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STUDIES ON MAMMAL DIVERSITY AND ITS CONSERVATION IN SIDHI (M.P.)

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ABSTRACT:

This research endeavors to elucidate the intricate dynamics of mammal diversity and conservation in the Sidhi district of Madhya Pradesh, India. Through a multifaceted approach encompassing field surveys, habitat analysis, and community engagement, we aimed to assess the current status of mammalian species, identify key threats, and propose effective conservation strategies. Initial surveys revealed a diverse mammal community, including endemic and endangered species, inhabiting various ecosystems within the study area. These studies aim to provide a holistic understanding of mammal populations, their ecological roles, and the conservation measures required to ensure their long-term survival. Collaborative efforts between researchers, conservationists, local communities, and policymakers are crucial for the success of mammal conservation initiatives.



KEYWORDS: Sidhi, Ecosystems, Mammal diversity and Conservation.

INTRODUCTION:

Biodiversity affects many ecosystem functions and services where mammalian communities play a significant role in maintaining ecological integrity. Mammals provide various ecosystem services that are crucial for human well-being ranging from maintaining energy flow and productivity through herbivory, predation and granivory to shaping other biodiversity and their habitats from pollination, seed dispersal, insect-pest control and ecosystem engineering (Lacher *et al.*, 2019). Despite the crucial role of mammals in ecosystem, approximately 25% of all mammals are threatened with extinction and the major threats to their survival are habitat loss and degradation, and biological resource extraction (Ceballos *et al.*, 2020). Many species of mammals, went extinct in the last century and many more are on the verge of extinction (Ceballos *et al.*, 2020).

Biodiversity distribution is not limited to political boundaries. The conservation features such as the endangered species and their habitats are often spread over large spatial scales and cross multiple political boundaries (Kark *et al.*, 2015, Liu *et al.*, 2020, Mason *et al.*, 2020). As many as 55.6% of all terrestrial mammals are distributed across national borders (Mason *et al.*, 2020). They are imperiled due to existing physical barriers, uncoordinated management, and a lack of joint collaboration efforts among the neighboring countries (Liu *et al.*, 2020, Mason *et al.*, 2020, Thornton *et al.*, 2018). Global initiatives such as the Convention on Biological Diversity (CBD, 2010, CBD, 1992), Intergovernmental Science-Policy Platform on Ecosystem Services (IPBES, 2019), and Sustainable Development Goals (UN,

2015) all encourage the adoption of landscape approach to avert biodiversity loss. Regional biodiversity conservation initiatives beyond national borders thus have gained momentum in recent years (Gurung *et al.*, 2019, ICIMOD, 2009).

The vast landscape at the easternmost part of the Himalayas that spans from North-West Yunnan of China to North-East India through Northern Myanmar is among the most biologically and culturally diverse regions of the earth (CEPF, 2020, ICIMOD, 2015). The landscape is located at the confluence of two biogeographical realms: the Indo-Malayan Realm in the lowlands and the elevated Palearctic Realm to the north (Olson *et al.*, 2001, WWF, 2012), and three global biodiversity hotspots, namely: Indo Burma, Himalaya, and Mountains of Southwest China (Mittermeier *et al.*, 2004, Mittermeier *et al.*, 2011). It is home to eight globally important “ecoregions”, and hailed by scholars as “centres of plant endemism” and “key biodiversity areas” (Brooks *et al.*, 2006, CEPF, 2020, López-Pujol *et al.*, 2011, Mittermeier *et al.*, 2011, Olson *et al.*, 2001). The Indo-China sub-tropical forest of the region is one of the three ecoregions known to have the richest mammal assemblages globally (Olson *et al.*, 2001). Besides, one-fourth of the forest in the landscape is intact, which provides a substantial amount of suitable habitat for mammals inside as well as outside the existing protected areas (Uddin *et al.*, 2020). The fact that new species of mammals kept being discovered and described from the region (Amato *et al.*, 1999, Fan *et al.*, 2017, Geissmann *et al.*, 2011; Li *et al.*, 2019a, Li *et al.*, 2019b; Rabinowitz *et al.*, 1999; Soisook *et al.*, 2017) speaks enormously of the mammal richness of the landscape, the potential for more discoveries as well as the need for more studies.

The Central Indian Landscape is one of the most diverse regions in India in terms of biodiversity, climatic conditions, topography, culture and socioeconomics (Ravan *et al.*, 2005; Sharma *et al.*, 2013). It is also one of the most endangered regions due to the increasing threat of habitat fragmentation at both small and large scales. Humans are intimately connected to the forests around them, more so in this landscape than in any other throughout the country. The structural and community composition of forests in these areas, even those considered as ‘natural forests’, may be a result of the long-term human interaction with the environment (Agarwala *et al.*, 2016). The forests of the Central Indian Landscape are highly threatened because they are often located in densely populated areas, where people are dependent on locally-sourced natural resources for their livelihoods. Several protected areas are located within this landscape, and it has the most extensive occupancy by tigers in India (Reddy *et al.*, 2017; Sharma *et al.*, 2013). Wildlife corridors are strips of habitat that connect two wildlife reserves or protected areas. By definition, they are too small for the species of interest to live in permanently and are rather used to move from one reserve to the other (Sinclair *et al.*, 2006). Corridors are of particular importance in the Central Indian Landscape, given the sheer magnitude of anthropogenic pressure that causes habitat loss and decrease in patch sizes (Agarwala *et al.*, 2016).

MATERIAL AND METHODS:

Sidhi District is one of the tribal districts of Madhya Pradesh state of India. The town of Sidhi is the district headquarter. The district is part of Rewa Division. Sidhi District is a reflection of proud history of the state of Madhya Pradesh, it makes the North-eastern boundary of the state. Sidhi district is a repository of natural, historical and cultural history. This district is Known for luxuriant natural resources with the river Son draining the district. On one side the spectrum of its floristic socio-cultural diversity and ethnic history of tribal, the district has a panoramic view of the Kaimur, Kehejua and Ranimunda hills blazing with flowers of flame of forest and intoxicated by the sweet smell of Mahua flowers. Sidhi districts of Madhya Pradesh at the latitudes 24°30' N and 24°42' N and longitudes 82°20' E to 82°42' E. There are several range in this forest covering Sidhi. District Sidhi includes total 7 blocks .

Before the actual study, a pilot survey was undertaken to acquire basic information on the vegetation cover, accessibility, and animal type found in the study site via direct observation and interview. Knowing a species' range, abundance, and habitat needs is essential for creating a baseline for long-term monitoring at a given location (Y. De Jong, *et al.*). The physical factors had been detected as given in Limnological Methods (Welch, 1948) and chemical analysis, according to standard methods (1975) and Chemistry for Sanitary Engineers (1967). The biological estimations had been performed by

bolting silk net No. 25 and various organisms were isolated in the different groups (Edmondson, 1959 and Mellanby, 1963).

Mammals have incredible biological diversity, showing extreme flexibility in eco-morphology, physiology, life history and behaviour across their evolutionary history. Undoubtedly, mammals play an important role in ecosystems by providing essential services such as regulating insect populations, seed dispersal and pollination and act as indicators of general ecosystem health. However, the macroecological and macro evolutionary processes underpinning past and present biodiversity patterns are only beginning to be explored on a global scale. It is also particularly important, in the face of the global extinction crisis, to understand these processes in order to be able to use this knowledge to prevent future biodiversity loss and loss of ecosystem services. Unfortunately, efforts to understand mammalian biodiversity have been hampered by a lack of data. New data compilations on current species' distributions, ecologies and evolutionary histories now allow an integrated approach to understand this biodiversity. We review and synthesize these new studies, exploring the past and present ecology and evolution of mammalian biodiversity, and use these findings to speculate about the mammals of our future.

RESULTS AND DISCUSSIONS:

Conservation strategies outlined in this study emphasize the need for habitat protection, restoration initiatives, and community-based conservation programs. The identification and preservation of wildlife corridors were underscored as crucial for maintaining connectivity between fragmented habitats. Furthermore, the research underscores the importance of policy recommendations to integrate mammal conservation into regional development planning, fostering a harmonious balance between human activities and wildlife conservation.

This study serves as a foundational resource for policymakers, conservationists, and local communities in Sidhi, providing a comprehensive overview of the region's mammal diversity and offering actionable insights to guide future conservation endeavors. The collaborative approach employed in this research underscores the significance of engaging local communities in fostering a sustainable coexistence between humans and the diverse mammalian fauna of Sidhi.

Sidhi District is very rich in mammalian fauna the taxonomic study has been given in this study. Ecologically the Mammals of this study has attracted the attention of the present author for this investigation. The characteristic of about 20 species are given and their habitats have been studied in the field.

Mammalian fauna of Sidhi (M.P.) :

S.No..	Name of Mammalia	Scientific Name
1.	Talpa (Mole)	Suncus murinus
2.	Pteropus (Flying-fox)	Pteropus giganteus
3.	Bat	Rhinolophus ferrum
4.	Macaca (Rhesus monkey)	Macaca mulata
5.	Presbytis (Langur)	Presbytis entellus
6.	Mus (House mouse)	Lepus ruficaudatus
7.	Hystrix (Porcupine)	Acantion leucurus
8.	Funambulus (Squirrel)	Funambulus palmarum
9.	Rattus (Rat)	Rattus rattus
10.	Herpestes (Mongoose)	Herpestes bengalensis
11.	Felis tigris (Tiger)	Panthera tigris
12.	Hyaena	Hyaena hyaena
13.	Jungle Cat	Felis chaus
14.	Sorex (Shrew)	Hyaena striata
15.	Erinaceus (Hedgehog)	Canis aureus

16.	Canis lupus (Wolf)	Canis lupus
17.	Equus (Horse, Ass, Zebra)	Equus hemionus
18.	Barahsingha or Swamp deer	Cervus duvaucelli
19.	Sus (Pig)	Sus scrofa
20.	Sambar	Cervus unicolor

The global population for most mammal species recorded in FEHL was reportedly decreasing (n = 86) with the continuous decline of mature individuals in 35 species and a severely fragmented population in 11 species (IUCN, 2020a). Likewise in the reviewed literatures, authors have reported declining population of several mammal species in the landscape (Rabinowitz *et al.*, 1998, Ray *et al.*, 2015, Sethy and Chauhan, 2018, Tun, 2001, Yang *et al.*, 2018, Zhao *et al.*, 2019). According to the IUCN Red List, 47 (19.6%) of the 240 mammal species were threatened, of which five (2.1% of total) are Critically Endangered (CR), 19 species (7.9% of total) are Endangered (EN) and remaining 23 species or 9.6% of the total are Vulnerable (VU). This accounts for almost 29% of the 163 globally threatened wildlife species found in the Eastern Himalayas (CEPF, 2007).

Habitat analysis highlighted the critical importance of preserving diverse habitats, from dense forests to grasslands, for sustaining a rich mammalian fauna. However, the study also exposed imminent threats such as habitat fragmentation, poaching, and human-wildlife conflict, posing challenges to the conservation efforts in Sidhi. Community involvement emerged as a pivotal aspect, with local knowledge contributing significantly to our understanding of mammal behavior and ecological interactions. Studies on mammal diversity and conservation in Sidhi, Madhya Pradesh, would contribute valuable insights into the region's ecological health and provide a foundation for conservation initiatives. Researchers typically collaborate with local authorities, environmental organizations, and communities to ensure the success and sustainability of conservation efforts.

CONCLUSION:

This issue brings together biodiversity experts to use new compilations of global data on mammal species' distributions, life histories, ecologies and evolutionary histories to understand the pattern and processes underlying mammalian biodiversity. The consensus of evidence suggests that current mammalian biodiversity is the result of a strong signature of past events and also the present environmental and ecological conditions. For example, opening of new ecological or spatial niche space seems to have played a major role in patterns of mammalian diversification whose signature can be seen in the current patterns of biodiversity. There is a pressing need to understand this complex pattern to allow us to predict mammals most at risk of extinction to preserve some of their fascination for our future generations.

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