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Tanmoy Dey
Post Graduate Department of
Zoology, Krishnanagar Govt.
College, P.O. Krishnanagar,
Dist.-Nadia, West Bengal, India

Dr. Jayati Ghosh
Assistant Professor, Post
Graduate Department of
Zoology, Krishnanagar Govt.
College, P.O.- Krishnanagar,
Dist.-Nadia, West Bengal, India

Study on the avifaunal species diversity of the Krishnanagar govt. college campus, Krishnanagar, Nadia, West Bengal

Tanmoy Dey and Dr. Jayati Ghosh

Abstract

The study started with an aim of preparing a Checklist of birds of Krishnanagar Govt. College, Krishnanagar, Nadia. A total of 30 species of birds belonging to 22 families were recorded in and around the campus of the College from January 2015 to December 2015. Of the thirty species about twenty two are residential, six are local migrant and two are winter migrants. Order Passeriformes represented by 16 species belonging to 11 families contribute to about 53.33% of the total avifaunal species richness. Among the non-passerines, maximum richness was represented by the order Ciconiiformes (2 families, 3 species). Of the total diversity, 43.33% (13 species) are common, 30% (9 species) are Frequent and 20% (6 species) are occasional and 6.66% (2 species) are rare. Among the foraging groups, insectivores (30%) dominated the bird community followed by Omnivores (20%), Frugivores and Carnivores (16.66%), Fish eating and Granivores (6.66%) and Nectarivores (3.33%).

Keywords: Urban birds, checklist, species richness, abundance

1. Introduction

Diversity of fauna is one of the most important ecological indicators to evaluate the quality of habitats. Of the biodiversity components, birds are proven bio-indicators of environmental quality. Indian subcontinent is known for diverse and rich bird species whose taxonomy, distribution and their general habitat characteristics are well documented in India. Bird communities have been studied fairly well both in temperate and tropical forests. India has more than 1300 species which is over 13% of the world bird species [1]. Now-a-days, avifaunal diversity has been decreasing due to the destruction of natural habitats and human disturbances. IUCN Red List of endangered birds has already recognized 1226 bird species as threatened globally and India with 88 threatened bird species [2]. With the shrinking of greenery and increase in pollution, birds and all our wildlife are fast disappearing. These have resulted in the narrow down in avian foraging habitat and their nesting sites. Thus, many species of birds may be forced to inhabit in the urban areas and constrain them to breed there. The urban biodiversity has received very little attention from the biologist as compared to natural and protected ecosystem [3, 4]. In general, urbanization decreases bird species diversity and richness, but increases their densities [5]. Although educational premises occupy less than 5% of the total urban area, such areas may harbour up to half the biodiversity of the urban biota [6]. Since there is no satisfactory survey on this respect till date the present study attempts to prepare a checklist of birds in and around the campus of the Krishnanagar Govt. College as well as to create awareness for their conservation.

2. Material and methods

2.1 Study area

Krishnanagar Govt. College (longitude 88° 33' E and latitude 23° 24' N) is located at a distance of 125 Km. from the Metropolis of Kolkata in the District Head Quarter of Nadia District, namely Krishnanagar. Krishnanagar City is about 11km away from tropic of Cancer (23.5°N). This is a suburb surrounded by rural atmosphere and is on the southern bank of Jalangi River. In summer, from April to June, the weather remains hot and temperature ranges from maximum of 35 °C to minimum of 26 °C. Monsoon season prevails during beginning-June to mid-September.

Correspondence

Dr. Jayati Ghosh
Assistant Professor, Post
Graduate Department of
Zoology, Krishnanagar Govt.
College, P.O.- Krishnanagar,
Dist.-Nadia, West Bengal, India

Set in a lush green natural environment the sprawling college campus is spread over an area of 36.06 acres. The college campus with majestic building, flower garden, vast open space with grown up trees, a pond and one medicinal plant garden support and provide nesting sites for many species of resident and migratory birds (Figure1).

2.2 Methods

This report is based on the observations made from January 2015 to December 2015. The birds are observed and recorded at various locations of the campus like garden, water bodies and adjacent areas. Observation was made equally across the season and at different time of the day for two to three hours. At each sighting birds were counted and observed by field binoculars, photographed whenever possible by using Canon Power Shot SX520 HS camera. The identification of birds was carried out using standard literature and field guides [1, 7].

For recording the abundance of the avifauna during the survey, the terminology used by Ahmed and Sahi, 2005 was used [8].

C = common: means it can be invariably be seen in that habitat where it occurs with the proviso of course that the reason is also appropriate.

F= Frequent: means that visiting appropriate habitat it will not be seen or heard invariably, perhaps only in one visit out of three.

O= Occasional: means seen or heard only in one visit out of six.

R= rare: means even less likelihood of occurrence.

The birds were also classified into 6 Categories on the basis of their food habits such as Carnivorous (CV), Omnivorous (OM), Insectivorous (IN), Frugivorous (FR), Granivorous (GR) and Nectarivorous (N), Fish eating (FE).

Abbreviations used in Table 1 for residential status: R- Resident; LM-Local Migrant; WM-Winter Migrant.

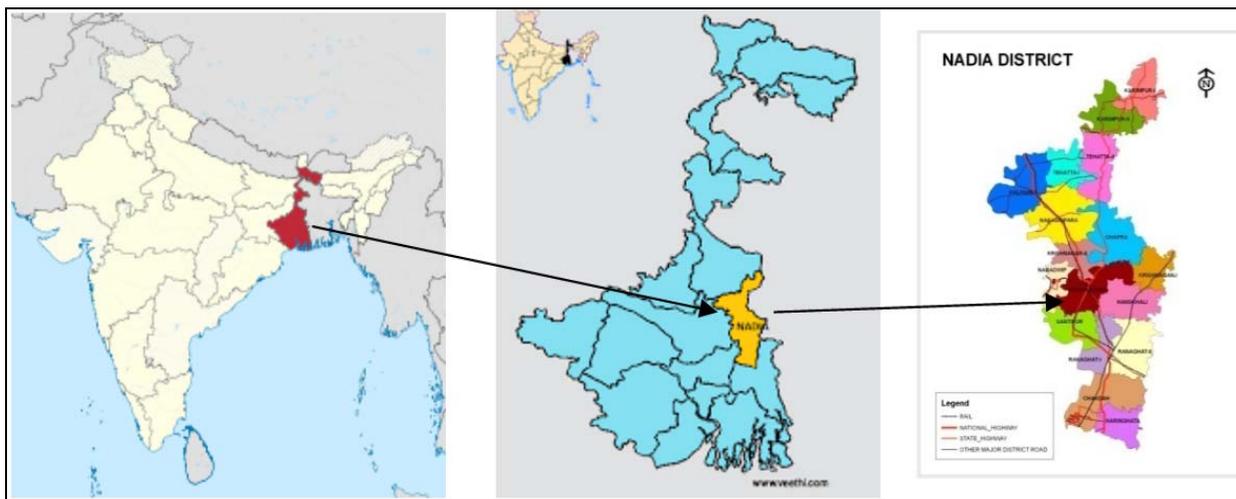


Fig 1: Location of the study Area.

3. Results

A total of 30 species of birds belonging to 22 families were recorded in and around the campus of Krishnanagar Govt. College from January 2015 to December 2015. Of the thirty species about twenty two are residential, six are local migrant and two are winter migrants (Figure 2). The checklist of recorded bird species along with their common name, scientific name and residential status is given in Table 1.

Of the total diversity, 43.33% (13 species) are common, 30% (9 species) are Frequent and 20% (6 species) are occasional and 6.66% (2 species) are rare on the basis of relative abundance (Figure 3). Order Passeriformes represented by 16 species belonging to 11 families contribute to about 53.33% of the total avifaunal species richness (Figure 4). Among the non-passerines, maximum richness was represented by the order Ciconiiformes (2 families, 3 species) (Table 1). Among the foraging groups, insectivores (30%) dominated the bird community followed by Omnivores (20%), Frugivores and Carnivores (16.66%), Fish eating and Granivores (6.66%) and Nectarivores (3.33%) (Figure 5 & 6).

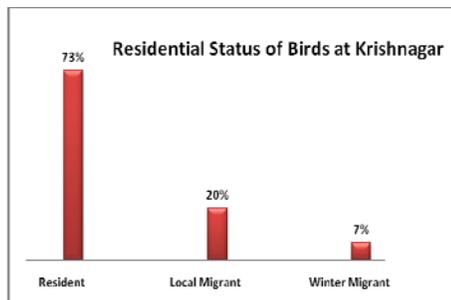


Fig 2: Residential status of birds at Krishnanagar

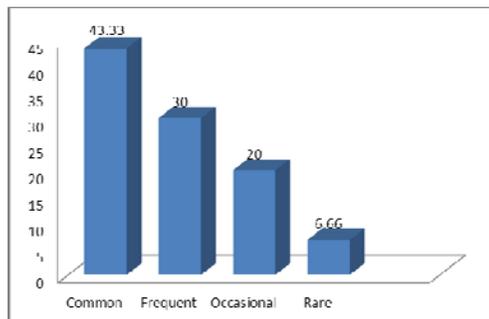


Fig 3: Bar diagram showing the variation in percentage of bird species having different relative abundance

Table 1: Bird species recorded in Krishnanagar Govt. College Campus, Krishnanagar, Nadia, West Bengal

Order	Taxa (Family)	Common Name	Scientific Name	Abundance	Status	Food Habit
Passeriformes	Dicruridae	Black drongo	<i>Dicrurus macrocercus</i>	F	R	IN
	Muscicapidae	Jungle Babbler	<i>Turdoides striatus</i>	C	R	OM
	Muscicapidae	Red-throated Flycatcher	<i>Ficedula parva</i>	R	LM	IN
	Muscicapidae	Chestnut-tailed starling	<i>Sturnia malabarica</i>	O	LM	OM
	Pycnonotidae	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	C	LM	FR
	Pycnonotidae	Red-vented Bulbul	<i>Pycnonotus cafer</i>	C	R	FR,GR
	Nectariniidae	Purple Sunbird	<i>Nectarinia asiatica</i>	O	R	N
	Sturnidae	Asian Pied Starling	<i>Sturnus contra</i>	C	R	OM
	Sturnidae	Common Myna	<i>Acridotheres tristis</i>	C	R	OM
	Laniidae	Brown Shrike	<i>Lanius cristatus</i>	O	R	CV
	Corvidae	Indian Treepie	<i>Dendrocitta vagabunda</i>	F	R	OM
	Corvidae	House Crow	<i>Corvus splendens</i>	C	R	OM
	Motacillidae	White Wagtail	<i>Motacilla alba</i>	O	WM	IN
	Turdinae	Oriental Magpie Robin	<i>Copsychus saularis</i>	C	R	IN
Passeridae	House Sparrow	<i>Passer domesticus</i>	F	R	IN,GR	
	Paridae	Great Tit	<i>Parus major</i>	O	R	IN
Accipitriformes	Accipitridae	Black/Pariah Kite	<i>Milvus migrans</i>	F	LM	CV
		Shikra	<i>Accipiter badius</i>	F	LM	CV
Ciconiiformes	Ardeidae	Indian Pond Heron	<i>Ardeola grayii</i>	C	R	CV
		Little Egret	<i>Egretta garzetta</i>	C	R	FE
	Phalacrocoracidae	Little Cormorant	<i>Phalacrocorax niger</i>	C	R	CV
Piciformes	Megalaimidae	Copper smith Barbet	<i>Megalaima haemacephala</i>	F	R	FR
	Picidae	Lesser Golden backed woodpecker	<i>Dinopium benghalense</i>	F	R	IN
Coraciiformes	Meropidae	Small Green Bee-eater	<i>Merops orientalis</i>	O	R	IN
	Alcedinidae	White-Breasted Kingfisher	<i>Halcyon smyrnensis</i>	C	R	FE, IN
Psittaciformes	Psittacidae	Rose-ringed parakeet	<i>Psittacula krameri</i>	F	LM	FR, GR
Columbiformes	Columbidae	Spotted dove	<i>Streptopelia chinensis</i>	C	R	GR
	Columbidae	Blue rock pigeon	<i>Columba livia</i>	C	R	GR
Upupiformes	Upupidae	Common Hoopoe	<i>Upupa epops</i>	R	WM	IN
Cuculiformes	Cuculidae	Asian Koel	<i>Eudynamis scolopaceus</i>	F	R	FR

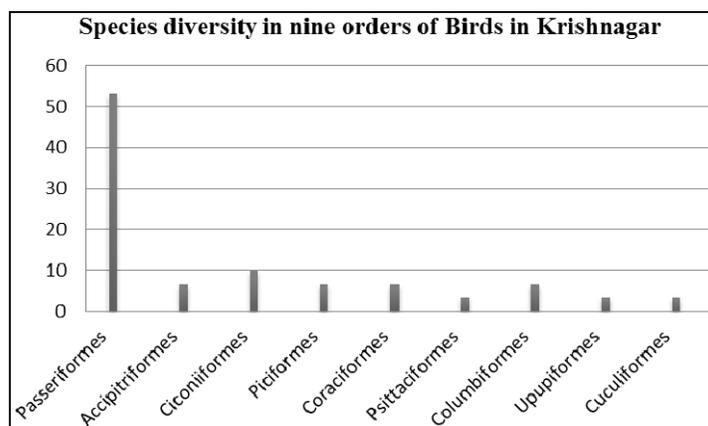


Fig 4: Bar diagram showing the different percentages of avifaunal species represented by nine orders

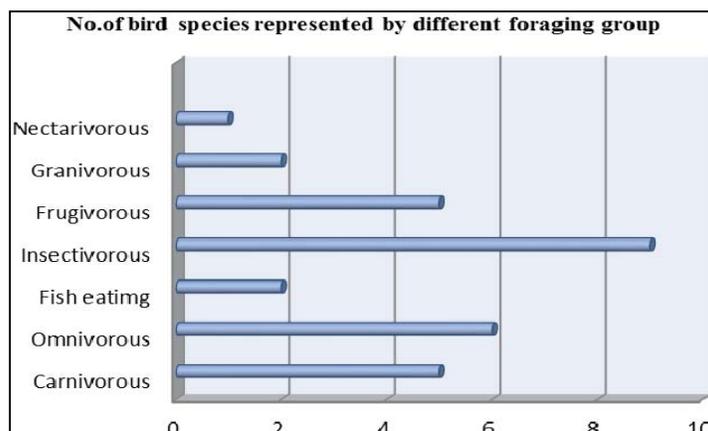


Fig 5: Bar diagram showing the number of bird species represented by different foraging group

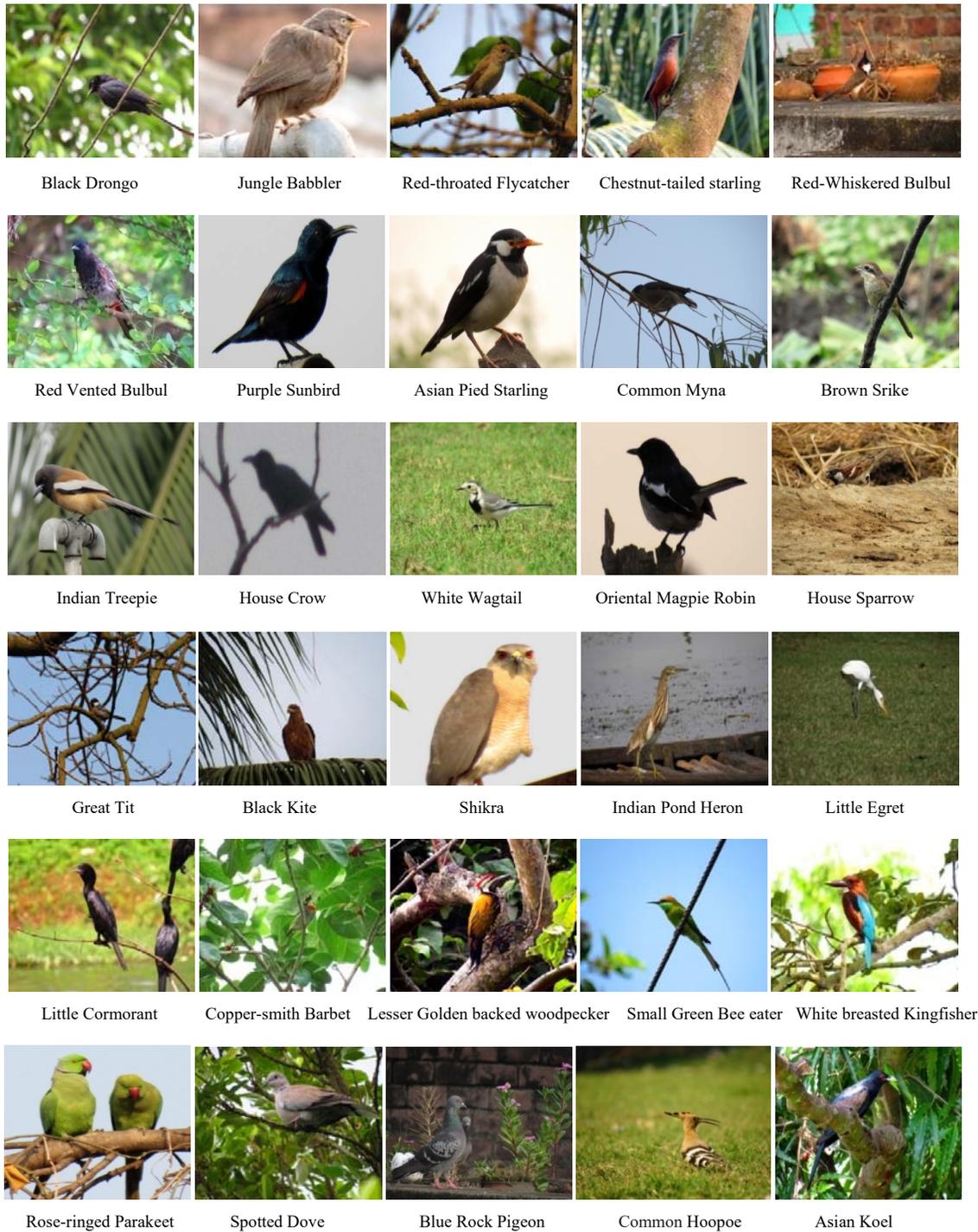


Fig 6: Photographs of different bird species found in the College Campus.

4. Discussion

The study shows that college campus harbor sizeable number of avian species. It is evident from the study, that insectivorous birds constitute majority of the bird community in the study area which is a common trend. Therefore it implies that the food availability for these birds is relatively good. Omnivorous are second position in the categories rank. Omnivorous bird species that are not reliant on a single food source are also more abundant in plantations. Among the Omnivores, Jungle babbler is most abundant. Red vented and Red whiskered bulbuls and rose-ringed parakeet as frugivorous are most abundant in the study area which indicates the wide range of food item availability. This group is of great importance in natural area conservation, since it is

strongly associated with seed dispersal and vegetation structure maintenance. Granivores are probably related to pasturelands and crop fields in the surrounding area that provide suitable foraging sites. Nectarivores are poorly represented in the bird community and are composed almost entirely of purple sunbird. Species richness appeared to vary due to changes in weather conditions or availability of food [9]. In the present study maximum richness was recorded during winter and rainy season. The most of birds observed during this study are resident rather than migratory species. This may be due to less number of water bodies present in the area. Although a decline in the number of migratory birds in the campus needs special attention.

5. Conclusion

The present study shows that Krishnanagar Govt. College campus shows a moderate species diversity in the campus. But Campus premises occasionally suffer from several threats such as habitat alteration, human disturbance like grass cutting, fire, and livestock grazing and anthropogenic activities which may change the existing species diversity. So, this study highlights the importance of conservation of urban birds in college campus.

6. Acknowledgement

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7. Conflict of interest

The authors declare that they have no conflict of interest.

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