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A CHECKLIST OF BIRD DIVERSITY IN GURU GHASIDAS UNIVERSITY CAMPUS, BILASPUR, CHHATTISGARH, INDIA

Alok Kumar Chandrakar and **S. S. Dhuria**

Department of Forestry, Wildlife & Environmental Sciences
Guru Ghasidas Vishwavidyalaya, Koni, Bilaspur, Chhattisgarh, India.
Corresponding author: alokanand1234@gmail.com

ABSTRACT

A study has been carried out to find the bird diversity of Guru Ghasidas University campus, Bilaspur, Chhattisgarh, for the period from February 2017 to February 2018. A total of 81 bird species belonging to 38 families and 18 orders were recorded during the study period. The study also brought out eight types of feeding habits among the identified species. Most of the species recorded in the study area were residents, while 15% were seasonal visitors. The study underlines the importance of green space around urban ecosystems as preferred habitats for bird populations.
Key words: Bird diversity, Checklist, Habitat, Bilaspur, Chhattisgarh.

INTRODUCTION

The birds have always fascinated man for their exquisite coloration, beautiful feathers, vivacity of their movements, cheerfulness or buoyancy of their flight, sweetness of their songs and attractiveness. Avifauna plays an important role in the linking of food chain in ecological unit of nature. Birds play an important role in ecosystem as a part of food web, as potential pollinator and bio-indicator of the quality of the ecosystems (Amat et al., 2010; Bensizerara et al., 2013; Prakash etal., 2001). In present time, avifaunal diversity has been decreasing due to the destruction of natural habitats and human disturbances. Random destruction of natural habitats by cutting nesting trees and foraging habitats for commercial use of woods and lands are the main factors responsible for narrow down in avian foraging habitat and their nesting sites (Edison et al., 2016). Studies on avian community are effective for monitoring urban ecosystems and for identifying conservation actions in areas of high human pressure.

In order to prioritize the future conservation of species, understanding the effect of habitat on bird community structure is important (Rajpar et al., 2011). In the long run, the relative value of different habitats and conservation importance of sites can be assessed by investigating the diversity of birds present in those areas (Bensizerara et al., 2013). This would be important for assessment of population status and conservation of avifaunal biodiversity in urban ecosystems.

Bilaspur is a major city of Chhattisgarh state, where Guru Ghasidas Vishwavidyalaya (a central university) is located, within an area of 700 hectares. The campus is surrounded by urban areas with diverse variety of habitats represented by aquatic bodies, woodlots and gardens, which provide sheltering for numerous fauna. The present study was an attempt to explore and document the avian diversity associated with the University campus.

STUDY AREA

Guru Ghasidas University campus is located 5 kms away from the Bilaspur town on Bilaspur-Ratanpur route (NH-111). It lies between 22°08'26" to 22°07'16" N latitude and 82°07'55" to 82°08'58" E longitude. The university campus spans to an area of 700 hectare. The areas at its belly, has 4 ponds, some pithole-eroded areas with nullahs, ravines and plateaus, contributing to diverse habitats. Prior to 1988, the area was a grazing land having scattered growth of *Acacia* and *Butea* trees.

During the period from 1990-92, about 8 lakhs seedling of various plant species were planted with a view to convert this campus green and attractive. In fact, parallel to the development of the academic infrastructure, full attention was given to modify the barren campus into a green belt. The area was fenced to protect the land from the interference by cattle and people from surrounding villages and urban areas. The area thus has evolved to a nice grass cover with dense trees, providing habitat for various faunal species.

METHODOLOGY

The study was carried out for the period of one year from February 2017 to February 2018. The bird species were recorded by direct count method by walking within the campus. The birds were observed during the most active period of the day, i.e. early morning between 07:00 to 10:00 AM and in the evening from 03:00 to 06:00 PM (Cunningham et al., 2006; Simons et al., 2006). However the observation was made throughout the day also. The observation of birds was made by an Olympus (10×50) binocular and photographs were also taken with the help of a Camera (Nikon-D5300). Standard literature on Indian Birds and Birds of the Indian Sub-continent (Ali, 2002; Grimmett et al., 2011; Kazmierczak et al., 2015) were used for the identification of birds and preparation of checklist. During field study, the feeding habit of bird species and the type of habitat they are found were also observed. At the time of preparation of checklist, their occurrence in the area and IUCN status was also studied.

RESULTS & DISCUSSION

As a result of observation, a total of 81 species belonging to 18 orders and 38 families were identified and recorded from the study area (Table-1). Among the bird species, Common pochard (*Aythya ferina*) was listed under vulnerable category in the red list (IUCN, 2012), which is a winter visitor in the area and their population was reducing day by day (Birdlife International, 2017). Rests of the species recorded in the area were listed in the Least Concern category (IUCN, 2012).

The maximum abundance of species was recorded from order Passeriformes with 35.80% of total avian species and represented by 29 species belonging to 16 families, which are adapted to terrestrial habitats. It was followed by order Charadriiformes with 8 species belonging to four families and Ciconiiformes with 7 species belonging to 2 families, adapted to wetland habitats (Fig.2). The maximum species richness of avian species was recorded from the family Ardeidae with seven species, followed by family Columbidae, Anatidae, Rallidae, Scolopacidae and Cuculidae, respectively (Fig.3). Thus the study revealed the rich diversity of birds in different habitat types in the University campus.

The study of feeding habit of bird is important for understanding the complexity of the ecosystem structure and providing information on each type of habitat in the ecosystem (Azman et al., 2011). Eight types of feeding habits were identified in the study area (Fig.4). There was more number of terrestrial insectivores in the open scrub and dry deciduous habitats than wetland habitats. Insectivores were followed by piscivores and granivores.

Most of the species recorded in the study are residents of the area, while 15% are seasonal visitors. Among the migratory birds,Red-crested Pochard, Common

Fig.1-Location Map of Guru Ghasidas University campus, Bilaspur, Chhattisgarh, India
(Source: Google Earth)

Table-1. Checklist of birds recorded during survey in GGU campus, Bilaspur

Sl. no.	Common name	Scientific name	Order	Family	Feeding habit	Status
1	Little Cormorant	*Phalacrocorex niger*	Suliformes	Phalacro-coracidae	P	R, C, LC
2	Indian Cormorent	*Phalacrocorex fuscicollis*	Suliformes	Phalacro-coracidae	P	R, C, LC
3	Great Cormorent	*Phalacrocorax carbo*	Suliformes	Phalacro-coracidae	P	R, r, LC
4	Little Grebe	*Tachybaptus ruficollis*	Podicipediformes	Podicipedidae	P	R, C, LC
5	Great Egret	*Casmerodius albus*	Ciconiiformes	Ardeidae	P	R, r, LC
6	Intermediate Egret	*Mesophoyx intermedia*	Ciconiiformes	Ardeidae	P	R, C, LC
7	Little Egret	*Egretta garzetta*	Ciconiiformes	Ardeidae	P	R, C, LC
8	Cattle Egret	*Bubulcus ibis*	Ciconiiformes	Ardeidae	I	R, C, LC
9	Purple Heron	*Ardea purpurea*	Pelecaniformes	Ardeidae	P	WM, r , LC
10	Indian Pond Heron	*Ardeola grayii*	Ciconiiformes	Ardeidae	P	R, C, LC
11	Black-crowned Night Heron	*Nycticorax nycticorex*	Ciconiiformes	Ardeidae	P	R, C, LC
12	Asian Openbill	*Anastomus oscitans*	Ciconiiformes	Ciconiidae	M	WM, C, LC
13	Lesser Whistling-duck	*Dendrocygna javanica*	Anseriformes	Anatidae	O	R, C, LC
14	Cotton Pygmy-goose	*Nettapus coromandelianus*	Anseriformes	Anatidae	O	R, C, LC
15	Red-crested Pochard	*Rhodonessa rufina*	Anseriformes	Anatidae	O	WM, r, LC
16	Common Pochard	*Aythya ferina*	Anseriformes	Anatidae	O	WM, r, VL
17	Black Kite	*Milvus migrans*	Accipitriformes	Accipitridae	C	R, C, LC
18	Shikra	*Accipiter badius*	Accipitriformes	Accipitridae	C	R, r, LC
19	White breasted Waterhen	*Amaurornis phoenicurus*	Gruiformes	Rallidae	I	R, r, LC
20	Common Moorhen	*Gallinula chloropus*	Gruiformes	Rallidae	O	R, C, LC
21	Common Coot	*Fulica atra*	Gruiformes	Rallidae	O	R, C, LC
22	Purple Swamphen	*Porphyrio porphyrio*	Gruiformes	Rallidae	O	R, C, LC
23	Pheasant-tailed Jacana	*Hydrophasianus chirurgus*	Ciconiiformes	Jacanidae	I	R, C, LC
24	Bronze-winged Jacana	*Metopidius indicus*	Ciconiiformes	Jacanidae	I	R, C, LC
25	Eurasian Thick-knee	*Burhinus oedicnemus*	Charadriiformes	Burhinidae	I	R, C, LC

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Sl. no.	Common name	Scientific name	Order	Family	Feeding habit	Status
26	Black -winged Stilt	*Himantopus himantopus*	Charadriiformes	Recurvirostridae	I	WM, r, LC
27	Red-wattled Lapwing	*Vanellus indicus*	Charadriiformes	Charadriidae	I	R, C, LC
28	Little Ringed Plover	*Charadrius dubius*	Charadriiformes	Charadriidae	I	R, C, LC
29	Common Greenshank	*Tringa nebularia*	Charadriiformes	Scolopacidae	I	WM, r, LC
30	Wood Sandpiper	*Tringa glareola*	Charadriiformes	Scolopacidae	I	WM, r, LC
31	Common Sandpiper	*Actitis hypoleucos*	Charadriiformes	Scolopacidae	I	WM, C, LC
32	Temminck's Stint	*Calidris temminckii*	Charadriiformes	Scolopacidae	I	WM, C, LC
33	Eurasian Collared Dove	*Streptopelia decaocto*	Columbiformes	Columbidae	G	R, C, LC
34	Laughing Dove	*Streptopelia senegalensis*	Columbiformes	Columbidae	G	R, C, LC
35	Spotted Dove	*Streptopelia chinensis*	Columbiformes	Columbidae	G	R, C, LC
36	Oriental Turtle Dove	*Streptopelia orientalis*	Columbiformes	Columbidae	G	R, r, LC
37	Rock Pigeon	*Columba livia*	Columbiformes	Columbidae	G	R, C, LC
38	Rose-ringed Parakeet	*Pisttacula krameri*	Psittaciformes	Psittacidae	F	R, C, LC
39	Common Hawk Cuckoo	*Hierococcyx varius*	Cuculiformes	Cuculidae	F	R, r, LC
40	Pied/Jacobin Cuckoo	*Clamator jacobinus*	Cuculiformes	Cuculidae	F	SM, r, LC
41	Asian Koel	*Eudynamys scolopacea*	Cuculiformes	Cuculidae	F	R, C, LC
42	Greater Coucal	*Centropus sinensis*	Cuculiformes	Cuculidae	F	R, C, LC
43	Indian Nightjar	*Caprimulgus asiaticus*	Caprimulgiformes	Caprimulgidae	I	R, r, LC
44	Spotted Owlet	*Athene brama*	Strigiformes	Strigidae	C	R, r, LC
45	White-rumped Spinetail	*Zoonavena sylvatica*	Apodiformes	Apodidae	I	R, r, LC
46	Little Swift	*Apus affinis*	Apodiformes	Apodidae	I	R, C, LC
47	Indian Roller	*Coracias benghalensis*	Coraciformes	Coraciidae	I	R, C, LC
48	Pied Kingfisher	*Ceryle rudis*	Coraciformes	Alcedinidae	P	R, C, LC
49	White-throated Kingfisher	*Halcyon smyrnensis*	Coraciformes	Alcedinidae	P	R, C, LC
50	Common Kingfisher	*Alcedo atthis*	Coraciformes	Alcedinidae	P	R, C, LC

Table-1. Checklist of birds recorded during survey in GGU campus, Bilaspur

Sl. no.	Common name	Scientific name	Order	Family	Feeding habit	Status
51	Green Bee-eater	*Merops orientalis*	Coraciformes	Meropidae	I	R, C, LC
52	Coppersmith Barbet	*Megalaima haemacephala*	Passeriformes	Megalaimidae	F	R, C, LC
53	Common Hoopoe	*Upupa epops*	Bucerotiformes	Upupidae	I	R, r, LC
54	Indian Golden Oriole	*Oriolus oriolus*	Passeriformes	Oriolidae	I	R, r, LC
55	Black Drongo	*Dicrurus macrocercus*	Passeriformes	Dicruridae	I	R, C, LC
56	While-bellied Drongo	*Dicrurus caerulescens*	Passeriformes	Dicruridae	I	R, r, LC
57	Barn swallow	*Hirundo rustica*	Passeriformes	Hirundinidae	I	WM, r, LC
58	Long-tailed shrike	*Lanius schach*	Passeriformes	Laniidae	C	WM, r, LC
59	Bay-backed Shrike	*Lanius vittatus*	Passeriformes	Laniidae	C	R, r, LC
60	Brown Shrike	*Lanius cristatus*	Passeriformes	Laniidae	C	WM, r, LC
61	Asian Pied Starling	*Sturnus contra*	Passeriformes	Sturnidae	O	R, C, LC
62	Brahminy Starling	*Sturnus pagodarum*	Passeriformes	Sturnidae	O	R, C, LC
63	Common Myna	*Acridotheres tristis*	Passeriformes	Sturnidae	F	R, C, LC
64	House Crow	*Corvus splendens*	Passeriformes	Corvidae	C	R, r, LC
65	Large-billed Crow	*Corvus macrorhynchos*	Passeriformes	Corvidae	C	R, C, LC
66	Red-vented Bulbul	*Pycnonotus cafer*	Passeriformes	Pycononotidae	N	R, C, LC
67	Jungle Babbler	*Turdoides striatus*	Passeriformes	Leiothrichidae	I	R, C, LC
68	Asian Paradise Flycatcher	*Terpsiphone paradisi*	Passeriformes	Monarchidae	I	R, P, r, LC
69	Ashy Prinia	*Prinia socialis*	Passeriformes	Cisticolidae	I	R, C, LC
70	Plain Prinia	*Prinia inornata*	Passeriformes	Cisticolidae	I	R, C, LC
71	Oriental Magpie Robin	*Copsychus saularis*	Passeriformes	Muscicapidae	I	R, C, LC
72	Indian Robin	*Saxicoloides fulicata*	Passeriformes	Muscicapidae	I	R, C, LC
73	Paddyfield Pipit	*Anthus rufulus*	Passeriformes	Motacillidae	I	R, C, LC
74	Purple-rumped Sunbird	*Nectarinia zeylonica*	Passeriformes	Nectariniidae	N	R, C, LC
75	Purple Sunbird	*Nectarinia asiatica*	Passeriformes	Nectariniidae	N	R, C, LC

Table-1. Checklist of birds recorded during survey in GGU campus, Bilaspur

Sl. no.	Common name	Scientific name	Order	Family	Feeding habit	Status
76	Indian Silverbill	*Lonchura malabarica*	Passeriformes	Estrildidae	G	R, C, LC
77	Scaly-breasted Munia	*Lonchura punctulata*	Passeriformes	Estrildidae	G	R, C, LC
78	Black-headed (Tricolor) Munia	*Lonchura malacca*	Passeriformes	Estrildidae	G	R, r, LC
79	House Sparrow	*Passer domesticus*	Passeriformes	Passeridae	G	R, r, LC
80	Chestnut-shouldered Petronia	*Petronia brachydactyla*	Passeriformes	Passeridae	G	R, C, LC
81	Baya Weaver	*Ploceus philippinus*	Passeriformes	Passeridae	G	R, C, LC
	Feeding Habit: P- Piscivore, I- Insectivore, M- Molluscivore, G- Granivore, F- Frugivore, C- Carnivore, O- Omnivore, N- Nectarivore.					
	Status: R- Resident, M- Migratory, WM- Winter Migratory, SM- Summer Migratory, P-Passage (Autumn/Spring visitor), C- Common, r-Rare/occasional, LC- Least Concerned, VL- Vulnerable.					

Fig. 2. Frequency of occurrence of bird species in each order

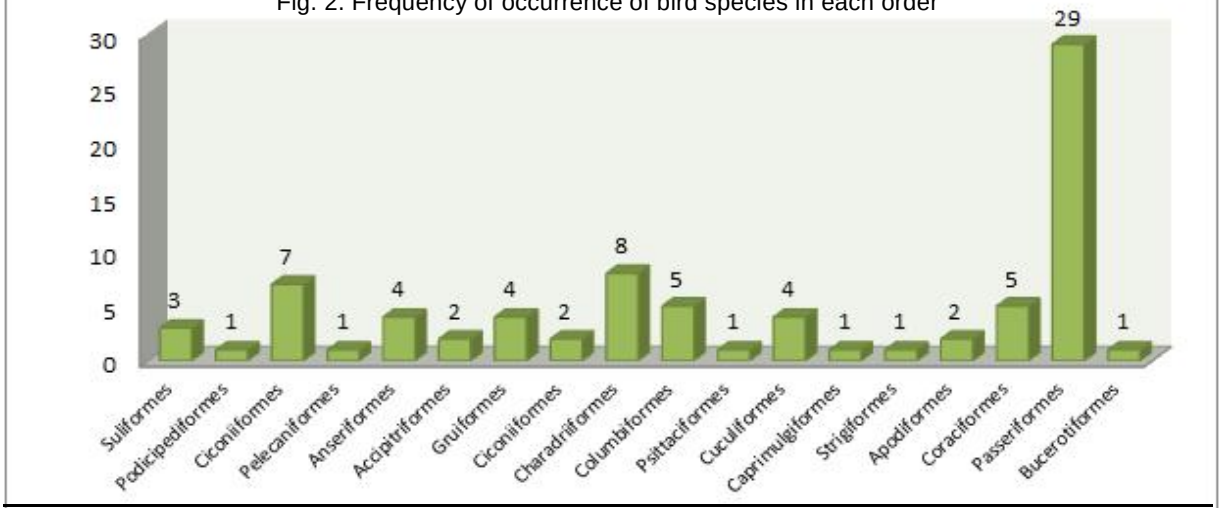


Fig. 3. Frequency of occurrence of bird species in each family

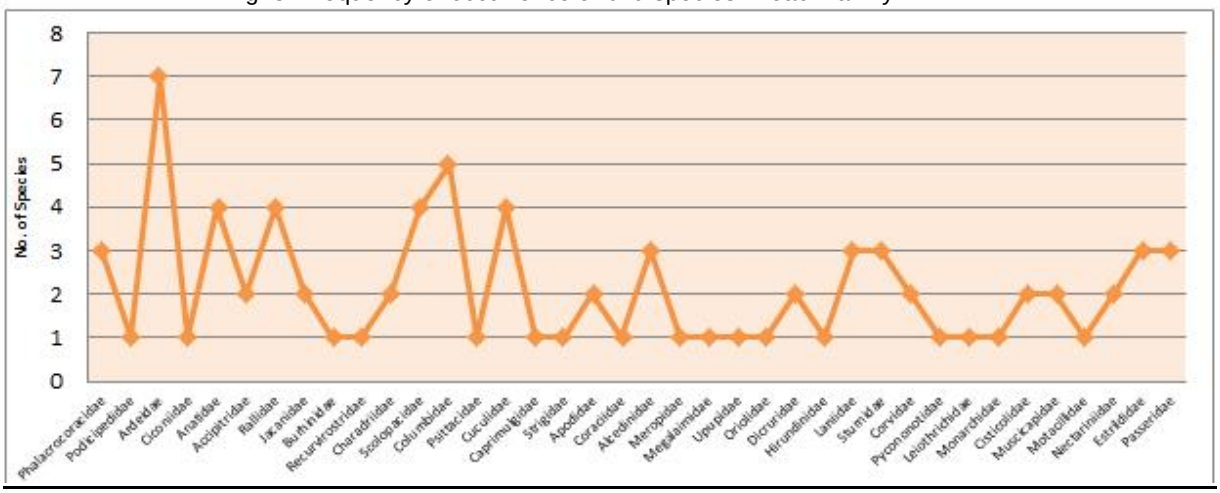
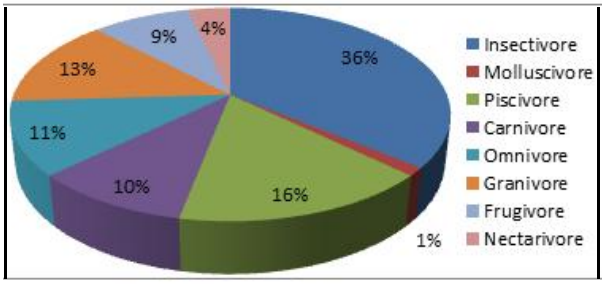


Fig. 4. Dietary habit of bird species in the study area



Pochard, Black -winged Stilt, Common Greenshank, Wood Sandpiper, Common Sandpiper, Temminck's Stint, Purple Heron, Barn swallow, Long-tailed shrike and Brown Shrike were winter visitors, while Pied/Jacobin Cuckoo and Asian Paradise Flycatcher were summer and spring season visitors to the area.It must be noted that the present study was undertaken on a random inventory basis and a more intensive study would surely result in identifying many more avifaunal species. The impact of anthropogenic alteration of the habitats in and around the campus also needs intensive studies.

CONCLUSION

The study revealed that the rich diversity of birds is attributable to habitat structure and geographical location of the University campus. The area seems to provide diverse habitats for residential birds and a corridor for migratory birds. There is a need to protect the habitat structure and diversity present in the University campus, as it is important for maintaining the diversity and ecological balance of bird population. Further research on appropriate conservation mechanism and management techniques with the ultimate conservation goal of changing urban environments into species rich ecosystems are inevitable.

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