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## Avian biodiversity in spring at SHUATS campus, Prayagraj, India: A survey

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### Abstract

A survey project on avian biodiversity at the campus of SHUATS, Prayagraj was done, over a period of three months from February to April, 2022, purposely to observe birds during the spring season. A total number of 41 bird species belonging to 28 families and 12 order were recorded during the study. The common bird species were Jungle babbler, Common Myna, Spotted Dove, Asian koel, Sparrow, Blue rock pigeon, House crow, Black drongo etc. The SHUATS campus has a wide variety of trees, which may be one of the major contributing factors for the richness of bird species. Nesting and breeding of 06 species (Jungle babbler, house crow, Asian koel, house sparrow, red vented bulbul, red wattled lapwing) also been observed.

**Keywords:** SHUATS campus, bird diversity, transects, species

### 1. Introduction

Birds are most beautiful creatures in this planet. Birding is one of most relaxing hobby. We should encourage this among students. Birds fulfill many ecological functions in their habitats. For instance, they are bio indicators of healthy ecosystems<sup>[1, 2]</sup>. Due to the important role that birds play in maintaining protection to manage biological threats and efficiently protect the environment<sup>[3]</sup>. In addition, insectivorous species and raptors regulate disease vectors, including mosquitoes and rodents. Scavenger birds, such as the Pied Crow (*Corvus albus*), contribute to biomass recycling and to some degree reduce levels of disposable wastes. Frugivorous birds play an important role in seed dispersal of fleshy fruit-producing plants<sup>[3]</sup>. Birds are also important in plant pollination as demonstrated by sun-birds, which participate in crossbreeding of flowering plants, especially those with bird-pollination syndrome<sup>[4]</sup>.

### 2. Materials and Methods

#### 2.1 Site selection

The study was conducted in the University campus of SHUATS, Prayagraj North India. The study area covers an approximate 900 acres of land area. The half of study area represents buildings, with an agriculture field and forest nursery. The university campus consists of more than 1,500 trees, which provide a wide range of habitats for the birds. Also, some areas within the university are quite silent which indirectly promotes bird diversity. (fig 1)

#### 2.2 Area of survey

Bird species were surveyed using the line transect method. It is based on the theory of walking along a predetermined route at a regular interval to record the Birds on or near the line. Open, flat homogeneous habitat was preferred. it was straight line not zig-zag. Seven line transects were selected for study. All transects were approximately 200m.

**Transect 1:** Old Men's Hostel to Girls Hostel.

**Transect 2:** Shepherd Hall to College of Forestry.

**Transect 3:** College of Forestry to Horticulture Field.

**Transect 4:** Jacob Institute Of Biotechnology To Forestry Nursery.

**Transect 5:** Backyard of Department of Animal Husbandry to Crop Research Field.

**Transect 6:** Yeshu Darbar to Yamuna bank

**Transect 7:** Genetics and Plant Pathology Department to Crop Research Field.

### 2.3 Estimation of avian density

According to Sutherland <sup>[5]</sup>, point count is the most efficient method of estimating avian density. This Method entails the observers remaining at one point for a fixed time and recording the birds seen by the observers. Distances were recorded in terms of concentric zones around the point (example 50 m, 100 m) up to some limit beyond which the birds are not identifiable. Bird survey was done using direct count methods which include <sup>[6]</sup> point count method and <sup>[7]</sup> area search method. In point count method <sup>[8]</sup>, birds were recorded in four circular plots with 25 m radius in every 300 m distance along transects. In area search method <sup>[9]</sup>, survey was made in a 3 m wide belt along the transect in between the circular plot. The time taken for survey varied depending on the terrain and topography.

### 2.4 Survey periods and time

All surveys were carried out in the month of February to April 2022. Surveys were conducted in the morning hours (6.30 a.m. to 9.30 a.m.) and evening hours (3.30 p.m. to 6.30 p.m.) by a single observer <sup>[10]</sup>.

### 2.5 Bird species identification

Identifying a bird can be a challenging process. Birds are active, energetic animals. Quick eye spotting is required in order to get possible detail in a short span of time. The following techniques were used during bird watching, birds were recognized by fixing eye on them. Continuous

observations were made regarding their movement, songs, feeding habit and size. Simultaneously specific calls and songs were also Identified General size, shape, distinctive strips and patches of colour including crown strips, eye lines, nape colour, eye arcs or rings and birds bill size were noted. Wing bars, colour patches, and markings on bird bodies during the stationary stage or flying stage were noted. Leg colour and length were also noted in each observation. Observations were confirmed with the help of Avibase bird count <sup>[11]</sup>.

The identification of birds were done with naked eyes and also with the aid of binoculars and cameras. Images of birds which could not be identified in the field were captured using a camera and identified with the help of a field guide. ebird.com <sup>[12]</sup> and Google Lens.

### 2.6 Tools and instruments used

- Camera (Nikon D3500).
- Binoculars.
- Compass.
- GPS.
- Checklist.
- Notepad, pen and pencil.
- Google lens.
- ebirds.com

## 3. Results and Discussions



**Fig 1:** Map showing SHUATS campus. (Courtesy: Google map)

The SHUATS campus is very green campus, situated in the bank of river Yamuna (fig. 1). It has a wide variety of trees, shrubs, flower garden, crop field, fallow land, cattle pasture, forest nursery, freshwater pond which may be one of the major contributing factors for the richness of bird species.

### 3.1 Avian biodiversity

A total number of 41 bird species belonging to 28 families and 12 order were recorded during the study in three months of spring (Table.1). The common bird species were Jungle babbler, Common Myna, Bank Mana Spotted Dove, Asian koel, House Sparrow, Blue rock pigeon, House crow, Black

drongo etc. Nesting and breeding of 06 species (Jungle babbler, House crow, Asian koel, House sparrow, Red vented bulbul and Red wattled lapwing) have also been observed. Conservation status of birds of SHUATS campus was of least concern (LC).

Table 2 indicated the transect wise number of bird species observed at SHUATS campus. Highest number of bird species observed in transect-7 where a total 27 numbers of bird species was found. Transect-5 where 25 species were observed. Followed by transect- 3 where 19 species were observed. These areas were very quiet all the time and had a very good habitat for birds.

**Table 1:** Checklist of bird species at SHUATS campus

S. No	Oder	Family	Scientific name	Common name	Status
1	Accipitriformes	Accipitridae	<i>Accipiter badius</i>	Shikara	LC*
2	Bucerotiformes	Bucerotidae	<i>Ocyeros birostris</i>	Indian Grey Hornbill	LC
3		Upupidae	<i>Upupa epops</i>	Common Hoopoe	LC
4	Caprimulgiformes	Apodidae	<i>Apus affinis</i>	House Swift	LC
5	Charadriiformes	Charadriidae	<i>Vanellus indicus</i>	Red-Wattled Lapwing	LC
6			<i>Vanellus malabaricus</i>	Yellow Wattled Lapwing	LC
7		Columbidae	<i>Spilopelia senegalensis</i>	Laughing Dove	LC
8			<i>Columba livia</i>	Rock Peginon	LC
9	Cuculiformes	Cuculidae	<i>Eudynamys scolopaceus</i>	Asian Koel	LC
10			<i>Centropus sisensis</i>	Greater Coucal	LC
11	Coraciiformes	Coraciidae	<i>Coracias benghalensis</i>	Indian Roller	LC
12		Meropidae	<i>Merops orientalis</i>	Green Bee Eater	LC
12		Alcedinidae	<i>Halcyon smyrensis</i>	White Throated Kingfisher	LC
14			<i>Ceryle rudis</i>	Pied Kingfisher	LC
15	Gruiformes	Rallidae	<i>Amaurornis phoenicurus</i>	White Throated Waterhen	LC
16	Passeriformes	Dicruridae	<i>Dicrurus macrocercus</i>	Black Drongo	LC
17		Cruidae	<i>Dendrocitta vagabunda</i>	Rufous Treepie	LC
18			<i>Corvus splendens</i>	House Crow	LC
19		Corvidae	<i>Corvus corax</i>	Raven	LC
20		Nectariniidae	<i>Cinnyris asiaticus</i>	Purple Sunbird	LC
21		Passeridae	<i>Passer domesticus</i>	House Sparrow	LC
22		Alaudidae	<i>Mirafra erythropera</i>	Indian Bush Lark	LC
23		Cisticolidae	<i>Prinia socialis</i>	Ashy Prinia	LC
24		Pycnonotidae	<i>Pycnonotus jocosus</i>	Red-whiskered Bulbul	LC
25			<i>Pycnonotus cafer</i>	Red-vented Bulbul	LC
26		Leiothrichidae	<i>Turdoides striata</i>	Jungle Babbler	LC
27			<i>Turdoides affinis</i>	Yellow Billed Babbler	LC
28		Sturnidae	<i>Gracupica contra</i>	Indian Pied Myna	LC
29			<i>Acridotheres tristis</i>	Common Myna	LC
30			<i>Acridotheres ginginianus</i>	Bank Myna	LC
31			<i>Sturnia pagodarum</i>	Brahminy Starling	LC
32		Phalacrocoracidae	<i>Microcarbo niger</i>	Little Cormorant	LC
33		Motacillidae	<i>Motacilla maderaspatensis</i>	White-browed Wagtail	LC
34		Muscicapidae	<i>Saxicoloides fulicatus</i>	Indian Robin	LC
35			<i>Copsychus saularis</i>	Oriental Magpie robin	LC
36	Pelecaniformes	Ardeidae	<i>Bubulcus ibis</i>	Cattle Egret	LC
37			<i>Ardea intermedia</i>	Intermediate Egret	LC
38	Piciformes	Ranphastidae	<i>Negalaina zeylanica</i>	Brown-headed Barbet	LC
39			<i>Psilopogon haenacephalus</i>	Coppersmith Barbet	LC
40	Psittaciformes	Psittaculidae	<i>Psittacula kraneri</i>	Rose-ringed Parakeet	LC
41	Phoenicopteriformes	Podicipedidae	<i>Tachybaptus ruficollis</i>	Little Grebe	LC

\*LC - Least concern, IUCN Red List.

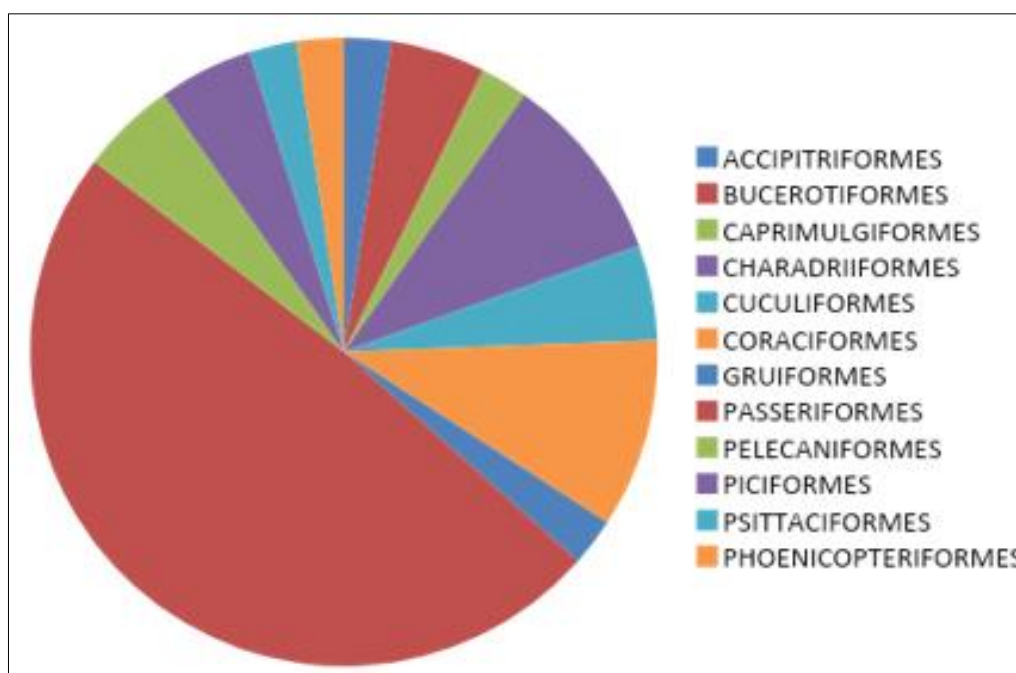
**Table 2:** Transect wise number of bird species observed at SHUATS campus

S. No	Transect (Tr)	No. of bird species observed
1.	Tr-1	13
2.	Tr-2	12
3.	Tr-3	19
4.	Tr-4	17
5.	Tr-5	25
6.	Tr-6	10
7.	Tr-7	27

Table 3 showed the number of bird species (Order wise) observed at SHUATS campus. Where order Passeriformes possessed by 20 bird species (Fig.2).

**Table 3:** Number of bird species (Order wise) observed at SHUATS campus

S. No	Name of Bird's Oder	No. bird species observed	%
1	Accipitriformes	1	2.44
2	Bucerotiformes	2	4.88
3	Caprimulgiformes	1	2.44
4	Charadriiformes	4	9.76
5	Cuculiformes	2	4.88
6	Coraciiformes	4	9.76
7	Gruiformes	1	2.44
8	Passeriformes	20	48.8
9	Pelecaniformes	2	4.88
10	Piciformes	2	4.88
11	Psittaciformes	1	2.44
12	Phoenicopteriformes	1	2.44

**Fig 2:** Number of bird species (Order wise) observed at SHUATS campus (In Percentage)

#### 4. Conclusions

Present study project showed that SHUATS campus has good habits for bird species. It also showed that good place for nesting and breeding place for different species.

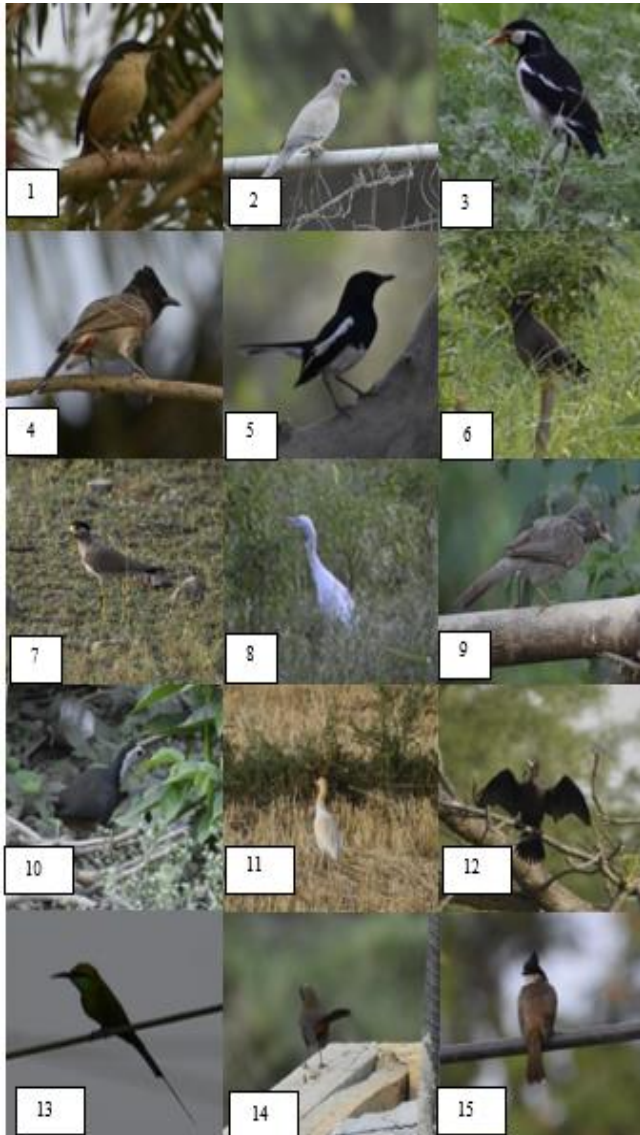
#### 5. Acknowledgments

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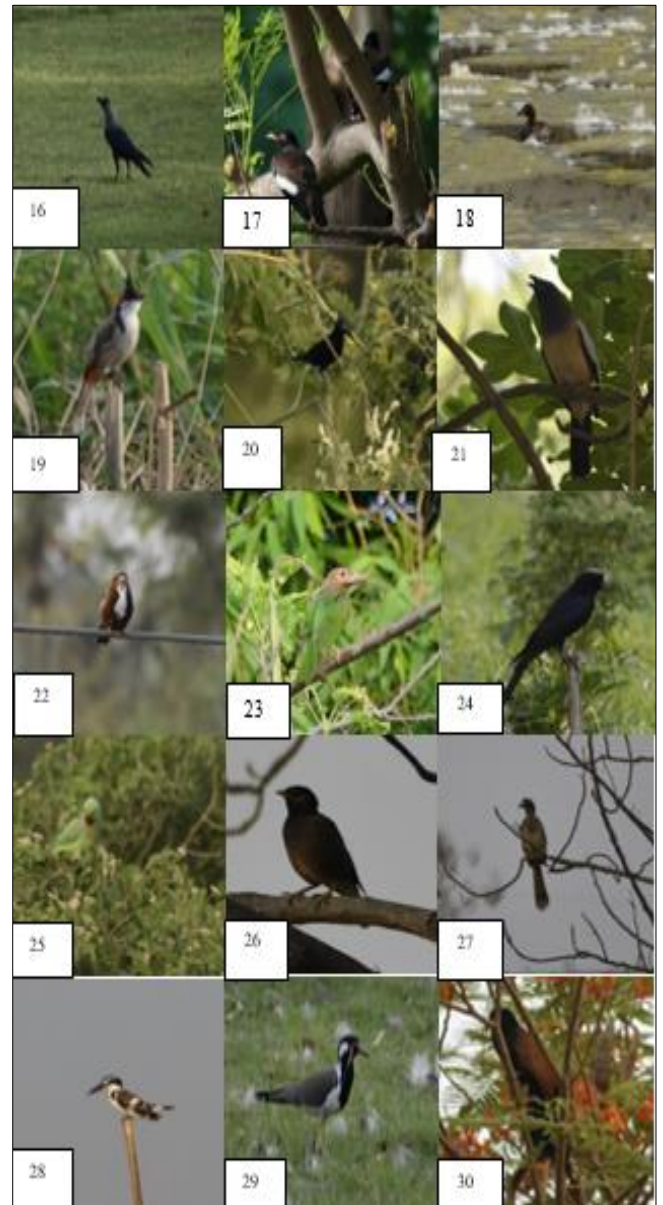
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**Appendix  
Photo plate**



**Note:** 1. Ashy Prinia (*Prinia socialis*) 2. Laughing Dove (*Spilopelia senegalensis*) 3. Indian pied Myna (*Gracupica contra*) 4. Red-vented Bulbul (*Pycnonotus cafer*) 5. Oriental Magpie robin (*Copsychus saularis*) 6. Bank Myna (*Acridotheres ginginianus*) 7. Yellow-Wattled Lapwing (*Vanellus malabricus*) 8. Intermediate Egret (*Ardea intermedia*) 9. Jungle Babbler (*Turdoides striata*) 10. White-breasted Waterhen (*Amaurornis phoenicurus*) 11. Cattle Egret (*Bubulcus ibis*) 12. Little Cormorant (*Microcarbo niger*) 13. Green Bee Eater (*Merops orientalis*) 14. Indian Robin (*Saxicoloides fulicatus*) 15. Red Vented Bulbul (*Pycnonotus cafer*)



**Notes:** 16. House Crow (*Corvus splendens*) 17. Common Myna (*Acridotheres tristis*) 18. Little Grebe (*Tachybaptus ruficollis*) 19. Red whiskered bulbul (*Pycnonotus jojosus*) 20. Purple Sunbird (*Cinnyris asiaticus*) 21. Rufous treepie (*Dendrocitta vagabunda*) 22. White Throated Kingfisher (*Halcyon smyrensis*) 23. Brown-headed barbet (*Negalaina zeylanica*) 24. Black Drongo (*Dicrurus macrocerus*) 25. Rose-ringed Parakeet (*Psittacula kraneri*) 26. Common myna (*Acridotheres tristis*) 27. Indian Grey Hornbill (*Ocyrceros birostris*) 28. Pied Kingfisher (*Ceryle rudis*) 29. Red-Wattled Lapwing (*Vanellus indicus*) 30. Greater Coucal (*Centropus sisensis*)