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DIVERSITY OF AVIFAUNA IN SHER-E-BANGLA AGRICULTURAL UNIVERSITY CAMPUS

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Abstract

Avifaunal surveys were carried out in the Sher-e-Bangla Agricultural University Campus, Dhaka, Bangladesh, from May 2013 to April 2014. Status, distribution, and conservation as well as other aspects of birds in this campus were studied. A total of 60 species of birds have been recorded. Among total birds, 30 (50%) species were resident, 13 (about 22%) migratory resident and 17 (about 28%) species were migratory. In the total birds, very common, common, uncommon and rare species were 37%, 18%, 23% and 22% respectively. Food and feeding habits of 60 numbers of birds species were observed during the study period. From the food observation it was found that, insect were eaten by 20%, fish by 10%, grain by 17%, fruits by 3%, small animal by 10%, mixed foods by 28%, fish and other invertebrates were eaten by 12% bird species. After investigating the feeding grounds, it was found that the pond feeding ground were 14% bird species, wet land were 20% species, crop field were 17% species, woodland and bush were 18% species , grassland and wetland were 18% species, ground and wetland were5%, pond and crop field were 5%, and ground were 3%. This study shows that Sher-e-Bangla Agricultural University Campus, even though subject to moderate anthropogenic disturbance, still hosts a large and distinctive avifauna.

Key words: Avifauna, Diversity, Sher-e-Bangla Agricultural University.

Introduction

Bird surveys provide useful information for basic and applied ecology, and are useful for identifying priority areas for conservation (Daniels *et al*. 1991; Peterson *et al*. 2000). Locality wise avifaunal inventories are useful in devising administrative strategies pertaining to the habitat as well as the species conservation. Birds are the chordate vertebrates under the class of Aves. Among animals, it is the first who has the mechanism of keeping the constant body temperature that make energetic activity possible in all habitats and seasons. This adds to their highly evolved homeostatic mechanism, what makes this class the dominant vertebrate (Welty and Bapista, 1988). The birds are designated as "flying machine through the evolutionary gifts of feather, powerful wings, hollow bones, warm blood, a remarkable respiratory system and a strong heart." Despite their ability to fly, some species are restricted to special regions or particular type of habitat and many of bird species have become adapted to particular climatic conditions (Kotpal, 1991). Thus the avifauna of tropics is immensely rich in families, genera, species than that of all other biological zones (Griscom, 1945). According to Harvey (1990), there are 668 species of birds found in Bangladesh of which nearly 40 % are resident. Thomson and Johnson (1996-unpublished) prepared a list of 690 species of birds found in Bangladesh. Husain (1979) puts 30 species of birds under threat while a recent report of IUCN (2000) identified 41 species of resident birds as threatened in Bangladesh. The total number of bird's species in Bangladesh represents about 50% of the total number of bird species recorded from the whole of the Indian Subcontinent (2060) and over 7% of the known bird species in the world (9021). Dhaka is one of the high densely populated cities in the world. The growing residential and commercial area is increasing in Dhaka city everyday and left a great

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threat in biodiversity specifically into the aviary species. The greener parts of the city are decreasing at an alarming rate and only a few area constitute are amiable to grow and inhabit likewise the park and public universities campus area for the birds and plants. Sher-e-Bangla Agricultural University campus is one of the few greenish parts of Dhaka city which is resided in the heart of the city. Sher-e-Bangla Agricultural University is an undeclared sanctuary of birds. The campus is famous for its diverse avifauna. Many people of the Dhaka city visit the Campus everyday in order to enjoy the beauty of residential birds and get a taste of village environment. The campus seems to be a green island in the concrete build city. Sher-e-Bangla Agricultural University Campus has diverse habitats for the birds, such as, permanent water bodies, grasslands, bushes and cultivated lands. Besides this, the campus is calm and quiet, and free from pollution and noise of vehicle. Because of these reasons, birds are more common in the campus comparing in the other location of Dhaka city. This paper reports sight records of species diversity, status, habit preference, feeding habits and at the same time to find out the major threats for the survival of birds of Sher-e-Bangla Agricultural University Campus.

Material and Methods

Study Area

The study area was situated at 23° 77'N latitude and 90°33'E longitude at an altitude of 8.6 meter above the sea level (Annon., 2004). The SAU campus is in Dhaka, the heart of Bangladesh, with a solid green covering area, with fresh air. The campus stands on 86.92-acre (35.2 ha). Sher-e-Bangla Agricultural University campus has a diverse ecological habitats and vegetation types. It consists of wetlands, grasslands, crop fields, forest areas, bushes, woodlands and human settlements, i.e. houses, academic and administrative buildings. Study area provide habitats for various kinds of wild life, fishes and innumerable number of insects. The study area consists of the whole campus area including the crop fields and the ground areas.

Data Collection

Birds were surveyed for about two holidays a week in every month from May 2013 to April 2014. The bird watching was designed in two categories; (a) routine bird watching, (b) casual bird watching. In Routine bird watching the day time was divided into two parts in the morning and evening. Birds are more active and hence more visible in these two periods of times. At least two hours were spent in each period. Observations were made with 7–21x40 binoculars and by naked eyes. Grimmett *et al.* (1998) and Ali and Ripley (1987) were used for identification, and in many cases photographs were taken in order to confirm the identification. Not only the bird species, but their habitats were also confirmed from the literature published in different books and journals. Relative abundance was assessed as 'very common' (seen on 75–100% of visits), 'common' (seen on 50–74% of visits), 'uncommon' (seen on 25–49% of visits), or 'rare' (seen on <25% of visits). For wintering migrants, abundance was assessed only during the months they were present.

Data Analysis

All records were kept in the tabulated form in the excel data sheets. A simple statistical tool is used to analyze the data. Bar diagram is used to identify the number of birds seen in the campus and pie chart are used to represent the habitat, food and feeding ground of bird species in the study area.

Results and Discussion

Species Diversity

During the study period of 12 months 60 species of birds from the Sher-e-Bangla Agricultural University Campus were recorded (Table 1). Among the recorded birds proportion of observed birds species throughout the study period were grouped as resident and migratory resident, migratory birds and total number of birds were observed. It was found that the (45) number of resident and migratory resident bird were highest in November 2013 and lowest number (24) in March 2014. In case of migratory birds the highest number(10) of migratory birds were in November 2013 and lowest number of migratory birds were 2 in June 2013 and February 2014. The total 55 number of birds highest in November 2013 and the total number 27 of birds were lowest in March 2014 (Figure 1). Some photographs of recorded birds were also shown in this paper (figure 2).

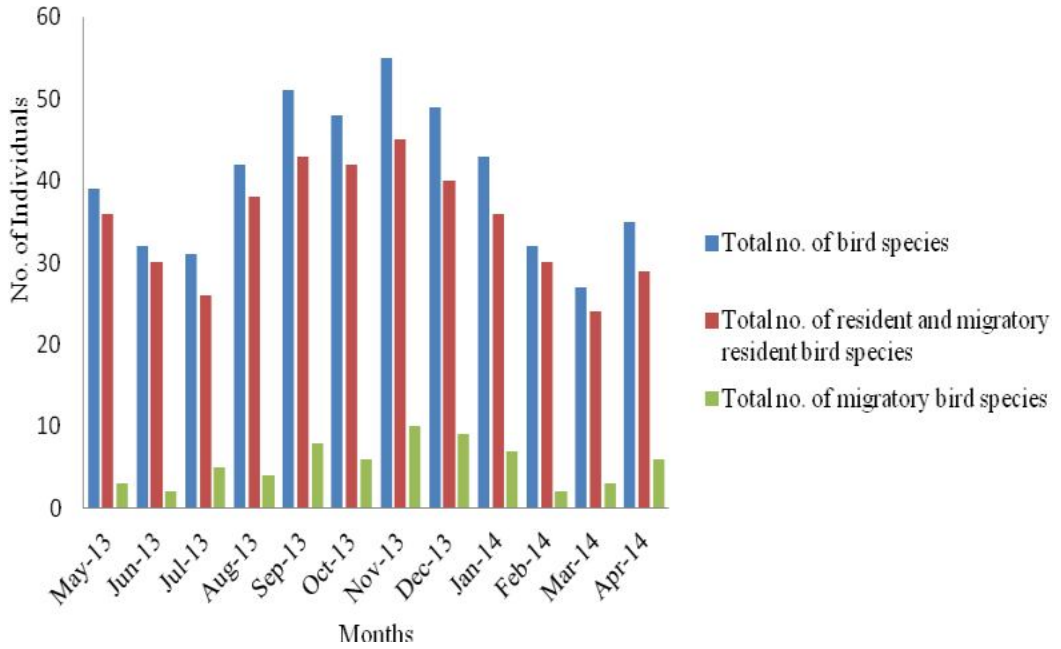

Figure 1. Total number of resident and migratory resident, migratory and total bird species (May-2013-April-2014) of Sher-e-Bangla Agricultural University Campus.

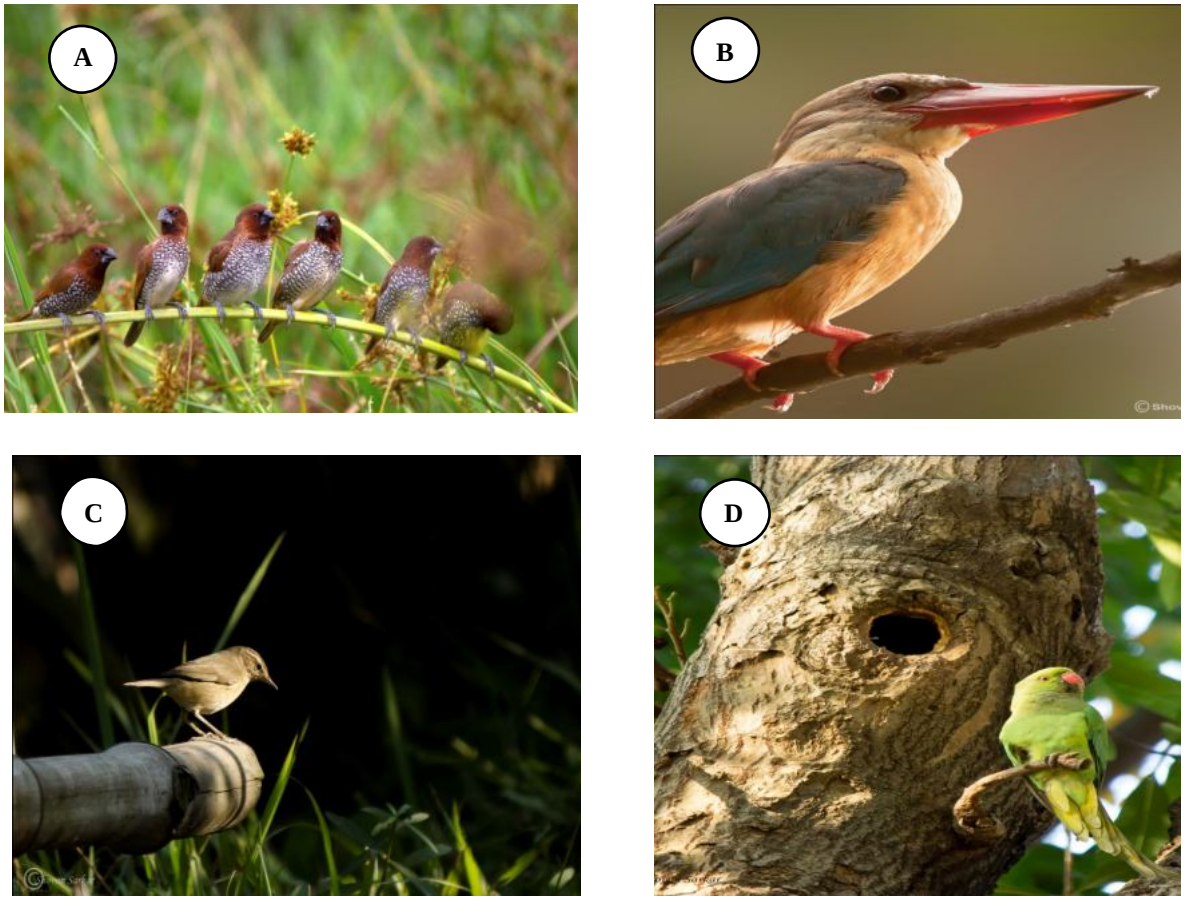

Figure 2. Photographic records of some species of Sher-e-Bangla Agricultural University, Dhaka. A: Scaly-breasted Munia, B: Stork-billed kingfisher, C: Duskey warbler, D: Rose-ringed Parakeet. Photographs by Shovon Sarker.

Status and Abundance of Bird Species in Sher-E- Bangla Agricultural University

The resident birds are seen highest in percentage in the study conducting time and it is 50% of all. Then in next position in the migratory birds and they are 28% in amount. The resident but local movements are

lowest in number and they occupied 22% out of total species during the study time (Table 1). In case of relative abundance 37% species were seen which are categorized as very common and highest in percentage. Uncommon species are 23% and common species are found only 18% . The rare species are also seen at 22% in number (Table 1). It is seen that common species are less in amount because of they are spread in the other parts of the city area but the uncommon and rare species are high relative to common species since the campus environment is amicable for them to survive and reside.

Habitat

During the study period total 60 species of birds were found in Sher-e-Bangla Agricultural University campus. Among these, grassland and corn field (18%), woodland (9%), water bodies (3%), grassland & woodland (23%), woodland & bush (14%), house & woodland (8%), muddy area & water bodies (7%), grassland & muddy area (3%), bush & grassland (3%), and grassland & water bodies (12%). From the above statistics we see that the grassland & woodland species are highest in number and bush & grassland are lowest in number (Figure 3). In recent times lots of constructional activities and infrastructure development, human interference are making threat to the species of avifauna in Sher-e-Bangla Agricultural University campus. Due to many constructions it is difficult for avifauna to find the nesting locations and sheltering place or foraging habitats in the campus. A good number of bird's species are still prevailing on campus area. Plantation of fruit trees within campus area can attract many frugivorous and insectivorous birds to live in. Therefore, a conservation plan should be under taken by the campus authority to save the urban species of birds and their sustainable population.

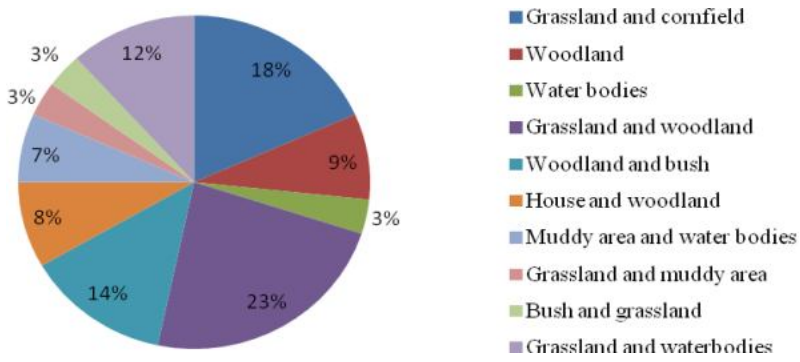

Figure 3: Percentage of Habitat Preference of Bird Species in Sher-e-Bangla Agricultural University Campus

Food and Feeding Ground

Food and feeding habits of 60 numbers of bird species were observed during the study period. From the study it was originate that 12 (20%) number of bird species ate insect 6(10%) number of bird ate only fish, 10 (17%) number of birds species ate grains ,2(3%) number of birds ate fruits, 6 (10%) number of birds species ate small animals (Larvae, worm, spider etc), 17 (29%) number of birds species ate mixed foods and 7(12%) number of birds species ate Fish and other invertebrates (Figure 4). On the other hand in terms of percentage of studied birds feeding ground were wetland (20%), woodland and bush (18%), grassland and wetland(18%) and crop field (17%) which comprises 73% of major birds feeding ground singly and combinedly in sher-e-Bangla Agricultural University campus (Figure 5).

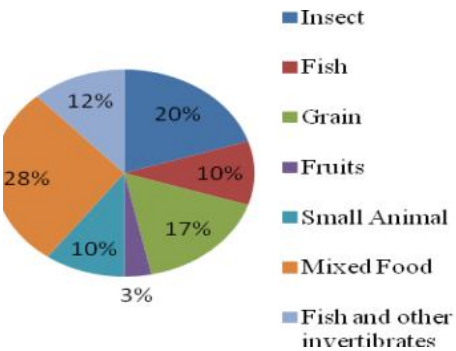

Figure 4. Percentage of bird species groups on the basis of food habit

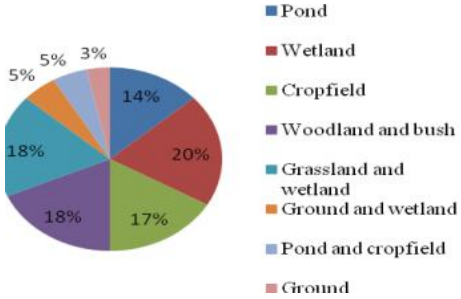

Figure 5. Percentage of bird species groups on the basis of feeding grounds

Table 1. Avifauna found in the study area during the study period (May 2013 to April 2014).

Sl. N.	Species	Relative abundance	Status	Habitat
1	Oriental magpie robinr, *Copsychus saularis*	VC	R	GR
2	Common Tailorbird,*Orthotomus sutorios*.	UC	R	GR,WL
3	Bar-Headed Goose,*Anser indicus*	R	RM	WB,GR
4	Indian Spot-Billed Duck,*Anas poecilorhyncha*.	R	RM	WB,GR
5	Fulvous-Breasted Woodpecker,*Dendrocopos macei*.	R	R	WL,BU
6	Coppersmith Barbet,*Megalaima haemacephala*.	VC	R	WL
7	Indian Roller,*Coracias benghalensis*.	R	M	WL
8	Common Kingfisher,Alcedo atthis.	VC	R	WB
9	Stork-Billed Kingfisher,*Pelargopsis capensis*.	C	R	WB
10	Wite-Throated Kingfisher,*Halcyon smyrnensis*.	VC	R	WB, GR
11	Green Bee-Eater,*Merops orientalis*.	UC	M	CF,WB
12	Common Hawk-Cuckoo,*Hierococcyx varius*.	UC	M	WL,BU
13	Asian Koel,*Eudynamys scolopaceus*.	C	R	WL,GR
14	Rose-Ringed Parakeet,*Psittacula krameri*.	VC	R	GR,WL
15	Barn Owl,*Tyto alba*.	R	R	HO,WL
16	Spottted Owlet,*Athene brama*.	VC	R	WL,CF
17	Brown Hawk-Owl,*Ninox scutulata*	C	RM	WL
18	Indian Nightjar,*Caprimulgus asiaticus*.	R	RM	BU,WL
19	Spotted Dove,*Streptopelia chinensis*.	VC	R	GR,WL
20	Eurasian Collared Dove,*Streptorelia decaocta*.	C	M	GR,WL
21	White-Breasted Waterhen,*Amaurornsis phoenicurus*.	UC	M	GR,WB
22	Black Kite,*Milvus migrans*.	VC	RM	MU,CF
23	Brahminy Kite,*Halistur indus*.	VC	RM	CF,WB
24	Red-Necked Falcon,*Falcon chicquera*.	R	M	WL,HO
25	Indian Cormorant,*Phalacrocorax fusciollis*.	UC	M	WL
26	Little Cormorant,*Phalacrocorax niger*.	C	M	WL
27	Indian Pond Heron,*Ardeola grayii*.	VC	R	GR,WB
28	Brown Shrike,*Lanius cristatus*.	VC	R	GR,WL
29	Long-Tailed Shrike,*Lanius schach*.	VC	R	GR,WL
30	Grey-Backed Shrike,*Lanius tephronotus*.	UC	M	GR,WL
31	Rufous Trepie,*Dendrocitta vagabunda*.	C	R	WL,BU
32	Large-Billed Crow,*Corvus macrorhynchos*.	C	R	HO,WL
33	House Crow,*Corvus splendens*.	VC	R	HO,WL
34	Black-Hooded Oriole,*Oriolus xanthornus*.	VC	R	WL,BU
35	Common Iora,*Aegithina tiphia*.	C	RM	WL,BU
36	Orange-Headed Thrush,*Zoothera citrina*	C	RM	MU,WB
37	Taiga Flycatcher,*Ficedula albicilla*.	UC	M	WL,BU
38	Pied Mayna,*Sturnus contra*.	VC	R	WL, GR
39	Chestnut-Tailed Starling,*Sturnus malabaricus*.	VC	R	WL, GR
40	Jungle Mayna,*Acridotheres fuscus*.	VC	R	WL, GR
41	Bank Mayna,*Acridotheres tristis*.	UC	M	GR,MU
42	Great Til,*Parus major*.	UC	RM	WL,CF
43	Red-Vented Bulbul,*Pycnonotus cafer*.	UC	R	GR
44	Zitting Cisticola,*Cisticola juncidis*.	R	M	GR
45	Blyths Reed Warbler, *Acrocephalu dumetorum*.	R	M	BU,GR
46	Dusky Warbler,*Phylloscopus fuscatus*.	R	M	BU,GR
47	Jungle Babbler,*Tudoides striatus*.	VC	R	WL,BU
48	Purple Sunbird,*Cinnyris asiaticus*.	UC	RM	WL,CF
49	House Sparrow,*Passer domesticus*.	VC	R	HO,WL
50	White Wagtail,*Motacilla citreola*.	VC	R	WB,MU
51	Citrine Wagtail, *Motacilla citreola*.	UC	M	MU,WB
52	White-Browed Wagtail,*Motacilla madaraspatensis*.	UC	R	MU,WB
53	Paddyfield Pipit,*Anthus rufulus*.	UC	M	GR
54	Streaked Weaver,*Ploceus manyar*.	C	R	GR
55	Baya Weaver,*Ploceus philippinus*.	VC	R	GR
56	Indian Silverbill, *Lonchura malabarica*.	C	RM	GR
57	Black-Headed Munia,*Lonchura malacca*.	R	M	GR
58	Scaly-Breasted Munia,lonchura *punctulata*.	VC	R	GR
59	Siberian Stonechat,*Saxicola maurus*.	R	RM	GR
60.	Cinnamonbittern , Ixobrychus cinnamomeus	R	RM	GR

Key

Relative abundance: VC= Very common; C= Common; UC= Uncommon; R= Rare. Status: R= Resident; RM= Migratory resident; M= Migrant. Habitat: GR= Grassland and cornfield, MU=Muddy area, WB= Water body, BU= Bush, WL= Wood land, HO= House, CF= Crop field.

Conclusion

Sher-e-Bangla Agricultural University campus is situated in the heart of the Dhaka city. Urbanization favors special life styles among birds; the omnivorous, granivorous, and cavity nesting species were found to be more represented within urbanization spots than at the surrounding regions that belong to the same habitat. Exotic species are also favored by urbanization. Sher-e-Bangla Agricultural University campus is a place in a capital where it supports diverse vegetation which supports ultimately diverse bird species. The major factor that underlies the urbanization effect on avifauna is the vegetation cover. Birds respond to both vegetation density and composition. From recent study it was found that major threats for the birds species in the study area are decreasing of habitat, use of pesticide in the crop field, destroying vegetation, unwise infrastructure development and destroying breeding place through tree management practice.

Recommendation

Expansion of human inhabitation should be stopped.

1. Construction work should be made in planned way.
2. Plantation of trees should be done which can act as a shelter and refuge for birds.
3. Use of highly poisonous insecticides in the agricultural fields should be restricted.
4. Advanced study is necessary for getting authentic report of the study area.

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