



Diversity and Conservation Status of Higher Vertebrate Fauna of the Aravalli Mountain Range of Rajasthan, India

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ABSTRACT

*The Aravalli, which stretches widely for about 670 km from Ahmedabad to Delhi, occupies most of its area in Rajasthan, Haryana, and Delhi. In Rajasthan, it creates a picturesque backdrop for flourishing settlements that stand out due to their rich habitat. The Aravalli ranges are the lifeline of Rajasthan state because several rivers sustain life in the adjoining areas. The Aravalli is home to many threatened and endangered faunal species. Most of the protected areas in the state, namely Sariska Tiger Reserve, Ranthambore National Park, National Chambal Sanctuary, Phulwari ki Nal Wildlife Sanctuary, Sita Mata Wildlife Sanctuary, Todgarh-Raoli Sanctuary, Mount Abu Wildlife Sanctuary, Kumbhalgarh Wildlife Sanctuary, Bassi Wildlife Sanctuary, and Jaisamand Wildlife Sanctuary, lie adjacent to the Aravalli Ranges. The wildlife of the Aravallis includes the Leopard (*Panthera pardus*), Striped Hyena, Indian Wolf (*Canis lupus*), Golden Jackal (*Canis aureus*), Hanuman Langur (*Semnopithecus entellus*), Four-horned Antelope (*Tetracerus quadricornis*), Chinkara (*Gazella bennettii*), Indian Crested Porcupine (*Hystrix indica*), Sambar (*Cervus unicolor*), Nilgai (*Boselaphus tragocamelus*), Sloth Bear (*Melursus ursinus*), Common Palm Civet (*Paradoxurus hermaphroditus*), Jungle Cat (*Felis chaus*), Bengal Fox (*Vulpes bengalensis*), Crocodile (*Crocodylus palustris*), and Indian Rock Python (*Python molurus*). However, due to overexploitation, the range is no longer an effective green barrier. There are serious issues threatening the survival of the Aravalli Hills. The most serious threat to wildlife and forests is developmental activities, which are gradually destroying the remnants of the Aravalli ranges. Anthropogenic activities such as indiscriminate mining, land use transformation, habitat destruction, land rights issues, and demand for construction stone and related materials are major threats to the tropical dry deciduous forests of the Aravalli ranges. The Aravalli ranges have been devastated and await conservation. Rajasthan has identified over 31 hills in the upper Aravalli range that have disappeared in just the last 20 years. The priority conservation areas as identified should be considered for effective conservation and management. This study reveals the complex interplay between regulatory provisions, land-use changes, resource exploitation, and threats to biodiversity within the Aravalli Mountain ranges.*

Keywords: Biodiversity, Wildlife, Aravalli, over-exploitation

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INTRODUCTION

Mountain ecosystems are valuable sites for terrestrial biodiversity, as they provide habitat for more than 85% of vertebrate species [1]. The Aravalli Range is a mountain range running across four states in India and is considered the oldest fold mountain range in the world [2], [3]. The Aravallis stretch from southwest Gujarat through Rajasthan to northeast Delhi and Haryana, covering a distance of about 690 km [4]. The Aravalli Ranges sustain unique biodiversity and are home to a variety of important flora and fauna. The geographical location of the Aravalli Range provides a natural buffer against the Thar Desert, extending into the Gangetic Plains. The range has a mix of Saharan, Ethiopian, peninsular, oriental, and even Malayan elements of diverse flora and fauna [5]. The Aravalli Range plays an important role in shaping the west-Indian climate and biodiversity. The Aravalli range are home to nearly 20 separate wildlife protected areas such as Ranthambore, Sariska, Jamwa Ramgarh, Sawai Mansingh, Ramgarh, Bishdhari, and Mount Abu [6]. The Aravalli Range has great diversity in flora, including over 25 tree species and more than 100 herbs, shrubs, and grasses [7]. The mammalian species prominent in the Aravalli Range include the leopard, jackal, hyena, jungle cat, fox, goral, wild boar, langur, rhesus macaque, and ungulates such as the sambar, nilgai, barking deer, chinkara, chital, civet, mongoose, Indian hare, Indian porcupine, gerbils, and squirrels [8]. Several species of snakes, lizards, amphibians, and tortoises constitute the herpetofauna of the Aravalli Range. The forests of the Aravalli ranges are crucial in maintaining groundwater resources, preventing

floods, mitigating air pollution, and combating desertification. Therefore, the Aravalli ranges are considered the life support system of northwestern India [9]. However, the last two decades have been challenging for the Aravalli Range due to rapid developmental activities, deforestation, and the effect of invasive species [10]. The land degradation, encroachments, irresponsible solid waste disposal within forests, illegal mining, environmentally insensitive spatial planning, and lack of legislative protection, which are threats to this unique landscape [11], [12]. The forests of the Aravalli ranges are now among the most degraded forests in India, with many indigenous plant species disappearing. This degradation has led to serious consequences such as desertification, increased frequency of dust storms, drying up of lakes, biodiversity loss, human-wildlife conflicts, air pollution, and climate change impacts [13]. Understanding the global trend of mountain forest loss is crucial for biodiversity conservation and mitigating the impacts on vulnerable forest species [14]. Numerous studies have revealed a shrinking green cover in the Aravalli. According to a report submitted by the Central Empowered Committee (CEC) to the Supreme Court, 31 out of 128 hills mapped by the Forest Survey of India have disappeared in Rajasthan. The Supreme Court ordered the government of Rajasthan to stop illegal mining in a 115.34-hectare area in the Aravalli hills within 48 hours during the proceedings of the Case T.N. Godavarman Thirumulpad versus Union of India and others [15]. In addition to judicial issues, a report by the Comptroller and Auditor General (CAG) tabled in the Rajasthan legislature highlighted that between 2011-12 and 2016-17, minerals worth ₹204.5 crore were illegally extracted in five districts of Rajasthan [16]. The hills continue to face several challenges. Therefore, it is crucial to understand the significance of the Aravalli and the major threats it faces. Mountain forests worldwide provide various ecological services and significantly contribute to community well-being [17]. Most tropical dry deciduous forests in India are facing anthropogenic pressure, and urgent conservation efforts are needed [18]. Effective forest governance is critical in determining protection status, regulating impermissible activities, and implementing land use regulations to ensure ecosystem preservation [19]. Proper assessment and monitoring are required for the restoration of biodiversity. This study attempts to present available ecological information within this landscape, providing baseline ecological data, particularly on mammalian and avian species. However, there remains a significant gap in ecological information on mammals in the Aravalli Range.

MATERIAL AND METHODS

The methodology used for the present study includes several steps. Initially, biodiversity in the region was analyzed and assessed by reviewing the literature to understand the current status and causes of biodiversity loss. Primary and secondary data related to all aspects of biodiversity were collected from various sources such as books, gazetteers, forest working plans, scientific monographs, journals, research papers, and library records. The collected data were compiled, processed, and presented using tables and cartographic techniques to facilitate analysis and visualization of the findings. This approach ensures comprehensive coverage and systematic presentation of biodiversity information in the study area.

RESULT AND DISCUSSION

In Rajasthan, there are more than 35 species of mammals, about 300 species of birds, 26 species of reptiles, and over 450 types of insects [20]. The Aravalli Ranges present a marvelous diversity of habitats, floristic composition, and edaphic conditions. It is home to many rare and endangered animals. Four major types of habitats have been distinguished: sandy, rocky, ruderal, and riverine. The Aravalli provides shelter for numerous wild animals including birds, mammals, reptiles, and amphibians. Most of the protected areas in Rajasthan belong to the Aravalli Mountain region and foothills. Animals such as tiger, leopard, and their prey species like Cheetal, Sambhar, Nilgai, and Chausingha are still found in the protected areas of the Aravalli Ranges [21]. Other wildlife includes Sloth bear, Wolf, Fox, Jackal, Hyena, Small Indian civet, Common Palm civet, Small Indian mongoose, Grey mongoose, Ruddy mongoose, Monitor lizard, and Indian rock python, among others [22], [23], [24]. Peafowl and Grey partridge are quite common. Five species of small cats, namely Caracal, Jungle cat, Fishing cat, Desert cat, and Rusty-spotted cat, are found in the region. However, Caracal and Fishing cats are now highly endangered [25]. Smooth Indian Otter, Ratel, and Pangolin are also present, but their numbers are declining. The Aravalli Range exhibits a marvelous diversity of habitats, floristic compositions, and edaphic conditions. Four major habitat types have been identified in the Aravalli region: sandy, rocky, ruderal, and riverine. The range provides suitable shelter for numerous bird species due to its diverse vegetation. The species diversity of birds is directly linked to the forest's vegetation structure [26]. The Aravalli Range is home to dry deciduous mixed forests, supporting a wide variety of avifauna [27].

Table 1 : Check list of animals found in Aravalli Mountain Range of Rajasthan.

Order	English name	Scientific name	Local name / Common name
Mammals			
Primata Artiodactyla	Hanuman Langur Sambar Spotted Dear Bluebull Four-horned Antelope Wild Boar	<i>Semnopithecus entellus</i> <i>Cervus unicolor</i> <i>Axis axis</i> <i>Boselaphus tragocamelus</i> <i>Tetracerus quadricomis</i> <i>Sus scrofa</i>	Vandra - Cheetal Roj Neelgai Bhadal Bhund
Carnivora	Jackal Jungle Cat Common Leopard Striped Hyena Wolf Fox	<i>Canis aureus</i> <i>Felis chaus</i> <i>Panthera pardus</i> <i>Hyaena hyaena</i> <i>Canis lupus</i> <i>Vulpes bengalensis</i>	Shiyal Jungli Billi Nahar Jharakh - Lomdi
Pholidota	Indian Pangolin	<i>Manis crassicaudata</i>	Halahooda
Lagomorpha	Indian Hare	<i>Lepus nigricollis</i>	Hanhan
	Indian Hedgehog	<i>Hemiechinus micropus</i>	-
Rodentia	Indian Porcupine	<i>Hystrix indica</i>	Heli, Sevali
	Five-striped Palm Squirrel Indian Giant Flying Squirrel Lesser Bandicoot Rat Indian Gerbil House Rat House Mouse	<i>Funambulus pennantil</i> <i>Petaurista philippensis</i> <i>Bandicota bengalensis</i> <i>Tatera indica</i> <i>Rattus rattus</i> <i>Mus musculus</i>	Khikoli Moorchitri, Udan gilhri
Chiroptera	Indian Flying Fox	<i>Pteropus giganteus</i>	Lomdi
	Indian Pygmy Bat	<i>Pipistrellus teruis</i>	-
Family	English name	Scientific name	Local name / Common name
Birds			
Accipitridae	Black –winged kite	<i>Elanus caeruleus</i>	Cheel
Accipitridae	Black Kite	<i>Milvus migrans</i>	Cheel
Accipitridae	Egyptian vulture	<i>Neophron percnoptus</i>	Giddh
Accipitridae	White rumped vulture	<i>Gyps bengalensis</i>	Giddh
Accipitridae	Indian Vulture	<i>Gyps indicus</i>	Giddh
Accipitridae	Shikra	<i>Accipiter badius</i>	Ceylon Shikra
Accipitridae	White-eyed Buzzard	<i>Butastur teesa</i>	Teesa
Alcedinidae	White troated Kingfisher	<i>Halyon smyrnesis</i>	Kilkila
Alcedinidae	Pied Kingfisher	<i>Ceryle rudis</i>	Kilkila
Anatidae	Ruddy Shelduck	<i>Tadorna ferruginea</i>	Brahminy Batab
Anatidae	Indian Spotbilled Duck	<i>Anas poecilorhyncha</i>	Gugral
Anatidae	Common Teal	<i>Anas crecca</i>	Choti Murgabi
Anatidae	Northern Shoveller	<i>Anas clypeata</i>	Alipat
Anatidae	Common Poachard	<i>Aythya ferina</i>	Ranga muriya
Ardeidae	Little Egret	<i>Bubulcus ibis</i>	Karchia Bagla
Bucerrotidae	Indian Grey Hornbill	<i>Ocyeros birostris</i>	Dhanesh
Charadriidae	Little Ringed plover	<i>Charadrius dubius</i>	Jira
Charadriidae	Common Redshank	<i>Tringa totamus</i>	Surma
Charadriidae	Green sand piper	<i>Tringa ochropus</i>	Tutari
Charadriidae	Common sandpiper	<i>Actitis hypoleucos</i>	Tutuvar
Colubidae	Common Pigeon	<i>Columba livia</i>	Kabutar
Colubidae	Laughing dove	<i>Stigmatopelia senegalensis</i>	Kamedi
Colubidae	Spotted Dove	<i>Stigmatopelia chinensis</i>	Kabutar
Coraciidae	Indian Roller	<i>Coracias benghalensis</i>	Neel Kanth
Coraciidae	House Crow	<i>Corvus splendens</i>	Kauva
Cuculidae	Common Hawk Cukoo	<i>Hierococyx varius</i>	Shikra
Cuculidae	Asian Koel	<i>Eudynamys scolopacea</i>	Koyal
Dicruridae	Black Drongo	<i>Dicrurus caerulescens</i>	Jungle kotwal
Hirundinidae	Wire-tailed Swallow	<i>Hirundo smithii</i>	Tarvali bhigri
Hirundinidae	Red-rumped Swallow	<i>Cecropis daurica</i>	Masjid Ababil
Laniidae	Long-tailed shrike	<i>Lanius schach</i>	Kajla latore

Motacillidae	White Wagtail	<i>Motacilla alba</i>	Khanjan
Muscicapidae	Indian Robin	<i>Saxicolodes fulcata</i>	Kalchiri
Muscicapidae	Common Babbler	<i>Turdoides caudata</i>	Chil Chil
Muscicapidae	Common Tailorbird	<i>Orthotomus sutorius</i>	Dargi chidiya
Phasianidae	Indian Peafowl	<i>Pavo cristatus</i>	Mor
Phasianidae	Panted Francolin	<i>Francolinus pictus</i>	Tittar
Picidae	Yellow crowned wood peacker	<i>Dendrocopos mahrattensis</i>	Khati chida
Pittidae	Indian Pitta	<i>Pitta brachyur</i>	Nuranga
Ploceidae	Scaly breasted Munia	<i>Lonchura punctulata</i>	Munia
Ploceidae	House Sparrow	<i>Passer domesticus</i>	Chidiya
Ploceidae	Baya Weaver	<i>Ploceus philippinus</i>	Baya
Pycnonotidae	Red-vented Bulbul	<i>Pycnonotus cafer</i>	Bulbul
Strigidae	Eurasian Eagle Owl	<i>Bubo bubo</i>	Roch Eagle Owl
Strigidae	Spotted Owlet	<i>Athene brama</i>	Chugad
Rallidae	Bank Myna	<i>Acridotheres giginianus</i>	Maina
Rallidae	Common Myna	<i>Acridotheres tristis</i>	Maina
Zosteropidae	Oriental white-eye	<i>Zosterops palpebrosus</i>	Baboona
Order	English name	Scientific name	Local name / Common name
Reptiles			
Squamata	Gecko	<i>Stenodactylus orientalis</i>	
Squamata	Garden gecko	<i>Cyrtodactylus scaber</i>	Girgit
Squamata	Spotted house gecko	<i>Hemidactylus brooki</i>	House lizard
Squamata	Gecko	<i>H. triendrus</i>	Girgit
Squamata	Bark gecko	<i>H. leschenaulti</i>	House lizard
Squamata	Yellow belled gecko	<i>H. flaviviridis</i>	House lizard
Squamata	Garden lizard	<i>Calotes versicolor</i>	Girgit
Squamata	Agama	<i>Agama agilis</i>	Girgit
Squamata	Agama	<i>Agama minor</i>	Girgit
Squamata	Spiny tailed lizard	<i>Uromastix hardiwicki</i>	Sanda
Squamata	Sand skink	<i>Ophiomorus tridactylus</i>	Raith mai
Squamata	Cobra eyed lizard	<i>Ophisops microlepis</i>	Goyra
Squamata	Monitor lizard	<i>Varanus bengalensis</i>	Patagoh/ Goyali
Squamata	Sand boa	<i>Eryx johani johani</i>	Boggy
Squamata	Dhaman	<i>Ptyas mucosus</i>	Bandal
Squamata	Krait	<i>Bungarus caeruleus</i>	Pivana
Squamata	Cobra	<i>Naja naja</i>	Nag
Squamata	Viper	<i>Echis carinatus</i>	Bandy

CONCLUSION

The Aravalli Range is a natural habitat for diverse wildlife, supporting numerous species of mammals, reptiles, birds, and insects. It serves as a crucial source of water and natural resources. The hills are adorned with a variety of trees such as sal, saj, jamun, aonla, mahuwa, teak, tendu, salai, palas, khair, and bamboo. Despite its significance, the Aravalli ecosystem faces challenges like deforestation, animal grazing, poaching, and illegal collection of forest produce. In conclusion, it is imperative to conserve biodiversity not only for the benefit of humanity but also for maintaining ecological balance.

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