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Studies on the Mammalian Diversity of Dimapur, Nagaland, India

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ABSTRACT

The exploration of mammalian diversity distributed at the tribal district of Dimapur in Nagaland, India revealed the presence of a diverse population of 16 species of mammals belonging to 16 genera, 16 families. The species of order Primate and a single species of order *Oryctolagus cuniculus* were observed in the Dimapur. The mammalian species reported presented an assemblage of unique and threatened species of mammals. The analysis of data revealed that *Hoolock hoolock* (Harlan, 1834) endangered species, *Ursus thibetanus* (G. Cuvier, 1823), *Panthera pardus* (Linnaeus, 1758) vulnerable species and *Oryctolagus cuniculus* (Linnaeus, 1758) near threatened species have been listed in IUCN 3.1, while out of the sixty species reported ten species have been placed under different schedules of Indian Wildlife (Protection) Act 1972. A total of sixty species reported from the study area was found to be declared threatened by IUCN 3.1.

Keywords: Mammals, Naga tribal, District Dimapur

1. INTRODUCTION

North-eastern Area of India, encompassing the states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura, can be physio explicitly

separated into the eastern Himalaya, the northeastern hills (Patkai-Naga Hills and Lushai Hills), the Brahmaputra and Barak valley plains. At the convergence of the Indo-Malayan and Palearctic biogeographic realms, the province contains a profusion of habitats characterized by diverse biota with a high level of endemism. The region is also the abode of approximately 225 of India's 461 tribes, the culture and customs which have a significant role in understanding of biodiversity conservation and management issues. The area is part of a global biodiversity hotspot (Myers *et al.* 2000), as well as two 'Endemic Bird Areas' (Stattersfield *et al.* 1998).

The whole state of Nagaland is rich in Biodiversity. Nagaland comes under the Indo-Burma (Myanmar) Biodiversity hotspots of the world. It lies between 25°06' and 27°04' latitude, north of equator and between the longitudinal lines 93°20' E and 95°15' E. The area of the State is 16,579 sq-kms. Though small in surface area the geographical location with varied climatic condition ranging from tropical to temperate conditions have greatly influenced the rich floristic and faunal diversity in the state.

The flora of Nagaland demonstrated great affinities with flora of Indo-Malaya and Indo-China. The angiospermic flora is characterized by about 2,431 species fitting to 963 genera and 186 families. In this, the share of dicots is 1,688 species, 724 genera from 158 families and monocots by 743 species below 239 genera from 28 families. Gymnosperms also record their presence with 9 species, under 6 genera from 5 families. There are over a thousand species of orchids in India and Nagaland alone has about 360 orchid species. There are about 71 bamboo species, 12 cane species and 41 allied species, 346 lichens and 103 Red Data Plants. The faunal diversity includes about 67 common wild animals, 519 bird species and 149 fish species and a number of reptiles and amphibians.

The abundant Indian hornbill is one of the record renowned birds and mammals found in the State. Blyth's tragopan, which is a vulnerable species of pheasant, is the State's bird of Nagaland. It is sighted on Mount Japfiu and Dzukou valley of Kohima district, Satoi range in Zunheboto district and Pfutsero in Phek district. The world's biggest and tallest Rhododendron tree discovered in 1993 featured in the Guinness Book of World Records, measuring up to 108 feet and can be found at the base of Japfu Peak. Rhododendron and Mithun is the State flower & animal of Nagaland respectively. The state is also known as "Falcon Capital of the World." It is the primary stopover roosting site for Amur falcons in places like Wokha, Longleng, Peren, Dimapur, Phek etc. The famed Guinness World Records, London, recognized the Melhite Lha (paddy) species as the tallest Paddy in the world on December 2001, and Naga King Chilly was also recorded as the World's Hottest Chilly in 2007.

The studies were conducted in Dimapur, Nagaland to explore the diversity of mammalian species at 2018. Dimapur is the largest city in Nagaland, India. Contrary to popular belief, the city's development in Nagaland is isolated from that of Assam. In the Middle Ages, it was the center of the Dimasa Kachari Kingdom. In the mind of the town there is an old relic of the Kachari Kingdom which speaks about the once prosperous era. It is located at 25°54'45"N 93°44'30"E and is bounded by Kohima district on the south and east, the Karbi Anglong district of Assam on the west and stretch of Golaghat District of Assam, in the west and the north. The name Dimapur is derived from the Dimasa language; "Di" means "water", "ma" means "large" and "pur" (sanskritised word) means "city", interpreting to "Big-river-city", accompanying with the meaning of "Kachari" which is people of the river valley" and after the river which flows through it (Dhansari).

It is also the opening to Nagaland and its only railhead. The city has the only functional airport in the state. (Cook and Sharell, 2014): Lahan and Sonowal, 1972; Mathuret *et al.*, 2005).

Dimapur is located in the western most part of Nagaland and is surrounded by the district of Kohima in the south-eastern part, district of Karbi Anglong in the west, and Golaghat district of Assam in the northern part. The boundary on the eastern part of Dimapur is formed by Dhansiri River, while the western part of the district consists mostly of forests and hills. Many investigators have conducted studies on diversity of mammals in different parts of the Himachal Pradesh (Blanford, 1881-91; Rodgers and Panwar, 1988; Negi, 1992; Chakraborty *et al.*, 2005, Sharma and Saikia, 2009; Singh and Banyal, 2013; Singh *et al.*, 2014). In the past, a few endeavours have been made to study the mammalian fauna of Damapur Nagaland region.

Bhatnagar (1993) gave a general account of the wildlife of Nagaland National Park. Studies on habitat utilization, feeding ecology and conservation of Asiatic Ibex conflicts between pastoralism and wild herbivores and the ecology of Snow leopard were also conducted in parts of Nagaland region in North East India (Bhatnagar, 1997; Chudawat. 1994; Manjrekar, 1997; Sharma *et al.*, 2009). However, the present study area of wildlife of Nagaland National Park, and Damapur has received very little attention of the field biologists due to severe cold climate, inaccessible habitat and the lack of local expertise. Only a few studies have been conducted on diversity and ecology of avian fauna of this sanctuary area (Wynter-Blyth, 1948; Negi and Banyal, 2015). The present study provides a preliminary list of mammals observed in the Damapur for the first time and will act as baseline literature for further studies in this area.

2. MATERIALS AND METHODS

The mammalian species were recorded in and around by using hired vehicle, to reach different localities of the study area (Fig. 1). The Nikon Binocular and Nikon Camera with Telelens were used to record the mammal's species in the field. The presence of some mammal's species is ascertained on the basis of interview with guides and villagers residing around reported locality, from earlier literature and record of forest department. The identification of mammalian species was also done by studying pugmark on the forest track and near water body.

Table 1. Mammal Diversity in Dimapur

S. No	Common Name	Scientific Name	Conservation status
1.	Asiatic Black Bear	<i>Ursus thibetanus</i> (G. Cuvier, 1823)	(VU) Vulnerable (IUCN 3.1) (Garshelis <i>et al.</i> , 2016)
2.	Buffalo	<i>Bubalus bubalis</i> (Linnaeus, 1758)	(LC) Least Concern (IUCN 3.1) (CITES 2012 and Lau <i>et al.</i> , 1998)
3.	Chital	<i>Axis axis</i> (C. H. Smith, 1827)	(LC) Least Concern (IUCN 3.1) (Duckworth <i>et al.</i> , 2015)

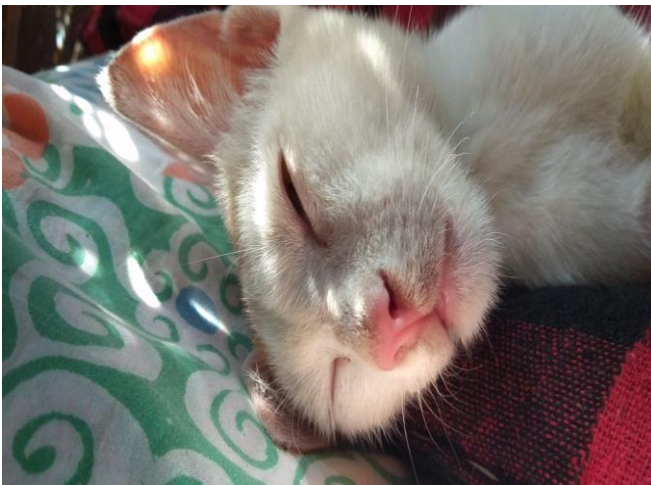
4.	House Cat	<i>Felis catus</i> (Linnaeus, 1758)	Domesticated (Wozencraft, 2005)
5.	Dog	<i>Cuon alpinus</i> (Linnaeus, 1758)	Domesticated, (Zhang <i>et al.</i> , 2016)
6.	Common Jackal	<i>Canis aurius</i>	Least Concern (IUCN 3.1), Jhala and Moehlman, 2008
7.	Leopard	<i>Panthera pardus</i> (Linnaeus, 1758)	(VU) Vulnerable on the IUCN (3.1) (Singh <i>et al.</i> , 2011: Pandit <i>et al.</i> , 2007: Nowell and Jackson, 1997
8.	Pig	<i>Suidae scrufa</i> (Erxleben, 1777)	Domesticated, Colin, 1995
9.	Rabbit	<i>Oryctolagus cuniculus</i> (Linnaeus, 1758)	Near Threatened (IUCN 3.1) (Smith & Boyer, 2008: Atkinson <i>et al.</i> , 2000: Bell, 2000: Bell & Boyle, 2008)
10.	Rat	<i>Rattus rattus</i> (Linnaeus, 1758)	(LC) Least Concern (IUCN 3.1) (Amori <i>et al.</i> , 2015 and Meerburg <i>et al.</i> , 2009)
11.	Rhesus Macaque	<i>Macaca mulatta</i> (Zimmermann, 1780)	(LC) Least Concern (IUCN 3.1) Timmins, <i>et al.</i> , 2008 and Kumar <i>et al.</i> , 2011
12.	Western Hoolock Gibbon	<i>Hoolock hoolock</i> (Harlan, 1834)	(EN) Endangered (IUCN 3.1) Brockelman <i>et al.</i> , 2008
13.	House Mouse	<i>Mus musculus</i> (Linnaeus, 1758)	(LC) Least Concern (IUCN 3.1) (Musser <i>et al.</i> , 2008 and Klemme and Firman 2013)
14.	Field Mouse	<i>Mus booduga</i> (Gray, 1837)	Least Concern (IUCN 3.1) (Aplin <i>et al.</i> , 2008: Musser <i>et al.</i> , 2005)
15.	Fulvous Fruit Bat	<i>Tousettus leschinuitas</i> (Desmarest, 1820)	Least Concern (IUCN 3.1) (Bates, P. & Helgen 2008: Shepherd and Chris 2102)
16.	Common Langur	<i>Presbytis entellus</i> (Dufresne, 1797)	Least Concern (IUCN 3.1) (Groves and Chhanani, 2008: Mitra and Molur, 2008)



Asiatic Black Bear



Bear Buffalo



Cat



Dog



Pig



Rabbit



Rhesus Macaque



Western Hoolock Gibbon

Fig. 1. Mammal Diversity in Dimapur

3. RESULTS AND DISCUSSION

In only 8% of India's topographical area in the NE, there are 60% of the threatened species of the country. This specifies the rich biodiversity of this region. In the case of 'Vulnerable' birds and reptiles, the share is very high, 73% and 81% correspondingly. For many species, such as the Pygmy Hog, Namdapha Flying Squirrel, Manipur Thamin, Manipur Bush-quail and Black-breasted Parrotbill, almost their entire population is cramped to this constituency. For the Indian Rhinoceros, Wild Buffalo, Golden Langur, Capped Langur, Greater Adjutant, Bengal Florican, White-winged Duck, Swamp Francolin and Assam Roof Turtle, the bulk of their known population is found in this area. There seems to be some ostensible gaps in listing the species under numerous classifications. For example, no snakes have been listed by the IUCN (3.1) as 'Endangered' or 'Vulnerable'. This was speciously due to lack of enough field information on these taxon. More should be produced to protect the habitation as possible for long-term protection and adequate conservation of endangered species.

Mammals belong to the group of animals that have a backbone, or column of vertebrae. These vertebrate animals include various fishes, amphibians, reptiles, birds, and mammals. The vertebrates all descended from a common ancestor that lived over half a billion years ago. The Class Mammalia evolved later in the history of life on Earth, in the early Mesozoic, about 210 million years ago. Mammals have hair on their bodies for insulation and protection. Mammal mothers provide their new born with milk from their mammary glands. Today we find mammals across all of Earth's continental land masses, on the ground, in the ground, above the ground, and in the air, as well as throughout the oceans. Scientists recognize more than 5,400 species of closely related mammals world-wide. The methodologies used in this research activity include Field Research and Descriptive Design. Data has gathered primarily visual inspection of a natural setting. The biggest advantage of the naturalistic method of research is that researchers view participants in their natural environments.

The mammal observed in the Park were: Asiatic Black Bear, Buffalo, Deer, Common Jackal, Leopard, Rhesus Macaque, Western Hoolock Gibbon. Mammals (found in other

localities) like Cat, Dog, Pig, Rabbit and Rat were also included in the research. There is a need to demonstrate the changes in land use practices especially in areas of endangered animals, and also in order to control losses in biodiversity and restore degraded ecosystems, we need to have a full assessment of the magnitude of such losses that stem from the utilization of biodiversity, and the factors that promote the unsustainable use of biotic resources. An important aspect is to strengthen the measuring, monitoring and management of biodiversity and evaluate our conservation strategies in the light of human needs for with coordinated approach to sustain protection of both areas and diversity as seen in totality.

The fauna of the Nagaland region have been adversely affected owing to combined effect of habitat destruction, fragmentation, hunting, poaching, illegal trade, grazing, deforestation, hybridization, random use of pesticides, landslides, cloud bursts, floods, construction of hydroelectric Projects and others. Nagaland glaciers are shrinking at a faster pace causing changes in the water dynamics of perennial rivers in the region affecting faunal components. The present need is sincere, collective efforts and action oriented strategies for conservation of Biodiversity and different ecosystems of Nagaland are required from all levels and also efforts to restore degraded ecosystems to be accelerated.

4. CONCLUSION

The evolution of the class Mammalia has produced tremendous diversity in form and habit. Living kinds range in size from a bat weighing less than a gram to the largest animal that has ever lived, the blue whale. Every major habitat has been exploited by mammals that swim, fly, run, burrow, glide, or climb. There are more than 5,500 species of living mammals, arranged in about 125 families and as many as.

Throughout our own evolution, humans have depended on other mammals for food and clothing. Domestication of mammals had helped to provide a source of protein for ever increasing human populations and provided means of transportation and heavy work as well. The study of nonhuman primates (monkeys and apes) has opened broad new areas of research relevant to human welfare. The care of domestic and captive mammals is, of course, the basis for the practice of veterinary medicine.

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