

A Checklist of Mammalian Fauna At Mukandra Hills Tiger Reserve, Kota, Rajasthan, India

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Abstract

The survey was conducted at Mukandra Hills Tiger Reserve from January to June 2024. The reserve is located in Kota, south-east Rajasthan in India. This study was completely based on the field observation. Field survey was carried out at all 6 ranges of Mukandra Hills Tiger Reserve to evaluate the status of mammalian species in the reserve. The surveys followed reconnaissance survey method, sign survey and direct observation method. The reserve is a safe habitat for various wild animals like sloth bear, leopard, striped hyena, and tiger. This study represents rich and comprehensive mammalian diversity in the reserve. Direct sightings and indirect evidences such as pugmarks, scats or pellets were recorded to document the presence of mammals in this reserve. A total of 28 mammalian species belonging to 19 families and 8 orders were recorded during the field survey. Of these, 8 species were omnivorous, 8 species were carnivorous, 8 species were herbivorous, 3 species were insectivorous and 1 species was frugivorous in their feeding habit. Some species were not recorded during the survey due to their presence in low numbers. Direct sighting of striped hyena, chital, nilgai, sambar and jackal were recorded during field visit. Reptiles and birds are also found in good numbers in the reserve.

Keywords: Mukandra Hills Tiger Reserve, Sign survey, Mammalian diversity, Rajasthan

Introduction

India is one of the most biodiverse regions in the world and its important attribute is the mammalian diversity. The global mammalian fauna represents more than 5,500 species placed in 154 families and 29 orders, of which India accounts for 422 species placed in 48 families and 13 orders (Wilson & Reeder, 2005). Indian mammalian species is about 7.8% 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, the Himalayas, the Indo-Burma, and the Sunderland biodiversity hotspots (Myers *et al.*, 2000). Out of 422 species of Indian mammals, 391 species are terrestrial and 31 species are marine. A total of 45 species of mammals are considered as endemic to India (Kamalakaran & Venkatraman, 2017). Rajasthan is the largest state of India, has a wide range of climate from semi-arid to arid. In spite of wide range of climate, Rajasthan has a rich faunal diversity in their natural habitat, including around 50 species of mammals (Johnson *et al.*, 2018).

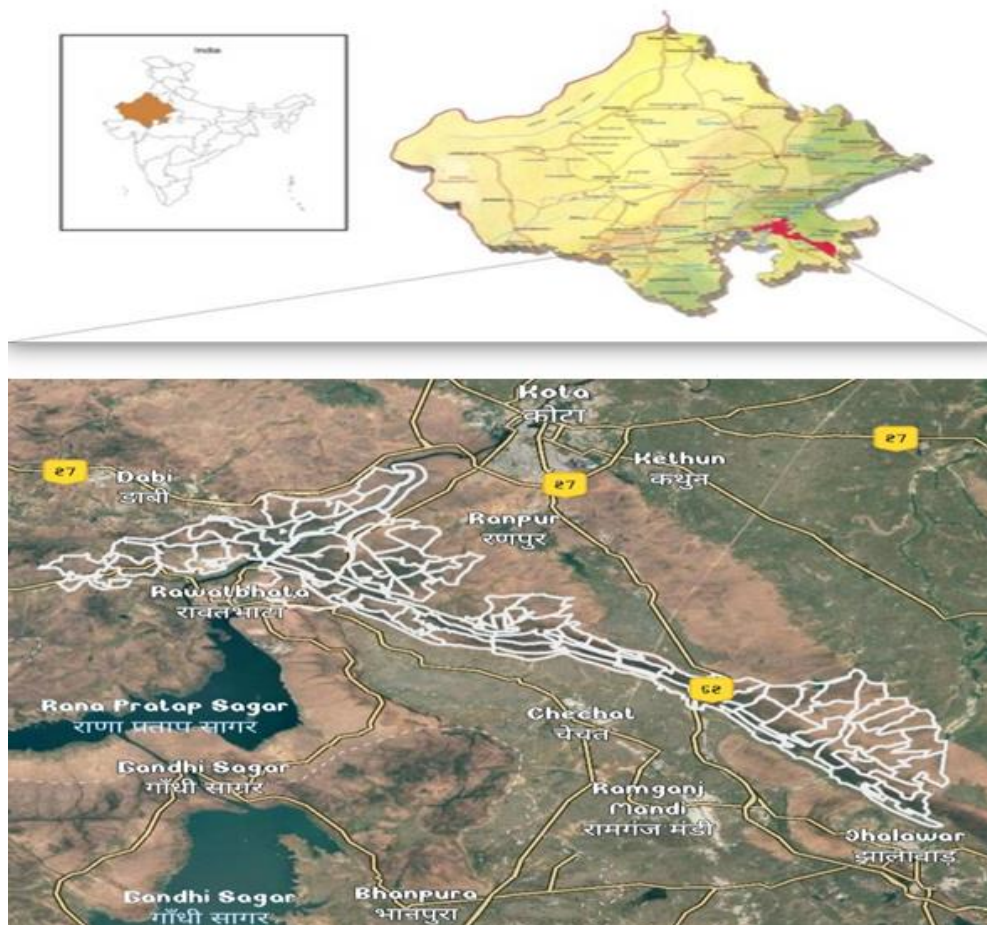
Mukandra Hills Tiger Reserve is confined to semi-arid zone of India. According to the classification of forest types by Champion & Seth, this forest falls under II Dry Deciduous Forest (Champion & Seth, 1968). Mukandra Hills Tiger Reserve meets ecological and biological requirements of different wildlife.

Mammals play a vital role in the ecological services of the reserve. They are important members of food webs as grazers, prey and predators. The reserve supports a rich faunal diversity, including several endangered and threatened mammalian species such as tiger, leopard, wolf and sloth bear. This study documents the present status of mammalian species in the Mukandra Hills Tiger Reserve and provides comprehensive account of the mammalian diversity of the reserve.

Study Area

Study area of survey was Mukandra Hills Tiger Reserve. It was notified as a Tiger Reserve in the year 2013 under the Wildlife Protection Act, 1972. On 1st December 2020, the Union Ministry of Environment, Forest & Climate Change (MoEFCC) declared the reserve as Eco-Sensitive zone. The Headquarter of the reserve is located at Kota district of Rajasthan and reserve is spread over the four districts- Kota, Bundi, Jhalawar and Chittorgarh. The reserve is divided into 6 ranges – Borabas, Darrah, Gagroan, Jawahar Sagar, Kolipura and Rawtha range. All ranges support wide diversity of flora and fauna. Mukandra Hills Tiger Reserve lies between 24°38' to 25°7' N Latitude and 75°26' to 76°11' E Longitude. MHTR consists of 417.17 sq.km. as core area and 342.82 sq. km. as buffer area with a total area of 759.9 sq.km. Core area of Mukandra Hills Tiger Reserve includes Darrah Wildlife Sanctuary, Jawahar Sagar Wildlife Sanctuary and National Chambal Sanctuary. The reserve is bound by 4 rivers from four different sides – Chambal, Kalisindh, Ahu and Ramzan.

Map showing location of Mukandra Hills Tiger Reserve



The climate of the reserve is subtropical. Mukandra Hills Tiger Reserve is confined to semi-arid zone of India and it is home to a rich floral and faunal diversity. The main forest species of reserve are *Anogeissus pendula* (Kala Dhok), *Anogeissus latifolia* (Safed Dhok), *Acacia catechu* (Khair), *Butea monosperma* (Chila) and Bamboos. Many other plants in the reserve are Tendu (*Diospyros melanoxylon*), Raunj (*Acacia lecofolia*), Ber (*Ziziphus mourtiana*), Shisham (*Dalbergia latifolia*) etc. The Grasslands of the reserve are dominated by rat-tail grass (*Sehima nervosum*), buffel grass (*Cenchrus ciliaris*) and bristly-needle grass (*Aristida setacea*). The reserve provides protection to endangered species of mammals such as leopard, sloth bear etc. Some of the resident species of reserve are hyena, wolf, jackal, sambar, chital and nilgai (Sultana *et al.*, 2015). It is also rich in herpeto-fauna such as snakes, Chameleon, Monitor Lizard, Garden Lizard etc. and avifauna including resident, migratory and endemic species.

Figure:1 Borabas Range of Mukandra Hills Tiger Reserve



Figure:2 Darrah Range of Mukandra Hills Tiger Reserve



Methodology

After taking permission from Rajasthan Forest Department, the survey was started in Mukandra Hills Tiger Reserve. This study was completely based on the field observation. Field survey was conducted from January to June 2024. The Field surveys include reconnaissance survey, sign survey and direct observation method covered all the ranges of Mukandra Hills Tiger Reserve. All surveys were mostly

carried out primarily on foot during early morning and evening, as wild animals can generally be seen in the early morning and evening. In each sign survey and reconnaissance survey, we covered 5 – 5 kilometers of the reserve areas. Animal presence were documented by indirect evidences such as footprints or pugmarks, scats or pellets, digging etc. recorded along the sign survey routes. Direct observations of animals were made by 10x50 Olympus Binocular. The Global Positioning System (GPS) and Compass were also used during field survey.

Results and Discussion

During field Survey in the Mukandra Hills Tiger Reserve, total 28 species of mammals were identified based on indirect evidences and direct observations. A total of 28 mammalian species belonging to 19 families and 8 orders were recorded during the field survey.

Table: Checklist of mammalian fauna recorded during field survey in Mukandra Hills Tiger Reserve, Kota, Rajasthan

| S.No. | Common Name | Zoological Name | Family | IUCN Status |
|-------|----------------------------|-----------------------------------|-----------------|-----------------|
| 1. | Tiger | <i>Panthera tigris</i> | Felidae | Endangered |
| 2. | Leopard | <i>Panthera pardus</i> | Felidae | Vulnerable |
| 3. | Sloth Bear | <i>Melusrus ursinus</i> | Ursidae | Vulnerable |
| 4. | Striped Hyena | <i>Hyaena hyaena</i> | Hyaenidae | Near Threatened |
| 5. | Jackal | <i>Canis aureus</i> | Canidae | Least Concern |
| 6. | Jungle Cat | <i>Felis chaus</i> | Felidae | Least Concern |
| 7. | Indian Wolf | <i>Canis lupus pallipes</i> | Canidae | Endangered |
| 8. | Wild Boar | <i>Sus scrofa</i> | Suidae | Least Concern |
| 9. | Porcupine | <i>Hystrix indica</i> | Hystricidae | Least Concern |
| 10. | Indian Fox | <i>Vulpes bengalensis</i> | Canidae | Least Concern |
| 11. | Common Mongoose | <i>Herpestes edwardsii</i> | Herpestidae | Least Concern |
| 12. | Indian Hare | <i>Lepus nigricollis</i> | Leporidae | Least Concern |
| 13. | Indian Pangolin | <i>Manis crassicaudata</i> | Manidae | Endangered |
| 14. | Wild Dog | <i>Cuon alpinus</i> | Canidae | Endangered |
| 15. | Indian Palm Civet | <i>Paradoxurus hermaphroditus</i> | Viverridae | Least Concern |
| 16. | Ratel/ Honey Badger | <i>Mellivora capensis</i> | Mustelidae | Least Concern |
| 17. | Black Rat | <i>Rattus rattus</i> | Muridae | Least Concern |
| 18. | Indian Musk Shrew | <i>Suncus murinus</i> | Soricidae | Least Concern |
| 19. | Indian Hedgehog | <i>Paraechinus micropus</i> | Erinaceidae | Least Concern |
| 20. | Smooth Coated Otter | <i>Lutrogale perspicillata</i> | Mustelidae | Vulnerable |
| 21. | Five Striped Palm Squirrel | <i>Funambulus pennantii</i> | Sciuridae | Least Concern |
| 22. | Fruit Bat | <i>Pteropus medius</i> | Pteropodidae | Least Concern |
| 23. | Monkey (Rhesus macaque) | <i>Macaca mulatta</i> | Cercopithecidae | Least Concern |
| 24. | Common Langur | <i>Semnopithecus entellus</i> | Cercopithecidae | Least Concern |

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|-----|---------------------------|--------------------------------|----------|---------------|
| 25. | Chinkara (Indian Gazelle) | <i>Gazella bennettii</i> | Bovidae | Least Concern |
| 26. | Chital (Spotted Deer) | <i>Axis axis</i> | Cervidae | Least Concern |
| 27. | Nilgai (Blue bull) | <i>Boselaphus tragocamelus</i> | Bovidae | Least Concern |
| 28. | Sambar | <i>Cervus unicolor</i> | Cervidae | Vulnerable |

Of these, 8 species were omnivorous, 8 species were carnivorous, 8 species were herbivorous, 3 species were insectivorous and 1 species (Fruit Bat) was frugivorous in their feeding habit. The 3 insectivorous species recorded in this reserve are Indian Pangolin, Indian Musk Shrew and Indian Hedgehog. Out of 28 mammalian species, 19 Species are Least Concern, 4 species are Vulnerable, 4 species are Endangered and 1 species is near threatened as per IUCN Red List of Threatened Species. Of the total 28 mammalian species in the reserve, 6 species are listed in the Schedule-I under WildLife Protection Act 1972. The reported Schedule-I species are Leopard, Tiger, Indian Wolf, Indian Pangolin, Sloth Bear and Indian Gazelle.

The indirect evidences recorded during the survey included pugmarks and scats of striped hyena and leopard, pugmarks of tiger, Pugmarks and digging of sloth bear, pugmarks of Indian hare, scats of porcupine, pellets of chinkara, chital and nilgai, and many more. Direct sighting of wild boar, jackal, striped hyena, nilgai, sambar and chital were recorded. The reserve has a large number of antelopes. The reserve is a safe habitat for various wild animals like sloth bear, leopard, jackal, striped hyena, and tiger. Mammals play a variety of roles in the ecosystem stability of Mukandra Hills Tiger Reserve. Herbivores such as chital, nilgai, chinkara and sambar feed on plant material and are prey to omnivores and carnivores of the reserve. Carnivores such as tiger, leopard and Indian wolf feed on herbivores and other small animals controlling natural prey populations in the reserve.

Figure:3 Pugmark of Tiger



Figure:4 Pugmark of Leopard



Figure:5 Pugmark of Hyena



Figure:6 Digging of Sloth Bear



Figure:7 Scats of Porcupine



Figure:8 Pellets of Chinkara



In Mukandra Hills Tiger Reserve, reptiles and birds are also found in good numbers. Various avifaunal species were directly sighted in the reserve such as Indian ring Dove, Rose ringed Parakeet, House Swift, Common grey Hornbill, Common Babbler, House Crow, Common Swallow, Black Drongo, Indian Rollar, King Vulture, Common Peafowl, Blue rock Pigeon, House Sparrow, Indian Robin and so on. The reptilian species directly sighted in the study area were Common garden Lizard, Indian Chameleon and Chrocodiles. The reserve also has many plant species including medicinal herbs. The chief faunal species present in the reserve are *Anogeissus latifolia*, *Anogeissus pendula*, *Prosopis cineraria* *Ziziphus mouratiana*, *Terminalia arjuna* and *Acacia catechu*. Kala Dhonk (*Anogeissus pendula*) is the predominant tree species in the reserve. The flora and fauna contribute to the maintenance of a stable ecosystem of the reserve. The reserve serves as a living laboratory for wildlife researchers and biodiversity conservationists, where they can study the behavior of various wild animals, habitat dynamics of reserve and conservation strategies.

Conclusion

In this study, we documented the status of mammalian diversity in Mukandra Hills Tiger Reserve. The Dry Deciduous Forest and Tropical Thorn Forest of the reserve provide favorable and diverse habitats for wild animals. During field Survey in the Mukandra Hills Tiger Reserve, total 28 species of mammals were identified based on indirect evidences and direct observations. The reserve has a large number of antelopes. The reserve is a safe habitat for various wild animals like sloth bear, leopard, jackal, striped hyena, and tiger. Mammals are very important for the functioning and balancing of the ecosystem. In addition, they also share the responsibility for pollinating plants and dispersing the seeds; they play a role as both predator and prey and have a significant impact on the structure and composition of vegetation, cycling of nutrients and plant productivity (Laurance & Bierregaard, 1997). Mammalian

fauna play a variety of roles in the ecosystem stability of Mukandra Hills Tiger Reserve. Herbivores such as chital, nilgai and sambar feed on plant material and are prey to omnivores and carnivores of the reserve. The members of the order Carnivora display great diversity in their body size, birth rate, death rate, feeding habits, behavior, home range, and habitats (Gittleman *et al.*, 2001). Carnivores such as tiger, leopard and Indian wolf feed on herbivores and other small animals controlling natural prey populations and provide stable environment of the reserve.

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