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## Bird diversity and breeding status at Nakol Union under Magura District of Bangladesh

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### Abstract

Nakol Union of Bangladesh could be a better green place to observe avian population. Descriptive analysis and correlation helped to mention the present status of avian diversity and breeding patterns at Nakol Union, based on data from 14 avian orders comprising 35 families and 61 species. Results revealed strong positive correlations between the number of families, species, and breeding species ( $r > 0.95$ ). This indicates that higher taxonomic diversity is directly associated with greater breeding richness. Overall findings highlighted that conservation strategies should prioritize diverse avian orders such as Passeriformes and Columbiformes, which contribute significantly to local breeding populations. Out of 61 species of birds, passerine birds were 44% and non-passerine 56% as well. Within all species, orders were 14, families 35, and breeding birds 20. Remarkable plants were banyan (*Ficus benghalensis*), rubber (*Ficus elastica*), American mahogany (*Swietenia mahagoni*), coconut (*Cocos nucifera*), karoi (*Albizia procera*), and some village ponds supported to build their nest for successful breeding. Resident birds were counted 56, summer visitor 1, winter visitor 2, rare 2, and few 10 species. Based on availability of the birds, this union focused very common birds 26, common 21, and uncommon 2. This study was carried out from July 2024 to June 2025 at Nakol village.

**Keywords:** Nakol Union, birds, distribution, abundance, diversity, breeding, Bangladesh

### Introduction

Nakol Union is a significant place with 20 other villages and 16 mouzas of Bangladesh (Fig. 1). This union has an area of 19.28 km<sup>2</sup> with 23°19'57"N and 89°17'23"E coordinates. The average highest temperature is 34.4 °C and the lowest is 26.7 °C. It is consisted some other villages like Kashiara, Kamlapur, Modhupur, and Radhanagar.

Little urbanization is a common scenario in this area, and is alarming to sustain avian species. Urbanization effects on the animal population (Gregory et al. 2004). Huge trees of the northern side and 'Gorai River' at the east side plays a significant role for foraging many birds. Inside Nakol Primary School there is a big banyan tree

which is a good shelter of many birds. Parks and botanical gardens are always significant for observing birds (Golley, 2004). The

objective of this study is to understand the present status of birds in Nakol Union for their conservation.



Fig 1. Location of Nakol Union in Sreepur Upazila of Magura District

## Materials and Methods

**Study areas:** This study was done in Nakol Union (23°19'57"N and 89°17'23"E coordinates). Trees of the northern side and river of the east side were significant areas for this study. The bamboo forest near the Gorai River also showed some birds.



Plate 1. Nakol Government Primary School with significant trees for birds' breeding

**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 nightjars and owls, a simple torch light was enough. An Android mobile phone (Oppo) was perfect for taking occasional photographs and voice recordings 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 a 200-500mm lens is used for necessary snaps.

**Statistical analyses:** SPSS (version 29) was used for descriptive analysis (Appendix 1) and correlation (Appendix 2).

## Results and Discussion

Out of 61 species of birds, 56 species were resident, winter visitors 2, and summer visitor 1. Breeding birds were noticed in 20 species (Table 2). Based on the taxonomy of birds, identified orders and families were 14 and 35 (Fig. 3). The non-passerine birds were the highest (34 species) due to different types of bushes and water bodies in this area (Table 1; Fig. 2). All birds were least concern both in national and global status except critically endangered the white-rumped vulture (Table 1).

**Table 1.** Avian species at Nakol Union

Sl.	Classification with names	Family	Availability and local status
<b>Columbiformes (4 species) (1 Family)</b>			
1	*Wild rock-pigeon, <i>Columba livia</i> , Gmelin 1789	Columbidae	Very common; resident
2	Eurasian collared-dove, <i>Streptopelia decaocto</i> (Frivaldszky 1838)	Columbidae	Common; resident
3	*Spotted-dove, <i>Spilopelia chinensis</i> (Scopoli 1786)	Columbidae	Very common; resident
4	Yellow-footed green pigeon, <i>Treron phoenicopterus</i> (Latham 1790)	Columbidae	Rare; resident
<b>Psittaciformes (1 species) (1 Family)</b>			
5	*Rose-ringed parakeet, <i>Psittacula krameri</i> (Scopoli 1769)	Psittacidae	Common; resident
<b>Anseriformes (1 species) (1 Family)</b>			
6	Lesser whistling duck, <i>Dendrocygna javanica</i> (Horsfield 1821)	Anatidae	Very common; resident
<b>Accipitriformes (4 species) (1 Family)</b>			
7	Black kite, <i>Milvus migrans</i> (Boddaert 1783)	Accipitridae	Common; resident
8	Brahminy kite, <i>Haliastur indus</i> (Boddaert, 1783)	Accipitridae	Few; resident
9	Black-shouldered kite, <i>Elanus caeruleus</i> (Desfontains 1789)	Accipitridae	Common; resident
10	White-rumped vulture, <i>Gyps bengalensis</i> (Gmelin 1788)	Accipitridae	Uncommon; resident
<b>Strigiformes (3 species) (2 Family)</b>			
11	Spotted owl, <i>Athene brama</i> (Temminck 1821)	Strigidae	Very common; resident
12	Brown fish owl, <i>Ketupa zeylonensis</i> (Gmelin 1788)	Strigidae	Common; resident
13	Barn owl, <i>Tyto alba</i> (Scopoli 1769)	Tytonidae	Common; resident
<b>Bucerotiformes (1 species) (1 Family)</b>			
14	Eurasian hoopoe, <i>Upupa epops</i> , Linnaeus 1758	Upupidae	Uncommon; winter visitor
<b>Coraciiformes (5 species) (3 Family)</b>			
15	Common kingfisher, <i>Alcedo atthis</i> (Linnaeus 1758)	Alcedinidae	Very common; resident
16	White-breasted kingfisher, <i>Halcyon smyrnensis</i> (Linnaeus 1758)	Alcedinidae	Very common; resident
17	Pied kingfisher, <i>Ceryle rudis</i> (Linnaeus 1758)	Alcedinidae	Rare; resident
18	*Asian green bee-eater, <i>Merops orientalis</i> , Latham 1801	Meropidae	Common; resident
19	Indian roller, <i>Coracias benghalensis</i> (Linnaeus 1758)	Coraciidae	Common; resident
<b>Cuculiformes (3 species) (2 Family)</b>			
20	Asian koel, <i>Eudynamys scolopaceus</i> (Linnaeus 1758)	Cuculidae	Common; summer visitor
21	Common hawk-cuckoo, <i>Hierococcyx varius</i> (Vahl 1797)	Cuculidae	Common; resident
22	Greater coucal, <i>Centropus sinensis</i> (Stephens 1815)	Centropodidae	Common; resident
<b>Caprimulgiformes (2 species) (2 Family)</b>			
23	*House swift, <i>Apus nipalensis</i> (Hodgson 1837)	Apodidae	Very common; resident
24	Long-tailed nightjar, <i>Caprimulgus macrurus</i> (Horsfield 1821)	Caprimulgidae	Common; resident
<b>Gruiformes (1 species) (1 Family)</b>			
25	*White-breasted waterhen, <i>Amaurornis phoenicurus</i> (Pennant 1769)	Rallidae	Very common; resident
<b>Suliformes (1 species) (1 Family)</b>			
26	Little cormorant, <i>Microcarbo niger</i> (Vieillot 1817)	Phalacrocoracidae	Very common; resident
<b>Pelecaniformes (4 species) (1 Family)</b>			

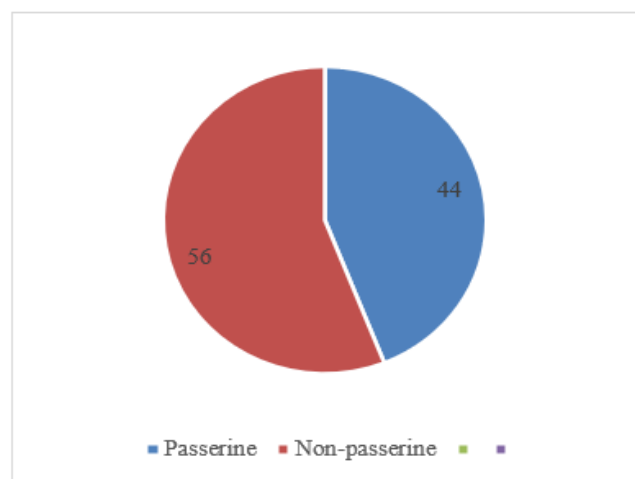
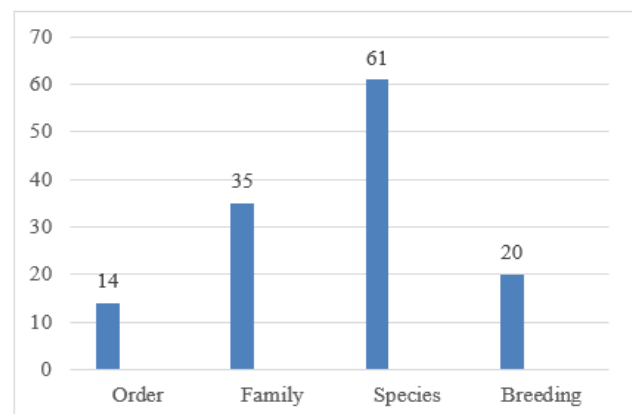


27	*Indian pond-heron, <i>Ardeola grayii</i> (Sykes 1832)	Ardeidae	Very common; resident
28	Little egret, <i>Egretta garzetta</i> (Linnaeus 1766)	Ardeidae	Very common; resident
29	Black-crowned night heron, <i>Nycticorax nycticorax</i> (Linnaeus 1758)	Ardeidae	Common; resident
30	Eastern cattle-egret, <i>Bubulcus coromandus</i> (Boddaert 1783)	Ardeidae	Very common; resident
<b>Piciformes (4 species) (2 Family)</b>			
31	Coppersmith barbet, <i>Psilopogon haemacephalus</i> (Muller 1776)	Megalaimidae	Very common; resident
32	*Blue-throated barbet, <i>Psilopogon asiaticus</i> (Latham 1790)	Megalaimidae	Very common; resident
33	Fulvous-breasted woodpecker, <i>Dendrocopos macei</i> (Vieillot 1818)	Picidae	Common; resident
34	Black-rumped flameback woodpecker, <i>Dinopium benghalense</i> (Linnaeus 1758)	Picidae	Very common; resident
<b>Passeriformes (27 species) (16 Family)</b>			
35	*Common myna, <i>Acridotheres tristis</i> (Linnaeus 1766)	Sturnidae	Very common; resident
36	Jungle myna, <i>Acridotheres fuscus</i> (Wagler 1827)	Sturnidae	Few; resident
37	Grey-headed myna, <i>Sturnia malabarica</i> (Gmelin 1789)	Sturnidae	Common; resident
38	*Indian pied myna, <i>Gracupica contra</i> (Linnaeus 1758)	Sturnidae	Very common; resident
39	Black-headed oriole, <i>Oriolus xanthornus</i> (Linnaeus 1758)	Oriolidae	Common; resident
40	*Black drongo, <i>Dicrurus macrocercus</i> , Vieillot 1817	Dicruridae	Very common; resident
41	Brown shrike, <i>Lanius cristatus</i> , Linnaeus 1758	Laniidae	Very common; winter visitor
42	Long-tailed shrike, <i>Lanius schach</i> , Linnaeus 1758	Laniidae	Common; resident
43	Rufous treepie, <i>Dendrocitta vagabunda</i> (Latham 1790)	Corvidae	Very common; resident
44	*House crow, <i>Corvus splendens</i> , Vieillot 1817	Corvidae	Very common; resident
45	Large-billed crow, <i>Corvus macrorhynchos</i> , Wagler 1827	Corvidae	Few; resident
46	*Common tailorbird, <i>Orthotomus sutorius</i> (Pennant 1769)	Cisticolidae	Very common; resident
47	Red-whiskered bulbul, <i>Pycnonotus jacusus</i> (Linnaeus 1758)	Pycnonotidae	Few; resident
48	*Red-vented bulbul, <i>Pycnonotus cafer</i> (Linnaeus 1766)	Pycnonotidae	Very common; resident
49	*Jungle babbler, <i>Argya striata</i> (Dumont 1823)	Leiothrichidae	Very common; resident
50	Orange-headed thrush, <i>Geokichla citrina</i> (Latham 1790)	Turdidae	Few; resident
51	*Oriental magpie-robin, <i>Copsychus saularis</i> (Linnaeus 1758)	Muscicapidae	Common; resident
52	Taiga flycatcher, <i>Ficedula albicilla</i> (Pallas 1811)	Muscicapidae	Few; resident
53	Black-naped blue flycatcher, <i>Hypothymis azurea</i> (Boddaert, 1783)	Monarchidae	Few; resident
54	Asian paradise-flycatcher, <i>Terpsiphone paradisi</i> (Linnaeus, 1758)	Monarchidae	Few; resident
55	White-throated fantail flycatcher, <i>Rhipidura albicollis</i> (Vieillot 1818)	Rhipiduridae	Few; resident
56	Pale-billed flowerpecker, <i>Dicaeum erythrorhynchos</i> (Latham 1790)	Dicaeidae	Common; resident
57	*Purple sunbird, <i>Cinnyris asiaticus</i> (Latham 1790)	Nectariniidae	Common; resident
58	Purple-rumped sunbird, <i>Leptocoma zeylonica</i> (Linnaeus 1766)	Nectariniidae	Few; resident
59	*Indian silverbill, <i>Lonchura malabarica</i> (Linnaeus 1758)	Estrildidae	Common; resident
60	*Scaly-breasted munia, <i>Lonchura punctulata</i> (Linnaeus 1758)	Estrildidae	Very common; resident
61	*House sparrow, <i>Passer domesticus</i> (Linnaeus 1758)	Passeridae	Very common; resident

\*=Breeding birds

**Table 2.** Present status of birds at Nakol Union

Order (14)	Family (35)	Species (61)	Breeding species (20)
Columbiformes	1	4	2
Psittaciformes	1	1	1
Anseriformes	1	1	0
Accipitriformes	1	4	0
Strigiformes	2	3	0
Bucerotiformes	1	1	0
Coraciiformes	3	5	1
Cuculiformes	2	3	0
Caprimulgiformes	2	2	1
Gruiformes	1	1	1
Suliformes	1	1	0
Pelecaniformes	1	4	1
Piciformes	2	4	1
Passeriformes	16	27	12

**Fig. 2.** Group of birds**Fig. 3.** Local status of birds

Nakol Union is renowned by its 'Gorai River', so many fish species are available here and some migratory birds visit every year. A report submitted on avian diversity with 140 species of birds in Magura District of Bangladesh (Shome et al., 2020). As a small

union of Nakol with 61 species of birds is of course a smart finding. An old banyan tree inside the Nakol Primary School plays a significant role for many birds. Banyan trees were always good for sheltering and nesting herons and egrets (Kabir et al. 2019). Parks and botanical gardens are always significant for gathering birds (Golley, 2004). Due to planting ornamental and flowering plants in Nakol, many pollen sucking small birds come accordingly. Kabir (2016) counted 150 rock-pigeons on the N. S. Road of Kushtia. This Nakol Union has moderate number of rock-pigeons with their successful breeding. Young generations are growing with the value of nature, so they are trying to protect wildlife. Protected areas are always remarkable for the availability as well as breeding of wild birds (Kabir, 2012). Medium and bush type of trees is available in in Nakol Village. Spotted-dove was everywhere either on busy roads or road-side jungles. This dove is found throughout Bangladesh with their successful breeding status (Kabir, 2024). Once a time, there were sufficient number of paradise-flycatchers in this area but now this is rare at all. Asian paradise-flycatcher is an uncommon and summer visitor of Bangladesh and males of this species exhibit two color morphs—white and rufous (Kabir, 2024a). This is a common scenario in Bangladesh that to catch rose-ringed parakeet from the tree hole (Kabir et al., 2020). White-breasted waterhen is caught by some bird catcher especially in villages of Bangladesh (Kabir, 2024b). Kabir (2024) described 106 species of wild birds in Kushtia Sadar Upazila. Due to some urbanization, this area is facing problems to maintain biodiversity. Urbanization has a negative impact on wildlife population (Gregory et al. 2004).

## Conclusions

Nakol Union is famous in many aspects, especially its 'Gorai River', trees, and some parks. As a small village, mentionable 61 common and resident birds are of course a remarkable finding to keep forward this type of research in the future.

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## Appendix 1.

### Descriptive Statistics

Variable	N	Mean	Std. Deviation	Range
Species	14	4.36	6.67	1–27
Breeding Species	14	1.43	3.11	0–12
Breeding Ratio (%)	14	29.60	35.47	0–100

## Appendix 2.

### Correlation Matrix (Pearson, two-tailed)

Variables	Families	Species	Breeding Species
Families	1.000	0.982	0.969
Species	0.982	1.000	0.972
Breeding Species	0.969	0.972	1.000