

## Endemic Avian Species in the Riverine Region of Rohilkhand, Uttar Pradesh

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**Abstract:** Bareilly, situated in the Rohilkhand region of Uttar Pradesh, India, boasts a rich avian population that includes several endemic species. This project aims to comprehensively review the endemic species found in Bareilly, shedding light on their ecological significance, distribution patterns, and conservation status. Using a combination of field surveys of rivers, crops, populations, historical literature data, and expert consultation, this study identifies key endemic species such as the Rock pigeon (*Columba livia*), Common crow (*Corvus splendens*), Black kite (*Milvus migrans*), Indian Myna (*Acridotherens tristis*), Indian House sparrow (*Passer domesticus*), River lapwing (*Vanellus duvaucelii*), Red-rumped swallow (*Cerropis daurica*), Purple sunbird (*Cinnyris asiaticus*), Asian koel (*Eudynamis scolopacea*), Asian green eater (*Meropus orientalis*), Jungle Babbler (*Argya striata*), Red-vented Asia bulbul (*Pycnonotus cafer*), and Common Indian hawk Cuckoo (*Hierococyx varius*), among others. These birds inhabit diverse habitats, including moist areas, aquatic habitats, grasslands, forests, and agricultural farms. It has been contemplated that these Indian Aves varieties are more abundant in natural habitats compared to urbanized areas. The findings of this project contribute to our understanding of the avian biodiversity in Bareilly and underscore the importance of conserving natural habitats to support endemic bird populations. Efforts to preserve these habitats are crucial for ensuring the continued survival of these species and maintaining the ecological balance of the region.

**Keywords:** *Columba livia*, Endemic bird, Urbanised area, etc

## Introduction

The research is to be conducted on endemic avian population species in Bareilly, Rohilkhand region of Uttar Pradesh, India. As many exotic avian population species are seen to be migrating due to the continuous urban expansion, the Rohilkhand region has many endemic avian population species and diversity. The research aims to comprehensively review these endemic species and highlight their ecological significance, distribution patterns, and conservation status. Through a combination of Bareilly field survey, literature review, and expert consultation, this study identifies key endemic species, aquatic avians, and their habitats.

Bareilly is a historic city and the administrative center of Bareilly district in Uttar Pradesh, India. It is whereabouts approximately one mile east of the Bareilly and 27 kilometers north of the Ganges River, within the Rohilkhand region of Uttar Pradesh.

This study is about the endemic species of avifauna in Bareilly which is situated in the Rohilkhand region of Uttar Pradesh in the Northern part. Bareilly includes a total of 4 districts I have visited a few of them like Bilsa, Bisauli, Bareilly, Dataganj, Sahaswan, and Bareilly of Rohilkhand region.

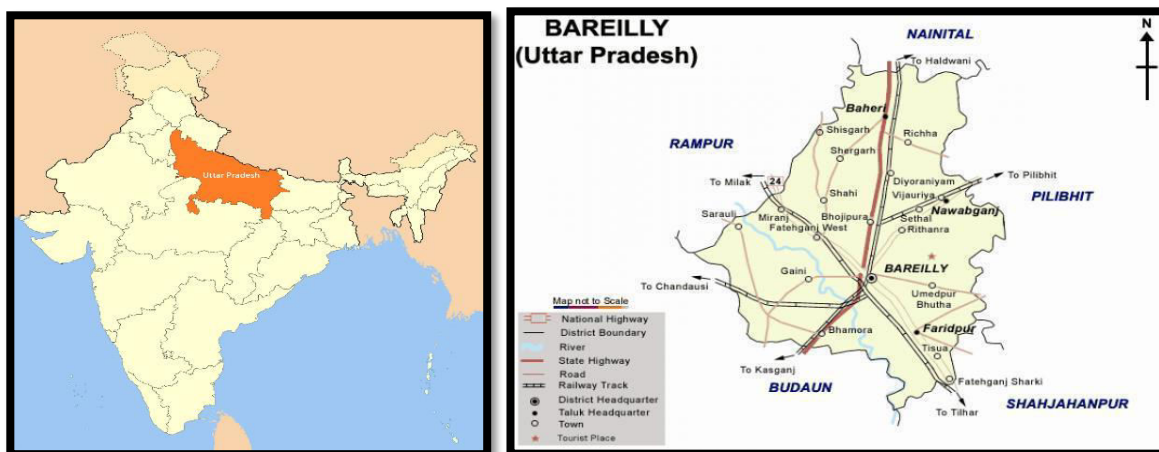
Diversity of Aves is one of the consequential Sustainable gauges to evaluate the habitat, they are a high priority of the Sustainable and contribute to maintaining a tropic level they also form an untreatable link in many food Cycle/chains. They are one of the biological pest management trainee tools for democratization in gardens, grasslands, farmstead, and another region. They encourage pollination in plants.

In my paper, I have mentioned the data of endemic species of Aves present in different parts of Bareilly. I have taken that data by deep studying from different sources like some research papers and I have visited my nearby places also. Besides I have got a total of 104 birds found in the Bareilly zone. This project helps us to know about birds present in our area which is beneficial for further studies because we know well that birds play a supreme role in our environment.

Moreover, birds serve as indicators of environmental health, with changes in their populations reflecting broader ecosystem dynamics. Protecting and conserving these bird species is crucial not only for preserving biodiversity but also for sustaining the cultural heritage and economic vitality of the Bareilly.

Overall, birds are integral components of ecosystems, and their presence and activities contribute significantly to the maintenance of biodiversity and the functioning of natural systems.

Protecting bird populations and their habitats is essential for the overall health and resilience of ecosystems worldwide.



**Fig:1 Indian Map with Rohilkhand, Uttar Pradesh**

Avifauna not only shows the natural wealth but also the aesthetic richness of an area. Birds play an important role in natural birds as some of them play the role of a Predator while some play the role of a connecting link. They help in seeds pollination controlling insect population etc their drops help in seeds, pollination controlling insect population, etc. Their droppings also are food for many life forms. Its projects were made to collect data about the distribution and abundance of birds in an area to discover the distribution of birds in different areas and the richness of their diversity. We have taken Avifauna as a special initiative to prove useful in studying the status and conservation of groups of birds living around various rivers and water sources in the Rohilkhand region of Bareilly district of Uttar Pradesh, which can be kept under biodiversity conservation.

#### **Endemic Avian Species were identified in Bareilly region of Rohilkhand:**

- Rock Pigeon (*Columba livia*)
- House Crow (*Corvus splendens*)
- Black Kite (*Milvus migrans*)
- Asia Myna (*Acridotheres tristis*)
- House Sparrow (*Passer domesticus*)
- Spur-winged lapwing (*Vanellus duvaucelii*)
- Sunbird (*Cinnyris asiaticus*)
- Jungle Babbler (*Argya striata*)
- Asian Koel (*Eudynamis scolopacea*)
- Indian house sparrow (*Passer domesticus*)
- Sooty-headed bulbul (*Pycnonotus passerines*)
- Indian Spotted eagle (*Clanga hastata*)
- Indian Owl or Rock eagle-owl (*Bubo bengalensis*)
- Indian Peacock or Peafowl (*Pavo cristatus*)
- Asian Hoopoe (*Upupa epops*)
- Ring dove (*Streptopelia decaocto*)

1. Habitat of Diversity: all Avian species inhabit a variety of habitats, comprehend:
2. Moisture-laden Places: Areas with high humidity and water bodies like rivers, lakes, and wetlands.
3. Grasslands: Open areas with patches of dry or green grass where egg laying is possible.
4. Forests: Dense and semi-dense forest areas.
5. Agricultural Farms: Fields and farmlands.
6. Findings Field observations revealed that these bird species are more numerous in natural habitats compared to urbanized areas. The reasons for this distribution pattern include:
  7. Availability of Food: Natural habitats provide a diverse range of food sources.
  8. Suitable Nesting Sites: Natural environments offer better nesting opportunities.
  9. Less Disturbance: Lower levels of human disturbance compared to urban areas.
10. Ecological Significance Each of these species plays a crucial role in the ecosystem,
11. Pest Control: Birds like the Common Myna and House Sparrow help control insect populations.
12. Seed Dispersal: Species like the Red-vented Bulbul contribute to seed dispersal, aiding in plant propagation.
13. Scavenging: The Black Kite and House Crow are important scavengers, helping to keep the environment clean.
14. Conservation Status The conservation status of these species varies, but habitat loss due to urbanization and agricultural expansion poses a significant threat. Conservation efforts should focus on
15. Habitat Protection: Preserving natural habitats and creating protected areas.
16. Community Engagement: Educating local communities about the importance of bird conservation.
17. Research and Monitoring: Conducting ongoing research to monitor bird populations and their habitats.
17. Bareilly's diverse avian population, including its endemic species, is a vital part of the region's natural heritage. Protecting these birds and their habitats is essential for maintaining ecological balance and biodiversity. Through combined efforts in conservation, research, and community involvement, the avian diversity of Bareilly can be preserved for future generations.

### Material and Methods

This project work is carried out in District Bareilly (Uttar Pradesh) in five selected areas to estimate the distribution and abundance of common birds. Proper regular visits are needed to collect data. The area for study, material, and method for this project is as follows:

Birds were recorded at five different locations of Bareilly City, Villages, on Jan 2024. We went to plains, rivers, and forest areas and collected many types of samples. In a week, we used different sampling methods, the first of which was the line transect method and the

reduplicative of which was the point count method. By implementing these methods properly, we completed the research project and got various results.

1. **Line Transect Method:** In this method, we created small segments of 50 meters to 500 meters, identified the birds in the transect, and counted the birds once or twice a day because walking at a slow and uniform footstep to comprehensive the Traversetakes time to collect data. Ornithological skills are required to collect data during this time.
2. **Point count method:** In this point count method, I stood at a fixed place and saw and heard the birds and counted the data, repeated three to four times a day at several places to record the bird species present in the plains, rivers and forest areas of Bareilly.

#### **Observe during a suitable time:**

- **Morning:** 6:00 am for 20 - 30 minutes cause birds are very active during morning hours, and at 9:00 am for 20 - 30 minutes,
- **Evening:** 4:00 pm for 20 - 30 minutes as birds are again very active during these evening hours.
- **Night:** 8:00 pm for 20 - 30 minutes, so to observe nocturnal birds. Observing birds at night needs a sharp and critical eye to detect them in dark spaces.

We made the observations of the line transect method with the help of binoculars (8x40HD vision 8x Zoom for long-distance bird watching, sightseeing wildlife tracking) and a camera/ mobile camera, GPS mobile, Notepad and Pen, and Google map. Books: "Book of Indian Birds" by Salim Ali "Birds of the Indian Subcontinent" by Grimmett Local Map To understand the location and use it as a field guide. The birds were recorded according to their daily behavior such as local/common names, food and feeding habits, and a variety of habitats or their nesting sites.

Aves, were patrolling using the "line transect" and "point count methods" in a pre-defined area. A line transects of (01-100 meter) was drawn and birds were monitored on both sides of the transect. Aves, were recognize using standard field guidebooks of Ali and Ripley, 1995, Grimmett et al., 1998 and Salim Ali, 2002.

To observe birds, one needs to carefully examine grasses, bushes, and branches of trees, as well as man-made structures like electric poles and telephone poles where birds may perch. Some birds use camouflage to evade predators, requiring a keen eye for detection. A gap of at least three hours is maintained between two observation sessions. Additionally, the internet is utilized to find the scientific names of some birds.

#### **Data Collected & Area of Study**

To get the most promising results the data is collected from four different areas of the city, having different statuses of natural richness. For observation, approximately half a hectare of area is chosen. The areas which are selected for study of this project work are: Bareilly Ramganga River, Bhagul River, Kalash River, Garra River, Kachilla River, and all Local Riverine region.



These have different types of natural wealth in comparison to each other Bareilly area has a good number of trees thus a good natural habitat. The city and many more Villages are also full of Greenery if the birds found in the Kachilla River decide the habitat, Bareilly, Budaun cities are abundant with mango trees, providing a rich habitat for birds. Additionally, pulses and other bird foods are readily available in these areas. This region serves as an important ecological link connecting the states of Rajasthan and Madhya Pradesh. The diverse availability of food and the presence of orchards make it attractive for bird populations, facilitating a thriving avian ecosystem. The Bareilly River and the bypass road are flanked by trees on both sides, creating a favorable environment for birdlife. Pulses and other bird food grains are readily available in the area, which is beneficial for their survival. According to C. Srivastava's research, this availability of food resources also supports Rabi and Kharif crops, indicating a symbiotic relationship between agriculture and bird populations in this region.

It seems as if both Dataganj and Katri areas near river Ganga are characterized by natural habitats with lush greenery. These places are likely to provide suitable environments for various bird species. The presence of natural habitats, such as forests, wetlands, or green areas, generally attracts a variety of bird species due to the availability of food, shelter, and nesting sites. In urban environments, where green spaces are often limited, areas like Dataganj and Katri constitute 15% of the important habitat for birds. These natural habitats can serve as a refuge for bird populations, provide essential resources, and boost biodiversity in city environments.

Conservation efforts and habitat protection in these areas can help maintain and increase bird populations, contribute to the overall ecological balance, and provide opportunities for bird watching and wildlife appreciation for residents and visitors.

### Result and Observations:

**Table-1: Bareilly**

S.NO.	Common Name	Scientific Name	No. of Species
1.	Sunbird	Leptocomaveronica	3
2.	Rose-ringed Parrot	Psittaculakrameria	2
3.	Greater Coucal	Centropussinesis	1
4.	Green bee-eater	Meropsorientalis	1
5.	Indian Roller	Coracias benghalensis	2
6.	Asian Koel	Eudynamysscolopaceus	3
7.	Cattle Egret	Bubulcus ibis	2
8.	White-throated Kingfisher	Halcyon synesis	3
9.	Laughing dove	Spilopelia senegalensis	8
10.	Red Vented Bulbul	Pycnonotuscafer	5
11.	Babbler	Turdoiderstrata	12
12.	Black Kite	Milvus migrant	1
13.	Indian Myna	Acrodotheres tristis	6
14.	Common Tailor Bird	Orthotomussutorius	3
15.	Indian Owl	Bubo bengalensis	1
16.	Woodpecker	Nil	1
17.	Indian Peacock	Pavo cristatus	2
18.	Robin	Copsychusduplicates	4
19.	Great Egret	Adrea alba	3

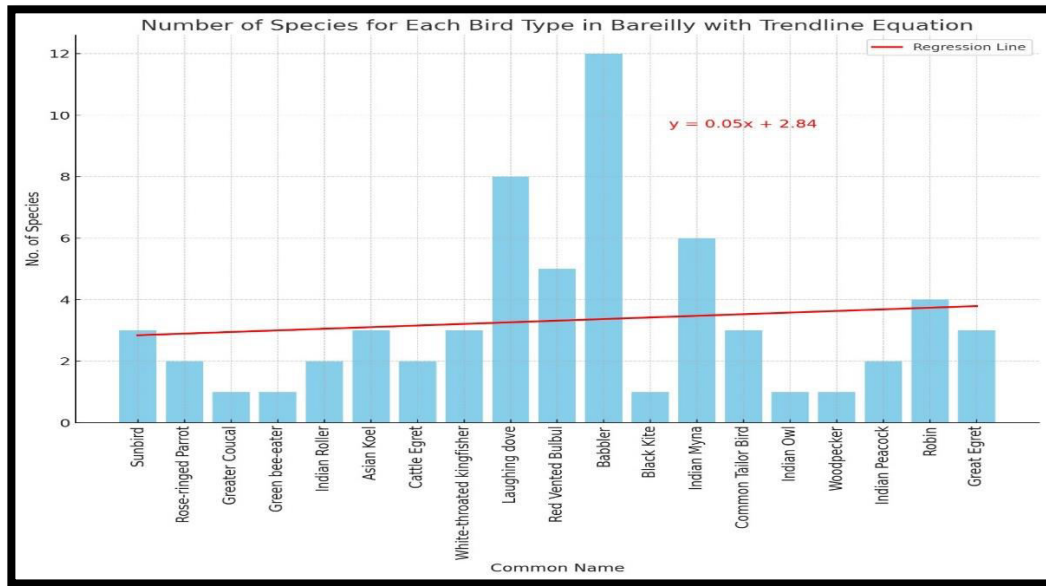


Table-2: Budaun

S.NO.	Common Name	Scientific Name	No. of Species
1.	Green Coucal	Centropussinesis	1
2.	Green bee-eater	Meropsorientalis	1
3.	Asian Koel	Eudynamysscolopaceus	1
4.	White-throated kingfisher	Halcyon smyrnensis	1
5.	Laughing dove	Spilopelia senegalensis	10
6.	Red Vented Bulbul	Pycnonotuscafer	4
7.	Babbler	Turdoiderstrata	9
8.	Indian Myna	Acridotheras tristis	5
9.	Indian Owl	Bubo bengalensis	1
10.	Robin	Copsychusduplicates	4
11.	Great Egret	Adrea alba	2
12.	Cattle Egret	Bubulcus ibis	2
13.	Crow	Corvus splenden	1
14.	Rock Dove	Columba livia	8
15.	Eagle	Calnga hastate	1
16.	Indian Pond Heron	Ardeolagrayii	2
17.	Common Hoopoe	Upupa epops	1



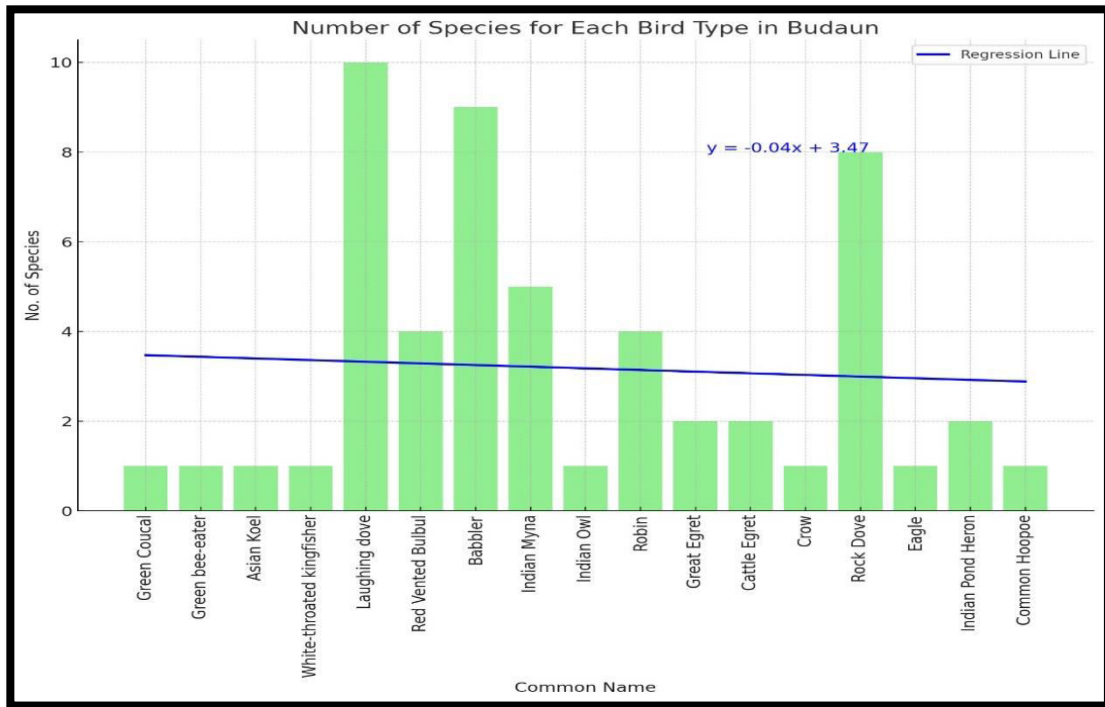


Table 3: Shahjahanpun

S.NO.	Common Name	Scientific Name	No. of Species
1.	River Lapwing	Vanellusduvaulie	1
2.	Red-napedIbis	Pseudibispapillosa	1
3.	Indian Roller	Coracias benghalensis	2
4.	Black hooded oriol	Oriolusxanthous	1
5.	Pigeon	Columba livia	3

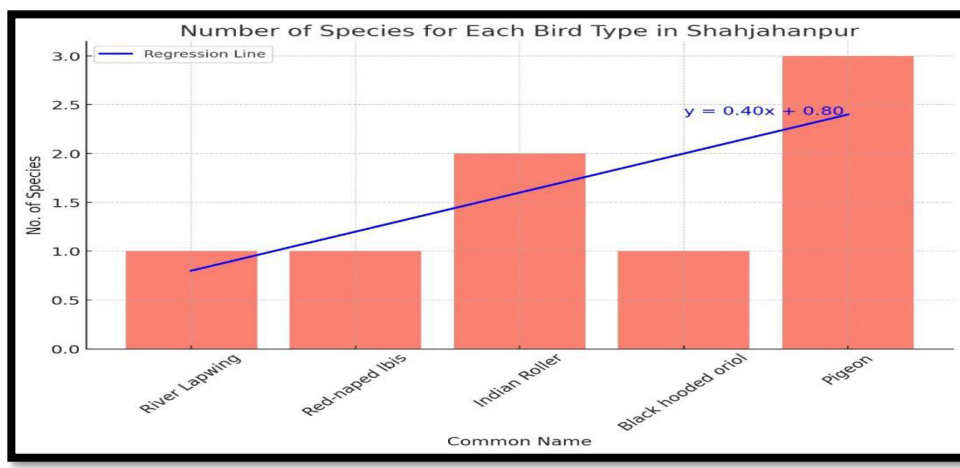


Table - 4: Pilibhit

S.NO.	Common Name	Scientific Name	No. of Species
1.	India Silverbill	Erodicemalabarica	1
2.	Sand lark	Alaudalaraytal	1
3.	Crow	Corvus splenden	2
4.	Indian owl	Bubo bengalensis	1
5.	Sunbird	Leptocomaveronica	3
6.	Black kite	Milvus migrant	2
7.	Pigeon	Columba livia	4

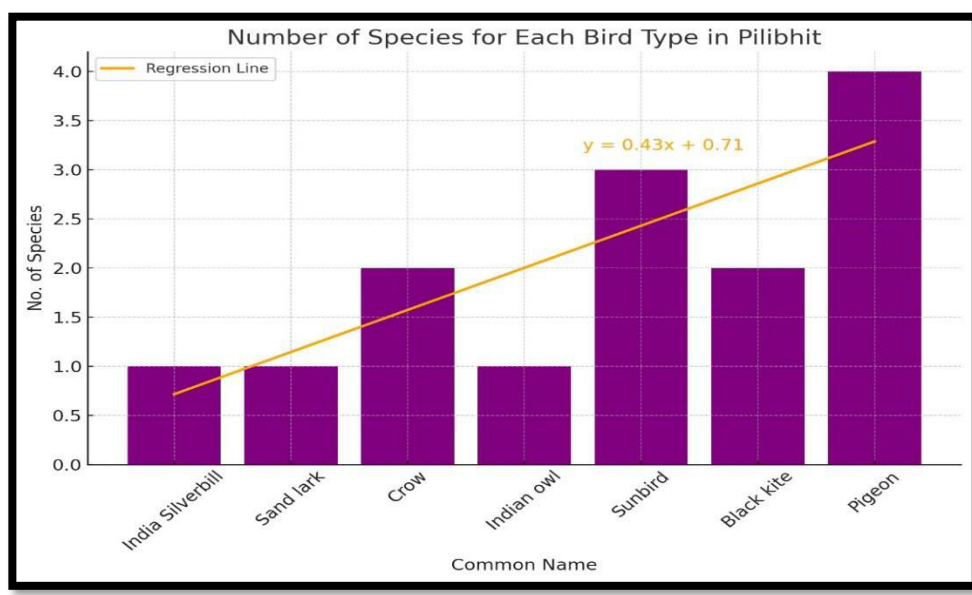


Table - 5: Rampur

S.NO.	Common Name	Scientific Name	No. of Species
1.	Laughing dove	Spilopelia senegalensis	7
2.	White-throated kingfisher	Halcyon smyrnensis	1
3.	Great Egret	Adrea alba	3
4.	Crow	Corvus splenden	4
5.	Rock Dove	Columba livia	6
6.	Indian Myna	Acridotheras tristis	6
7.	Indian Owl	Bubo bengalensis	1
8.	Green Coucal	Centropussinesis	1
9.	Babbler	Turdoider striata	9
10.	Cattle Egret	Bubulcus ibis	2
11.	Red Vented Bulbul	Pycnonotuscafer	1
13.	Green bee-eater	Meropsorientalis	1
14.	Eagle	Calnga hastate	1
15.	Indian Pond Heron	Ardeolagrayii	2

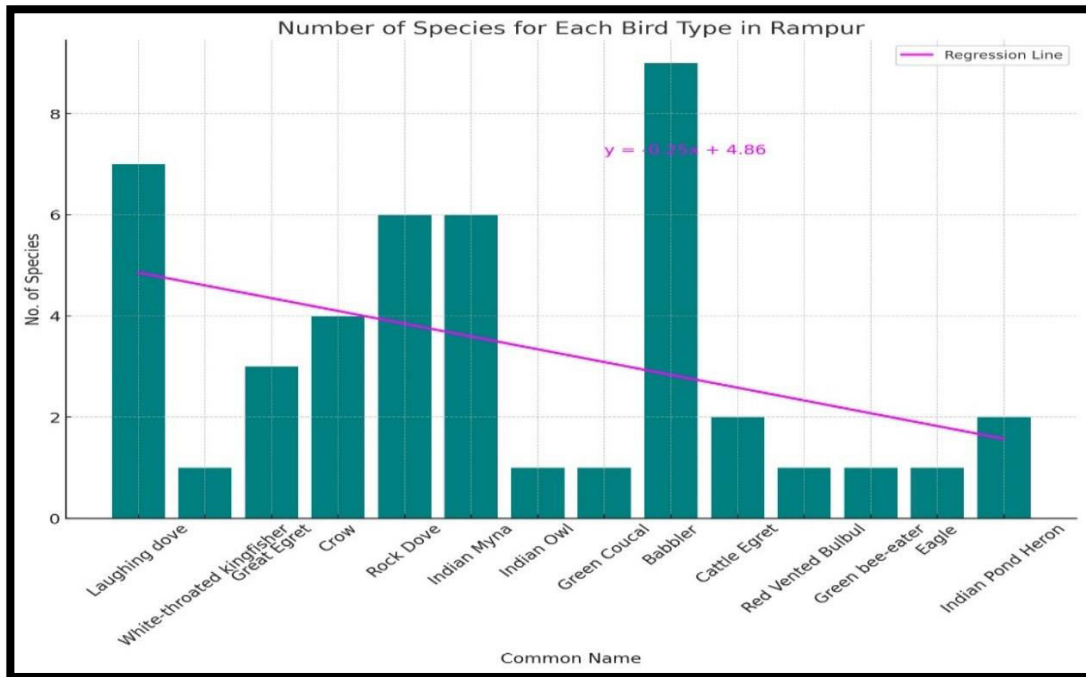


Fig: Indian Peacock (*Pavo cristatus*)



Fig: Indian Owl (*Bubobengalensis*)



Fig: Group of Indian Eagle



Fig: Asian Koel  
(*Eudynamys scolopaceus*)



Fig: Black kite (*Milvus migrans*),



Fig: River Lapwing (*Vanellus duvauliei*)



Fig: Ring dove (*Streptopelia decaocto*)



Fig: Oriental Magpie-Robin  
(*Copsychus saularis* Habitate)



Fig: Asian Hoopoe (*Upupa epops*)



Figure 1



## Conclusion

The above research encourages that the distribution of individual Avian species as well as A large extent of the Avian confraternity, like species richness. but also, the configuration of the community and the allocation of personalized Birds. This approach exposes that disparate groups of birds are pretentious in various ways by Environmental factors that have distinct conservation Inferences. The avian population falls into Three Broad groups - Urban Avoiders, Suburban Adaptable, and Urban Exploiters. The distribution of birds in any area signifies the richness of natural habitats. The distribution of birds is directly proportional to the natural wealth of that area. The vegetation of an area knits a web, that deeply interlinks every thread of Nature. In a study, we found that the distribution and abundance of Avifauna in Bareilly City are good but not equally distributed and balanced. Areas that are interrupted by human activities and settlement are not the choice of birds for their habitat. So, it is important to the bird's distribution to an area signifies the richness of its natural habitat. The higher the distribution of birds in an area, the healthier that area will be in terms of natural wealth. The Biota of an area knits a web that deeply interlocks every thread of nature. A study found that the distribution and abundance of avifauna in Bareilly City are good but not equally distributed and balanced.

Areas that are disturbed due to human activities and settlement were not the choice of birds for habitat. So, it is important to bring hands together for the goodwill of these birds. Avian community composition and conservation Implications studies affirm the importance of analyzing not only the A large extent of the Avian confraternity, like species richness.

#### **Avian typically falls into three broad groups:**

- ✓ **Urban Avoiders:** These species tend to avoid urban areas due to the lack of suitable habitat and higher levels of disturbance.
- ✓ **Suburban Adaptables:** These birds can adapt to suburban environments where there is a mix of natural and human-altered habitats.
- ✓ **Urban Exploiters:** These species thrive in urban environments, often taking advantage of the resources provided by human activities. The distribution of birds in an area can indicate the richness of natural habitats. A higher distribution of birds generally signifies a healthier natural environment, as the biota of an area forms a deeply interlocked web of nature.
- ✓ **Urban Endeavor:** Many bird species thrive in urban environments, often taking advantage of resources provided by human activities such as gardens, water sources, roads, green belts, etc. The distribution of birds in an area can indicate the richness of natural habitats. A high distribution of birds generally indicates a healthy natural environment, as the biosphere of an area forms a deeply interconnected web of nature. Integrate green spaces and natural habitats into urban planning to support bird populations.
- ✓ **Research on Avifauna in Rohilkhand region:** Our research on the distribution and abundance of avifauna in Bareilly smart city, tehsil, town of Rohilkhand region found that the overall presence of birds is good, but it is not evenly distributed or balanced. Human activities with technology expansion and settlements disturb some areas, making them less suitable for bird habitats. This uneven distribution highlights the need to take conservation efforts to a new dimension to preserve and restore natural habitats. Habitat Preservation Protect existing natural habitats and prevent further destruction due to urban expansion. Habitat Restoration Restore degraded habitats to make them suitable for a wider variety of bird species.

#### **Conservation Recommendations**

Community Involvement and Monitoring Research: Community Involvement Involve local communities, colleges, schools, and discussion models in conservation efforts to raise awareness and promote practices that benefit bird populations. Conduct ongoing monitoring and research to track changes in bird populations and the effectiveness of conservation measures. By addressing areas that are concerning, it is possible to improve the balance and distribution of bird species in urban and suburban environments, which contributes to the overall health and biodiversity of the ecosystem.

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