

A Checklist of Wild Mammals in Aligarh District, Uttar Pradesh, India

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ABSTRACT

Biodiversity weaves a complex web of interactions among various organisms, which is vital for maintaining ecological balance and resilience. Mammals are an essential part of this diversity, fulfilling roles as predators, herbivores, pollinators, and ecosystem engineers. In India, there are around 397 species of mammals, with a significant number being threatened or endemic, which points to the importance of thorough regional biodiversity assessments. This study focuses on examining the diversity, abundance, distribution patterns, population trends, and habitat status of wild mammals in the Aligarh district of Uttar Pradesh, a region situated between the Ganga and Yamuna rivers, characterized by its rich variety of habitats. Field surveys carried out between January and July 2024 involved using line transects, direct observations, and random sampling in various agricultural areas, orchards, forest patches, and the edges of villages. Researchers recorded a total of 21 mammal species across 11 families and six orders. The Carnivora order had the highest number of species, followed closely by Artiodactyla and Rodentia. Some of the more common species spotted included Nilgai, Wild Boar, Blackbuck, Golden Jackal, Indian Mongoose, Rhesus Macaque, and several species of pteropodid bats. Interestingly, species that were once common, like the Indian leopard, Indian fox, and chinkara, are now quite rare. The results emphasize Aligarh's ecological importance while also highlighting the rising pressures from habitat changes, agricultural expansion, and conflicts between humans and wildlife. This study delivers key baseline data that will be essential for future conservation and management plans.

Keywords- Mammals, diversity, Ungulates, Wildlife management, Agriculture.

I. INTRODUCTION

Biodiversity is like the intricate web of life, where various organisms interact with one another in both direct and indirect ways, creating complex and ever-changing relationships that are crucial for maintaining ecological balance. It includes diversity at genetic, species, and ecosystem levels, all of which play a part in making ecosystems resilient and stable (Gaston & Spicer, 2013). Among these elements, the diversity of mammals is especially important because of the key roles they fulfill as predators, herbivores, seed dispersers, and ecosystem engineers. Terrestrial animals play an important role in the forest environment by providing ecosystem services and indicating ecological health (Kitamura et al., 2010). Mammals are essential to the forest ecosystem, contributing to the regulation of numbers of prey species, pollination of plant species, and spreading of seeds

(Galetti *et al.*, 2015; Derhe *et al.*, 2017). Around the world, we recognize about 6,753 mammalian species, showcasing the incredible adaptability of this group (Burgin *et al.*, 2018). In India, with its diverse climates and ecosystems, there are roughly 397 mammalian species, of which 10.8% are threatened and 18.4% are unique to the country, underscoring the need for conservation efforts (State of Environment Report, 2009). Additionally, India is home to 48 families and 14 orders, which account for about 7.81% of the global mammalian population (Sharma *et al.*, 2014). Out of the 31 ungulate species found in India, 25 are protected under the Wildlife Protection Act of 1972, highlighting their ecological and conservation significance. The current study is all about exploring and documenting the wild mammals that call the Aligarh region home. focusing on their diversity, abundance, distribution patterns, richness, evenness, dietary habits, population trends, and residential status.

Aligarh, nestled in the Upper Gangetic Plains, boasts a rich tapestry of habitats that support a wide array of wildlife. During our survey, we spotted 21 different wild mammal species from 11 families across six orders. The Carnivora order had the most species, followed closely by Artiodactyla and Rodentia. Some of the more commonly seen animals included Nilgai, Wild Boar, Blackbuck, Golden Jackal, Indian Mongoose, various bat species, Indian Hare, Rhesus Macaque, and squirrels. A standout is the Nilgai (*Boselaphus tragocamelus*), the largest antelope in Asia, which is a key species in the region and plays a vital ecological role.

II. MATERIALS AND METHODS

Study area: The Aligarh District is historically remarkable and present in the western part of the North Indian state of Uttar Pradesh, with latitude (27°35'–28°11'N) and longitude (77°29'–78°26'E). It has an elevation of approximately 178 m (588 ft). The total geographical area of Aligarh district is 3691.50 km², and the land falls in between the Ganga (northeast) and the Yamuna (northwest) rivers. Aligarh district is narrow in the north but wider in the south. The length is about 112 km from east to west, and the breadth is 72 km from north to south. It is bounded by Bulandshahr in the north, Badaun from the northeast, Mathura from the west to the southeast, Hathras in the south, Kasganj and Etah in the east to southeast, and the Palwal district of Haryana from the northwest. Administratively, Aligarh district is divided into 5 tehsils, namely Khair, Lodha, Gabhana, Iglas, and Atrauli. Geomorphologically, alluvial plains with a gentle slope run from northwest to southeast in the entire region. The soil of the Aligarh district is of sandy, loamy, clay, and silty types. The climate of the Aligarh district is semi-arid or subtropical humid type and experiences three distinct seasons: summer (late March to June), rainy or monsoon (July to October), and winter (November to February). Western parts are drier as compared to eastern parts. In summer the temperature rises up to 46°C and drops down to as low as 20°C during winter. In March-May (summer), the average temperature ranges between 35°C and 38°C, but in November-January (winter), the average temperature ranges from 12°C to 16°C or may be lower. The mean minimum and maximum temperatures are 15.50°C and 26.70°C, respectively. The mean annual rainfall of Aligarh district is 800 mm. Monsoon starts in July and runs to September. The relative humidity is 65%. Approximately 85% of the district's land is used for active farming. The principal

grown crops are wheat, paddy, maize, potatoes, legumes, millet, and vegetables. A total of 66.75 km² of forest cover is present in the Aligarh district. Open forest (59.75 km²) and moderately dense forest (7.00 km²) represent the forest cover in Aligarh district. Here, very dense forests are not available. Mostly forest patches dominated by *Prosopis juliflora*, followed by *Acacia catechu*, *P. cineraria*, *P. specigera*, *Acacia nilotica*, *Pongamia pinnata*, *Azadirachta indica*, *Cordia dichotoma*, *Dalbergia sissoo*, *Melia azadirachta*, *Syzygium cumini*, *Acacia leucophloea*, *Phoenix sylvestris*, *Butea monosperma*, etc. Numerous poplar and eucalyptus plantations can be found in addition to mango, guava, and plum orchards.

Methodology: Sampling of mammalian species was conducted through different methods such as the line transect method (vehicle transect), direct observation method, random sampling methods, etc. between January 2024 and July 2024 in the landscape of Aligarh district. A motorcycle was used to carry out the vehicle transect, and all major roads and sub-roads were used as transects. Line transect sampling is useful for studying uncommon, hard-to-find flora, intertidal species, and other things that are hard to find. It may also be used to figure out how many of these things there are per unit area (Burnham et al., 1980).

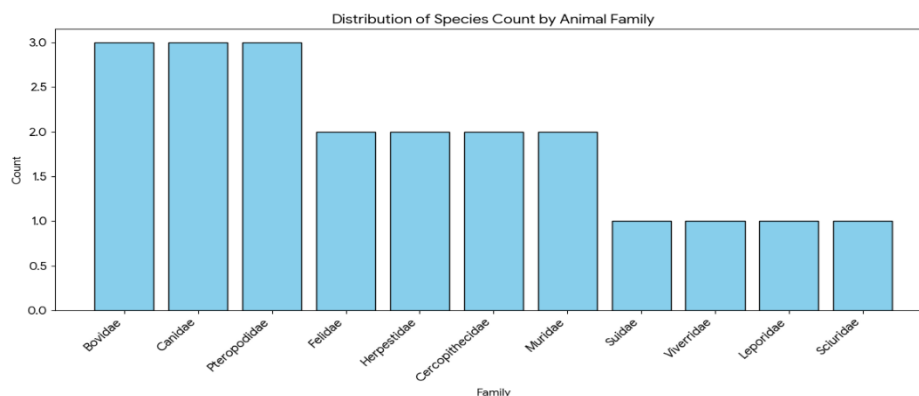
This method is similar to variable circular plot sampling and is often dubbed distance sampling (Buckland et al., 2001). During encounters, we identify different mammalian species and collect numbers and basic information about their nature. We also collect kills of individual species and recognize different species with the help of local people by showing photographs of different animal species. The presence of mammalian species in the Aligarh district is also recognized by experts in relative fields. All mammalian species were classified into various categories of relative guilds, such as dietary pattern, abundance, trends of population, and residential status.

III. RESULTS

After a long time of field work and survey finally we get a unique data that's completely justify the mammalian diversity of Aligarh region. Biodiversity of Aligarh region makes an impact on future prospectives for wildlife conservation. During research, we identify a total of 21 mammalian species from 6 orders and enlist all these species according to their name, common name, local name, order, and family.

S N	Species Name	Common Name	Local Name	Order	Family
1	Antelope cervicapra (Linnaeus 1758)	Blackbuck	Kala Hiran	Artiodactyla	Bovidae
2	Boselaphus tragocamelus (Pallas 1766)	Bluebull	Nilgai	Artiodactyla	Bovidae
3	Gazella bennettii	Indian gazelle	Chinkara	Artiodactyla	Bovidae
4	Sus scrofa (Linnaeus 1758)	Wild boar	Jangali suar	Artiodactyla	Suidae

5	Canis lupus (Linnaeus 1758)	Grey wolf	Bhediya	Carnivora	Canidae
6	Canis aureus (Linnaeus 1758)	Golden jackal	Sarkata	Carnivora	Canidae
7	Felis chaus (Guldenstadt 1776)	Jungle cat	Jangali Billi	Carnivora	Felidae
8	Paradoxurus hermaphroditus (Pallas 1777)	Palm civet	Bilao	Carnivora	Viverridae
9	Panthera pardus fusca (Meyer 1794)	Indian leopard	Tendua	Carnivora	Felidae
10	Urva auropunctata (Hodgson 1836)	Small Indian Mongoose	Nevla	Carnivora	Herpestidae
11	Urva edwardsii (Geoffroy 1817)	Indian grey Mongoose	Nevla	Carnivora	Herpestidae
12	Vulpes benghalensis (Shaw 1800)	Indian fox	Loomri	Carnivora	Canidae
13	Cynopterus sphinx (Vahl 1797)	Short nosed fruit bat	Chamkadar	Chiroptera	Pteropodidae
14	Pteropus giganteus (Temminck 1825)	Indian Flying fox	Chamkadar	Chiroptera	Pteropodidae
15	Rousettus leschenaultia (Desmarest 1820)	Laschenault's Rousette	Chamkadar	Chiroptera	Pteropodidae
16	Lepus nigricollis (Cuvier 1823)	Indian hare	Kharah	Lagomorpha	Leporidae
17	Macaca mulatta (Zimmermann 1780)	Rhesus macaque	Monkey	Primates	Cercopithecidae
18	Presbytis entellus (Pallas 1766)	Common Langur	Langur	Primates	Cercopithecidae
19	Funambulus pennantii (Wroughton 1905)	Five striped Palm Squirrel	Gilhari	Rodentia	Sciuridae
20	Golunda ellioti (Grey 1837)	Bush rat	Musa	Rodentia	Muridae
21	Tatera indica (Hardwicke 1807)	Indian gerbil	Antelope Rat	Rodentia	Muridae



IV. DISCUSSION

Aligarh district carries a specific diverse environment for wild animals because of its geographical location. It is situated between two major rivers, namely Ganga and Yamuna. Nilgai are highly adaptive in nature and easily fit in any environment. Its population size has rapidly increased in the last two decades due to a lack of natural predators. It's a major crop-raiding wild animal in the study area. Blackbuck and wild boar get benefits or utilize resources without any disturbance. Some wild mammals such as Gazella bennettii (Chinkara), Canis lupus (grey wolf), Paradoxurus hermaphroditus (palm civet), Vulpes benghalensis (Indian fox), and Panthera pardus fusca (Indian leopard) are not common residents,

but earlier they were found in abundance in the area. Bats make a significant contribution to mammalian species richness and biomass. A total of three pteropodid bat species, such as the Indian flying fox (*Pteropus giganteus*), the short-nosed fruit bat (*Cynopterus sphinx*), and Laschenault's rousette (*Rousettus leschenaultia*), have been identified. Pteropodid bats are important pollinators and seed-dispersing agents for a number of economically and ecologically important plants. The rhesus macaque holds an ethically significant reputation in Hindu mythology, but nowadays it is reported as a severe crop depredation animal in Atrauli tehsil. Due to the abundance of food and safe habitat, the golden jackal (*Canis aureus*), small Indian mongoose (*Urva auropunctata*), jungle cat (*Felis chaus*), etc., are thriving

easily in this area. The rodent species *Golunda ellioti* (bush rat) and *Tatera indica* (Indian gerbil) are considered pests because they cause severe damage to wheat, paddy, lentil, and vegetable crops. Langurs (*Presbytis entellus*) are highly adaptable to survive in a variety of environments and harsh conditions, but still their population is continuously decreasing in the Aligarh district.

V. CONCLUSIONS

The present study provides a comprehensive assessment of wild mammalian diversity in the Aligarh district, documenting 21 species across six orders and eleven families. The findings reveal that the region's mosaic of agricultural lands, orchards, forest patches, and riverine plains supports a rich assemblage of mammals, with Carnivora being the most dominant order. Species such as Nilgai, Wild Boar, Blackbuck, Golden Jackal, and Rhesus Macaque are thriving, largely due to abundant food resources and reduced predation pressure. In contrast, several historically common species, including the Indian leopard, Indian fox, and chinkara, now appear rare, reflecting increasing anthropogenic disturbances and habitat fragmentation. The study emphasizes the critical need for tailored conservation strategies that focus on specific regions to protect the dwindling mammal populations. It's vital to enhance habitat protection, reduce conflicts between humans and wildlife, and raise community awareness to ensure long-term biodiversity preservation. This foundational information is invaluable for guiding future ecological studies and effective wildlife management in the Aligarh area.

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