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A preliminary study on birds diversity of Shamli district, Uttar Pradesh

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Abstract
As an excellent seed-spreaders, hunters, scavengers, and predators, bird have shown their importance in ecosystem sustainability. In order to better understanding of bird diversity and their current status in the Shamli District of Uttar Pradesh, the present study intends for investigation. The assessment of avian diversity and current status was studied extensively. A total of 50 bird species were observed in Shamli district. The recorded species belong to 14 Orders and 27 families which are reproducing successfully under natural conditions. This study added information on species composition of studied region are varied considerably. Depending on the availability of resources and habitat suitability may have a significant impact on the occupancy of avifaunal diversity. It also may helpful in further avifaunal studies and synthesis of conservation strategies.

Keywords: avifauna, diversity, threatened status, conservation

Introduction

Birds have proven an important role in ecosystem and landscape shaping by providing essential ecosystem services such as disperser, predator, prey, and scavenger (Sekercioglu, 2006) [6]. In recent years, it has been established that these sorts of surveys are increasingly important and critically given the rate at which, some species are becoming threatened locally. As on date, 13% of the reported bird species are listed as threatened, and several are declining across the globe. It may be a vital step to pay attention on the evaluation of main cause of the population decline. Presently, climate change and human population emerge as a factor for species threat and depletion of their diversity. It is yet to be known, how these relationships are playing a crucial role in species depletion (Sekercioglu, 2006) [6]. Birds investigations primarily focus on observation, classification, catalog updating, and yet, a systematic arrangement of observational entities on populations, species, habitats, and adaptation with climate change are warrants urgent attention concerning with the implications of species conservation. In continuation, several conservation measures such as ex-situ breeding, reintroductions, and translocations have been employed to conserve species declines and they had proven their significant results (Kaplan, 2021) [3].

A key question could be taken into account when making conservation plan to protect bird diversity and when evaluating inventory data to compare the number of birds, where they live, and how they maintained population. For decision-makers and conservationists to be able to come up with effective ways to protect the diversity of birds that already exist and to plan for the future, goals-based inventories must also give accurate information. So, the need for food and habitat is a global concern. The diversity and accessibility of natural resources influence how often different species appear. As a result, taking into account a vital source of both habitat and food in evaluating bird diversity and protection may be a key feature for a fair evaluation (Grzędzicka, 2023) [2].

A few essential elements, such as biodiversity protection, sustainable use of its components, and equitable benefit sharing, may be significantly incorporated in diversity assessments and sustainable conservation plans to minimize biodiversity losses. This might increase our understanding of biodiversity in various ecosystems and geographical areas.

Information on species habitation, especially, habitat and habitation, played a significant role in updating area-specific diversity and distribution in a broader context. Additionally, inventory data is required for determining the key concerns for policy and management goals. In this context, research inventories on these ecological parameters might be valuable, especially in the conservation of habitat selection and occupancy of residential birds in a specific geographical area. There are several limitations on currently existing bird inventories, including inconsistent sampling attempts (Kittur and Sundar, 2020) [4].

Presently, methods used in bird investigations may provide primary data, and when such information is combined with regional location, it enables the study of population dynamics, species abundance, and avifaunal richness estimation. For the majority of the Uttar Pradesh birds, it is particularly unknown how well they reproduce successfully and maintain their diversity in very diverse territories. Therefore, the present study aimed to investigate the diversity of bird species and their present status in Shamli District, Uttar Pradesh.

Materials and methods

Geographical characteristics of study site

In the northwest of Uttar Pradesh, Shamli district spans an area of 1341 square kilometers. Haryana and Uttar Pradesh are two Indian states which share in western with the Ganga and eastern borders with Yamuna sub-basins, respectively. It is located on the national highway route which connects Delhi and Shamli. It is well connected to surrounding areas such as Delhi (100 km), Saharanpur (65 km), Muzaffarnagar (38 km), and Panipat district, Haryana, which is only 38 kilometres away. This district shares it eastern border with Muzaffarnagar, the western border with Haryana, the northern border with Saharanpur, and the southern border with Baghpat. Shamli district is geographically situated between the longitudes $77^0$23'10.06" and $78^0$08'13.18" in the east and the latitudes $29^0$45'49.33" and $29^0$42'33.33" in the north.

Sampling procedure and data collection techniques

The study area was chosen based on bird availability, and sampling was determined based on area coverage and vegetation type within the habitation range. A purposive random sampling technique was used for the assessment of bird diversity and their threatened status. During the field visit, a good time was spent during the early hours of observation; hence, birds were properly settled on trees and ceased their behavioural activities.

The present study was carried out from March 2021 to February 2022 in the Shamli district, Uttar Pradesh. Line transect and point count methods were used during the bird diversity assessment. The length of transect was fixed at 5 km and then subdivided into 50-meter subsections for diversity assessment. In each site, transects were placed 100 meters apart. During the study period, a pedometer and GPS were also employed for distance measurement and location marking of each site of the studied area. In continuation, Spotting Scope (Celestron Ultima 20–60 X 80 mm) and Binocular (Trailseeker Roof ED 8 X 42 mm) was used in the bird watching and identification along with trained and experienced volunteers who are well familiar with regional knowledge of birds occupancy and habitation.

During the study period, observation was carried out twice in a day (6 hours/ day). Observations were usually made during the active phase of birds' activities, such as morning (6 – 10 am) and evening (4 – 6 pm) when birds are mostly engaged in the exhibition of diurnal behaviour. Photographs of observed birds were taken under suitable conditions using a DSLR camera (Canon EOS Rebel T3 with 18-55 mm and 55-200 mm Twin Lenses). It was noticed that there were some species which were not common in the visited area, and even a few of them were not seen by the residents. It became apparent when a series of interaction sessions were conducted with the residential masses. However, in the case of any typical observation, it was verified with the taxonomic keys of bird identification and classification, and in some cases, references, textbooks, and classification keys were also taken into consideration for species identification.

Results and discussion

During the study period, a total of 50 bird species belonging to 14 Order and 27 families were observed in Shamli district (Table 1). The observed birds and the recorded species are very diverse in terms of habitation and foraging habits. Most of the observed species belong to Order Passeriformes (*n* = 24) such as *Muscicapa ruficauda*, *Saxicola caprata*, *Saxicola torquata*, *Saxicoloides fulicatus*, *Cercomela fusca*, *Copsychus saularis*, *Motacilla alba*, *Motacilla cinerea*, *Metacilla flava*, *Motacilla citreola*, *Anthus trivialis*, *Acridotheres tristis*, *Sturnus contra*, *Sturnus vulgaris*, *Corvus splendens*, *Corvus macrorhynchos*, *Dendrocitta vagabunda*, *Prinia hodgsonii*, *Lanius schach*, *Lanius cristatus*, *Pycnonotus cafer*, *Phylloscopus collybita*, *Passer domesticus*, *Dicrurus macrocercu*) while Charadriiformes contributed the second most recorded species order (*n* = 4) like *Streptopelia senegalensis*, *Streptopelia chinensis*, *Columba livia*, and *Vanellus indicus*.In continuation of Order arrangement of the recorded species, Columbiformes (*Streptopelia senegalensis*, *Streptopelia chinensis* and *Columba livia*), Coraciiformes (*Merops phillippinus*, *Coracias benghalensis* and *Halcyon smyrnensis*), and Pelecaniformes (*Egretta garzetta*, *Ardeola grayii* and *Bubulcus ibis*) contributed three species in each group (*n* = 3), and Gruiformes (*Gallinula chloropus* and *Porphyrio porphyria*), Bucerotiformes (*Ocyceros birostris* and *Upupa epops*), Piciformes (*Megalaima haemacephala* and *Jynx torquilla*), Accipitriformes (*Milvus migrans* and *Neophron percnopterus*) were identified with two species (*n* = 2) while, in the case of Cuculiformes (*Eudynamys scolopacea*), Galliformes (*Pavo cristatus*), Suliformes (*Phalacrocorax niger*), Ciconiiformes (*Anastomus oscitans*) and Psittaciformes (*Psittacula krameri*) were recorded with single species (*n* = 1; Table 1). Shamli district is home for a wide range of habitation diversity like gardens, farmlands, and water reservoirs. In addition to these ecosystems, the area of Shamli district also has a rich bird population which is highly diversified in terms of habitat and feeding habits. The attribute of habitat characteristics such as water availability, foraging resources, and territory; is likely due to certain factors like climate change, as birds thrive in a warm climate. Based on these findings, it can be suggested that local NGOs should work for the conservation of avian community (Aiyadurai and Banerjee, 2020) [1]. The bird diversity of the rural and urban areas is highly diversified in the studied locations of the Shamli district. This may be due to human activities like transportation, vehicles, buildings, and roads, which have had a significant impact on the environment over time.

The family-wise arrangement of the recorded species was also estimated, and it was found that the observed bird species belong to 27 families. The observed family diversity is as follows: Muscicapidae (*n* = 6), Motacillidae (*n* = 5), Corvidae (*n* = 4) while Sturnidae, Laniidae, Columbidae, and Ardeidae showed three species in each family (*n* = 3). Further, few species were listed in the Charadriidae, Rallidae, and Accipitridae families, with two species (*n* = 2). There were a few more bird families such as Phylloscopidae, Passeridae, Dicruridae, Jacanidae, Scolopacidae, Meropidae, Coraciidae, Halcyonidae, Bucerotidae, Upupidae, Cuculidae, Megalaimidae, Picidae, Phasianidae, Phalacrocoracidae, Ciconiidae, and Psittaculidae were categorized with a single member of the family (*n* = 1; Table 1).

Shamli district is surrounded by urban areas; however, 82.0% of the observed species are classified as of least concern, 12.0% have data deficient, and only 4.0% of the species are reported at the threatened level. It shows that the study area has a lot of places to live and food to eat. Because of this, it can be assume that the birds in an ecosystem provide important services which may help to make a healthy and stable ecosystem. Furthermore, it could be caused by marginally threatened factors. Some birds, however, displayed a wide range of foraging preferences and feed in both marshy areas and agricultural farms, making them less vulnerable to anthropogenic activity and habitat degradation (Panda *et al.*, 2021) [5].

As a result, the examination of feeding guilds may be a useful technique for determining the composition and threats to biodiversity conservation. Another important component of this study was to explore the species composition of the study area, which entailed evaluating how birds are impacted by spatial landscape structure at population and community levels. This study reveals species composition of the study area varied depending on the pattern of land use and resource utilization, which may have a significant impact on bird diversity, and it may explore more challenges and opportunities for avifaunal conservation.

Table 1: Availability of bird's diversity and threatened status in the Shamli district, Uttar Pradesh.

Order	Family	Common Name	Scientific Name	IUCN Status
Passeriformes	Muscicapidae	Rusty Tailed Flycatcher	*Muscicapa ruficauda*	Least Concern
		Pied Bushchat	*Saxicola caprata*	Least Concern
		Common Stonechate	*Saxicola torquata*	Least Concern
		Indian Robbin	*Saxicoloides fulicatus*	Least Concern
		Rock Chat	*Cercomela fusca*	Least Concern
		Oriental Magpie Robin	*Copsychus saularis*	Least Concern
	Motacillidae	White Wagtail	*Motacilla alba*	Least Concern
		Grey Wagtail	*Motacilla cinerea*	Least Concern
		Yellow wagtail	*Metacilla flava*	Data deficient
		Citrine Wagtail	*Motacilla citreola*	Least Concern
		Pipit	*Anthus trivialis*	Least Concern
	Sturnidae	Common Myna	*Acridotheres tristis*	Least Concern
		Asian Pied Starling	*Sturnus contra*	Least Concern
		Common Starling	*Sturnus vulgaris*	Least Concern
	Corvidae	House Crow	*Corvus splendens*	Least Concern
		Jungle Crow	*Corvus macrorhynchos*	Least Concern
		Indian Treepie	*Dendrocitta vagabunda*	Least Concern
		Grey-Breastet Prinia	*Prinia hodgsonii*	Least Concern
	Laniidae	Rufous Backed Shrike	*Lanius schach*	Least Concern
		Brown Shrinke	*Lanius cristatus*	Least Concern
		Red Vented Bulbul	*Pycnonotus cafer*	Data deficient
	Phylloscopidae	Common Chiffchaff	*Phylloscopus collybita*	Least Concern
	Passeridae	House Sparrow	*Passer domesticus*	Least Concern
	Dicruridae	Black Drango	*Dicrurus macrocercu*	Not Recorded
Columbiformes	Columbidae	Little Brown Dove	*Streptopelia senegalensis*	Least Concern
		Spotted Dove	*Streptopelia chinensis*	Data deficient
		Rock Pegeon	*Columba livia*	Least Concern
Charadriiformes	Charadriidae	Red Wettled Laping	*Vanellus indicus*	Least Concern
		Yellow Wattled Lapwing	*Venellus melabaricus*	Not Recorded
	Jacanidae	Bronzewinged jacana	*Metopidius indicus*	Least Concern
	Scolopacidae	Wood Sandpiper	*Tringa glareola*	Least Concern
Coraciiformes	Meropidae	Tailed Bee-eater	*Merops phillippinus*	Data deficient
	Coraciidae	Indian Roller	*Coracias benghalensis*	Least Concern
	Halcyonidae	White-Throated Kingfish	*Halcyon smyrnensis*	Least Concern
Pelecaniformes	Ardeidae	Little Egret	*Egretta garzetta*	Least Concern
		Indian Pond Heron	*Ardeola grayii*	Least Concern
		Cattle Egret	*Bubulcus ibis*	Least Concern
Gruiformes	Rallidae	Common moorhen	*Gallinula chloropus*	Least Concern
		Purple Swamphen	*Porphyrio porphyria*	Least Concern
Bucerotiformes	Bucerotidae	Indian Grey Hornbill	*Ocyceros birostris*	Least Concern
	Upupidae	Common Hoopoe	*Upupa epops*	Least Concern
Cuculiformes	Cuculidae	Asian Koel	*Eudynamys scolopacea*	Least Concern
Piciformes	Megalaimidae	Coppersmith Barbet	*Megalaima haemacephala*	Least Concern
	Picidae	Eurasian wryneck	*Jynx torquilla*	Least Concern
Accipitriformes	Accipitridae	Black kite	*Milvus migrans*	Least Concern
		White Scavenger Vulture	*Neophron percnopterus*	Endangered
Galliformes	Phasianidae	Indian Peafowl	*Pavo cristatus*	Least Concern
Suliformes	Phalacrocoracidae	Little Cormorant	*Phalacrocorax niger*	Least Concern
Ciconiiformes	Ciconiidae	Asian Openbill Stock	*Anastomus oscitans*	Least Concern
Psittaciformes	Psittaculidae	Rose-ringed Parakeet	*Psittacula krameri*	Least Concern

References

1. Aiyadurai A, Banerjee S. Bird conservation from obscurity to popularity: a case study of two bird species from Northeast India. Geo Journal,2020:85:901-912.
2. Grzędzicka E. Assessing the role of invasive weeds in the impact of successional habitats on the bird assemblage in overgrowing agriculture. Journal for Nature Conservation, 2023, 126352.
3. Kaplan G. Casting the net widely for change in animal welfare: The plight of birds in zoos, ex situ conservation, and conservation fieldwork. Animals,2021:12:31.
4. Kittur S, Sundar KG. Density, flock size and habitat preference of Woolly-necked Storks Ciconia episcopus in agricultural landscapes of south Asia. SIS Conservation,2020:2:71-79.
5. Panda BP, Prusty B, Panda B, Pradhan A, Parida SP. Habitat heterogeneity influences avian feeding guild composition in urban landscapes: evidence from Bhubaneswar, India. Ecological Processes,2021:10:1-10.
6. Sekercioglu CH. Increasing awareness of avian ecological function. Trends in ecology & evolution,2006:21:464-471.