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# A Study of Fauna in and Around Sevana, Haripur, Marrow, Handia, Prayagraj U.P. India

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**ABSTRACT**

**The present study titled "A Study of Fauna in and Around Sevana, Haripur, Marrow, Handia, Prayagraj" focuses on documenting and analyzing the faunal diversity of a rural agricultural landscape in Prayagraj. The study was conducted through field observations and photographic documentation to identify various animal species and understand their ecological roles within the ecosystem. The study area is characterized by agricultural fields, water bodies, scattered vegetation, and human settlements, which together create a diverse range of habitats. These habitats support a variety of faunal groups including mammals, birds, reptiles, amphibians, and insects. The findings of the study indicate that birds are the most abundant and diverse group in the region. Common species such as the House Sparrow and the Common Myna were frequently observed and are well adapted to human dominated environments. These birds play an important role in pest control and seed dispersal, contributing to agricultural productivity and ecological balance. Mammals were observed in moderate numbers, with both wild and domestic species present. The Nilgai was identified as a significant wild herbivore that often interacts with agricultural fields, sometimes causing crop damage. Reptiles and amphibians, although less frequently observed, were found to be important for controlling insect populations and indicating environmental health. Insects and other small fauna were the most diverse group, contributing to pollination, decomposition, and nutrient cycling, which are essential for maintaining soil fertility and supporting plant growth. The study also highlights the influence of seasonal variation on faunal diversity. The monsoon season showed the highest diversity due to 4 favorable environmental conditions, while summer and winter exhibited variations in species activity and distribution. Agricultural practices, availability of water, and vegetation also influenced the presence and behavior of fauna**

## INTRODUCTION

Faunal diversity represents the variety of animal species inhabiting a particular geographical region and forms an essential component of biodiversity. It includes mammals, birds, reptiles, amphibians, and invertebrates that collectively contribute to ecosystem functioning and environmental stability. The study of fauna is significant in zoology because animals play crucial roles in maintaining ecological balance through activities such as pollination, seed dispersal, nutrient cycling, decomposition, and pest regulation. Understanding faunal diversity provides valuable information regarding species distribution, ecological interactions, and the effects of environmental changes on biodiversity.

The present study focuses on the rural landscapes of Sevana, Haripur, Marrow, and Handia in Prayagraj district, Uttar Pradesh. This region forms part of the fertile Indo-Gangetic plains and is characterized by agricultural fields, scattered vegetation, village settlements, and small water bodies. Such a heterogeneous landscape creates suitable habitats for a wide range of animal species. Birds, insects, reptiles, amphibians, and mammals are commonly observed in these habitats due to the availability of food, shelter, and favorable environmental conditions. Agricultural fields particularly attract herbivores, seed-feeding birds, and insect populations, while ponds and irrigation channels support aquatic and semi-aquatic fauna.

Faunal diversity is of immense ecological and agricultural importance. Birds and insects contribute to pollination and natural pest control, while predators help regulate populations of harmful organisms. Decomposers and soil-dwelling invertebrates play an important role in nutrient recycling and maintaining soil fertility. However, increasing human activities such as urbanization, habitat modification, agricultural intensification, and excessive use of fertilizers and pesticides have adversely affected natural ecosystems. Habitat fragmentation and environmental degradation have resulted in changes in species composition and reductions in faunal abundance.

The present investigation was conducted through direct field observations and photographic documentation to identify and record faunal species occurring in the study area. Field-based studies provide authentic information regarding species occurrence, habitat preference, and ecological behavior under natural conditions. In addition, such studies contribute to the understanding of human–animal interactions commonly observed in rural environments, where some species provide ecological benefits while others may create agricultural challenges.

Therefore, documenting faunal diversity at a local level is important not only for scientific understanding but also for biodiversity conservation and sustainable environmental management. The findings of this study are expected to provide baseline information on regional fauna and contribute toward future conservation strategies and ecological awareness programs.

**Research Objectives**

1. ***To document the faunal diversity*** *present in and around Sevana, Haripur, Marrow, and Handia regions of Prayagraj.*
2. ***To identify and classify animal species*** *belonging to different faunal groups such as mammals, birds, reptiles, amphibians, and insects.*
3. ***To study the distribution and abundance of fauna*** *across different habitats including agricultural fields, village surroundings, water bodies, and open lands.*
4. ***To analyze habitat preferences*** *of various animal species and understand their ecological associations within the study area.*
5. ***To assess the ecological role and significance*** *of different faunal groups in maintaining ecosystem balance.*
6. ***To examine the influence of environmental and human activities*** *such as agriculture, urbanization, and habitat alteration on faunal diversity.*
7. ***To compare the observed findings with previous studies*** *conducted in similar ecological regions of Uttar Pradesh and India.*
8. ***To create baseline data*** *that may be useful for future biodiversity monitoring and conservation studies in the Prayagraj region.*
9. ***To suggest suitable conservation and management measures*** *for the protection and sustainable maintenance of local fauna and biodiversity.*

## REVIEW OF LITERATURE

Faunal diversity represents the variety of animal species inhabiting a region and is a key component of ecosystem stability and functioning. India is recognized as one of the world's megadiverse countries, supporting a rich variety of fauna across forests, wetlands, grasslands, agricultural fields, and rural landscapes. Several studies conducted in different parts of the country have documented species composition, ecological interactions, and conservation concerns. Early investigations primarily focused on species identification and taxonomic cataloging, while later studies incorporated ecological parameters such as habitat preference, population dynamics, and species interactions. Organizations such as the Zoological Survey of India have significantly contributed to documenting the nation's faunal wealth.

Previous research indicates that both natural and human-modified habitats support considerable faunal diversity. Forest ecosystems are known for high species richness, but agricultural and rural landscapes also provide suitable habitats for birds, mammals, reptiles, and insects. Studies have reported that species such as the House Sparrow (*Passer domesticus*) and Common Myna (*Acridotheres tristis*) commonly occur in agricultural areas and contribute to ecological functions such as insect control and seed dispersal. Research on mammalian fauna has particularly emphasized herbivores like Nilgai (*Boselaphus tragocamelus*), whose interactions with agricultural systems often result in human–wildlife conflicts.

Within Uttar Pradesh, several studies have highlighted the faunal diversity present in wetlands, agricultural landscapes, and semi-urban ecosystems. Although the state possesses limited forest cover compared to other regions of India, it supports diverse bird, mammal, reptile, and insect populations. Research in the region suggests that rural ecosystems play an important role in maintaining biodiversity, despite increasing anthropogenic pressures. Studies have also shown that insect populations are highly influenced by agricultural practices, particularly pesticide use, which affects ecological balance and associated food chains.

Agricultural ecosystems have increasingly attracted attention due to their ecological significance. Agroecosystems support numerous beneficial organisms, including pollinators, decomposers, and natural pest predators. Birds, mammals, and

insects collectively contribute to nutrient cycling, pollination, seed dispersal, and pest regulation. However, habitat fragmentation, urbanization, and intensive farming practices continue to threaten biodiversity.

Despite substantial research, important gaps remain. Most previous studies focus on protected areas and large ecosystems, while village-level investigations in rural regions such as Prayagraj remain limited. Furthermore, insufficient attention has been given to invertebrate diversity, seasonal variation, and photographic documentation. Therefore, localized studies are essential to provide a comprehensive understanding of faunal diversity and support biodiversity conservation and sustainable environmental management.

## 3. MATERIALS AND METHODS

### 3.1 Study Area

The present study was conducted in the rural regions of Sevana, Haripur, Marrow, and Handia of Prayagraj district, Uttar Pradesh, India. The study area lies within the central Gangetic plains and is characterized by fertile alluvial soil, agricultural landscapes, village settlements, scattered vegetation, and aquatic habitats. Agriculture is the dominant land-use pattern, with crops such as wheat, rice, pulses, mustard, and vegetables cultivated extensively. The climate of the region is subtropical with three distinct seasons: summer, monsoon, and winter. Summers are hot, with temperatures often exceeding 40°C, while winters are relatively cool (8–10°C). The monsoon season enhances vegetation growth and supports increased faunal activity. Major habitat types included agricultural fields, roadside vegetation, ponds, irrigation canals, and village surroundings, creating heterogeneous ecological conditions favorable for diverse faunal communities. The present study was conducted at **Gothawa village, Uttar Pradesh, India** (Latitude **25.454892° N**, Longitude **82.265827° E**), located in the rural landscape of Prayagraj district. The study area represents a typical agrarian ecosystem characterized by mixed land use patterns including agricultural fields, grazing grounds, scattered vegetation, and human settlements. The site supports domestic livestock and associated fauna, providing a suitable environment for ecological observations and biodiversity assessment.

The field photograph illustrates a flock of sheep and goats grazing within the study area, indicating the prevalence of pastoral and livestock-based activities in the region. The presence of open grazing spaces and natural vegetation contributes to habitat heterogeneity and influences the local faunal composition. Such landscapes play an important role in maintaining ecological interactions between domesticated animals and surrounding wildlife.

### 3.2 Duration of Study

The study was conducted over several weeks to months through repeated field visits. Observations were carried out during different periods of the day, mainly during early morning and evening hours when animal activity is highest. Seasonal variations were also considered to record species occurring under different environmental conditions.

### 3.3 Data Collection Methods

*Field-based observational techniques formed the primary approach for data collection. Surveys were conducted across multiple habitat types including crop fields, water bodies, and human settlements. Direct observations were supplemented with photographic documentation using a mobile camera or digital device. Opportunistic sampling methods were employed, where species were recorded whenever encountered during field visits. Additional evidence such as footprints, nests, burrows, feeding marks, and vocalizations was also considered to detect species that were not directly observed.*

### 3.4 Identification and Classification

Species identification was based on morphological characteristics including body size, coloration, behavior, and habitat preference. Photographs were compared with standard field guides, textbooks, and authenticated online resources for confirmation. Recorded fauna were classified into major groups including mammals, birds, reptiles, amphibians, and insects according to standard taxonomic criteria.

### 3.5 Data Recording and Analysis

Field observations were systematically recorded in notebooks and digital formats, including date, time, location, habitat type, and species occurrence. Photographic records were maintained as supporting evidence. Collected data were organized into tables according to faunal groups and observation frequency. This systematic approach facilitated interpretation of species diversity and habitat associations within the study area.

## RESULTS AND OBSERVATIONS

The present study conducted in the rural regions of Sevana, Haripur, Marrow, and Handia (Prayagraj district, Uttar Pradesh) revealed substantial faunal diversity across different habitats. Field observations and photographic records indicated the

presence of a wide range of species belonging to mammals, birds, reptiles, amphibians, insects, and other invertebrates. The coexistence of agricultural landscapes, water bodies, vegetation, and human settlements created diverse ecological niches that supported rich biodiversity.

Birds emerged as the most abundant and frequently observed faunal group. Species such as *Passer domesticus* (House Sparrow), *Acridotheres tristis* (Common Myna), *Corvus splendens* (Crow), *Columba livia* (Pigeon), and *Egretta garzetta* (Egret) were commonly encountered. Their abundance can be attributed to the availability of food resources, nesting sites, and habitat diversity. Agricultural fields and village areas provided favorable conditions for feeding and shelter. Birds play important ecological roles in pollination, seed dispersal, scavenging, and insect pest regulation.

Mammalian diversity included both wild and domestic species. *Boselaphus tragocamelus* (Nilgai) was occasionally observed in crop fields, particularly during early morning and evening periods. Domestic animals such as cattle, buffaloes, goats, and dogs were common in village environments. Rodent activity was identified through burrows and crop damage signs. Mammals contribute significantly to ecological processes through grazing activities, nutrient transfer, and trophic interactions.

Reptiles and amphibians, though comparatively less abundant, formed an important part of the ecosystem. Lizards (*Calotes versicolor* and *Hemidactylus flaviviridis*) were frequently observed around houses and vegetation, while frogs and toads were common near water bodies during the monsoon season. These groups function as natural biological control agents by feeding on insects and maintaining ecological balance.

Insects represented the most diverse faunal category in terms of species richness. Butterflies, bees, ants, grasshoppers, beetles, and spiders were frequently recorded. Pollinating insects such as bees and butterflies were abundant and contributed significantly to plant reproduction and crop productivity. Earthworms and decomposer organisms enhanced soil fertility and nutrient cycling.

Seasonal variation strongly influenced faunal abundance and distribution. Monsoon conditions favored insects and amphibians due to increased moisture and vegetation growth, while winter provided suitable conditions for higher bird activity. Human activities, particularly agricultural practices and pesticide use, affected faunal distribution and abundance. Overall, the findings emphasize the ecological significance of rural landscapes and highlight the importance of sustainable management strategies for biodiversity conservation.

## DISCUSSION

The present study conducted in Sevana, Haripur, Marrow, and Handia in Prayagraj revealed important insights into the faunal diversity and ecological conditions of rural landscapes. Comparison with previous studies indicates that the observed faunal composition is broadly consistent with findings from other agricultural regions of India and Uttar Pradesh. Birds were found to be the most dominant group, with species such as the House Sparrow and Common Myna showing strong adaptation to human-modified environments. Mammals like Nilgai, along with reptiles, amphibians, and insects, also contributed significantly to ecosystem functioning. However, compared with protected habitats, species richness was relatively lower, likely due to habitat disturbance and human activities.

The observed fauna play a crucial ecological role in maintaining environmental balance. Birds, reptiles, and amphibians contribute to natural pest control, while insects support pollination, decomposition, and nutrient cycling. Mammals influence vegetation dynamics and food-chain interactions. These ecological functions are particularly important in agricultural systems, where fauna directly or indirectly support crop productivity and ecosystem health.

Agriculture in the study area demonstrated both positive and negative relationships with wildlife. While agricultural fields provide food and habitat resources, intensive farming practices, pesticide use, and habitat modification negatively affect biodiversity. Species such as Nilgai often create human–wildlife conflicts through crop damage, while beneficial organisms such as pollinators and amphibians face threats from chemical exposure and environmental degradation.

Major conservation challenges identified include habitat loss, pollution, pesticide use, water contamination, and lack of awareness among local communities. Expansion of settlements and agricultural land has reduced natural habitats and increased pressure on wildlife. Sustainable farming practices, habitat protection, reduced chemical use, and community-based conservation awareness programs are therefore essential. Overall, the study highlights the importance of localized biodiversity assessments and emphasizes the need to balance agricultural development with ecological conservation for long-term environmental sustainability.

## CONCLUSION AND RECOMMENDATIONS

The present study, *"A Study of Fauna in and Around Sevana, Haripur, Marrow, Handia, Prayagraj,"* provides an important assessment of faunal diversity within a rural agricultural ecosystem of Prayagraj district. Through systematic field observations and photographic documentation, the study recorded a variety of faunal groups including birds, mammals, reptiles, amphibians, and insects, highlighting their ecological significance and interactions within the environment.

The findings indicate that birds represented the most abundant and frequently observed group, with species such as the House Sparrow and Common Myna demonstrating strong adaptability to human-dominated habitats. Mammals such as Nilgai and domestic animals also contributed significantly to ecosystem functioning, though wildlife–human conflicts related to crop damage were evident. Reptiles and amphibians were observed as important natural pest regulators, while insects and other small fauna played key roles in pollination, decomposition, and nutrient cycling. Seasonal variation was identified as an important factor influencing faunal distribution, with the monsoon season supporting comparatively higher biodiversity.

The study further revealed that habitat heterogeneity—including agricultural fields, water bodies, vegetation patches, and settlements—supports rich faunal assemblages. However, increasing anthropogenic pressures such as pesticide use, habitat alteration, and human–wildlife conflicts pose significant threats to biodiversity conservation.

Based on these findings, sustainable conservation measures are strongly recommended. Adoption of eco-friendly agricultural practices, reduction in chemical pesticide use, preservation of natural habitats and water resources, and implementation of community-based conservation initiatives can significantly contribute to biodiversity protection. Public awareness and local participation are also essential for long-term ecological sustainability.

Future research should focus on long-term biodiversity monitoring, detailed taxonomic investigations, climate change impacts, and the use of advanced tools such as GIS and camera trapping techniques. Overall, the study provides baseline information that can support future ecological research and conservation planning in rural landscapes of Prayagraj.

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