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Habitat preference of common birds of Shamli district, Uttar Pradesh

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Abstract
Birds play an important role in long-term sustainability of ecosystems via their roles in pollination, seed dispersal, and soil formation. Both terrestrial and marine ecosystems benefit from these eminent services. Birds are used as bio-indicators or ecosystem health assessors because of the valuable information they provide to researchers. Therefore, the characteristics of the habitat in which birds thrive may provide a crucial information on the health of ecosystems and further biodiversity conservation. Daytime observation was performed to evaluate bird populations and habitat types during the study period. The majority of recorded birds were preferred to live in tree canopies (45.33 percent), with shrubs and marshy areas being seen in smaller numbers than trees (10.67% and 26.67%, respectively). Herbs (8.00%), shrubby plants (05.00%), and only 4.00% of the birds showed interest in living around human dwelling. It could be crucial for comprehending the procedure and making an accurate estimate of bird diversity in a certain area or region.

Keywords: avifauna, habitat selection, conservation measures

Introduction

Pollinating flowers, dispersing seeds, and creating soil are just a few of the many ways in which birds contribute to the long-term health of an ecosystem. These things are important for both terrestrial and aquatic ecosystems. Because of these services, scientists often employ birds as bio-indicators or ecosystem health assessors. Thus, the features of the environment in which birds live are an essential clue for upholding ecological function and the state of ecological sustainability. It is believed that changes in habitat, concerning geographical location, the kind of flora that grows there, and available resources, affect bird population structure, habitat use, and species composition. Birds, both resident and migratory, use habitat for roosting and foraging opportunities. As a result, habitats are regarded as being of the utmost importance to their life history needs (Whelan *et al.*, 2008) [14].

The sort of research demonstrates the connections between species diversity and environmental features including plant structure and heterogeneity and community organization. This information may subsequently be put to use in the theoretical and practical management and protection of national parks and sanctuaries, as well as in the conservation of their native species and their habitats (Wiens and Rotenberry, 1981) [15]. Given that birds are often active during the day and easily spotted due to their bright plumage, there is a large amount of literature in ecology focusing specifically on the groups in which these animals live (Bevanger, 1994) [2]. Natural assemblages, diversity, abundance, density, richness, or evenness are all key concepts in the study of bird communities, as is the distribution of birds within habitats such as urban settings, species-habitat relationships, niche separation, community structure, and physiognomy (Metcalfe and Ure, 1995) [9].

Examining the population and community-level responses of birds to changes in landscape spatial arrangement is another area of study in avian ecology. Most studies have also shown that there are substantial differences in bird community species composition across different land-use types, suggesting that changes in land-use are already having an effect on bird communities and will continue to do so in the future, which in turn indicates changes in the biota (Morelli *et al.*, 2017) [10]. Any kind of landscape alteration and fragmentation is harmful to bird populations and the community structure, as it leads to a change in bird composition, which in turn can serve as a seed vector or pollinator, compounding the encroachment problem. This landscape context of avian sampling sites may have a significant impact on local community structure (Gaüzère *et al.*, 2020) [6].

By reducing bird territories and other resources, habitat fragmentation throughout a region can reduce overall habitat area, individual patch size, and proximity of habitat patches, and increase the number of habitat boundaries, leading to population declines (Aouissi *et al.*, 2021) [1]. In this way, local assemblage and structure are altered as a result of different influences on functional groups, resulting in persistent non-equilibrium situations that may be called population instability. As a result, the forest's composition, structure, richness, abundance, and trophic organization may change for the better, allowing for a bigger influx of opportunistic bird species (Sreekar *et al.*, 2021) [13].

1,300 bird species represent around 13% of the global avian assemblage, exhibiting its remarkable diversity and richness (Pimm *et al.*, 2006) [11]. It is becoming increasingly important to have a more thorough understanding of the ecology of birds, especially at the community level, because birds are an integral part of every ecosystem or landscape and continue to attract humans (Buckton and Ormerod, 2002). Natural assemblages of species have been further classified by the numbers of individuals, diversity, richness, or evenness in a habitat, making the study of patterns that explain these assemblages a complex and multifaceted science (Kirby *et al.*, 2008) [8]. Studies of habitat selection and its preferences are currently a popular field of research because of their value as a tool for ecosystem protection and monitoring. Therefore, the present study aimed to examine the habitat selection and preferences of birds in Shamli, Uttar Pradesh.

Materials and Methods

The present study was conducted from March 2021 to November 2021. During the study period, direct roost observation method was used for assessment of birds as well as habitat categories. A spotting scope (Celestron Ultima 20 –60 X 80 mm) and binoculars (Trailseeker Roof ED 8 X 42 mm) were used for the purpose of observing the behaviours and habitat preferences of the spotted birds. In addition, photographs of the observed birds were captured using a Digital Single Lens Reflex (DSLR) camera (Canon EOS Rebel T3 equipped with 18-55 mm and 55-200 mm Twin Lenses) with optimum settings. The bird species that were seen were confirmed using taxonomic keys for identification, and their habitat was further categorized based on the occupancy that was observed during the observation.

Results and Discussion

In the present study, the species have quite different habitat selection and preference interests when it comes to the environments in which they have survived for several decades, which make good sense to grow, survive, and alter reproductive generations. Despite the fact that the study region offered a diverse selection of roosting and feeding opportunities, birds tend to prefer highly specialized environments to meet the requirements of their life histories. The study area has a widespread availability of trees, which is one of the qualities that attracts a greater population. In continuation, the structural characteristics of trees play an important part in the habitat preferences and selections made by bird populations (Gabbe *et al.*, 2002) [5]. Trees had wider canopies develop to retain a greater bird population, and birds are widespread among them; this may be a primary reason why the majority of species' prolific populations choose to live on tree canopies (45.33%). The abundance of water bodies and marshy areas offers key sites for local bird populations. This is probably the reason why the majority of bird species choose to have their habitat near shrubs (26.67% of the total) and marshy areas (10.67%).

According to the findings of a number of studies, increased bird diversity not only helps ensure the continued existence of species but also serves as an essential indicator of ecological health. The abundance of bird species may be an effective strategy for producing a sustainable ecological condition for available bird species; hence, it may be important for understanding the process and effective prediction of bird diversity in a particular area or region. It was also noticed that a few other vegetation types, such as herbs (08.00%) and bushy plants (05.00%), also harbour bird habitation. It is indicated that herbs and bushy plants play a crucial role in the habitation of local bird communities; hence, local birds might be sustained longer with the sustainable presence of herbs and bushy plants (Hostetler and Holling, 2000) [7]. It indicates that birds have shifted to accommodate their population on larger trees that are closer to human dwellings. In the present study, it was found that very few bird species prefer to reside in human dwellings (04.00%). It shows that the diversity of trees that are common around human dwelling areas provide a good number of flowers and fruits, which are crucial parts of their diet. The occurrence of such interpretations is also clearly explored, as it may be a result of the availability of suitable trees, which may be a determining factor in bird communities. It is still not understood how some species choose where to live (i.e., habitat selection), so the number of bird species that breed in a place goes up as you move from one breeding place to another because of food resources, threatened factors, and mating opportunities. Species diversity and evenness are important parameters that might be helpful in the estimation of species variation in a particular habitat. Due to easy access to food, the population density of a few bird species has increased that were already common, but a few studies have found that food availability did not reduce the number of bird species but rather influenced the duration of habitat persistence and generation alteration (Seress and Liker, 2015) [12].

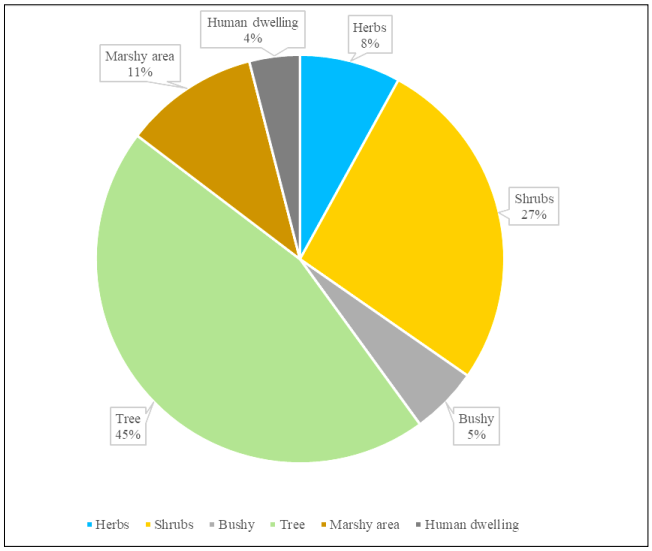

Fig 1

One of the most noticeable things about habitat selection is that a small number of very common bird species tend to dominate, which leads to a lower species evenness. The identification of the habitat requirements for maintaining species' populations inside urban areas is crucial not only for the conservation of species but also for expanding people's experiences with nature. This is crucial for more than simply the survival of species. Many people feel that urbanization is the biggest threat to biodiversity since it is responsible for the loss of so many native species. Many natural species, especially those that travel great distances, seem doomed to extinction in our increasingly urbanized world. Although urbanization threatens and degrades several biological components essential to the habitat of organisms, many studies show that native species continue to live inside cities (Devictor *et al.*, 2007) [4]. A major challenge in the conservation profession is the lack of research into the possible benefits of urban settings for the preservation of local and regional species diversity. Among these characteristics are nesting areas, perches for birdsong, and territorial delineations. Few studies have tried to compare the importance of local and landscape-scale factors in explaining bird distributions, despite growing evidence that the environment outside nesting areas or patterns at the landscape scale may have an effect. Even fewer individuals care to investigate how different species' reactions to habitat mirror patterns of preference for or avoidance of habitat components in an increasingly urbanized environment

Table 1

S. n.	Common name	Scientific name	Habitat type					
			Herbs	Shrubs	Bushy	Tree	Marshy area	Human dwelling
1	Green Bee-eater	*Merops orientalis*	-	+	-	+	-	-
2	Little Brown Dove	*Streptopelia chinensis*	-	-	-	+	-	-
3	Purple Sunbird	*Nectarinia asiatica*	-	-	-	+	-	-
4	Asian Koel	*Eudynamys scolopacea*	-	-	-	+	-	-
5	Black kite	*Milvus migrans*	-	-	-	+	-	-
6	Rose-ringed Parakeet	*Psittacula krameri*	-	-	-	+	-	-
7	White-Throated Kingfish	*Halcyon smyrnensis*	-	-	-	+	-	-
8	Red-vented bulbul	*Pycnonotus cafer*	-	-	-	+	-	-
9	House Sparrow	*Passer domesticus*	-	+	+	+	-	+
10	Yellow wagtail	*Metacilla flava*	+	+	+	-	-	-
11	Common Tailorbird	*Orthotomus sutorius*	+	+	+	-	-	-
12	Black Drango	*Dicrurus macrocercus*	-	-	-	+	-	-
13	Common Myna	*Acridotheres tristis*	-	-	-	+	-	-
14	Rock Pegeon	*Columba livia*	-	-	-	+	-	+
15	House Crow	*Corvus splendens*	-	-	-	+	-	-
16	Little Egret	*Egretta garzetta*	-	-	-	+	+	-
17	Little Cormorant	*Phalacrocorax niger*	-	-	-	+	+	-
18	Indian Pond Heron	*Ardeola grayii*	-	-	-	+	+	-
19	Red Wettled Laping	*Vanellus indicus*	-	+	-	+	+	-
20	Oriental Magpie Robin	*Copsychus saularis*	-	+	-	+	-	-
21	Coppersmith Barbet	*Megalaima haemacephala*	-	+	-	+	-	-
22	Ring Dove	*Streptopelia capicola*	-	-	-	+	-	+
23	Sarus Crane	*Grus antigone*	-	-	-	-	+	-
24	Yellow Wattled Lapwing	*Venellus melabaricus*	-	+	-	-	+	-
25	Greater Coucal	*Centropus sinensis*	-	+	-	+	-	-
26	Black Redstart	*Phoenicuras ochruros*	-	+	-	-	-	-
27	Asian Openbill stock	*Anastomus oscitans*	-	-	-	+	+	-
28	Bronzewinged jacana	*Metopidius indicus*	-	-	-	-	-	-
29	Blue Throat	*Luscinia svecica*	-	+	-	+	-	-
30	Indian Treepie	*Dendrocitta vagabunda*	-	-	-	+	-	-
31	Brahminy Starling	*Sturnus pagodarum*	+	+	-	+	-	-
32	Bank Myna	*Acidotheres ginginianus*	-	+	-	+	-	-
33	Asian Pied Starling	*Sturnus contra*	+	+	-	+	-	-
34	Indian Grey Hornbill	*Ocyceros birostris*	-	-	+	+	-	-
35	Indian Roller	*Coracias benghalensis*	+	+	-	+	-	-
36	Common Hoopoe	*Upupa epops*	-	+	-	+	-	-
37	White Breast waterhen	*Amaurornis phoenicurus*	-	-	-	-	+	-
38	Red Collared Dove	*Streptopelia tranquebarica*	-	+	-	+	-	-
39	Rufous Backed Shrike	*Lanius schach*	-	+	-	+	-	-
40	Rusty Tailed Flycatcher	*Muscicapa*	-	+	-	+	-	-
41	Pied Bushchat	*Saxicola caprata*	+	+	-	+	-	-

References

1. Aouissi HA, Petrişor AI, Ababsa M, Boştenaru-Dan M, Tourki M, Bouslama Z. Influence of land use on avian diversity in North African urban environments. *Land*,2021:10:434.
2. Bevanger K. Bird interactions with utility structures: collision and electrocution, causes and mitigating measures. *Ibis*,1994:136, 412-425.
3. Buckton S, Ormerod SJ. Global patterns of diversity among the specialist birds of riverine landscapes. *Freshwater Biology*,2002:47:695-709.
4. Devictor V, Julliard R, Couvet D, Lee A, Jiguet F. Functional homogenization effect of urbanization on bird communities. *Conservation Biology*,2007:21:741-751.
5. Gabbe AP, Robinson S, Brawn JD. Tree-species preferences of foraging insectivorous birds: implications for floodplain forest restoration. *Conservation Biology*,2002:16:462-470.
6. Gaüzère P, Barbaro L, Calatayud F, Princé K, Devictor V, Raison L, Sirami C, *et al*. Long-term effects of combined land-use and climate changes on local bird communities in mosaic agricultural landscapes. Agriculture, Ecosystems & Environment,2020:289:106722.
7. Hostetler M, Holling C. Detecting the scales at which birds respond to structure in urban landscapes. Urban Ecosystems,2000:4:25-54.
8. Kirby JS, Stattersfield AJ, Butchart SH, Evans MI, Grimmett RF, Jones VR, *et al*. Key conservation issues for migratory land-and waterbird species on the world's major flyways. Bird Conservation International,2008:18, S49-S73.
9. Metcalfe NB, Ure SE. Diurnal variation in flight performance and hence potential predation risk in small birds. Proceedings of the Royal Society of London. Series B: Biological Sciences,1995:261:395-400.
10. Morelli F, Benedetti Y, Su T, Zhou B, Moravec D, Šímová P, Liang W. Taxonomic diversity, functional diversity and evolutionary uniqueness in bird communities of Beijing's urban parks: effects of land

use and vegetation structure. Urban Forestry & Urban Greening,2017:23:84-92.
11. Pimm S, Raven P, Peterson A, Şekercioğlu ÇH, Ehrlich PR. Human impacts on the rates of recent, present, and future bird extinctions. Proceedings of the National Academy of Sciences,2006:103:10941-10946.
12. Seress G, Liker A. Habitat urbanization and its effects on birds. Acta Zoologica Academiae Scientiarum Hungaricae,2015:61:373-408.
13. Sreekar R, Si X, Sam K, Liu J, Dayananda S, Goodale U, *et al*. Land use and elevation interact to shape bird functional and phylogenetic diversity and structure: Implications for designing optimal agriculture landscapes. Journal of Applied Ecology,2021:58:1738-1748.
14. Whelan CJ, Wenny DG, Marquis RJ. Ecosystem services provided by birds. Annals of the New York academy of sciences,2008:1134:25-60.
15. Wiens JA, Rotenberry JT. Habitat associations and community structure of birds in shrubsteppe environments. Ecological monographs,1981:51:21-42.