

A Study on the Biodiversity Status and Distribution of Bird Species in Village Bahrala of Meerut Region Uttar Pradesh, India

Layba Saifi¹ and Dr. Garima Pundir²

¹M.Sc. Student, Department of Zoology, Raghunath Girls' Post Graduate College, Meerut, Uttar Pradesh, India

²Associate Professor, Department of Zoology, Raghunath Girls' Post Graduate College, Meerut, Uttar Pradesh, India

²Corresponding Author: gaarima112@yahoo.co.in



www.jrasb.com || Vol. 5 No. 1 (2026): February Issue

Received: 23-01-2026

Revised: 29-01-2026

Accepted: 05-02-2026

ABSTRACT

The present systematic field study was conducted on the avifauna of Village Bahrala, District Meerut (U.P.) for three months from August 2025 to October 2025 (monsoon – early winter). Observation were recorded in monthly different time of the day (morning and evening). Various variables, including family name, order, habitat and distinctive features, were documented during the survey. A total of 36 species, belonging to 31 genera, 23 families and 13 orders were recorded. Most bird species are frequent visitor and most of species utilized more than one habitat and the highest number of species, 32 (88.89%), was observed on the trees, whereas the lowest number of species, 4 (11.11%), was found around the pond.

Keywords- Avifauna, bird diversity, survey sites, habitat, species.

I. INTRODUCTION

World avian fauna comprises over living species of warm – blooded feathered theropod birds divided into 44 orders serving as a critical ecological indicators for environmental health, habitat destruction and climate change. There are more than 10,000 species of birds present worldwide (Clement 2007). These birds are found globally ranging from the 5.5 cm bee Hummingbird to the 2.8 m Ostrich. In world, 12% animal biodiversity covered by Indian avian species and in Indian Sub – continental region supports more than 1219 species of birds contribute total animal biodiversity of World (Grimmett *et al.*, 1998; Kumar *et al.*, 2000). The avifauna of India is one of the most diversified on the planet because of the varied climatic and physical characteristics of the landmass, which have resulted in a variety of habitat types ranging from desert to forest. India is home to approximately 1300 to 1353 bird species, representing about 12.4% to 14% of the global avian diversity. This subcontinent rich in avian fauna (or avifauna) also boasts of 48 birds out of the total 75 families in the World (Grimmett *et al.*, 1998). The geographical ramifications

of Southeast Asia, the tangled patterns of mountain chains, rivers drainage systems and a long period of stable climate seem to have been ideal for the evolution of a wide array of species of birds (Ali and Ripley, 1987). A bird species highly adapted to a specific plant species, community or structure, is also able to describe the vegetation conditions and consequently the ecosystem situations (Uliczka and Angelstam, 2000; Jansen and Robertson, 2001). The increasing refinement and quantification of biological investigation requires comparative exactness in the identification of organisms used in both basic and applied research. By now the number of bird species and for that matter, the number and distribution of geographic races have been all but not completely determined (Steresemann, 1975). Uttar Pradesh boats a rich diversity with over 550 bird species found, including some extremely rare ones, across its varied landscapes, particularly in wetlands and forests. The State's avifauna includes a mix of resident and migratory birds, with the Sarus crane (*Antigone antigone*) serving as the State bird. Among the critically endangered species, oriental whited – backed vulture (*Gyps bengalensis*), long – billed vulture (*Gyps indicus*) and

slender – billed vulture (*Gyps tenuirostris*) are found in this State. Bird Life International (2001) has listed ten endangered species; the bengal florican (*Houbaropsis bengalensis*), the white – headed duck (*Oxyura leucocephala*) and lesser florican (*Sypheotides indica*) are occasionally seen and the greater adjutant (*Leptoptilos dubius*) has not been recorded recently (Rahmani et al., 1990). Bird Life International (2001) has listed 52 near threatened bird species from India, 14 of which occur in Uttar Pradesh. The data of bird survey are used to assess whether a piece of land should receive legal protection

II. MATERIAL AND METHODS

Study area: The present study was conducted in the Village Bahrala, District Meerut (U.P.), [total geographical area is approximately 281.1 hectares or 2.81 square kilometers] figure – 4. We identified the avian fauna in four sites of village. During the period of three months (August 2025 – October 2025) following seasons (monsoon, autumn and pre- winter) were covered during the survey.

Four sites were selected for survey in village and the selections of sites were based on bird habitat. These sites included Agriculture field, Grassland, Residential area, Shrubby area and Pond. These sites are marked as **Site – 1**, **Site – 2**, **Site – 3** and **Site – 4**, shown in figure 5.

from governments and their agencies; such designations are important to conservation because they are intended to constrain potentially damaging activities. Information on population sizes of individual species can also be used to set priorities, allowing conservation effort to be focused on those species most in need of attention. In general, smaller population size is associated with greater risk of extinction locally, regionally or globally. Such information is collected by undertaking surveys over varying geographical areas. Birds in many ways are ideal part for biological investigation (Stresemann, 1975).

III. VEGETATION OF STUDY SITES

The diversity of main habitat type is shown in figure 5. These land cover types can be classified in the major categories: Residential area, Pond, Agriculture field, Shrubby area. Types of sites were:

Site - 1: Agriculture field, Pond and Shrubby area around Ved International School;

Site - 2: Cropland, Grassland and Agriculture field at starting of Village;

Site - 3: Residential area and Pond in the center of Village;

Site - 4: Mixed habitat: Grassland, Cropland and Agriculture field of the Village.



Figure 1: Map of India showing Uttar Pradesh



Figure 2: Map of Uttar Pradesh showing Meerut



Figure 3: Map of District Meerut

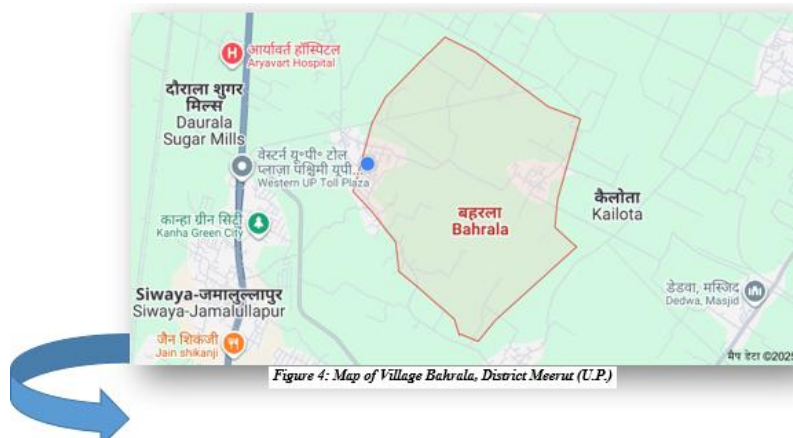


Figure 4: Map of Village Bahrala, District Meerut (U.P.)



Figure 5: Four Sites of Village Bahrala, District Meerut, (U.P.)

IV. OBSERVATION

Birds are an active and energetic animal, which can be a challenging process to identify. It is necessary to have a quick eye to see birds in short time. Birds were identified by fixing eye on them and their movement, feeding habits, shape distinctive strips, patches of color, size and song and calls were noted and observed carefully. The periodic observation was done at two times in a day: (morning before & after the sunrise) and evening (before the sunset). Birds were observed and identified by sitting and standing from a hiding place.

An android phone [REALME 10 Pro + 5G with a 108MP main rear camera, a 8MP ultra – wide camera, and a 2MP macro camera] and an iPhone [iPhone 16 Pro with triple camera system with a 48 MP main camera, a 48 MP ultra – wide camera and a 12MP telephoto camera] were used to take photographs of the birds. The bird species were documented and identified with the help of standard books, websites, mobile applications, etc.

V. SPECIES IDENTIFICATION

The identification of birds was done using field guide such as “A Pictorial guide to the birds of the Indian Sub – Continent” (Ali and Ripley, 1989); “Birds of

Northern India” (Grimmett and Inskipp, 2003). The identification of species was also done with the help of “Collins Handguide to the Birds of the Indian Sub – Continent” (Woodcock, 1980).

The following three characteristics were applied to identify the bird species.

External morphometry: The most important features for the identification of bird species are color, shape, size, beak, leg and tail.

Song and calls: Identification of bird species were also made on the basis of song or calls and habits of the birds.

Habitat: The bird species were also identified by observing the habitats of the birds. 1. Agriculture field 2. Open area 3. Tree 4. Human Residential area, 5. Pond and other water bodies.

Feeding behavior: Identification of bird species have also made on the basis of their feeding behavior, whether the bird eats insects, seeds, flowers and grass.

VI. RESULTS AND DISCUSSION

Observations were recorded in present survey were according to variables like family name, order, food and feeding habits, habitat preference and characteristics features were noted during the survey period. After three months of continuous observation, from August 2025 to

October 2025. 36 bird species belonging to 31 Genera and 23 different Families (13 Orders) were identified and recorded during the course of survey from all four sites

which are mentioned in TABLE 1 and the figures of all bird species is shown on PLATE I to IV.

PLATE – I



PLATE – II

		
<i>Bubulcus ibis</i> Family – Ardeidae	<i>Hirundo smithii</i> Family - Hirundinidae	<i>Hirundo rustica</i> Family - Hirundinidae
		
<i>Oenanthe fusca</i> Family - Muscipidae	<i>Dendrocitta vagabunda</i> Family – Corvidae	<i>Spilopelia senegalensis</i> Family - Columbidae
		
<i>Streptopelia decaocto</i> Family - Columbidae	<i>Pycnonotus barbatus</i> Family - Pycnonotidae	<i>Pycnonotus cafer</i> Family - Pycnonotidae

PLATE - III

		
<i>Acridotheres ginginianus</i> Family – Sturnidae	<i>Gallinula chloropus</i> Family – Rallidae	<i>Gracupica contra</i> Family – Sturnidae
		
<i>Copsychus saularis</i> Family – Muscicapidae	<i>Orthotomus sutorius</i> Family – Cisticolidae	<i>Amaurornis phoenicurus</i> Family – Rallidae
		
<i>Argya striata</i> Family –Leiothrichidae	<i>Milvus migrans</i> Family – Accipitridae	<i>Eudynamis scolopaceus</i> Family – Cuculidae

PLATE- IV

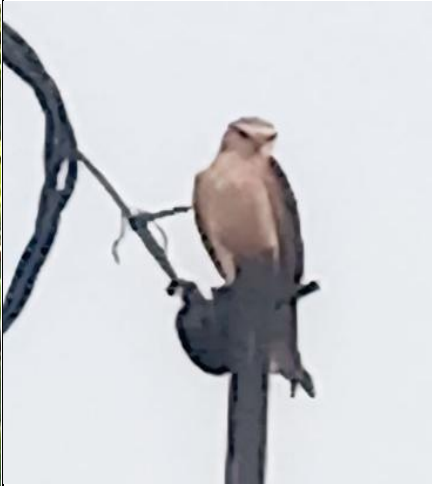
		
<i>Psittacula krameri</i> Family – Psittaculidae	<i>Spilopelia chinensis</i> Family – Columbidae	<i>Psittacula eupatria</i> Family – Psittaculidae
		
<i>Upapa epops</i> Family – Upupidae	<i>Copsychus fulicatus</i> Family – Muscipidae	<i>Himantopus himantopus</i> Family – Recurvirostridae
		
<i>Athene brama</i> Family – Strigidae	<i>Elanus caeruleus</i> Family – Accipitridae	<i>Pseudibis papillosa</i> Family – Threskiornithidae

TABLE – 1

S. No.	Common Name	Scientific Name	Family	Status in Village
1.	House Sparrow	<i>Passer domesticus</i>	Passeridae	Widespread
2.	Red-wattled Lapwing	<i>Vanellus indicus</i>	Charadriidae	Widespread
3.	Common Myna	<i>Acridotheres tristis</i>	Sturnidae	Widespread
4.	Indian Silverbill	<i>Euodice malabarica</i>	Estrildidae	Widespread
5.	Black Drongo	<i>Dicrurus macrocercus</i>	Dicruridae	Widespread
6.	Rock Pigeon	<i>Columba livia</i>	Columbidae	Widespread
7.	Common Crow	<i>Corvus splendens</i>	Corvidae	Widespread
8.	Indian Peafowl	<i>Pavo cristatus</i>	Phasianidae	Widespread
9.	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	Alcedinidae	Widespread
10.	Cattle Egret	<i>Bubulcus ibis</i>	Ardeidae	Widespread
11.	Wire-tailed Swallow	<i>Hirundo smithii</i>	Hirundinidae	Widespread
12.	Barn Swallow	<i>Hirundo rustica</i>	Hirundinidae	Widespread
13.	Brown Rock Chat	<i>Oenanthe fusca</i>	Muscicapidae	Widespread
14.	Rufous Treepie	<i>Dendrocitta vagabunda</i>	Corvidae	Widespread
15.	Laughing Dove	<i>Spilopelia senegalensis</i>	Columbidae	Widespread
16.	Eurasian Collared Dove	<i>Streptopelia decaocto</i>	Columbidae	Widespread
17.	Common Bulbul	<i>Pycnonotus barbatus</i>	Pycnonotidae	Widespread
18.	Red-vented Bulbul	<i>Pycnonotus cafer</i>	Pycnonotidae	Widespread
19.	Bank Myna	<i>Acridotheres ginginianus</i>	Sturnidae	Widespread
20.	Common Moorhen	<i>Gallinula chloropus</i>	Rallidae	Widespread
21.	Indian Pied Myna	<i>Gracupica contra</i>	Sturnidae	Widespread
22.	Oriental Magpie-robin	<i>Copsychus saularis</i>	Muscicapidae	Widespread
23.	Common Tailorbird	<i>Orthotomus sutorius</i>	Cisticolidae	Widespread
24.	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	Rallidae	Widespread
25.	Jungle Babbler	<i>Argya striata</i>	Leiothrichidae	Widespread
26.	Black Kite	<i>Milvus migrans</i>	Accipitridae	Rare
27.	Asian Koel	<i>Eudynamys scolopaceus</i>	Cuculidae	Widespread
28.	Rose-ringed Parakeet	<i>Psittacula krameri</i>	Psittaculidae	Widespread
29.	Spotted Dove	<i>Spilopelia chinensis</i>	Columbidae	Widespread
30.	Alexandrine Parakeet	<i>Psittacula eupatria</i>	Psittaculidae	Widespread
31.	Common Hoopoe	<i>Upapa epops</i>	Upupidae	Rare
32.	Indian Robin	<i>Copsychus fulicatus</i>	Muscicapidae	Widespread
33.	Black-winged Stilt	<i>Himantopus himantopus</i>	Recurvirostridae	Widespread
34.	Spotted Owlet	<i>Athene brama</i>	Strigidae	Rare
35.	Black-winged Kite	<i>Elanus caeruleus</i>	Accipitridae	Rare
36.	Red-naped Ibis	<i>Pseudibis papillosa</i>	Threskiornithidae	Widespread

Most birds prefer mixed habitat and their feeding depend upon availability of environmental factor such as temperature, appropriate conditions (i.e., availability of food, competition) which plays an important role in selection of habitat. The following 36 species were identified during survey. This investigation revealed that the total four sites covered 36 species, 31 genus, 23 families and 13 different orders of bird species.

The members of family Columbidae, Sturnidae, Corvidae, Hirundinidae, Muscicapidae were widely distributed in all four sites. *Columba livia*, *Corvus splendens*, *Acridotheres tristis*, *Halcyon smyrnensis*, *Bubulcus ibis*, *Hirundo smithii*, *Passer domesticus*, *Pycnonotus barbatus*, *Hirundo rustica* were occurred in all four sites; while *Milvus migrans*, *Elanus caeruleus*,

Pseudibis papillosa, *Pavo cristatus*, *Upapa epops*, *Dicrurus macrocercus*, *Copsychus fulicatus* were present in Site – 2. *Euodice malabarica*, *Gallinula chloropus*, *Athene brama*, *Copsychus saularis*, *Amaurornis pnoenicurus*, *Himantopus himantopus*, *Oenanthe fusca*, *Spilopelia senegalensis*, *Gracupica contra* were only present in Site – 3 (residential area and pond). *Vanellus indicus*, *Argya striata*, *Eudynamys scolopaceus*, *Psittacula krameri*, *Spilopelia chinensis*, *Psittacula eupatria* are common bird species found in both Site – 1 and Site – 4.

A three – month study has revealed that 36 bird species belongs to 13 different orders. Out of 36 bird species, 17 species belongs to order Passeriformes (Figure 6).

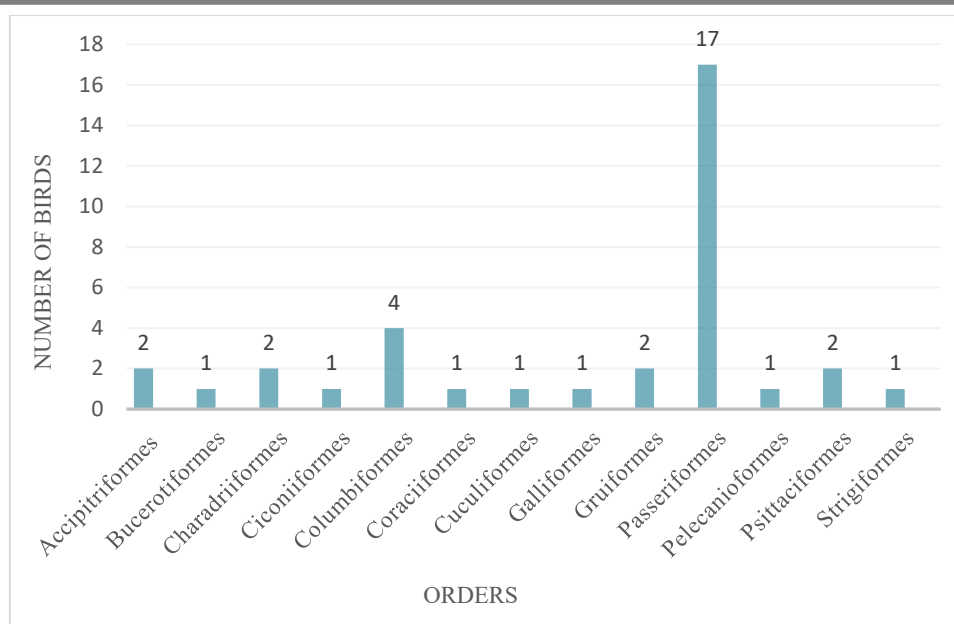


Figure 6: Relative diversity among all Avi fauna orders in the Village Bahrara, District Meerut Uttar Pradesh

During the present investigation, 36 bird species belongs to 31 genus, 23 families and 13 different orders were recorded from all four sites. The Site – 3 showed high species diversity with 33% species, while the Site –

4 showed 22% species, however 28% species were recorded from Site – 2 but the lowest birds diversity were recorded from Site – 1 (only 17% species), shown in figure 7.

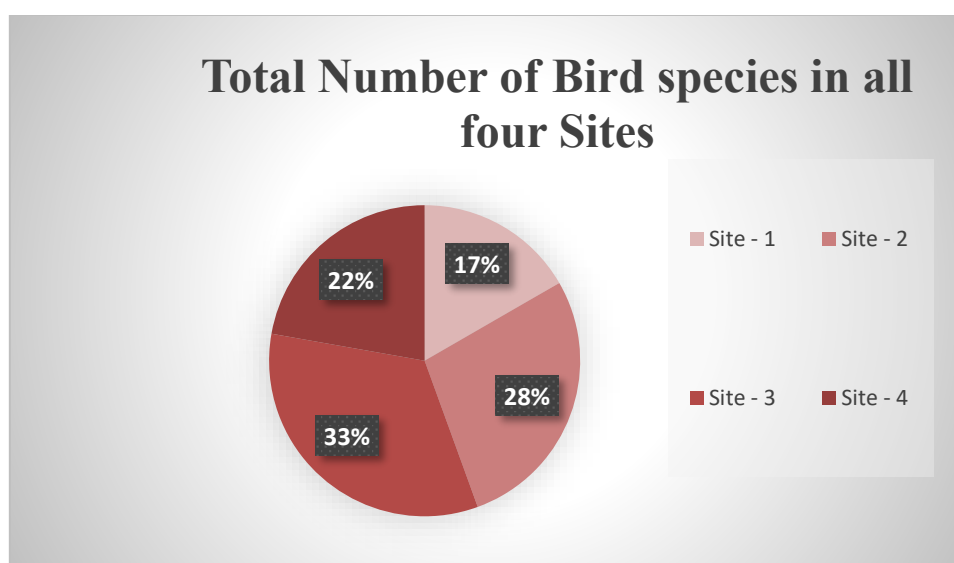


Figure 7: The total number of bird species (% value) of each sites during the survey period.

The family Columbidae, Sturnidae, Muscicapidae were dominant with highest species. During the survey it was also observed that the members of Corvidae family like *Corvus splendens* and *Dendrocitta vagabunda* are considered as the most intelligent of bird species. Different species of birds have different social habitats. Some species of bird lives in flocks while other are loners and live in small family or groups. *Hirundo smithii*, *Pavo cristatus*, *Columba livia*, *Hirundo rustica*, *Corvus splendens*, *Argya striata* were those lived in their flocks. They perched with their flocks.

The large grouping of birds was recorded in the member of Ardeidae family like *Bubulcus ibis*.

The member of Alcedinidae family (*Halcyon smyrnensis*) and the member of Dicuridae family (*Dicrurus macrocercus*) perched lonely. The investigation also suggested that most of the species spend their time in mixed habitat. They usually perched on a tree, on the ground (*Bubulcus ibis*) or some of them swims in water (*Gallinula chloropus*).

Among all groups of animal in the World, birds are more liked owing to their rich coloration, song easy

recognition and liveliness. Moreover, birds are present everywhere from forest, grassland, wetland, to crop field and gardens. Our country is rich in bird fauna. India is home to approximately 1396 bird species as 2025, which represents roughly 12% of the world's total bird fauna.

Many bird species have highly predictable daily cycles and exhibit strong biological clocks that governs their routines and activities. Birds are highly prone to day length, which provides important cues for their migration patterns and seasonal activities. The number of avian species in India is 1396, which belongs to 114 families and grouped under 26 orders. The conservation initiatives should continue with public involvement in the particular areas and that the researchers should regularly monitor the birds to understand the changes in the species composition (Arya *et al.*, 2020). A long-term study is needed to understand the effect of climatic change and bird species distribution in the study area. Bird species diversity has declined drastically due to overhunting and the destruction of their natural habitat. Many species have become extinct, and the existence of many more is currently under threat. During the tenure of the present work it was evaluated that no previous work is done in particular village and more time to time studies are required in Meerut region with changing environmental conditions.

VII. CONCLUSION

Total 36 species, belonging to 13 orders, 23 families and 31 genera, were recorded from Village Bahralla, District Meerut (U.P.). The most of the bird's species were frequently visitor and also the most of the species used more than one habitat and the highest number of species 32 (88.89%) was observed on the trees, whereas the lowest number of species 4 (11.11%) was found around the ponds. Avian species generally prefer mixed habitats, which depend on the availability of food. Environmental and abiotic factors viz. temperature, food availability and competition play critical role in determining habitat selection for a particular species. Natural and anthropogenic factors appears to dictate the population density and species diversity of birds within the study area. Many species which were likely to be found but due to various reason such as habitat destruction, changing agricultural practices, environmental degradation, mirroring broader ecological declines. Birds are becoming less in village primarily due to rapid village modernization or urbanization, converting natural landscapes into concrete – based environment. However, future more systemic studied are required to understand avifauna as well as biodiversity.

ACKNOWLEDGEMENT

The author would like to express their gratitude to Dr. Garima Pundir, Associate Professor, Raghunath

Girls' Post Graduate College, Meerut for her immense support and constant encouragement throughout this research work.

REFERENCES

- [1] Ali, S. and Ripley, S.D. (ed.) 1987. *Handbook of Birds of India and Pakistan*, 2nd ed. Oxford University Press, New Delhi, India
- [2] Ali, S. and Ripley, S.D. 1989. *A pictorial guide to the birds of the Indian subcontinent*, 2nd ed. Bombay Natural History Society, Mumbai, India.
- [3] Arya A. K., Joshi K.K., Bachheti A., Raturi V., Bhatnagar P. and Rawat R. 2020. Avian Survey at Haiderpur Wetlands in Hastinapur Wildlife Sanctuary Uttar Pradesh, India *Journal of Environment and Bio-sciences* 34 (2): 107 – 114.
- [4] Bird Life International. 2001. *Threatened Birds of Asia, The BirdLife International Red Data Book. Part A*. Collar, N. J., Andreev, A. V., Chan, S., Crosby, M. J., Subramanya, S. & Tobias, J. A. (eds.) Cambridge, UK. (1): 1-1516.
- [5] Clement JF. (2007) *Clements Checklist of the World*. 6th edn. New York, Cornell University Press.
- [6] Grimmett, R., Inskipp, C. and Inskipp, T. 1998. *Birds of the Indian Subcontinent*, 1st ed. Christopher Helm, A. & Black C., London.
- [7] Grimmett, R. and Inskipp, T. 2003. *Birds of Northern Indian*, Oxford University Press, New Delhi, India.
- [8] Jansen, A. and Robertson, A. I. 2001. Riparian bird communities in relation to land management practices in floodplain woodlands of south-eastern Australia. *Biological Conservation*, 100: 173-185.
- [9] Kumar, A., Walker, S. and Molur, S. 2000. *Prioritisation of Endangered Species*, Setting Biodiversity Conservation Priorities for India. Singh, S., Sastry, A. R. K., Mehta, R. & Uppal V. New Delhi, WWF- India. 2: 341-425.
- [10] Rahmani, A.R., Narayan, G., Rosalind, L. and Sankaran, R. 1990. *The status of the Bengal Florican in India*. In: Status and Ecology of Bengal and Lesser Florican with reports on Jerdon's Courser and Mountain Quail. Final Report, Bombay Natural History Society, Mumbai: 55-78.
- [11] Stereseemann, E. (Ed.-Cottrell, W.G.) 1975. *Ornithology: From Aristotle to the Present* Haward University Press Cambridge, MA: 365-396.
- [12] Uliczka, H. and Angelstam, P. 2000. Assessing conservation values of forest stands based on specialised lichens and birds. *Biological Conservation*, 95: 343-351.