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Exploring avian richness in some village areas of Assam, India

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Abstract

As the second largest state of India, Assam could be a better green place to observe avian population. At the time of surveying, direct observation, and interviews with local people helped to write this paper. The avian diversity in selected seven villages in Assam resulted the richness of birds with 42 species. The Simpson indices suggested high diversity of avian richness in forest, wetland, cropland, and old building with 0.882, 0.926, 0.914, and 0.806 values respectively. Based on the Berger-Parker indices, those birds showed high diversity too with 0.243, 0.144, and 0.174 values. Relative abundance or evenness of different species in the wetlands was found the highest (0.775) whereas the lowest on old buildings (0.557), so the result exhibited as $B > C > A > D$ sites accordingly. Out of 42 species, passerine birds were 18 (43%) in number and non-passerine 24 (57%) species. Within all species, orders were 12, families 30, breeding birds 20 (48%), and resident birds were 38 (90%). Based on the availability of listed birds, these villages focused very common birds 10, common 11, uncommon 9, and rare 12. This study was carried out from October 2024 to October 2025.

Keywords: Assam, birds, distribution, abundance, breeding, India

Introduction

Assam is a state in northeastern India with cover an area of 78,438 km². This is the second largest state in northeastern India in terms of population with more than 31 million. The state has 35 districts with 5 divisions (Fig 1). The Assamese economy is aided by wildlife tourism to 'Kaziranga National Park' and 'Manas National Park' which are world heritage sites. Sal tree forests are found in this state, as a result of abundant rainfall, look green all year round. Brahmaputra River of this state provides a distinctive hydrogeomorphic environment. Assam is a temperate zone (summer maximum at 95-100 °F and winter 43-46 °F) and experiences heavy rainfall and high humidity. It has tropical rainforest, deciduous forest, riverine grassland, bamboo forest, and wetland ecosystem (Fig 1). In Assam, many forests are now protected as national parks and reserved forests. This state has highest diversity of birds with the subspecies this number as high as 946 (Choudhury, 1990). Assam is one of the biodiversity-rich states of India and home to about 950 bird species including 17 endemic species (Choudhury, 2000) with 55 important birds and biodiversity areas. In 'Panidihing Bird Sanctuary' there were 165 species of birds (Mili and Acharjee, 2014); 284 in 'Orang National Park' (Chakdar *et al.*, 2019), and 227 in 'Raimona National Park' (Mahanta *et al.*, 2022). Recently, 'Bornodi Wildlife Sanctuary' recorded 227 (Chetry *et al.*, 2024) and 'Loharghat Forest' 157 avian species (Talwar *et al.*, 2024). In 1996, the Assam government designed Bordoibam-Bilmukh as a bird sanctuary due

to its great biodiversity (BirdLife International, 2024). Wetlands provide excellent habitats for migratory birds for feeding, nesting, and rearing young ones (Anand *et al.*, 2023). Human activities are the pressure on the avian population (Kumar and Kanaujia, 2014; Chen *et al.*, 2011; Sekercioglu *et al.*, 2012). Illegal collection of eggs, consumption of meat of many birds, and hunting are common in Assam (Saikia *et al.*, 2024). Additionally, due to the development of agricultural areas, noise played a negative role on avian population (Saikia *et al.*, 2024). Wetlands are affected for intensive farming in this area (Golzar *et al.*, 2019). Need to take immediate action for conservation of birds (Saikia *et al.*, 2024). The objective of this paper is to mention the present status of birds in some village areas of Assam for their conservation.

Materials and Methods

Studied villages in Assam: This study was done in Udmari (26.40426, 92.63147), Ambari (26.10163, 90.41028), Rowar Par (26.03576, 90.08706), Paschim Jamuna Gaon (26.12907, 92.93226), Gonipur (26.10508, 92.92588), and Doboka (26.11240, 92.86412) which were in Hojai District and only Kathiatiali village (26.18405, 92.73560) under Nagaon District of Assam (26.2006° N, 92.9376° E) (Fig 1). Sal forests, wetlands, cropfields, and old buildings of the Assam of India played a significant role to forage of many birds. Its Brahmaputra River and bamboo forest were surveyed to note the avian population.

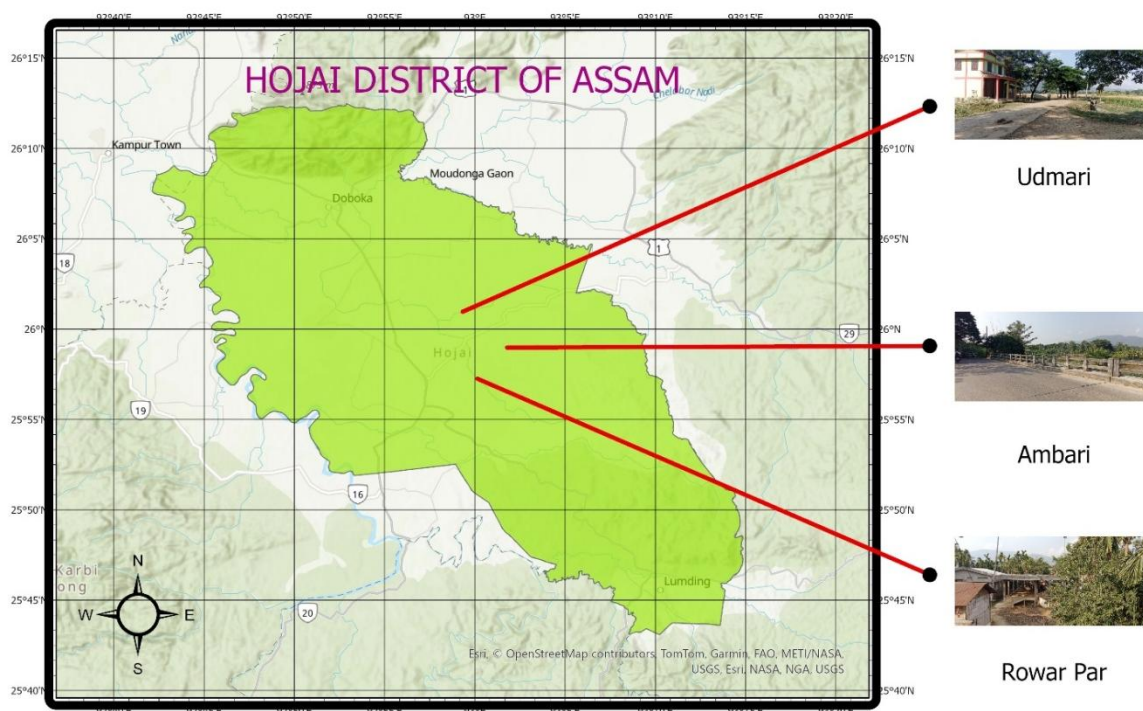


Fig 1. Significant villages in Assam on the basis of birds' population

Collection of data: In order to collect data on birds, one day in a week, from 5:00 to 10 a.m, then 4:00 to 7:00 p. m. (total 8 hours) was spent. For nocturnal birds especially owls, a simple torch light was enough. Two android mobile phones (LAVA Z35; Moto g85) were perfect for taking occasional photographs and voice recording of those birds. A pair of high-quality binoculars (10x-70x × 70mm, Comet) was helpful for this survey. A DSLR camera (Canon, EOS Rebel T3i) with 200-500mm lens is used for necessary snaps.

ArcGIS pro and R software: In order to make a standard map of Assam (location, ruler, grid, images) ArcGIS pro (Fig 1) and for species richness (Table 3) R package helped to explain the avian diversity in these areas.

Results and Discussion

Out of 18 finches in Bangladesh, family 'Estrildidae' showed the highest species (6 species) (Kabir, 2024a). In Assam, only one species in this family was found as rare but resident, so this result is similar with the Bangladeshi data (Table 1). In Bangladesh, black-crowned night herons are doing remarkable breeding

performance due to implementing wildlife act (Kabir *et al.*, 2019b). Black-crowned night heron is available in Assam, so this is similar type of finding to compare (Table 1). Trapping is regulated in most countries by trained research personnel to follow precautions can lead to injury or death of birds (Kabir, 2019). Trapping birds in Assam is merely common and to mitigate this incident administrative raid is a common phenomenon. Mecca-Medina is the safe place for rock-pigeons due to the strict protective legislation (Kabir, 2025). In Bangladesh, there are many rock-pigeons both rural and urban areas (Kabir, 2016). Out of 42 avian population, rock-pigeons were found abundant in Assam (Appendix 1). Rice-mills are significant place for allowing birds (Kabir, 2019a), and in Assam there are many rice-mills which allowed many cereal wild birds. Eurasian collared dove (*Streptopelia decaocto*) could be an excellent research bird with the barbary dove (*Streptopelia risoria*) which is a significant pet dove in Bangladesh (Kabir, 2023). Eurasian collared dove is not common as spotted dove in Assam but its breeding was seen (Table 1). Rose-ringed parakeet is our native and wild bird, not allowed to keep in cage, and exotic parrots and parakeets could be an alternative to rear as pets (Kabir *et al.*, 2020). The scenario of this rose-ringed parakeet is the same with Bangladesh. Both rural

and urban areas of Bangladesh, Burmese/Malayan spotted dove (*Streptopelia chinensis tigrina*) is found huge and is very common (Kabir, 2024b). This is fully similar to the villages of Assam (Table 1). Due to different breeding seasons in different localities, the white-breasted waterhen (*Amaurornis phoenicurus*) could get advantage to protect naturally. Hunting by making traps (Kabir, 2019) and habitat loss is the most concern of this bird (Kabir, 2024c). Since, in Bangladesh, this white-breasted waterhen is available but in Assam this was found rare (Table 1). A report from 2022 to 2024 carried out 47 species of birds in Assam with 16 orders, 29 families, 15 passerine birds, 43 resident birds, one summer visitor, and brown shrike, citrine wagtail, and white wagtail were winter visitor (Saikia *et al.*, 2024). This report with 42 species, 12 orders, 30 families, 38 resident birds, 1 summer visitor, 1 winter visitor, and 18 passerine birds is very similar with these findings (Fig 2) (Table 2). A report with 167 birds (Phukan *et al.*, 1997), and out of 133 species with 41 families, 86 resident, 23 migratory, and 24 local migrants were noted (Dutta *et al.*, 2011). Since, this report described in the year 2011, so at present due to small dataset, only 42 species did not show similar findings (Fig 3) (Appendix 1).

Table 1. Observed bird species in some village areas of Assam

Classification with names	Family	Local status	Global status
Cuculiformes (4 species, 2 families)			
*Asian koel (<i>Eudynamis scolopaceus</i>)	Cuculidae	Common; Resident	LC
Pied crested cuckoo (<i>Clamator jacobinus</i>)	Cuculidae	Rare; Summer visitor	LC
Common hawk-cuckoo (<i>Hierococyx varius</i>)	Cuculidae	Uncommon; Resident	LC
Greater coucal (<i>Centropus sinensis</i>)	Centropodidae	Rare; Resident	LC
Coraciiformes (4 species, 2 families)			
White-throated kingfisher (<i>Halcyon smyrnensis</i>)	Alcedinidae	Very common; Resident	LC
*Common kingfisher (<i>Alcedo atthis</i>)	Alcedinidae	Very common; Resident	LC
Storkbilled kingfisher (<i>Pelargopsis capensis</i>)	Alcedinidae	Rare; Resident	LC
Green bee-eater (<i>Merops orientalis</i>)	Meropidae	Uncommon; Resident	LC
Ciconiiformes (4 species, 2 families)			
*Indian pond heron (<i>Ardeola grayii</i>)	Ardeidae	Very common; Resident	LC
Little egret (<i>Egretta garzetta</i>)	Ardeidae	Common; Resident	LC
Black-crowned night heron (<i>Nycticorax nycticorax</i>)	Ardeidae	Uncommon; Resident	LC
Asian openbill stork (<i>Anastomus oscitans</i>)	Ciconiidae	Common; Resident	LC
Psittaciformes (1 species, 1 family)			
*Rose-ringed parakeet (<i>Psittacula krameri</i>)	Psittaculidae	Very common; Resident	LC
Columbiformes (3 species, 1 family)			
*Blue rock-pigeon (<i>Columba livia</i>)	Columbidae	Very common; Resident	LC
*Spotted dove (<i>Spilopelia chinensis</i>)	Columbidae	Very common; Resident	LC
*Eurasian collared dove (<i>Streptopelia decaocto</i>)	Columbidae	Uncommon; Resident	LC
Strigiformes (1 species, 1 family)			
*Spotted owl (<i>Athene brama</i>)	Strigidae	Common; Resident	LC

Passeriformes (18 species, 15 families)			
*Citrine wagtail (<i>Motacilla citreola</i>)	Motacillidae	Uncommon; Winter visitor	LC
*Purple sunbird (<i>Cinnyris asiaticus</i>)	Nectariniidae	Common; Resident	LC
*Red-vented bulbul (<i>Pycnonotus cafer</i>)	Pycnonotidae	Very common; Resident	LC
Red-whiskered bulbul (<i>Pycnonotus jacosus</i>)	Pycnonotidae	Rare; Resident	LC
*Common tailorbird (<i>Orthotomus sutorius</i>)	Cisticolidae	Common; Resident	LC
*House sparrow (<i>Passer domesticus</i>)	Passeridae	Very common; Resident	LC
White-throated fantail flycatcher (<i>Rhipidura albicollis</i>)	Rhipiduridae	Rare; Resident	LC
*Common myna (<i>Acridotheres tristis</i>)	Sturnidae	Very common; Resident	LC
Jungle myna (<i>Acridotheres fuscus</i>)	Sturnidae	Uncommon; Resident	LC
*Blue-throated barbet (<i>Megalaima asiatica</i>)	Megalaimidae	Rare; Resident	LC
Asian palm swift (<i>Cypsiurus balasiensis</i>)	Apodidae	Common; Resident	LC
Long-tailed shrike (<i>Lanius schach</i>)	Laniidae	Uncommon; Resident	LC
Black-headed cuckoo-shrike (<i>Coracina melanoptera</i>)	Campephagidae	Common; Summer visitor	LC
Eastern jungle crow (<i>Corvus levaillantii</i>)	Corvidae	Rare; Resident	LC
Rufous treepie (<i>Dendrocitta vagabunda</i>)	Corvidae	Rare; Resident	LC
*Black drongo (<i>Dicrurus macrocercus</i>)	Dicruridae	Very common; Resident	LC
*Oriental magpie-robin (<i>Copsychus saularis</i>)	Muscicapidae	Common; Resident	LC
Indian silverbill (<i>Euodice malabarica</i>)	Estrildidae	Rare; Resident	LC
Piciformes (2 species, 1 family)			
*Black-rumped flameback woodpecker (<i>Dinopium benghalense</i>)	Picidae	Common; Resident	LC
Streak-throated woodpecker (<i>Picus xanthopygaeus</i>)	Picidae	Uncommon; Resident	LC
Anseriformes (1 species, 1 family)			
*Lesser whistling duck (<i>Dendrocygna javanica</i>)	Anatidae	Common; Resident	LC
Falconiformes (1 species, 1 family)			
Black-shouldered kite (<i>Elanus caeruleus</i>)	Accipitridae	Rare; Resident	LC
Gruiformes (1 species, 1 family)			
*White-breasted waterhen (<i>Amaurornis phoenicurus</i>)	Rallidae	Rare; Resident	LC
Charadriiformes (2 species, 2 families)			
Common sandpiper (<i>Actitis hypoleucos</i>)	Scolopacidae	Uncommon; Winter visitor	LC
Greater painted snipe (<i>Rostratula benghalensis</i>)	Rostratulidae	Rare; Resident	LC

***Breeding birds; LC = least concern**

Table 2. Present status of birds in Assam

Order (12)	Species (42)	Family (30)	Breeding species (20)
Cuculiformes	4	2	1
Coraciiformes	4	2	1
Ciconiiformes	4	2	1
Psittaciformes	1	1	1
Columbiformes	3	1	3

Strigiformes	1	1	1
Passeriformes	18	15	9
Piciformes	2	1	1
Anseriformes	1	1	1
Falconiformes	1	1	0
Gruiformes	1	1	1
Charadriiformes	2	2	0

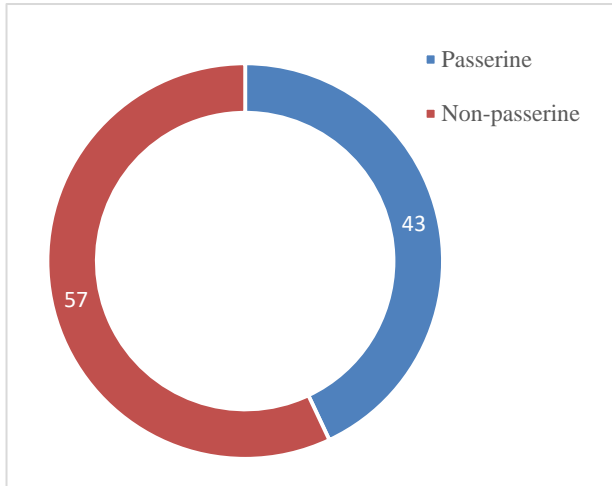


Fig 2. Group of birds

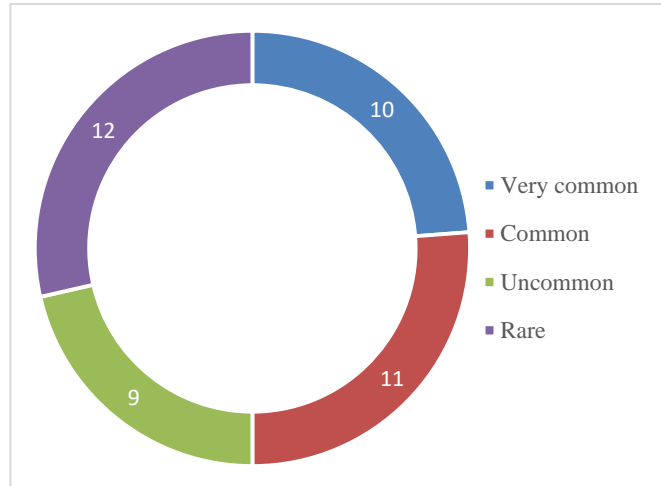


Fig 3. Local status of birds

Table 3. Avian indices in four selected sites

Sites	Simpson	Berger-Parker	Evenness
Site-A (Forest)	0.882 (high)	0.243 (high)	-
Site-B (Wetland)	0.926 (high)	0.144 (high)	0.775
Site-C (Cropland)	0.914 (high)	0.174 (high)	-
Site-D (Old building)	0.806 (high)	-	-

Conclusions

In Assam, some hunters capture or kill birds by using poison in field. Sometimes, meat of wild birds as well as fowl are sold in restaurants. In this area, parakeets are caught from the jungle and sold through online platforms. Forest officials raid in the weekly rural markets and release such wild birds for the conservation of biodiversity. To protect wildlife as well as birds, need to implement more research projects for motivating local people.

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Appendix 1. Dataset for the R studio

Species	Site_A	Site_B	Site_C	Site_D
Species1	47	1	1	1
Species2	2	1	1	1
Species3	12	1	1	1
Species4	1	1	5	1
Species5	1	37	1	1
Species6	1	47	1	1
Species7	1	1	1	1
Species8	3	1	1	1
Species9	1	6	1	1
Species10	14	1	14	1
Species11	1	18	20	1
Species12	1	27	1	1
Species13	1	47	1	1
Species14	1	9	1	1
Species15	37	1	30	2
Species16	1	1	1	1
Species17	22	3	23	2
Species18	2	5	43	50
Species19	3	31	34	2
Species20	25	20	31	124
Species21	200	30	70	200
Species22	8	1	6	1
Species23	12	4	8	6
Species24	1	1	1	1
Species25	150	70	98	82
Species26	72	2	3	3
Species27	4	1	1	1
Species28	5	1	1	1
Species29	57	1	1	1
Species30	1	5	1	1

Species31	2	35	22	1
Species32	4	1	1	1
Species33	2	8	1	1
Species34	1	1	1	1
Species35	7	1	1	1
Species36	29	1	9	1
Species37	4	1	1	1
Species38	5	1	1	1
Species39	22	15	21	22
Species40	47	41	68	44
Species41	3	2	2	2
Species42	11	5	32	22