



A Survey on Avian Bio-diversity in and around Sanjay Gandhi Postgraduate Institute of Medical Sciences (S.G.P.G.I.), Lucknow, Uttar Pradesh, India

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Abstract:- Birds are the most attractive and fascinating groups on the Earth and their varieties leads to an abundance of life. Avian Bio – diversity plays a major role in uniting of food chain in ecological unit of nature. The birds perform diverse functional roles as seed dispenser, scavenger, ecosystem engineers, nutrient depositor, predator of insects and rodents. The study was performed in selected areas in S.G.P.G.I. of Lucknow during October 2024 to April 2025. The main Objective of this study was to explore the Avian bio-diversity of this zone. The Data was collected for seven months by using the point count method. Birds survey was carried out using the line transect method across five different transects areas. As a result of seven months observation 30 Avian species were recorded which belonging into 10 orders and 23 families. Majority of species were belonging to the order Pesseriformes which had 15 bird species.

Keywords:- Avian Bio-diversity, Lucknow, Ecosystem Habitat, Avian species

1.Introduction

The word Avian Bio-diversity refers to the variety and variability of bird species in a particular area. This diversity is important for understanding the health and function of ecosystem. Birds are most prominent groups of animals throughout the world because of their remarkable splendor, melodious calls, easy recognition and liveliness [1,2] Birds are one of the most adaptive and widely spread organisms on the planet and the adaptations of birds totally depends upon their body mass and feeding habits because of these they have followed human colonization. Due to higher degree of adaptability of these few successful species, their density is much higher in the cities as compared to the more natural and adjacent habitat. [3]

Today more than 9600 species of birds occur all over the World. Of these 2100 species and subspecies occur in the India subcontinent, India alone has 1200 species. With the new classification coming into force, the number of species may well be 1300, containing about 13% of the World's birds. [4]

Birds play a major role in pollination and seed dispersal of various flowering plants. Friendly birds are good custodians of crops and they help manage the number of serious insect pests within the threshold [5,6]. Some birds for example Crows and kites are the best scavengers within the urban areas. Fly catchers, bee-eaters destroy a lot of harmful insects. Some passerine birds and Koels disperse a variety of seeds.

There are several factors affecting Avian Bio-diversity including habitat availability, climate and human activities (like pollution, deforestation, urbanization, misuse of natural resources) all play a role in shaping avian bio-diversity. Recent developments in the field of Ornithology suggest that the total number of bird species of the World is 10157 belong to 227 families [7] of which about 1253 are considered to be threatened with extinction (IUCN 2011). As per state of India's Bird Report 2020 (SOIB, 2020), there is a decline in bird population in India, as more than 50% of Indian bird species (out of total 867 species) assessed have registered a decline during the last few decades. The total bird species found in Uttar Pradesh are nearly 550 (UPSDB, 2014).

A number of studies on biodiversity, taxonomy and documentation of the avifauna have been reported from many parts of the Uttar Pradesh state by a number of authors; (Gopi and Kittur, 2011; Yadav et al. 2016; Kumar et al. 2018; Mazumder and Khan, 2020; Verma, 2020; Kumari et al. 2020; Singh et al. 2018; Prakash & Verma 2016; Kanaujia et al. 2015; Tomar and Chouksey, 2018; Kumar et al. 2015; Mishra et al. 2016; Dwevedi et al. 2014; Kushwaha et al. 2019). The present study is the first documentation and checklist of the avifauna from SGPGI Campus, Lucknow, Uttar Pradesh, India.

1. MATERIALS AND METHODS

1.1 Study Area

The Sanjay Gandhi Postgraduate Institute of Medical Sciences in Lucknow is located on a 550-acre (2.2 square kilometers) campus. It is situated on Raebareli Road about 15 Kilometers from the main city of Lucknow. The area (S.G.P.G.I) for the study was chosen for the convenience to regular and periodic observation as required for the study. The Geographical status of S.G.P.G.I. at 26.7463 °N and 80.9460 °E in Lucknow district of Uttar Pradesh, India. The climate condition of that area has a humid subtropical climate with cool, dry winters and dry, hot summers with ample sunshine. The annual rainfall in that area is approximately 39.3 inches. Common trees found in the Sanjay Gandhi Postgraduate Institute of Medical Sciences (SGPGIMS) Campus and surrounding areas, include native species like neem, mango, banyan and peepal trees. Other popular choices for urban greenery in the region include Indian gooseberry, Indian almond and Indian laburnum. While the search result doesn't specify the exact species found in SGPGIMS, other common trees for urban landscapes include dogwood, magnolia, crepe myrtle, oak, maple and elm. The area is facing major threats to habitat loss due to deforestation and encroached development activities. This can lead to reduced tree cover area and wildlife habitat destruction.



Figure - Map of the study area

1.2Methodology

The present study was conducted for a period of seven months starting from October, 2024 to April, 2025 in S.G.P.G.I and their surrounding areas of Lucknow, covering two seasons remarkable (winter & summer season). The bird survey was conducted every after two days. In the study area, five different transects varying in length and comprising different habitats, were selected for data collection The data collection carried out twice in a day in the morning (6:00 am to 9:00 am) and in evening (5:00 pm to 7:00 pm) The birds are identified using standard field guide books of Ali & Ripley, 1995, Grimmett et al.,1998, Salim Ali,2002. Birds were counted by using direct count method from walking with in the selected habitat of Lucknow. Photographs were taken with the help of normal camera and I phone. The birds were observed most active during the period od day.

1.3Transects selection

In the study area there are different types of habitat location of paths survey are carried out at S.G.PG.I. In the survey of study area there are five different transect, varying in lengths were selected for the collection of data during study time. Location of all five transects areas (T1, T2, T3, T4, T5) with their length and habitat demonstrated in the table form.

Table 1. Length and habitat of transects in the study area

S.NO	TRANSECTS	TRANSECT LENGTH	HABITAT AT TRANSECT
1	T1	4 km	S.G.P.G.I. Main Campus
2	T2	2 km	Scrubby forest
3	T3	1.5 km	Residential area, park, garden, seasonal water bodies
4	T4	2.0 km	Residential area & area with trees and shrubs
5	T5	1.0 km	Suburban area

3. RESULTS AND DISCUSSION

During the observation time, a total 30 bird species were recorded in different transect of the observation area. These 30 avian species belong to 10 orders, 23 families. Out of the observed 10 orders, the avian species richness was highest for the Order Passeriformes (15 species) followed by Columbiformes (3 species) Cuculiformes (3 species), Psittaciformes (2 species) Gruiformes (1 species), Anseriformes (1 species), Galliformes (1 species), Strigiformes (1 species), Bucerotiformes (1 species), Accipitriformes (1 species). Passeriformes alone accounted 50 % of total observed avian species.

The second largest order was Columbiformes & Cuculiformes which have total 3 species which belonging to the family Columbidae and Cuculidae respectively which constitute the 10 % of the total avifaunal biodiversity. The Orders Psittaciformes and Bucerotiformes were represented with 2 species constitutes the 7% of the total Avifaunal biodiversity. The order Galliformes & Anseriformes were represented with 1 species each, constitute the 4% of the total avifaunal biodiversity. The order Gruiformes were constitute the 3 % of the total avifaunal biodiversity.

3.1 Monthly Variations

For the evaluation of monthly variations in Avian diversity, the data recorded during periodic visits was computed month wise for the seven months of the study. The maximum species richness was recorded in the month of March, 2025 (18 species) and minimum in the month of December - January, 2025 (8 species).

3.2 Seasonal Variations

For evaluation of seasonal variations in Avian diversity, the data was computed season wise namely, winter season (December to February). And summer season (March to April). Maximum avian species were observed during the summer season (26 species) and minimum avian species were observed during the winter season (16 species).

3.3 Diurnal Variations in Avian Diversity of The Study Area

The evaluation of diurnal variations in avian diversity was done by observing the birds during whole day in two diurnal phases viz. Morning and Evening Phase. Maximum numbers of birds were observed during the Morning Phase (22 species) whereas the Evening Phase accounted for minimum numbers of birds (17species) were observed.

S.NO	FAMILY	COMMON NAME	ZOOLOGICAL NAME	NO. OF SPECIES
1	Sturnidae	Common Myna	<i>Acridotheres tristis</i>	1
2	Muscicapidae	Oriental Magpie Robin	<i>Copsychus saularis</i>	3
		Common Rose finch	<i>Carodacus erythrinus</i>	
		Indian Robin	<i>Copsychus copsy</i>	
3	Phasianidae	Indian Peafowl	<i>Pavocristatus</i>	1
4	Strigidae	Jungle Owlet	<i>Glaucidium radiatum</i>	1
5	Leiotherichidae	Jungle babbler	<i>Turdodies striata</i>	1
6	Corvidae	House crow	<i>Corvus splendens</i>	2
		Rufous treepie	<i>Dendrocitta vagabunda</i>	
7	Bucerotidae	Indian Grey Hornbill	<i>Ocyeros briostris</i>	1
8	Turdidae	Black throated thrush	<i>Turdus astrogularis</i>	1
9	Pycnonotidae	Red whiskered bulbul	<i>Pycnonotus jocosus</i>	1
10	Fringillidae	Brown rockchat	<i>Oenanthe fusca</i>	1
11	Motacillidae	White wagtail	<i>Motacilla alba</i>	1
12	Paridae	Coal Tit	<i>Periparus ater</i>	1
13	Estrildidae	Scaly Breasted Munia	<i>Lonchura punctulata</i>	1
14	Cisticolidae	Tailor bird	<i>Orthotomus sutorius</i>	1
15	Nectariniidae	Purple sunbird	<i>Cinnyris asiaticus</i>	1
16	Rallidae	White breasted waterhen chick	<i>Ampurornis phoenicurus</i>	1
17	Columbidae	Spotted Dove	<i>Spilopelia chinensis</i>	3
		Laughing Dove	<i>Spilopelia senegalensis</i>	
		Pigeon	<i>Columbia livia domestica</i>	
18	Anatidae	Domestic goose	<i>Anser</i>	1
19	Psittaculidae	Blossom Headed Parakeet	<i>Psittacula roseate</i>	1
20	Psittacinae	Rose Ringed Parakeet	<i>Psittacula kromeri</i>	1
21	Cuculidae	Indian cuckoo	<i>Cuculus Micropterus</i>	3

		Asian Koel	<i>Eudynamys scolopaceus</i>	
		Greater Cauca	<i>Centropus sinensis</i>	
22	Upupidae	Common Hoopoe	<i>Upupa epops</i>	1
23	Accipitridae	Shikra	<i>Tachyspiza badia</i>	1

Table- Observation Table showing % Composition of Order

S.NO.	Name of order	No. of species in order	% composition of order
1	Passeriformes	15	50%
2	Cuculiformes	3	10%
3	Gruiformes	1	4%
4	Galliformes	1	3%
5	Columbiformes	3	10%
6	Strigiformes	1	3%
7	Anseriformes	1	3%
8	Bucerotiformes	2	7%
9	Psittaciformes	2	7%
10	Accipitriformes	1	3%

Fig 2. Avian Species richness per order recorded in Study area

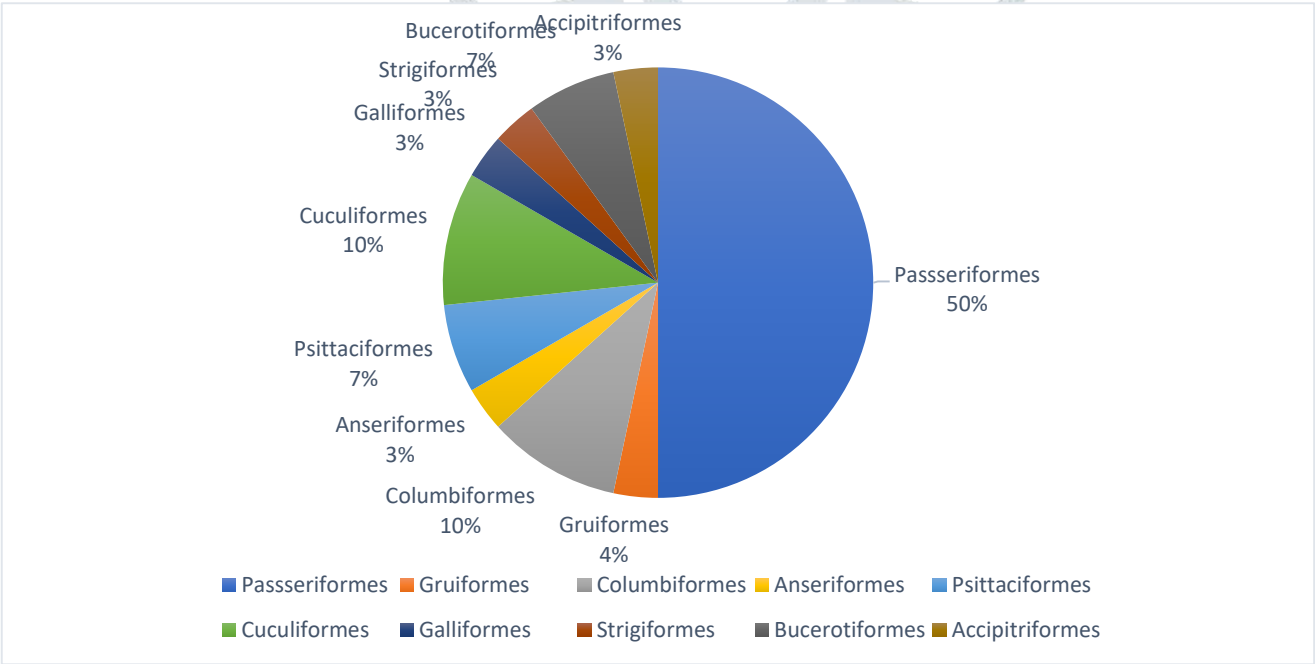
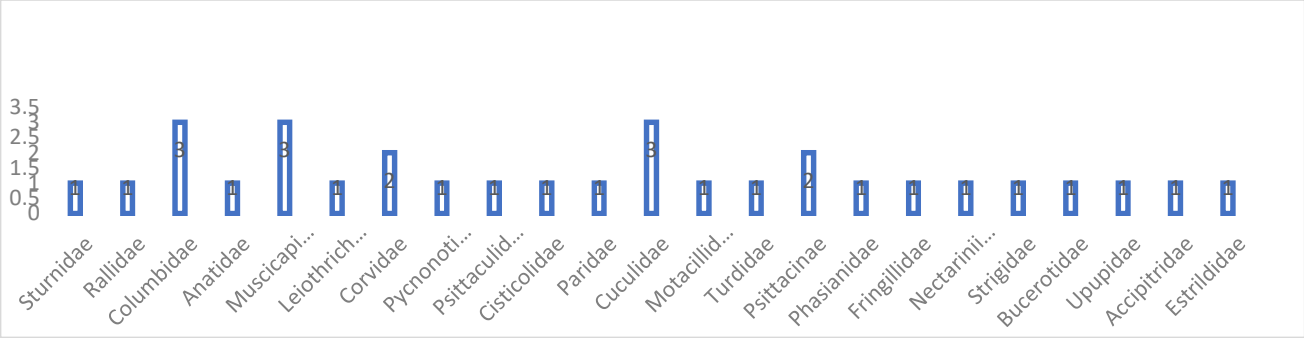
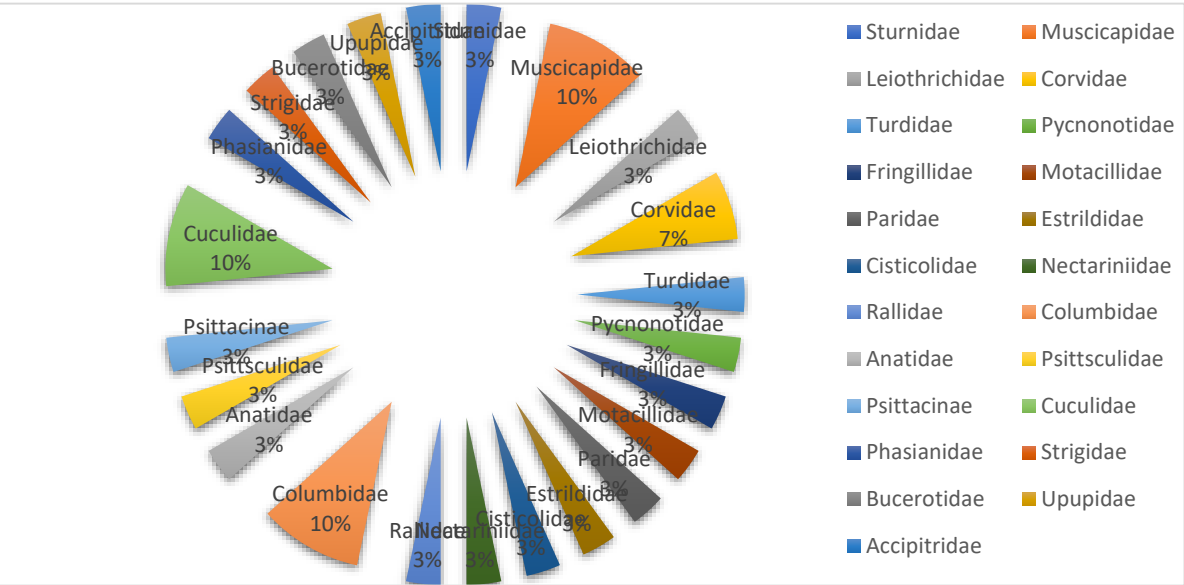


Fig 3. Family wise species richness observed in Study areas



S.NO.	Name of family	No. of species in a family	% composition of species in a family
1	Sturnidae	1	3%
2	Muscicapidae	3	10%
3	Leiothrighidae	1	3%
4	Corvidae	2	7%
5	Turdidae	1	3%
6	Pycnonotidae	1	3%
7	Motacillidae	1	3%
8	Paridae	1	3%
9	Estrildidae	1	3%
10	Cisticolidae	1	3%
11	Nectariniidae	1	3%
12	Rallidae	1	3%
13	Columbidae	3	10%
14	Anatidae	1	3%
15	Psittaculidae	1	3%
16	Psittacinae	1	3%
19	Cuculidae	3	10%
18	Fringillidae	1	3%
19	Phasianidae	1	3%
20	Strigidae	1	3%
21	Bucerotidae	1	3%
22	Upupidae	1	3%
23	Accipitridae	1	3%

Fig 4. Avian species richness per family recorded in Study Area



Picture 1 – Photographs of some bird species, observed during study



Centropus sinensis



Spilopalia chinensis



Turdodies striata



Acridotheres tristis



Columbia livia domestica



Oenanthe fusca



Copsychus saularis



Amourornis Phoenicurus



Anser



Turdus astrogularis



Dendrocitta vagabunda



Cuculus micropterus



Psittacula roseate



Eudynamys scolopaceus



Cinnerys asiaticus



Copsychus copsy



Lonchura punctulata



Corvus splendens



Motacilla alba



Tachyspiza badia



Pycnonotus jocosus

Picture 2- Stress Factor



Pollution



Disposal Dumping



Overgrazing



Deforestation

CONCLUSION

It can conclude that the total number of 30 bird species were observed during the study time. S.G.P.G.I. Area located in district Lucknow supports resistant birds as well as migratory birds but this area is under serve threats due to rapid Urbanization, deforestation, overgrazing. This area showed a rich & diverse present of nearly 30 species of birds in its varied habitat, belonging to the 10 orders and 23 families. In this area there are some common birds were observed belonging to the order Passeriformes which showed a maximum number of birds diversity. Due to stress factors the abundance of bird species was declined. The purpose of this study, is to know and improve the avifaunal bio-diversity of this area with little care and concern such as providing bird feed, water and bird houses for the bird species.

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