BIRDS OF JOYPURHAT DISTRICT, BANGLADESH

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Abstract: With a view to gather information on the diversity, habitat, distribution and residential status of avifauna of Joypurhat District under Rajshahi Division, a systematic field study was conducted for a period of eight months from April to November 2010. The study area was divided into the following five Upazila sites *viz.* Site A Joypurhat Sadar; Site B Khetlal; Site C Panchbibi; Site D Akkelpur and Site E Kalai. A total of 57 species, belonging to 8 orders, 28 families and 48 genera, were recorded. Of 57 species, 47.37% were non-passerines and 52.63% passerines; 89.43% were resident and 11.57% migratory. The status of the birds ranged from 14.04% for fairly common to 45.61% for rare species. The diversity of the bird species ranged from 25 (47.37%) for site D to 39 (68.42%) for site A. The study revealed that most of the species used more than one habitat and the highest number of species, 52 (91.23%), was observed on the trees, whereas the lowest number of species, 3 (5.26%), was found around the ponds. A number of environmental and man-made factors appeared to be responsible for declining population and species diversity of the birds in the study area.

Key-words: Bird diversity, Joypurhat District, resident, migratory, passerine.

mivsk: i\Rkunxuefų‡Mi RqcÿmU †Rjvi cuk-˙eWÌ, Zų‡i Avenm¯j, we¯iZ I wÕZ n¤uK2 Z_¨ejxmsWÌhi Rb¨ Gueÿ 2010 †_¤K b‡f¤i 2010 ch®—gW ch®qi Rixc Pÿj‡bvnq| M‡elYvGjvKU‡K Dc‡Rjv‡Kw¯K c¤PÌ fÿM fWKivnq| ch®¶¶Y ng‡q ‡gU 57 c‡ÌuZi cuk ƒ˙Lv‡1M‡Q, Giv8U e‡MÏ, 28W ‡M¶ÌÎi Ges 48U M‡Yi AšMZ| GB c‡ÌuZ¸jÿi 47.37% A¯ÚPuix‡Ges 52.63% ¯ÚPuix| G‡Ì¯i 89.43% c‡ÌuZ evjÿ‡f‡tki ¯ibq Ges 11.57% c‡ÌuZ cuihvqÿ| c‡ÌuZ¸jÿi me®gcd14.04% AuZ cuiviWZ Ges mte¾P 45.61% weij| ‡tekxi fWI cuk‡f¯i GKumK Avenm¯j e¨emvi Ki‡Z ƒ˙Lv‡1M‡Q| M‡elYvGjvKui cuk-˙eWÌ Ges Gų‡i msL¨vwb`w b K‡g hvjÿui †cÕ¶b cui‡tekMÌ I gvbÿ-m¿ų usufbdKuiY ˙uÿxe‡j c‡Ìuÿgvb nq|

Introduction

The national list of the birds of Bangladesh owns as many as 650 species (Siddiqui *et al.* 2008), of which, 620 species have been recorded in recent years and can be asserted to be present today. Out of these 143 are vagrant (occurring very irregularly or seen extremely rare) in the country, and the rest 477 are regular species. Among the regular species, 301 are residents and 176 are seasonal visitors to Bangladesh. Out of 176 regularly occurring migratory species, 160 are winter visitors, six are summer visitors and 10 are spring or passage migrants. According to the relative abundance, Bangladesh has 143 vagrants, 176 rare, 103 uncommon and 198 common species of birds. Among the total observed birds, 40 species are globally threatened or nearly threatened, and a further 13 species are globally threatened and by now have been extirpated in Bangladesh (Banglapedia 2003). However, recent information reports 736 species of birds in the country (Khan 2008a).

For community study of flora and fauna, species diversity is a function of the number of different species, the number of individuals per species, and the total number of individuals of all species present in that community at a definite time period (Southwick 1976).

It is a challenging parameter to measure because diversity is organized hierarchically, and as a consequence, pattern of diversity at one level is linked statistically and by evolutionary history of the patterns of higher and lower levels (Gottelli 2002). Out of the total number of species in the trophic component, or in a community as a whole, relatively small percentages are usually abundant and a large percentage is rare. While the few common species, or dominants, largely account for the energy flow in trophic group, it is the large number of rare species that largely determine the species diversity of trophic groups and whole communities (Odum 1971). Abundance and distribution is one of the major characteristics of species in a community. It indicates the status of particular species and shows the ecological conditions of a particular environment.

The bird populations of Bangladesh are decreasing at an alarming rate like elsewhere in the world mainly due to habitat destruction with the subsequent effect on food and shelter (Hussain 2008). Although birds play a crucial economic role in pest control, scavenging and pollinating as well as providing food to mankind, they are highly susceptible to any changes in the habitat they live, and their diversity is decreasing at a considerable rate because of human unconsciousness for their

protection and conservation (Sarker *et al.* 2001). Reports on avifauna in different regions of Bangladesh have been published. These include, among others, Hussain (1969, 1975) in Chittagong Hill Tracts and Pablakhali Wildlife Sanctuary, Haque (1976) at the Rajshahi University Campus, Khan (1982) and Sarker *et al.* (2001) in St. Martin Island, Sarker and Sarker (1986) in the Sundarbans, Sarker *et al.* (2000a, b) at Bagkhali range, Cox's Bazar and Moheskhali island, respectively, and Sarker *et al.* (2009) at two sites of the Uttara Model Town, Dhaka. A literature survey shows that no recent work has been done on the avifauna of Joypurhat and its adjacent areas. The present work therefore was undertaken to describe the existing bird fauna of Joypurhat District with special reference to their habitat, abundance and residential status, which will provide some basic information for future in-depth studies and conservation of the birds in the study area.

Methodology

Study area: Joypurhat is a District of Rajshahi Division that has an area of 965.44 sq. km. It is bounded by Dinajpur in the north, Naogaon in the south, and Bogra and Gaibandha in the east, Bogra and Naogaon and West Bengal, India in the west (Banglapedia 2003). For the convenience of the field work, the study area was divided into five sites on the basis of administrative Upazilas as follows: Site A Joypurhat Sadar, Site B Khetlal, Site C Panchbibi, Site D Akkelpur and Site E Kalai (Fig. 1).
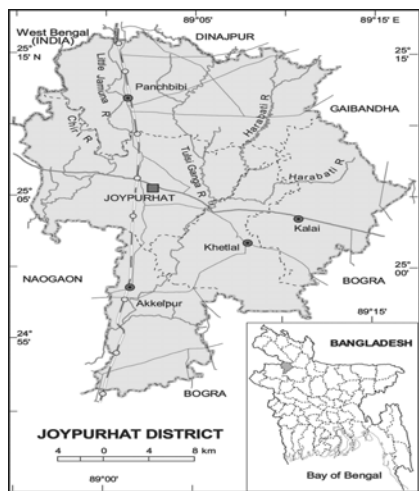

Fig. 1. Map showing five sites (●) of the study area.

Observation schedules: Observations were made fortnightly in the mornings during summer, winter and monsoon (when there was no rain). Occasionally field

visits were carried out in the afternoons. At least two monthly visits were carried out at each site of the study area. However, from mid April to end of May 2010, three visits were made per week. A special visit was made to Site B (*i.e.* Khetlal Upazila) where a heronry is situated and protected by the local people. The study was conducted for a period of eight months from April to November 2010 in Joypurhat District under Rajshahi Division, located at the northern region of Bangladesh.

Observation methodology: Mainly eye observations were made to watch the birds. Often a binocular was used to locate the bird at a distance and to observe them more clearly. A digital camera (Olympus FE-20) was used to take photographs of the birds.

Vegetation of the study area: Bangladesh has been tentatively divided into 30 agroecological zones. The study area comes under Level Barind Tract where the landscape is almost plain. The predominant soils have grey, silty, puddled topsoil with ploughpan. The soils are low in available moisture holding capacity and slightly acidic to acidic in reaction. Organic matter status is very low and most of the available nutrients are limited. So, the vegetation of the study area is well planted, comprising both indigenous and exotic species. The predominant vegetation of the study area is composed mainly of woody trees. The major tree species are Kanthal (*Artocarpus hetarophyllus*), Aam (*Magnifera indica*), Jam (*Syzygium cumini*), Pitraj (*Aphanamixis polystachya*), Mehogoni (*Swietenia mehagoni*), Bot (*Ficus benghalensis*), Eucalyptus (*Eucalyptus* spp.), Akashmoni (*Acacia moniliformis*), Boroi (*Zizyphus mauritiana*), Koroi (*Albizzia* spp.), Shimul (*Salmalia* spp.) and Coconut (*Cocos nucifera*) The study area is composed of both urban and rural populations but the rural area contains much plant diversity than that of the urban area.

Species identification: The birds were mainly identified with the help of their photographs using two famous books by Ali (1996) and Hussain (2008). The common English, scientific and vernacular names of the birds have been taken from Ali (1996), Grewal *et al.* (2002), Harvey (1990) and Khan (2008a, b). The following three characteristics were applied to identify the bird species.

External morphology: Colour, shape, size, beak, leg and tail of the birds were the most important features to identify the species.

Song and calls: Identification was also made on the basis of songs or/and calls of the birds. This was mainly assisted by the people residing in the study area.

Habitats: The species were also identified by observing the habitats of the birds that fall under eight categories as follows: 1. open area, 2. agricultural land, 3. human habitations, 4. bush, 5. tree, 6. pond, 7. ditch and 8. other water bodies.

Status justification: The following status of birds was justified on the basis of the standard methods used by Khan (1982).

(i) Very common (VC): Species those were found almost allover the study area and were recorded in 80-100% field visits/working days.
(ii) Common (C): Species those were recorded in 50-79% field visits/working days.
(iii) Fairly common (FC): Species those were recorded in 20-49% in two or three sites of the study area during the field visits; and
(iv) Few or rare (R): Specie those were seen rarely in one or two sites of the study area in less than 19% during the visits.
The status of the birds was calculated in terms of percentage of occurrence.

Results and Discussion

A total of 57 species of birds was recorded from the study area (Table 1). They were found to belong to nine orders, 26 families and 48 genera, comprising 23 passerines and 25 non-passerines. The resident birds constituted 50 (87.72%) species while the migratory ones had 7 (12.28%), suggesting that the resident species were nearly 7 times higher than those of the migratory species. The migratory species are *Clamator jacobinus* (Chokhgelo), *Eudynamys scolopaceus* (Kalo Kokil), *Actitis hypoleucos* (Cha-pakhi), Amaurornis *phoenicurus* (Dahuk), *Milvus migrans* (Bhubon Chil), *Motacilla alba* (Sada Khonjan), and *Motacilla flava* (Halud Khanjan). Two resident and FC birds are shown in Plate 1.

The highest number of 30 species (52.63%) and 22 genera (45.83%) belonged to the order Passeriformes and a single species (1.75%) and single genus (2.08%) belonged to the order Gruiformes. The family Corvidae (Order Passeriformes) included the highest 10 species (*i.e.*, 17.54% of the total and 33.33% of the passerines) and the highest 7 genera (*i.e.,* 14.85% of the total and 30.43% of the passerines).

Plate 1. (Above) Rufous Backed Shrike (*Lanius schach*), (below) Asian Open bill Stork (Anastomus oscitans

A total of 14 families, 9 non-passerines and 5 passerines, had only a single species. Of the 48 genera, a single genus *Dicrurus* (Passeriformes: Corvidae) contained the highest number of species (3 *i.e.,* 6.25% of the total and 13.04% of the passerines).

Out of 25 non-passerine genera, the Family Ardeidae contained 4 genera (8.33% of the total and 16% of the non-passerines). *Dinopium* (Piciformes: Picidae) and *Merops* (Coraciformes: Meropidae) had 2 species each that represented 3.51% of the total and 7.41% of the non-passerines.

The availability status of the recorded species is shown in Table 1 & 2. It varied from 8 for FC (14.04%) to 26 for R (45.61%). Percentage of C species (13 in number, 22.81%) was higher than that of VC species (10 in number, 17.54%). Moreover, the number of VC species was the same for both the non-passerine and passerine birds. The status of all 6 migratory species was R.

The results on species diversity among different sites of the study area are presented in Table 3. The diversity varied from 25 (47.37%) for Site D to 39 (68.42%) for Site A. The second highest value was recorded from Site B, 37 (64.91%). The species diversity was found to

be similar for Sites C and D. The highest species diversity in Site A might be due to such factors as the increase in species conservation intensity, higher tree plantation activities and re-habilitation of the bird

species. The lowest species diversity in Sites C an D, on the other hand, might be due to the felling of forest cover and man's deliberate actions.

Table 1. A systematic list of birds of Joypurhat District, Bangladesh.

Orders (Families)	Scientific Names	English Names	Bangla Names	Country Status*	Status of Abundance**
Piciformes Picidae	*Dendrocopos macei* (Vieillot 1818)	Fulvous-breasted Pied woodpecker	Pakra Kaththokra	R	R
	Dinopium javanense (Liungh 1797)	Indian Golden-backed woodpecker	Pati Kaththokra	R	VC
	Dinopium benhgalense (Linnaeus 1758)	Lesser Golden-backed woodpecker	Bangla Kaththokra	R	VC
Coraciiformes Alcedinidae	*Alcedo atthis* (Linnocus 1758)	Common Kingfisher	Pati/Choto Machranga	R	C
Halcyonidae	*Halcyon smyrnensis* (Linnaeus, 1758)	White-throated / White-breasted Kingfisher	Sadagola Machhranga	R	C
	Todiramphus Chloris (Boddart, 1783)	Collared kingfisher, white collared kingfisher	Sada-ghar Machranga	R	R
Meropidae	*Merops orientalis* (Latham, 1802)	Green Bee-eater	Choto Suichora, Banspati	R	C
	Merops Philippinus (Linnaeus, 1766)	Blue tailed Bee-eater	Nil-lej Suichora	R	VC
Cuculiformes Cuculidae	*Clamator jacobinus* (Boddaert, 1783)	Pied/Pied-crested Cuckoo	Chokhgelo-Pakhi, Papya	M	VC
	Cuculus micropterus (Gould, 1838)	Indian cuckoo	Bau-Kawtha-Kau	R	R
	Eudynamys scolopaceus (Linnaeus,1758)	Asian koel, Asian Cuckoo	Kokil, Kalo Kokil	R	VC
Centropodidae	*Centropus bengalensis* (Gmelin, 1788)	Lesser coucal	Choto Kanakuka	R	R
Psittaciformes Psittacidae	*Psittacula krameri* (Scopoli 1769)	Rose-ringed Parakeet	Tia, Tota	R	FC
Apodiformes Apodidae	*Cypsiurus balasiensis* (J.E. Gray 1829)	Asian palm swift, palm swift	Nakkati	R	C
	Apus affinis (J.E.Gray 1830)	House Swift	Ababil	R	FC
Columbiformes Columbidae	*Columba livia* (Gmelin 1789)	Rock Pigeon, Blue Rock Pigeon	Jalali Kobutar, Paira	R	C
	Streptopelia chinessis (Scopoli, 1786)	Spotted Dove	Tila Ghughu	R	C
Gruiformes Rallidae	*Amaurornis phoenicurus* (Pennant, 1769)	White-breasted Waterhen	Dahuk	R	R
Ciconiiformes Scolopacidae	*Actitis hypoleucos* (Linnaeus, 1758)	Common Sandpiper	Chapakhi	M	R
Accipitridae	*Milvus migrans* (Boddaert, 1783)	Black Kite	Bhubon Chil	M	R
	Spilornis cheela (Latham, 1790)	Crested Serpent Eagle	Tila Baj, Shapkheko Baj	R	R
Ardeidae	*Ardeola grayii* (Scopoli, 1832)	Pond Heron	Kani/Kana bok	R	C
	Egretta garzetta (Linnaeus, 1766)	Little Egret	Choto Bok	R	R
	Nycticorax nycticorax (Linnaeus, 1758)	Night Heron	Nishi Bok	R	FC
Ardeidae	*Ixobrychus cinnomomeus* (Gmelin 1789)	Cinnamon Bittern, Chestnut Bittern	Lal Bok, Khairi Bok	R	R
Ciconiidae	*Anastomus oscitans* (Boddaert, 1873)	Asian Openbill Stork	Shamukh Bhanga, Shamukh Khol	R	R

Orders (Families)	Scientific Names	English Names	Bangla Names	Country Status*	Status of Abundance**
Threskiornithidae	*Pseudibis Papillosa* (Temminck,1824)	Black Ibis	Kalo Duchora / Kastechora	R	R
Passeriformes Irenidae	*Chloropsis cochinchinensis* (Gamelin 1789)	Golden fronted leaf bird	Shonakopali Horbola, Choto Horial	R	FC
Laniidae	*Lanius schach*	Rufous Backed Shrike	Badami-pith Latora/Koshai	R	R
Corvidae	*Dendrocitta vagabunda* (Latham 1790)	Indian tree pie	Horichacha, Kutum-Pakhi	R	FC
	Corvus macrorhynchos (Wagler, 1827)	Jungle crow	Dar Kak	R	FC
	Corvus splendens (Vieillot, 1817)	House crow	Pati Kak	R	VC
	Oriolus xanthornus (Linnaeus, 1758)	Black hooded oriole	Haldey Pakhi	R	FC
	Rhipidura albicollis (Vieillot, 1818)	White throated Fantail Flycatcher	Lej Nachani	R	R
	Aegithina tiphia (Linnaeus.1858)	Common iora	Fotikjal	R	FC
Terpsiphone Paradisil (Linnaeus, 1758)	Paradise Flycatcher	Shah Bulbul	R	R	
Dicrurus macrocercus (Vieillot, 1817)	Block Drongo, Kingcrow	Kalo Fingey	R	C	VC
Dicrurus aeneus (Vieillot, 1817)	Bronzed Drongo	Choto Fingey	R	R	C
	Spangled Drongo	Keshraj	R	R	R
Dicrurus hottentottus (Linnaeus 1766)	*Acridotheres fuscus* (Wagler, 1827)	Jungle Myna	Jhunti Shalik	R	C
	Acridotheres tristis (Linnaeus, 1766)	Common Myna	Bhat Shalik	R	VC
Hirundinidae	*Hirundo rustica* (Linnacus 1758)	Barn Swallow, Common Swallow	Ababil	M	R
Pycnonotidae	*Pycnonotus jocous* (Linnaeus1758)	Red-whiskered Bulbul	Shipahi Bulbul	R	C
	Pycnonotus cafer (Linnaeus 1766)	Red- vented Bulbul	Bulbuli	R	C
Muscicapidae	*Locustella naevia* (Boddaent, 1783)	Grasshopper Warbler	Foring warbler	R	R
	Megalurus palustris (Horsefield, 1821)	Striated Marsh Warbler, Striated Grassbird	Jolar Chhatare	R	R
	Orthotomus sutorius (Pennant, 1769)	Common Tailorbird	Tuntuni	R	C
	Phylloscopus affinis (Tickell, 1833)	Tickell's Leaf Warbler	Tickeller Pata Futki	M	R
Nectariniidae	*Dicaeum cruentatum* (Lannaeus, 1758)	Scarlet-backed Flower Pecker)	Lal Pati Fuljhuri	R	R
	Nectarinia zeylonica (Linnaeus, 1766)	Purple rumped Sunbird	Beguni-komor Moutusi	R	R
	Nectarinia asiatica (Latham, 1790)	Purple Sunbird	Niltuni	R	R
Passeridae	*Passer domesticus* (Linnaeus, 1758)	House sparrow	Charui	R	VC
Motacillidae	*Motacilla alba* (Linnaeus, 1758)	White Wagtail	Sada Khonjon	M	R
	Motacilla flava (Linnaeus,.1758)	Yellow wagtail	Halud Khonjon	M	R

Note: R: Resident, M: Migratory, *Hussain (2008), ** VC=very common, C= common, FC= fairly common, R= rare.

The species diversity for different habitats of the study period is presented in Table 4. It was found that majority of the species used more than one habitat. The highest number of 52 species (91.23%) was observed to roost on trees whereas the lowest number of 3 species (5.26%) was found to reside around ponds, thus indicating that the passerine birds were not available in habitats like ponds, ditches and water edges.

Table 2. Status of the recorded bird groups of the study area

Status	Non-Passerine		Passerine		Total	
	No.	%	No.	%	No.	%
Very Common (VC)	5	18.52	5	16.66	10	17.54
Common (C)	7	25.93	6	20.00	13	22.81
Fairly Common (FC)	3	11.11	5	16.67	8	14.04
Rare (R)	12	44.44	14	46.67	26	45.61
Total	27	100	30	100	57	100

Table 3. Species diversity of birds at different sites of the study area.

Sites	Non Passerine species	Passerine species	Total No. of species	% of total recorded species
A	20	19	39	68.42
B	17	20	37	64.91
C	10	17	27	47.37
D	11	14	25	43.86
E	12	15	27	47.37

A= Joypurhat Sadar, B=Khetlal, C=Panchbibi, D=Akkelpur, E=Kalai

Table 4. Habitat-wise species diversity of birds of the study area

Habitats	Non-passerines	Passerines	Total No. of species	% of total recorded species
Open area	5	18	23	40.35
Agricultural land	6	10	16	28.07
Human habitations	2	6	8	14.04
Bush	13	18	31	54.39
Tree	13	29	52	91.23
Pond	3	0	3	5.26
Ditch	5	0	5	8.77
Water edge	7	0	7	12.28

The number of bird species seems to be fewer in the study area, which may be due to the short span of the study period. There might be some species which can only be seen if daily and random observations are made. Most of the published reports on the avifauna of different regions of Bangladesh are on the Sundarbans and the islands, where the shore birds constitute the major species followed by the forest birds. Ahsan and Khanom (2005) listed 92 bird species from the Chittagong University campus, among which 49 species are in common with the avifauna of Joypurhat district. The avifauna of Joypurhat therefore is quite different from that of other areas. However, the present study corroborates to the reports of Haque (1976) and Sarker *et al.* (2009), who showed that the number of passerine birds mostly supersede the non-passerine ones in the country (Hussain 2008, Khan R, 2008).

Conclusion

Although the study area harbours a considerable number of bird species, some potential threats to birds were identified during the study period. The major threats were illegal cutting of trees and bamboo, conversion of natural forests to monoculture plantations and agricultural fields, and hunting and trapping of birds, especially by the ethnic tribal people. The minor threats included nestling-theft for selling as cage birds and large-scale illegal harvest of forest fruits such as 'chapalish' (*Artocarpus chaplasha*) and 'latkan' (*Bixa* sp.). Some general considerations need attention for protecting birds and their habitats from above mentioned threats. It is therefore recommended that further intensive studies need to be conducted on the protection and conservation of birds in Joypurhat District in the near future.

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