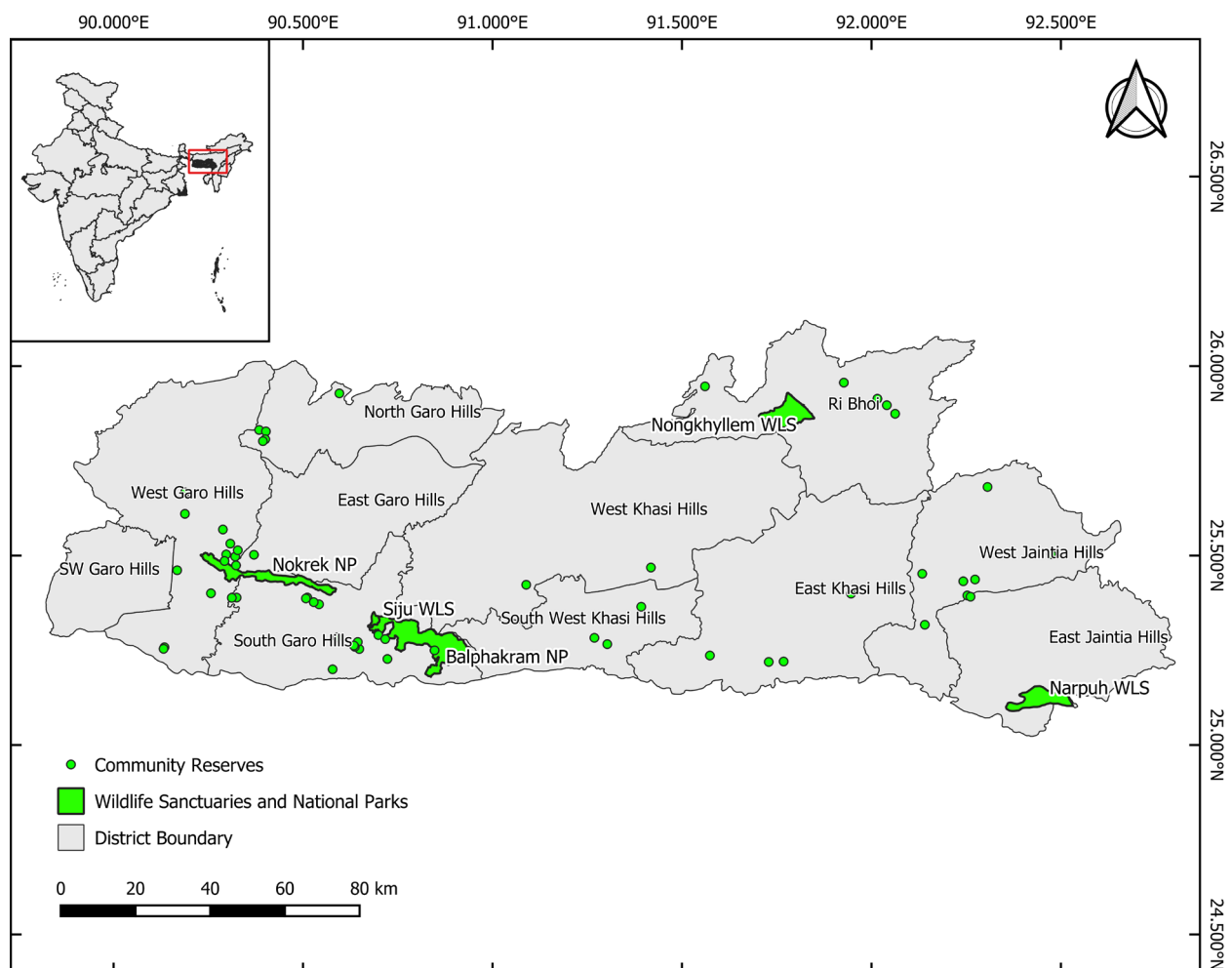


Figure 1. The state Meghalaya with protected areas.

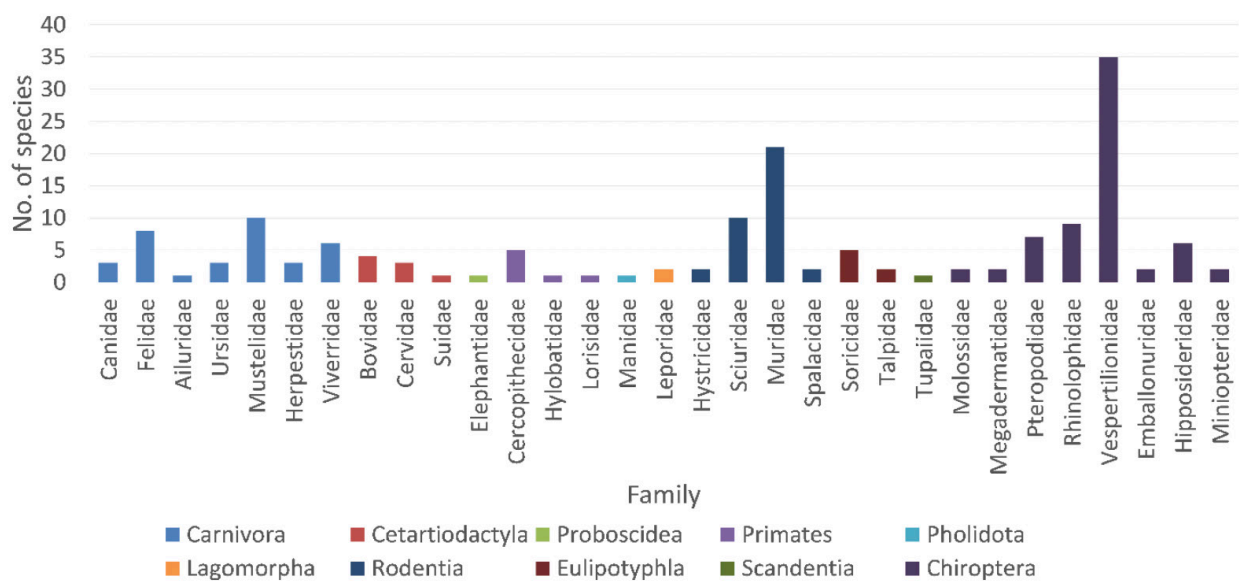


Figure 2. Mammal species richness in different families in Meghalaya.

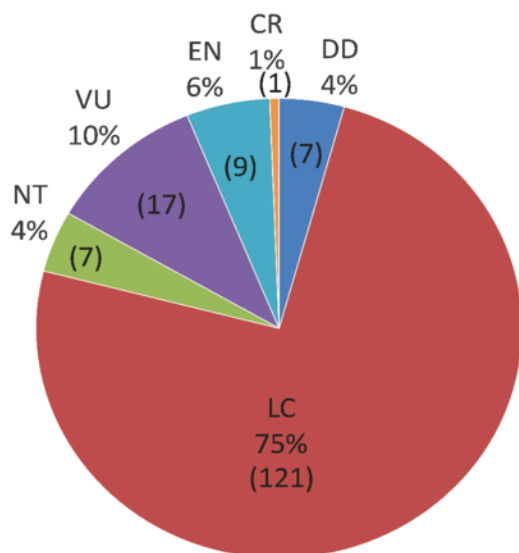


Figure 3. Percent mammals in IUCN Red List category.

(Figure 3). Evening bats formed the largest group at 35 species, followed by murids at 21, sciurid and mustelids at 10 each. Among the 162 species, 27 are threatened (one Critically Endangered, nine Endangered, 17 Vulnerable) and seven species each as Near Threatened and Data Deficient (Figure 2, Table 2). None of the species, however, are endemic to Meghalaya.

#### Mammals excluded from the Meghalaya list

A few species have been excluded from this list because they could be locally extinct, erroneously mentioned in the literature or have not been formally

recognized as a separate species. A description of their past and current distribution in northeastern India is also summarized here in support of their exclusion from this list.

**Barasingha** *Rucervus duvaucelii* was stated to be present in East Khasi Hills of Meghalaya (Das et al. 1995) although no record of its existence is available except for a hunting report in 1894 on three Barasinghas shot on the border of East Garo Hills of Meghalaya and Goalpara District of Assam (Choudhury 2001; Choudhury 2013). In northeastern India, the species' past range extended along the foothills of the Himalaya from upper Assam and were common in the Brahmaputra Valley with many having still existed in a few districts of Assam till as late as 1934 (Blanford 1888–91; Lydekker 1915; Bhadian 1934; Schaller 1967). Since then, however, their numbers have drastically dwindled and their current distribution in northeastern India is now restricted to only a few pockets of Assam in Kaziranga NP and Manas NP (Schaller 1967; Choudhury 2001a; Srinivasulu et al. 2012; IUCN 2019).

**Chital** *Axis axis* was stated to be present in Ri-Bhoi and East Khasi Hills districts of Meghalaya (Das et al. 1995). It is, however, unlikely to have occurred as there is no historical record of the species occurring south of the Brahmaputra River (Choudhury 2001a). In northeastern India, Chital is restricted to the western part of Assam, north of the Brahmaputra River (Choudhury 2001a; IUCN 2019) with its most recent record at Manas NP (Bhatt et al. 2018). Its easternmost record was at Dhunsiri River in Darrang District reported in 1935 by A.J.W. Milroy (De

1935).

**Chousingha** *Tetracerus quadricornis* was reported to be present in West Garo Hills although it could be a misidentified *Naemorhedus goral* (Das et al. 1995). This species is endemic to peninsular India and parts of lowland Nepal (Leslie et al. 2009; Srinivasulu et al. 2012; IUCN 2019).

**Himalayan Serow** *Capricornis thar* in this paper is reported as *Capricornis rubidus*. Due to the lack of information on the taxonomic status of the *Capricornis* sp. in northeastern India, some reports have considered them as *C. thar* (Srinivasulu et al. 2012; IUCN 2019) although others have reported it as *C. rubidus* (Choudhury 2013; Kakati et al. 2015).

**Indian Crested Porcupine** *Hystrix indica* was reported from Meghalaya (Goswami 2015); however, this species is not distributed in northeastern India (IUCN 2019).

**Dormer's Bat** *Scotozous dormeri* was reported by Sinha (1995) based on a damaged male specimen from Shillong but examination of its teeth and external characteristics suggested it to be of another species, *Hypsugo cadornae* (Saikia et al. 2018).

**Dusky Leaf-nosed Bat** *Hipposideros ater* reported in Meghalaya from a single record that is doubtful, and is excluded from this list (Kurup 1968; Choudhury 2013; Saikia et al. 2018).

A new species of bat, *Hipposideros khasiana* was reported in Meghalaya based on the differences in call frequencies of the bats from their closely related species *H. larvatus* (Thabah et al. 2006). Due to the lack of type material, however, this species has not yet been formally recognized as a distinct species from *H. larvatus* (Saikia 2018; Saikia et al. 2018).

Specimens collected from Siju Cave in Meghalaya and identified as the Eastern Bent-winged Bat (*Miniopterus fuliginosus*) (Sinha 1999) were found to be that of *M. magnater* (Saikia et al. 2018). *M. fuliginosus* although likely to be found in the state is yet to be formally identified (Saikia et al. 2018).

#### A note on natural history of other species

**Elephants:** Numerous studies on Asian Elephants *Elephas maximus* have been carried out in Meghalaya (Johnsingh 1996a,b; Choudhury 1999, 2004, 2007; Johnsingh & Williams 1999; Williams & Johnsingh 2004; Datta-Roy et al. 2008, 2009; Marak 2009; Kaul et al. 2010; Marcot et al. 2011; Goswami et al. 2014). Meghalaya is known to have one of the largest and densest populations of Elephants in India with a population of 1,811 as per 2008 records (Datta-Roy et al. 2008; Marcot 2011). The State Forest Department conducted the first

Elephant census in and around Balpakram National Park (NP) in 1981. The number of Elephants was estimated to be 2,333 (Gogoi & Choudhury, as cited in Williams & Johnsingh 1996a). The first state-wide Elephant census was conducted in 1993 which estimated Elephants to be numbering 1,850 (William & Johnsingh 1996a; Choudhury 1999). The number increased slightly to 1,868 Elephants in 2002 (Marcot 2011). Fourteen distinct populations of Elephants were identified throughout northeastern India (Choudhury 1999). Two of the populations are shared between Assam and Meghalaya. These two populations form a sizeable portion of the estimated 11,000 Elephants found in northeastern India (> 50%). One large population was found in Ri-Bhoi and Jaintia Hills districts and another in West Khasi Hills, Ri-Bhoi, and Garo Hills districts. Populations in western Khasi Hills are around more than 800 and in Garo Hills around 1,800, with the latter having a density of 0.74 km<sup>-2</sup>. A smaller population of Elephants exist in some parts of Jaintia Hills (Choudhury 1999). Areas in and around Nokrek NP and Balpakram-Baghmara Landscape in Garo Hills have been reported to have the highest potential for long term conservation of Elephants in the region (William & Johnsingh 1996a) and as such warrant greater conservation efforts. Three critical Elephant corridors were identified in Garo Hills, one of them faced tremendous anthropogenic pressure and another one was at risk of being overexploited for timber and coal as most of the corridor is private or community owned land and does not come under the control of the Forest Department (William & Johnsingh 1996b). In 2003, six corridors (five in Garo Hills and one in Jaintia Hills) were identified by the Wildlife Trust of India for the long-term conservation of Elephants in the state (Kaul et al. 2010).

Human-Elephant interaction is intense in some parts of Garo Hills. This is mainly attributed to disturbances caused by 'jhum' (slash and burn regime) and coal mining (William & Johnsingh 1996a). Retaliatory killing due to crops being raided and poaching of Elephants has also increased over the years (Johnsingh & William 2004). The presence of Elephants in human-occupied areas and intensity of conflicts with humans varies highly across the landscape. Various factors such as sowing and harvesting season of crops and availability of wild forage had an influence on the Elephant visits (Datta-Roy et al. 2008, 2009); however, in most cases, these Elephant visits were not negative in nature. Elephants have also been observed to use sites close to PAs more intensely than sites away from the PAs. The presence of humans further augmented this trend (Goswami et al. 2014). A few Elephants (40–50) from South Garo

Table 1. Checklist of mammals found in Meghalaya, India.

	Taxa	Common name	IUCN Red List status	Wildlife Protection Act, 1972 schedule/status	CITES	Distribution	Source
	<b>Order Proboscidea: Elephants</b>						
	<b>Family Elephantidae: Elephants</b>						
1	<i>Elephas maximus</i>	Asian Elephant	EN	Sch I (Part I)	I	WGH, EGH, SGH, RB, WKH, JH	1,2,3,4,5
	<b>Order Scandentia: Tree Shrews</b>						
	<b>Family Tupaiidae: Tree Shrew</b>						
2	<i>Tupaia belangeri</i>	Common Tree Shrew	LC	Sch II (Part I)	II	WGH, EGH, EKH	1,2,3,4
	<b>Order Primates: Primates</b>						
	<b>Family Lorisidae: Lorises</b>						
3	<i>Nycticebus bengalensis</i>	Bengal Slow Loris	VU	Sch I (Part I)	I	WGH, EGH, EKH	1,2,3,4
	<b>Family Cercopithecidae: Old World Monkeys</b>						
4	<i>Macaca arctoides</i>	Stump-tailed Macaque	VU	Sch II (Part I)	II	All districts	1,2,3,4
5	<i>Macaca assamensis</i>	Assamese Macaque	VU	Sch II (Part I)	II	All districts	1,2,3,4
6	<i>Macaca leonina</i>	Northern Pig-Tailed Macaque	VU	Sch II (Part I)	II	All districts	1,2,3,4
7	<i>Macaca mulatta</i>	Rhesus Macaque	LC	Sch II (Part I)	II	All districts	1,2,3,4,5
8	<i>Trachypitecus pileatus</i>	Capped Langur	VU	Sch I (Part I)	I	All districts	1,2,3,4,5
	<b>Family Hylobatidae: Gibbons</b>						
9	<i>Hoolock hoolock</i>	Western Hoolock Gibbon	EN	Sch I (Part I)	I	WGH, EGH, SGH, RB, WKH	1,2,3,4,5
	<b>Order Rodentia: Rodents</b>						
	<b>Family Muridae: Rats and Mice</b>						
10	<i>Bandicota bengalensis</i>	Lesser Bandicoot Rat	LC	Sch V	NA	EKH, JH, GH	1,2,3
11	<i>Bandicota indica</i>	Large Bandicoot Rat	LC	Sch V	NA	EKH, JH, GH	1,2,3
12	<i>Berylmys bowersi</i>	Bower's Rat	LC	Sch V	NA	Mawphlang	1,3,9
13	<i>Berylmys mackenziei</i>	Kenneth's White-toothed Rat	DD	Sch V	NA	Shillong	1,2,3
14	<i>Chiropodomys gliroides</i>	Pencil-tailed Tree Rat	LC	Sch V	NA	EKH, JH	1,2,3
15	<i>Leopoldamys edwardsi</i>	Long-tailed Giant Rat	LC	Sch V	NA	WGH, EGH, RB, JH	1,2,3
16	<i>Micromys minutus</i>	Harvest Mouse	LC	Sch V	NA	EKH	1,2,3
17	<i>Mus booduga</i>	Little Indian Field Mouse	LC	Sch V	NA	WGH, EGH, EKH, JH	1,2,3
18	<i>Mus cervicolor</i>	Fawn-coloured Mouse	LC	Sch V	NA	EKH, GH, JH	1,2,3
19	<i>Mus cookii</i>	Cooke's Mouse	LC	Sch V	NA	Khonshnon, Shangpung	1,3,9
20	<i>Mus musculus</i>	House Mouse	LC	Sch V	NA	All districts	1,2,3
21	<i>Mus pahari</i>	Sikkim Mouse	LC	Sch V	NA	WGH, EKH, JH	1,2,3
22	<i>Niviventer fulvescens</i>	Chestnut Rat	LC	Sch V	NA	WGH, EKH, RB, JH	1,2,3
23	<i>Niviventer confucianus</i>	Chinese White-bellied Rat	LC	Sch V	NA	WGH, EKH, RB, JH	3
24	<i>Niviventer niviventer</i>	White-bellied Rat	LC	Sch IV	NA	EKH, RB, JH	1,2,3,4
25	<i>Rattus andamanensis</i>	Indo-Chinese Forest Rat	LC	Sch V	NA	WGH, EKH, RB, JH	1,3,9
26	<i>Rattus nitidus</i>	White-footed Himalayan Rat	LC	Sch V	NA	WGH, EGH, SGH, EKH, RB, JB	1,2,3
27	<i>Rattus rattus</i>	House Rat	LC	Sch V	NA	All districts	1,2,3
28	<i>Rattus norvegicus</i>	Brown Rat	LC	Sch V	NA	EKH	2,3
29	<i>Rattus tanezumi</i>	Oriental House Rat	LC	Sch V	NA	All districts	1,3
30	<i>Vandeleuria oleracea</i>	Indian Long-tailed Tree Mouse	LC	Sch V	NA	EKH, JH	1,2,3



	Taxa	Common name	IUCN Red List status	Wildlife Protection Act, 1972 schedule/status	CITES	Distribution	Source
	<b>Family Sciuridae: Squirrels</b>						
31	<i>Ratufa bicolor</i>	Malayan Giant Squirrel	NT	Sch II (Part I)	II	All districts	1,2,3,4,5
32	<i>Belomys pearsonii</i>	Hairy-footed Flying Squirrel	DD	Sch II (Part I)	NA	GH	2,3
33	<i>Hylopetes alboniger</i>	Parti-coloured Flying Squirrel	LC	Sch II (Part I)	NA	EKH, JH	1,2,3
34	<i>Petaurista petaurista</i>	Red Giant Flying Squirrel	LC	Sch II (Part I)	NA	All districts	1,2,3
35	<i>Petaurista philippensis</i>	Indian Giant Flying Squirrel	LC	Sch II (Part I)	NA	GH, KH	1,2,3
36	<i>Callosciurus erythraeus</i>	Red-bellied Squirrel	LC	No mention of this in WPA	NA	All districts	2,3,4
37	<i>Callosciurus pygerythrus</i>	Hoary-bellied Squirrel	LC	Sch II (Part I)	NA	All districts	1,2,3,4,5
38	<i>Dremomys lokriah</i>	Orange-bellied Himalayan Squirrel	LC	Sch II (Part I)	NA	All districts	1,2,3
39	<i>Funambulus pennanti</i>	Himalayan Five-striped Palm Squirrel	LC	Sch IV	NA	KH, JH	2,3
40	<i>Tamiops macclellandii</i>	Himalayan Striped Squirrel	LC	No mention of this in WPA	NA	EKH	1,2,3,4
	<b>Family Spalacidae: Bomboo Rats</b>						
41	<i>Cannomys badius</i>	Bay Bamboo Rat	LC	Sch V	NA	EGH, EKH, JH	1,2,3
42	<i>Rhizomys pruinosus</i>	Hoary Bamboo Rat	LC	Sch V	NA	All districts	1,2,3
	<b>Family Hystricidae: Old-World Porcupines</b>						
43	<i>Atherurus macrourus</i>	Asiatic Brush-Tailed Porcupine	LC	Sch II (Part I)	NA	All districts	1,2,3,4
44	<i>Hystrix brachyura</i>	Himalayan Crestless Porcupine	LC	Sch II (Part I)	NA	All districts	1,2,3,4,5
	<b>Order Lagomorpha: Hares and Rabbits</b>						
	<b>Family Leporidae: Hares</b>						
45	<i>Caprolagus hispidus</i>	Hispid Hare	EN	Sch I (Part I)	I	Balpakram NP and Chenggni border SGH	3
46	<i>Lepus nigricollis</i>	Indian Hare	LC	Sch IV	NA	All districts	1,2,3,4
	<b>Order Eulipotyphla: Moles and Shrews</b>						
	<b>Family Soricidae: Shrews</b>						
47	<i>Crociodura fuliginosa</i>	Southeast Asian Shrew	LC	NA	NA	WGH, EKH	2,3
48	<i>Crociodura attenuata</i>	Asian Grey Shrew	LC	NA	NA	WGH, EKH, JH	1,2,3
49	<i>Suncus etruscus nudipes</i>	Pygmy White-toothed Shrew	LC	NA	NA	EKH, JH	1,2,3
50	<i>Suncus murinus</i>	Asian House Shrew	LC	NA	NA	EKH, WGH, JH	1,2,3
51	<i>Anourosorex assamensis</i>	Assam Mole Shrew	LC	NA	NA	EKH, JH	1,2,3
	<b>Family Talpidae: Moles</b>						
52	<i>Euroscaptor micrura</i>	Indian Short-tailed Mole	LC	NA	NA	EKH, JH, GH	1,2,3
53	<i>Parascaptor leucura</i>	White-tailed Mole	LC	NA	NA	EKH, JH	1,2,3
	<b>Order Chiroptera: Bats</b>						
	<b>Family Miniopteridae: Long-fingered Bats</b>						
54	<i>Miniopterus pusillus</i>	Lesser Bent-winged Bat	LC	No mention of this in WPA	NA	Umlingsha, EJH	7
55	<i>Miniopterus magnater</i>	Large Bent-winged Bat	LC	No mention of this in WPA	NA	SGH, EJH, EKH, WKH, RB.	7
	<b>Family Pteropodidae: Old World Fruit Bats</b>						
56	<i>Cynopterus brachyotis</i>	Lesser Short-nosed Fruit Bat	LC	Sch V	NA	EJH, WGH	1,3,7
57	<i>Cynopterus sphinx</i>	Greater Short-nosed Fruit Bat	LC	Sch V	NA	WGH, EGH, SGH, KH, EJH	1,2,3,7
58	<i>Eonycteris spelaea</i>	Lesser Dawn Bat	LC	Sch IV	NA	SGH, EKH, JH	1,2,3,7
59	<i>Macroglossus sobrinus</i>	Hill Long-tongued Fruit Bat	LC	Sch IV	NA	EKH, JH	1,2,3,7

	Taxa	Common name	IUCN Red List status	Wildlife Protection Act, 1972 schedule/status	CITES	Distribution	Source
60	<i>Megaerops niphanae</i>	Northern Tailless Fruit Bat	LC	Sch V	NA	WKH, EKH	1,2,3,7
61	<i>Pteropus giganteus</i>	Indian Flying Fox	LC	Sch V	II	EKH, RB, WGH	1,2,3,4,7
62	<i>Rousettus leschenaultii</i>	Leschenault's Rousette	LC	No mention of this in WPA	NA	WGH, EGH, SGH, EKH, JH	1,2,3,7
<b>Family Rhinolophidae: Horseshoe Bats</b>							
63	<i>Rhinolophus affinis</i>	Intermediate Horseshoe Bat	LC	NA	NA	EKH, JH	1,2,3,7
64	<i>Rhinolophus lepidus</i>	Blyth's Horseshoe Bat	LC	NA	NA	KH, JH, SGH	1,2,3,7
65	<i>Rhinolophus luctus</i>	Great Woolly Horseshoe Bat	LC	NA	NA	KH, JH	1,2,3,7
66	<i>Rhinolophus macrotis</i>	Big-eared Horseshoe Bat	LC	NA	NA	KH, EKH	1,3,7
67	<i>Rhinolophus pearsonii</i>	Pearson's Horseshoe Bat	LC	NA	NA	KH, JH, GH	1,2,3,7
68	<i>Rhinolophus pusillus</i>	Least Horseshoe Bat	LC	NA	NA	EKH, SGH, WGH, JH	1,2,3,7
69	<i>Rhinolophus siamensis</i>	Thai Horseshoe Bat	LC	NA	NA	EKH	7
70	<i>Rhinolophus sinicus</i>	Chinese Horseshoe Bat	LC	NA	NA	EKH, EKH	7
71	<i>Rhinolophus subbadius</i>	Little Nepalese Horseshoe Bat	LC	NA	NA	GH, EKH	1,2,3,7
<b>Family Hipposideridae: Old-World Leaf-Nosed Bats</b>							
72	<i>Coelops frithii</i>	Tailless Leaf-nosed Bat	LC	NA	NA	KH	1,2,3,7
73	<i>Hipposideros armiger</i>	Great Himalayan Leaf-nosed Bat	LC	NA	NA	KH, JH, GH	1,2,3,7
74	<i>Hipposideros cineraceus</i>	Least Leaf-nosed Bat	LC	NA	NA	EKH, JH, RB	1,2,3,7
75	<i>Hipposideros larvatus</i>	Horsfield's Leaf-nosed Bat	LC	NA	NA	WGH, KH, EKH, RB	1,2,3,7
76	<i>Hipposideros pomona</i>	Anderson's Leaf-nosed Bat	LC	NA	NA	SGH, EKH, RB, EKH	1,2,3,7
77	<i>Hipposideros lankadiva</i>	Indian Leaf-nosed Bat	LC	NA	NA	EKH, RB, EKH, SGH	2,3,7
<b>Family Megadermatidae: False Vampire Bats</b>							
78	<i>Megaderma lyra</i>	Greater False Vampire	LC	NA	NA	WGH, RB, EKH, EKH	1,2,3,7
79	<i>Megaderma spasma</i>	Lesser False Vampire	LC	NA	NA	BBL, RB, EKH	1,3,4,7
<b>Family Emballonuridae: Sheath-tail Bats</b>							
80	<i>Saccolaimus saccolaimus</i>	Bare-rumped Sheath-tail Bat	LC	NA	NA	Phulbari, WGH	1,3,7
81	<i>Taphozous melanopogon</i>	Black-bearded Tomb Bat	LC	NA	NA	WKH	1,7
<b>Family Molossididae: Free-Tailed Bats</b>							
82	<i>Chaerephon plicatus</i>	Wrinkle-lipped Free-tailed Bat	LC	NA	NA	EKH, WGH	1,2,3,7
83	<i>Otomops wroughtoni</i>	Wroughton's Free-tailed Bat	DD	Sch I (Part I)	NA	EKH, JH	1,3,7
<b>Family Vespertilionidae: Evening Bats</b>							
84	<i>Arielulus circumdatus</i>	Black-gilded Pipistrelle	LC	NA	NA	EKH	1,2,3,7
85	<i>Eptesicus pachyotis</i>	Thick-eared Bat	LC	NA	NA	KH	1,2,3,7
86	<i>Scotomanes ornatus</i>	Harlequin Bat	LC	NA	NA	EGH, EKH, JH	1,2,3,7
87	<i>Scotophilus heathii</i>	Asiatic Greater Yellow House Bat	LC	NA	NA	WGH, EKH	1,2,3,7
88	<i>Scotophilus kuhlii</i>	Lesser Asiatic Yellow House Bat	LC	NA	NA	GH, EKH	1,2,3,7
89	<i>Pipistrellus ceylonicus*</i>	Kelaart's Pipistrelle	LC	NA	NA	EJK	1,7
90	<i>Pipistrellus coromandra</i>	Indian Pipistrelle	LC	NA	NA	JH, EKH, RB, GH	1,2,3,7
91	<i>Pipistrellus javanicus</i>	Javan Pipistrelle	LC	NA	NA	KH	1,7
92	<i>Pipistrellus paterculus</i>	Mount Popa Pipistrelle	LC	NA	NA	EKH	1,7
93	<i>Pipistrellus mimus</i>	Least Pipistrelle	LC	NA	NA	WGH, EKH	1,2,3,7

	Taxa	Common name	IUCN Red List status	Wildlife Protection Act, 1972 schedule/status	CITES	Distribution	Source
94	<i>Pipistrellus kuhlii</i>	Kuhl's Pipistrelle	LC	NA	NA	EKH	3,7
95	<i>Barbastella leucomelas</i>	Eastern Barbastelle	LC	NA	NA	JH, KH	1,2,3,7
96	<i>Plecotus homochrous</i>	Long-eared Bat	LC	NA	NA	KH	1,2,7
97	<i>Hypsugo joffrei</i>	Joffre's Pipistrelle	DD	NA	NA	EKH	7
98	<i>Hypsugo savii</i>	Savi's Pipistrelle	LC	NA	NA	EKH	1,2,3,7
99	<i>la io</i>	Great Evening Bat	LC	NA	NA	KH, EJH	1,2,3,7
100	<i>Tylonycteris malayana</i>	Greater Bamboo Bat	LC	NA	NA	EJH	7
101	<i>Tylonycteris pachypus</i>	Lesser Bamboo Bat	LC	NA	NA	WGH, EKH	1,2,3,7
102	<i>Myotis altarium</i>	Szechwan Myotis	LC	NA	NA	EKH, EJH	7
103	<i>Myotis formosus</i>	Hodgson's Bat	LC	NA	NA	EKH	1,2,3,7
104	<i>Myotis horsfieldii</i>	Horsfield's Myotis	LC	NA	NA	JH	1,2,3,7
105	<i>Myotis laniger</i>	Chinese Water Myotis	LC	NA	NA	EKH	1,2,3,7
106	<i>Myotis longipes</i>	Kashmir Cave Bat	DD	NA	NA	SGH, EJH, EKH, WKH	1,2,3,7
107	<i>Myotis muricola</i>	Nepalese Whiskered Bat	LC	NA	NA	WJH, EKH	1,3,7
108	<i>Myotis pilosus</i>	Rickett's Big-Footed Myotis	NT	NA	NA	EKH	7
109	<i>Myotis siligorensis</i>	Himalayan Whiskered Bat	LC	NA	NA	JH, KH	1,2,3,7
110	<i>Harpiocephalus harpia</i>	Lesser Hairy-winged Bat	LC	NA	NA	EKH	1,2,3,7
111	<i>Murina aurata</i>	Little Tube-nosed Bat	LC	NA	NA	EKH	1,3,7
112	<i>Murina cyclotis</i>	Round-eared Tube-nosed Bat	LC	NA	NA	EKH, JH	1,2,3,7
113	<i>Murina huttoni</i>	Hutton's Tube-nosed Bat	LC	NA	NA	EKH, EJH	3,7
114	<i>Murina jaintiana</i>	Jaintia Tube-Nosed Bat	DD	NA	NA	EKH, EJH	7
115	<i>Murina pluvialis</i>	Rainy Forest Tube-nosed Bat	DD	NA	NA	EKH, EJH	7
116	<i>Murina tubinaris</i>	Scully's Tube-nosed Bat	LC	NA	NA	JH, EKH	1,2,3,7
117	<i>Kerivoula hardwickii</i>	Common Woolly Bat	LC	NA	NA	SGH, WJH	1,2,3,7
118	<i>Kerivoula kachinensis</i>	Kachin Woolly Bat	LC	NA	NA	EKH, EJH	7
	<b>Order Pholidota: Pangolins</b>						
	<b>Family Manidae: Pangolins</b>						
119	<i>Manis crassicaudata</i>	Indian Pangolin	EN	Sch I (Part I)	I	WGH, EGH, SGH	1, 2, 3
120	<i>Manis pentadactyla</i>	Chinese Pangolin	CR	Sch I (Part I)	I	SGH, EKH	1,2,3,5
	<b>Order Carnivora: Carnivores</b>						
	<b>Family Felidae: Cats</b>						
121	<i>Catopuma temminckii</i>	Asian Golden Cat	NT	Sch I (Part I)	I	EGH, SGH, JH	1,2,3,8
122	<i>Felis chaus</i>	Jungle Cat	LC	Sch II (Part I)	II	WGH, EGH, SGH	1,2,3,8
123	<i>Pardofelis marmorata</i>	Marbled Cat	NT	Sch I (Part I)	I	GH	1,2,3,4
124	<i>Prionailurus bengalensis</i>	Leopard Cat	LC	Sch I (Part I)	I/II	All districts	1,2,3,4
125	<i>Prionailurus viverrinus</i>	Fishing Cat	VU	Sch I (Part I)	II	All districts	1,3
126	<i>Neofelis nebulosa</i>	Clouded Leopard	VU	Sch I (Part I)	I	All districts	1,2,3,4
127	<i>Panthera pardus</i>	Leopard	VU	Sch I (Part I)	I	All districts	1,2,3,4,5
128	<i>Panthera tigris</i>	Tiger	EN	Sch I (Part I)	I	All districts	1,2,3,6

	Taxa	Common name	IUCN Red List status	Wildlife Protection Act, 1972 schedule/status	CITES	Distribution	Source
	<b>Family Viverridae: Civets</b>						
129	<i>Arctictis binturong</i>	Binturong	VU	Sch I (Part I)	III	All districts	1,2,3
130	<i>Arctogalidia trivirgata</i>	Small-toothed Palm Civet	LC	Sch II (Part I)	NA	BBL	1,3,4
131	<i>Paguma larvata</i>	Himalayan Palm Civet	LC	Sch II (Part I)	III	All districts	1,2,3,4
132	<i>Paradoxurus hermaphroditus</i>	Common Palm Civet	LC	Sch II (Part I)	III	All districts	1,2,3,4
133	<i>Viverra zibetha</i>	Large Indian Civet	LC	Sch II (Part I)	III	All districts	1,2,3,4
134	<i>Viverricula indica</i>	Small Indian Civet	LC	Sch II (Part I)	III	WGH	1,2,3,4
	<b>Family Herpestidae: Mongooses</b>						
135	<i>Herpestes javanicus</i>	Small Indian Mongoose	LC	Sch II (Part I)	III	All districts	1,2,3,4
136	<i>Herpestes edwardsii</i>	Indian Grey Mongoose	LC	Sch II (Part I)	III	WGH	1,2,3
137	<i>Herpestes urva</i>	Crab-eating Mongoose	LC	Sch II (Part I)	III	WGH, EGH	1,2,3,4,5
	<b>Family Canidae: Dogs and Foxes</b>						
138	<i>Canis aureus</i>	Golden Jackal	LC	Sch II (Part I)	III	WGH, EGH, SGH, JH	1,2,3,4
139	<i>Cuon alpinus</i>	Wild Dog	EN	Sch II (Part I)	II	All districts	1,2,3,4
140	<i>Vulpes bengalensis</i>	Indian Fox	LC	Sch II (Part I)	III	SGH	1,2,3
	<b>Family Ursidae: Bears</b>						
141	<i>Helarctos malayanus</i>	Malayan Sun Bear	VU	Sch I (Part I)	I	All districts	1,2,3
142	<i>Melursus ursinus</i>	Sloth Bear	VU	Sch II (Part I)	I	RB, EKH, GH	1,2,3
143	<i>Ursus thibetanus</i>	Asiatic Black Bear	VU	Sch II (Part I)	I	All districts	1,2,3,4
	<b>Family Mustelidae: Weasels, Badgers, and Otters</b>						
144	<i>Aonyx cinerea</i>	Asian Small-clawed Otter	VU	Sch I (Part I)	II	WGH, JH	1,2,3
145	<i>Lutra lutra</i>	Common Otter	NT	Sch II (Part I)	I	All districts	2,3
146	<i>Lutrogale perspicillata</i>	Smooth-coated Otter	VU	Sch II (Part I)	II	WGH	1,2,3,4
147	<i>Arctonyx albogularis</i>	Northern Hog Badger	LC	Sch I (Part I)	NA	All districts	1
148	<i>Arctonyx collaris</i>	Hog Badger	VU	Sch I (Part I)	NA	All districts	1,2,3,4
149	<i>Martes flavigula</i>	Yellow-throated Marten	LC	Sch II (Part I)	III	All districts	1,2,3,4
150	<i>Melogale moschata</i>	Small-toothed Ferret Badger	LC	Sch II (Part I)	NA	KH	1,2,3,4
151	<i>Melogale personata</i>	Burmese Ferret-badger	LC	Sch II (Part I)	NA	BBL, KH	1,2,3,4
152	<i>Mustela kathiah</i>	Yellow-bellied Weasel	LC	Sch II (Part I)	III	WKH, EKH	1,2,3
153	<i>Mustela strigidorsa</i>	Stripe-backed Weasel	LC	NA	NA	EKH, JH	1,3
	<b>Family Ailuridae: Red Panda</b>						
154	<i>Ailurus fulgens</i>	Red Panda	EN	Sch I (Part I)	I	WGH, EGH, SGH, WKH, EKH	1,2,3
	<b>Order Artiodactyla: Even-Toed Ungulates</b>						
	<b>Family Suidae: Pigs</b>						
155	<i>Sus scrofa</i>	Indian Wild Boar	LC	Sch III	NA	All districts	1,2,3,4,5
	<b>Family Cervidae: Deer</b>						
156	<i>Muntiacus vaginalis</i>	Indian Muntjac	LC	Sch III	NA	All districts	1,2,3,4,5
157	<i>Axis porcinus</i>	Hog Deer	EN	Sch III	I/III	RB, GH	2,3
158	<i>Rusa unicolor</i>	Sambar	VU	Sch III	NA	WGH, EGH, SGH, RB, EKH	1,2,3,4
	<b>Family Bovidae: Cattle, Antelopes, and Goats</b>						
159	<i>Bubalus arnee</i>	Wild Water Buffalo	EN	Sch I (Part I)	III	BBL, Siju WS, WKH	2,3
160	<i>Bos gaurus</i>	Gaur	VU	Sch I (Part I)	I	All districts	1,2,3,4

	Taxa	Common name	IUCN Red List status	Wildlife Protection Act, 1972 schedule/ status	CITES	Distribution	Source
161	<i>Capricornis rubidus</i>	Red Serow	NT	Sch I (Part I)	I	All districts	3,4
162	<i>Naemorhedus griseus</i>	Chinese Goral	NT	Sch III	I	WGH	1,2,3

Sources: 1—IUCN Red List | 2—Das et al. (1995) | 3—Choudhury (2013) | 4—Kakati & Kabra (2015) | 5—Goswami (2015) | 6—Kumar et al. (2010) | 7—Saikia et al. (2018) | 8—Mukherjee et al. (2019) | 9—Molur et al. (2005). EGH—East Garo Hills | EJH—East Jaintia Hills | EKH—East Khasi Hills | GH—Garo Hills | JH—Jaintia Hills | KH—Khasi Hills | RB—Ri-Bhoi | RF—Reserved Forest | SGH—South Garo Hills | WGH—West Garo Hills | WJH—West Jaintia Hills | WKH—West Khasi Hills.

Hills have been reported to cross the border annually to Bangladesh and lone males in Jaintia Hills have also been observed to cross the International boundary occasionally (Choudhury 2007).

**Primates:** The distribution and status of different primate species were mapped, and the forest status and human pressures in northeastern India were assessed by Srivastava (2006). Extensive surveys were carried out throughout the region between 1994 and 1999. The survey reported the presence of Rhesus Macaque *Macaca mulatta*, Assamese Macaque *Macaca assamensis*, Northern Pig-Tailed Macaque *Macaca leonina*, Stump-Tailed Macaque *Macaca arctoides*, Capped Langur *Trachypithecus pileatus*, Western Hoolock Gibbon *Hoolock hoolock*, and Bengal Slow Loris *Nycticebus bengalensis* in Meghalaya. All the species were observed to occur in very low densities. Habitat loss and hunting were reported to be the main threats to the primates. In some cases, indiscriminate hunting had extirpated local populations despite the availability of large tracts of primary forest. Interactions with humans due to crop raiding have led to retaliatory killing of macaques and langurs (Srivastava 2006).

Stump-Tailed Macaque was reported to occur in Mawsynram area of the Khasi Hills, Balpakram NP and Nokrek RF while Pig-Tailed Macaque were reported in all districts including Mawsynram area of East Khasi Hills, West Garo Hills, and West Khasi Hills (Biswas 1977; Sati & Alfred 1990; Molur et al. 2003). Rhesus Macaque was reported to occur in Garo and Khasi hills, Assamese Macaque in Balpakram NP, Songsek Tasek RF and Siju WS, and Capped Langur in Garo Hills (Molur et al. 2003). Habitat destruction and hunting were stated to be the main threats for all the species.

Preliminary investigations have reported the occurrence of the Bengal Slow Loris in Meghalaya (Radhakrishna et al. 2006; Nandini et al. 2009; Radhakrishna et al. 2010). The species occurs in very low numbers and its population may have reduced over the years owing to threats such as forest fragmentation, vehicle collision, and hunting (Radhakrishna et al. 2006).

Other major threats to the species were hunting for bushmeat, capture for pets, man-made fires, mining and conversion of forests to plantations (Radhakrishna et al. 2010). The species has been sighted in Nongkhylllem WS, Narpuh RF, Baghmara RF, Balpakram NP, and Nokrek NP although its density is very low (Molur et al. 2003; Kakati et al. 2009; Radhakrishna et al. 2010).

The occurrence of Western Hoolock Gibbons has been reported in East Garo Hills, South Garo Hills, Ri-Bhoi, and Khasi Hill districts (Baskaran 1975; Molur et al. 2003). Hoolock Gibbon also occurs in 32 localities in West Garo Hills (Alfred & Sati 1990). Hoolock Gibbon populations in West Garo Hills had declined between 2007 and 1985–87 by 26.2% owing to human disturbances such as tree felling, jhum, livestock grazing, and poaching (Alfred & Sati 1990; Sati 2011). It was observed that the rate of survival might have been severely affected and establishment of new colonies was not happening.

**Rodents:** Rodents have hardly been studied in Meghalaya, except for a couple of studies that reported on the partial albinism of White-Bellied Rat *Rattus niviventer* (Rajagopal & Mandal 1965). A faunal account of all rodent species found in India was provided through an extensive collection available at the British Museum (Ellerman 1961). Accounts of all mammalian species including a few rodent species found in the Khasi, Jaintia, and Garo hills region was also provided by Hinton & Lindsay (1926).

**Chiropterans:** Bats have been well documented in Meghalaya. About 65 species have been reported in the state (Saikia et al. 2018). One of the first scientific records of bats in Meghalaya was of the description of *Scotomanes ornatus* done by Blyth in 1851 (Saikia et al. 2018). Since then bats have been documented throughout the Khasi, Jaintia, and Garo hills (Dobson 1871, 1872, 1874; Thomas 1921; Kemp 1924; Hinton & Lindsay 1926; Topal 1970; Lal 1977; Sinha 1990, 1994, 1995, 1999; Thabah & Bates 2002; Thabah et al. 2006, 2007; Ruedi et al. 2012a,b, 2014; Thong et al. 2017; Saikia et al. 2017, 2018; Korad 2018). Most of the studies reported only the taxonomic status and distribution of

**Table 2. Conservation status according to IUCN Red List, IWPA 1972 and CITES. Numbers show the number of species.**

<b>Indian Wildlife (Protection) Act, 1972</b>	
Schedule I	23
Schedule II	33
Schedule III	5
Schedule IV	9
Schedule V	23
Not assessed	65
<b>CITES (2017)</b>	
Appendix I	22
Appendix II	12
Appendix III	13

the bat species. One of the few studies that focused on the ecology of bats (Thabah et al. 2007) reported on the feeding and echolocation behavior of the Great Evening Bat *la io*. The authors found that the species preyed on birds, although coleopterans formed the main constituent of their diet.

Unregulated mining activities for limestone and coal near cave systems pose a threat to the caves and the fauna they harbour (Saikia 2018). Expansion of plantations, demand for firewood and deforestation associated with mining activities threaten the survival of bat species as well as all other forest-dwelling species (Ruedi et al. 2012a, 2014). Hunting of bats for a supplementary source of protein is another threat. Improvised techniques are employed for their capture from caves by locals, and the number of captured bats has been reported to go as high as 100 on a single night. Some of the bat meat is sold in local markets (Ruedi et al. 2012b; Saikia et al. 2018). This overharvesting has led to a decline in the bat population, with some colonies retreating to inaccessible cliffs and caverns (Saikia et al. 2018).

**Dhole:** A questionnaire-based survey reported that Dhole *Cuon alpinus* was still common in Garo Hills although throughout the state it had become very rare (Johnsingh 1985). The species was last sighted in Garo Hills (Kakati & Kabra 2015).

**Bears:** A few studies have reported the occurrence of three bear species in Meghalaya, viz., Asian Black Bear *Ursus thibetanus*, Sloth Bear *Melursus ursinus*, and Malayan Sun Bear *Helarctus malayanus* (Blanford 1888–91; Hinton & Lindsay 1926; Sathyakumar 2001; Johnsingh 2003; Sathyakumar & Choudhury 2007; Choudhury 2011; Kakati & Kabra 2015). An Asian Black Bear was photo-captured in Balpakram-Baghmara Landscape

in Garo Hills (Kakati & Kabra 2015). The occurrence of Sloth Bear in Meghalaya was confirmed through a specimen acquired from Khasi Hills and preserved at the Zoological Survey of India as well as by local hunters who were familiar with all three species (Choudhury 2011). Choudhury (2011) also reported the sighting of a Malayan Sun Bear pelt from Balpakram NP in the early 1980s; however, no systematic study has been carried out till date for any of the bear species.

The major threats faced by these species are habitat loss, construction of linear infrastructure and dams, coal mining and shortening of jhum cultivation cycles (Sathyakumar 2001; Choudhury 2011). Asiatic Black Bear also faces pressure from poaching for its bile (Choudhury 2011).

**Mustelids:** Specimens of Yellow-bellied Weasel *Mustela kathiah* and skins of Burmese Ferret-badger *Melogale personata* were acquired from Khasi and Jaintia hills (Pillai & Biswas 1971). The authors stated that the Khasis ascribed magical properties to the teeth of the weasel and used it to remove fish bone stuck in the throat. The Burmese Ferret-badger and Small-toothed Palm Civet *Arctogalida trivirgata* were camera-trapped for the first time by Kakati et al. (2014a, 2014b) in Garo Hills. The Burmese Ferret-badger had earlier only been recorded in Khasi Hills (Choudhury 2013).

**Red Panda:** A disjunct population of Red Panda *Ailurus fulgens*, locally known as Matchibel, was reported in Meghalaya through four skins of the species collected from Nokrek and Balpakram in Garo Hills in the 1960s and 1980s (Choudhury 1997, 2000a,b). The largest known specimen was shot in the early 1960s in Nokrek NP (Choudhury 2000a). This was the first record of the species in a tropical forest. It also holds the record for the lowest elevation reported for the species at 200m. This population was thought to have migrated through the Patkai and Naga ranges to the Garo Hills. It was also stated to be found in the Khasi Hills (Choudhury 2000b) although no evidence was provided.

**Ungulates:** Populations of Wild Water Buffalo *Bubalus arnee* have declined in Meghalaya as well as in the whole of northeastern India owing to the destruction of habitat through the conversion of elephant-grass jungles to farmland, hunting pressure and transmission of diseases by livestock. In Meghalaya, there currently exists only a small population in Balpakram NP (Choudhury 1994).

The Gaur *Bos gaurus* is mainly found in South Garo Hills and West Khasi Hills although a small population is also found in Ri-Bhoi District (Choudhury 2002).

## CONCLUSION

Meghalaya being part of the Indo-Burma Biodiversity Hotspot and also hosting a diverse array of Indo-Malayan species is an important landscape for the conservation of many of the mammalian species that exist in the subcontinent. With about 38% of all Indian mammals found in the state, it is worthwhile to emphasize the need for greater conservation efforts in this region. Although a decent number of studies have been conducted, most have focused only on Asian Elephants and only in the Garo Hills region while hardly a handful of studies have focused their attention on other species and in other parts of the state; most of the studies on other species have been limited to preliminary investigations and provide only a synoptic view of species distribution, occurrences and threats. Certain taxa such as the chiropterans have in recent years been well documented, but are restricted only to the taxonomic field. Other taxa such as the rodents, although representing the second largest group in the state, have hardly been studied. A wider concerted effort in conducting additional studies on other lesser appreciated groups and lesser known species and tackling both ecological as well as human-wildlife questions would provide a firm foundation for

undertaking holistic conservation actions to ensure the persistence of the mammalian fauna in the state.

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Image 1. Camera trap photos: A—Leopard | B—Clouded Leopard | C—Leopard Cat | D—Yellow-throated Martin. © GBPN/NMHS-2017-18/MG 32.

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