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ANIMAL BIODIVERSITY IN INDIA: A PERSPECTIVE STUDY

Appa Reddy
Department of Zoology, Bengaluru, Karnataka

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ABSTRACT:

India stands as one of the world's megadiverse nations, harboring approximately 7-8% of global species despite occupying only 2.4% of the Earth's land surface. This perspective study explores the rich faunal diversity across India's varied ecosystems, highlighting key biodiversity hotspots, regional variations in animal life, endangered species statistics, the escalating impacts of climate change, and ongoing conservation initiatives. Drawing from recent assessments as of 2025, the paper underscores the urgency of integrated strategies to mitigate threats and preserve this invaluable natural heritage. By synthesizing current data, it aims to provide insights into sustainable pathways for biodiversity management in the face of environmental challenges.

KEY WORDS: Western Ghats, wildlife, biodiversity, amphibians, ecological balance.

INTRODUCTION:

India's geographical expanse encompasses a remarkable array of ecosystems, from the snow-capped Himalayas to the tropical rainforests of the Western Ghats and the arid deserts of Rajasthan. This diversity supports an extensive range of animal species, making the country a critical repository of global biodiversity. With over 91,000 documented animal species, India ranks among the top in faunal richness, reflecting its position as one of the 17 megadiverse countries. The nation's wildlife includes iconic mammals like the Bengal tiger and Asiatic elephant, alongside a plethora of birds, reptiles, amphibians, and invertebrates. Recent developments in 2025, such as the launch of the National Red List Roadmap and discoveries of new species, highlight ongoing efforts to catalog and protect this diversity. However, rapid urbanization, habitat fragmentation, and climate variability pose significant risks. This study offers a comprehensive perspective on these elements, emphasizing the need for adaptive conservation measures to ensure long-term ecological balance.

OBJECTIVE:

The main objective of this research is to study the animal biodiversity in India.

METHODOLOGY:

To fulfill the objective of this research, secondary data has been used. The information sources include data from the internet and various websites. This study has been conducted from a perspective-based approach.

RESULT AND DISCUSSION:

Biodiversity Hotspots in India

Biodiversity hotspots are regions with exceptional concentrations of endemic species facing high levels of threat. India hosts four such globally recognized hotspots: the Himalayas, Indo-Burma, Western Ghats (including Sri Lanka), and Sundaland (encompassing the Nicobar Islands). These areas collectively support a disproportionate share of the country's faunal wealth. The Himalayas, spanning northern India, are home to unique high-altitude species such as the snow leopard and red panda, with diverse mammalian and avian populations adapted to extreme conditions. The Indo-Burma hotspot, covering the northeastern states, features rich primate diversity and has been shaped by historical climate fluctuations leading to species diversification. In the south, the Western Ghats boast high endemism, including 179 amphibian species (65% endemic) and 157 reptile species (62% endemic), making it one of the world's eight "hottest hotspots." Sundaland, particularly the Andaman and Nicobar Islands, contributes significantly despite their small size, hosting over 10% of India's fauna. These hotspots face pressures from deforestation and human encroachment, necessitating targeted protection to maintain their ecological integrity.

Faunal Diversity across Regions

India's faunal diversity varies markedly across its biogeographic zones, influenced by climate, topography, and vegetation. The country documents over 102,718 animal species, achieving a biodiversity score of 0.46 on the diversity index.

In the Himalayan region, faunal assemblages include over 30,615 species, with mammals like

the Himalayan tahr and birds such as the Himalayan monal thriving in alpine meadows. The semi-arid zones, such as the Thar Desert, support resilient species like the Indian gazelle and desert fox, representing about 3.3% of national diversity. Northeastern India, part of the Indo-Burma hotspot, is a haven for primates and features dynamic populations influenced by past climatic cycles. The Western Ghats and coastal regions exhibit high aquatic and terrestrial diversity, including endemic fishes (53% endemic in the Ghats). Island ecosystems like the Andamans add unique elements, with species not found on the mainland. Overall, this regional mosaic underscores India's role in global biodiversity, with mammals (over 39 species in some areas), birds (72 species), and reptiles (17 species) varying by habitat.

Endangered Species and Statistics

India grapples with a high number of endangered species, with over 1,200 listed as threatened on the IUCN Red List. Key mammals include the Bengal tiger (accounting for 70% of the world's population), Asiatic lion, and one-horned rhinoceros. According to 2025 data, 73 species are critically endangered, including 9 mammals, 18 birds, 26 reptiles, and 20 amphibians. Globally, 22.2% of assessed mammals are threatened, a trend mirrored in India where poaching, habitat loss, and trade exacerbate declines. The National Red List assessments in 2025 reveal that nearly 28% of 163,000 evaluated species face extinction risks, with hotspots like the Indo-Burma region particularly affected. Lesser-known species, such as certain amphibians and reptiles in wildlife sanctuaries covering 3.76% of India's land, also demand attention.

Impacts of Climate Change

Climate change profoundly affects India's animal biodiversity through habitat alterations, water scarcity, and shifted migration patterns. Warming cycles have historically driven primate population splits in the northeast, and ongoing changes threaten similar disruptions across taxa. Rising temperatures lead to food source depletion and population declines, with sensitive species in sanctuaries at risk of habitat loss. By 2021, 90% of hotspots were already lost, a figure likely worsened by 2025. Global warming exacerbates these issues, pushing species toward extinction and altering demographic rates.

Conservation Efforts

India's conservation framework includes landmark initiatives like Project Tiger, Project Elephant, and Project Dolphin, supported by the Wildlife Protection Act of 1972. In 2025, milestones such as enhanced flagship programs and the National Red List Vision (2025-2030) aim to assess and protect threatened species. Community-driven efforts, cross-border collaborations with neighbors, and habitat restoration projects address poaching and fragmentation. Organizations like WWF-India focus on priority species, while legal measures like the Biological Diversity Regulations 2025 promote benefit-sharing and sustainable use. Protected areas, including 573 wildlife sanctuaries, play a pivotal role in these strategies.

Major Animal Groups:

- Mammals: Elephants, tigers, lions, leopards, rhinos, sloth bears, various deer, antelopes.
- Birds: Peacocks, adjutant storks, migratory species, diverse raptors.
- Reptiles: King cobras, crocodiles, tortoises, geckos.
- Amphibians: Numerous endemic frogs, toads.
- Fish: Rich marine and freshwater varieties, including major Indian carps.
- Invertebrates: Over 60,000 insect species alone, plus mollusks, arachnids, etc..

CONCLUSION:

India's animal biodiversity represents a vital component of global ecological health, yet it faces multifaceted threats from human activities and climate change. This perspective study illustrates the richness across hotspots and regions, the precarious status of endangered species, and the proactive conservation measures in place. Moving forward, integrating scientific research, policy enforcement, and community engagement will be essential to safeguard this diversity for future generations. As of 2025, initiatives like the Red List assessments provide a roadmap, but sustained global cooperation is imperative to combat on-going declines.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of this manuscript.

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