



## A checklist and relative diversity of avifauna of Atrai, Raninagar and Naogan Sadar Upazillas of Naogaon district of Bangladesh

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### Abstract

An investigation was carried out to make a checklist and enlist the avian diversity of Atrai, Raninagar, and Naogan Sadar Upazila of Naogaon District of Bangladesh. Data were collected from April 2011 to October 2018. During the study period, 105 avian species were recorded that belong to 33 families under 11 orders. Among the found total 32 (30.48%) migratory birds 17 (16.19%) species were common winter visitors, 3 (2.86%) species were common summer visitors, 12 (11.43) species were resident migratory birds and 72 (68.57%) were residents among which 1 (0.95%) was rare species. The feeding guild and diversity index of birds were also noticed.

**Keywords:** relative diversity, species diversity, feeding guild, migration status

### 1. Introduction

The most beautiful creation of nature, birds, evolving from the reptiles, becoming the owner of sky are the symbol of beauty, speed and strength as well. When the flock of birds fly in the sky, it increases the beauty of the sky in thousand folds. Birds are common dwellers of any ecosystem and very important ecological indicator as well. Diversity of avifauna is one of the most important ecological indicators to evaluate the quality of habitats [1]. In any type of ecosystem, avian fauna constitutes one of the major biotic components [2].

A recent census of birds, informed that being a biodiversity hotspot Bangladesh harbors 690 species of birds [3], which is 7% of the world total species of 9,600 (MFA compiled, unpublished report). Published regional avifauna of Bangladesh are found in literature viz., Islam [4] from Rangpur District; Husain [5, 6] from Chittagong Hill Tracts and Pablakhali Wildlife Sanctuary; Banerjee [7] and Das [8] from Curzan Hall area of the University of Dhaka and the Ramna Park of Dhaka respectively; Das [8] from Sylhet District; Sarker & Sarker [9] from the Sundarbans, Haque & Rahman [10] from the Ramna Park and Suhrawardy Uddyan, Dhaka; Akhter [11] from the Boldha Garden, Dhaka; Sarker *et al.*, [12] from the Moheshkhali Island; Reza *et al.*, [13] from Rajshahi University Campus; and Reza *et al.*, [14] from the Padma Charlands near Rajshahi City, etc. Sarkar [15] published seabirds of the Bay of Bengal of Bangladesh Coast and their conservation; Jaman *et al.*, [16, 17] studied ecology, conservation problems and status of avifauna of Noakhali Charbata Coastal area. Sarker *et al.*, [18, 19] reported diversity of avifauna of Bagkhali Range and Cox's Bazar; Sarker *et al.*, [20] reported the avifauna from two urban sites of the Uttara Model Town, Dhaka. Literature on the avian diversity are very scanty from the Rajshahi region. Haque [21] published a list of birds from the Rajshahi University campus, which was later updated by Reza *et al.* [13]. Karmakar *et al.*, [22] published an article on birds of Joypurhat District. Reza *et al.*, [14] and Reza & Parween [23]

reported on the waterbirds of the Padma River and the migratory birds of the Padma River Charlands respectively.

### 2. Materials and methods

#### 2.1 Study area

##### 2.1.1 Atria

Geographically Atrai is located in between 24°32' and 24°42' North latitudes and in between 88°49' and 89°06' East longitudes. Total area of this upazilla is 284.81 km<sup>2</sup>. Atrai is bounded by Raninagar and Manda upazillas on the North, Natore Sadar upazilla is on the South, Singra upazilla is on the East and the Bagmara upazilla is on the west. The main water bodies are Atrai River, Nagor River, Pakar beel, Chander beel and Kaklaban beel and Paspakia village were selected from this upazilla to study [31].

##### 2.1.2 Raninagar

Raninagar is situated in between 24°38' and 24°47' North latitudes and in between 88°51' and 89°10' East longitudes. The total area is 258.33 km<sup>2</sup>. This area is bounded by Naogaon sadar and Adamdighi upazillas on the North, by Atrai upazilla in the South, by the Nandigram and Singra upazillas in the East and by Manda upazilla on the West. Raninagar, Roktodoho Beel and Trimohoni of Raninagar upazilla was also observed [32].

##### 2.1.3 Naogaon sadar

Naogaon Sadar is located at 24.8042°N 88.9500°E. Total area of about 275.73 km<sup>2</sup>. It is bounded by Badalgachhi and Mahadevpur upazillas on the North, Raninagar and Manda upazillas are on the South, Adamdighi and Akkelpur upazillas on the East and Mahadebpur and Manda upazillas are on the west. Beel Vobanipur, Shimulia and Baludanga of Naogaon Sadar were also observed [33].

### 2.2 Study period

The study was carried out from April, 2011 to October 2018.

### 2.3 Study design

The study was carried out whole the year round. Specially, during three seasons i.e. Rainy (July to October), winter (November to February) and summer (March to June) seasons, birds were observed by regular visits (At least 10 days in a month). Look and see method was opted for bird's survey.

### 2.4 Data Collection Techniques

Field data of birds were observed during winter season at morning hours between 6.30 to 9.00 a.m. and in the evening from 4.00 to 6.00 p.m., during summer season at morning hours between 5.00 to 8.00 a.m. and evening from 5.00 to 7.00 p.m. while, during the rainy season at morning hours between 6.00 to 8.30 a.m. and evening from 4.30 to 6.30 p.m. All types' of habitats were surveyed carefully for birds. The area was visited by walking; sometimes small boat was used to cover the wetland areas. The birds were observed with binoculars (Bushnell 20 × 200 mm with multicoated lens) and photographed using digital cameras (Nikon P 530).

### 2.5 Identification of Birds

The birds were identified from their photographs in the Central library and; Seminar library of the Department of Zoology, University of Rajshahi. The consulted literatures for bird identification were Ali and Ripley [24], Ali [25], Khan [3, 26], Halder [27], Grewal [28].

### 2.6 Species Diversity

Systematic lists was constructed following Ali and Ripley (1996) to yield Relative Diversity (RD):

$$\text{Relative diversity} = \frac{\text{Number of species in a family}}{\text{Total number of species}} \times 100$$

### 2.7 Migration status

The birds were categorized according to their status at the study area, which are Common Resident (R), Rare Resident (RR), Resident Migratory (RM), Migratory, summer visitors (MSV) and Migratory, Winter Visitors (MWV).

### 2.8 Social Status

The status of the resting or foraging types were studied. Some birds were found to rest or forage either solitary or in pair or in small parties. The water birds were found to forage mostly in different sized family flocks or in mixed species flocks. The symbols for the social status of the birds are used as S (solitary/single), P (pair), F (flock), LF (large flock), and SF (small flock),

### 2.9 Feeding guild

Feeding habits of the observed birds were studied. The bird species were identified accordingly their feeding guild. The feeding guilds were categorized as frugivorous (FV), carnivorous (CV), nectivorous (NV), molluscivorous (MV), piscivorous (PV), granivorous (GV), insectivorous (IV) and Omnivorous (OM).

## 3. Result and Discussion

### 3.1 Species diversity

A total of 105 species of birds were recorded from study area. A check list of birds found in the Naogaon District is

given in Table 1. Distribution and abundance of birds in different blocks is given in Table 2. Local status, social status and feeding guild and IUCN status of birds are represented in Table 3. Number and percentages of families and species under each order and Relative abundance of bird species under each family is given in Table 4. Among the total species only one (*Ichthyophaga ichthyaetus*) is globally threatened [29]. The observed species are representatives of 11 orders, 33 families and 81 genera.

Siddiqui *et al.*, 2008 reported that 477 are regular species, among them, 301 are residents and 176 are seasonal visitors to Bangladesh. Out of 176 regularly occurring migratory species, 160 are winter visitors, 6 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 [34].

**3.2 Migration Status:** Among the 105 species of birds 32 (30.48%) were migratory; of which 17 (16.19%) were common winter migrants, 3 (2.86%) were common summer visitors and 12 (11.43) were resident migratory birds. A total of 72 (68.57%) were common residents of the study area and 1 (0.95%) was rare resident (Table 3, Figure 1).

**3.3 Social Status:** Birds are different in social status as well as their feeding status. Sometime they are found in solitary or in pairs. Some birds are formed small to large groups. Some birds are visited in a small to large or loose flocks. The number of species found as single (solitary) was 15 (14.29%), paired 2 (1.90%) and may single or in pairs was 37(35.24%). However, 5 (4.76%) species were found in small flock, 2 (1.90%) were found in large flock and 4 (3.81%) were seen forming small and large flocks. Some birds were found in single or small flocks, some were found in paired or small flock while some were seen in paired and large flocks and the numbers of these groups of birds are 10 (9.52%), 7 (6.67%) and 1(0.95%) respectively. About 15 (14.29%) birds were seen in single, paired or forming small flocks; 5 (4.76%) were single, paired or in large flocks, and 2 (1.91%) bird species were seen single or formed both small and large flocks. All these status are shown in Figure 2.

**3.4 Feeding Guild:** The guild-wise percentages of the 105 species are shown in figure 3. Among the species 40.95% were insectivorous, followed by omnivorous 10.48%, carnivorous 9.52%, frugivorous 4.76%, piscivorous 6.67%, nectarivorous 2.68% and graminivorous 1.90%. Some species has also intermediate feeding guild such as picivorous-carnivorous (8.75%) and insectivorous-frugivorous (5.71%), frugivorous-graminivorous (4.76%), insectivorous-carnivorous (0.95%), insectivorous and piscivorous 1.90% and molluscivorous-carnivorous (0.95%).

According to Siddiqui *et al.*, [30] there are a total 650 species of birds found in the Bangladesh territory, among which 477 are regular species. Out of these regular species 301 are residents of the country and 176 are seasonal migrants. The number of winter migrants is 160, summer migrants are 6

and spacing or passage migrants are 10. Based on relative abundance of birds 143 are vagrants, 176 are rare, 103 are uncommon and 198 are common species of Bangladesh<sup>[3, 26, 30]</sup>. Among the birds of Bangladesh IUCN declared 40 species as globally threatened. The avifauna of Atrai,

Raninagar and Sadar Upazillas of Naogaon District enlists total 105 species which is 16.15% of the Bangladeshi species. The study area includes river, marsh land, wetland, cropland, village groves and orchards along with some fallow lands.

**Table 1:** Checklist of the birds found in Atrai, Raninagar and in Sadar upazillas of Naogaon District

| Order (Family)                      | Sl. No | Scientific Name                                   | Bangle Name            | English Name               |
|-------------------------------------|--------|---|------------------------|----------------------------|
| Anseriformes<br>1. (Dendrocygnidae) | 1      | <i>Dendrocygna bicolor</i> (Vieillot, 1837)       | Boro sorali            | Fulvous Whistling Duck     |
|                                     | 2      | <i>Dendrocygna javanica</i> (Horsfield, 1821)     | Choto Sorali           | Lesser whistling-duck      |
| 2. (Anatidae)                       | 3      | <i>Tadorna ferruginea</i> (Pallas, 1764)          | Lal Chokha             | Ruddy Shelduck             |
|                                     | 4      | <i>Tadorna tadorna</i> (Linnaeus, 1758)           | Shah Chokha            | Common Shelduck            |
|                                     | 5      | <i>Anas poecilorhynchus</i> (Forster, 1718)       | Metey Hans             | Spot-Billed Duck           |
|                                     | 6      | <i>Aythya fuligula</i> (Linnaeus, 1758)           | Tiki Hans              | Tufted Duck                |
| Apodiformes<br>(Apodidae)           | 7      | <i>Apus affinis</i> (Gray, 1830)                  | Ghore, Batasi          | House Swift                |
|                                     | 8      | <i>Cypsiurus balasiensis</i> (Selater, 1866)      | Chata, Tal Batasi      | Palm Swift                 |
| Ciconiiformes<br>1. (Accipitridae)  | 9      | <i>Milvus migrans</i> (Sykes, 1832)               | Bhuban Chil            | Black Kite                 |
|                                     | 10     | <i>Haliastur indicus</i> (Boddaert, 1783)         | Sankha / Lal Chil      | Brahminy Kite              |
|                                     | 11     | <i>Spilornis cheela</i> (Latham, 1790)            | Tila Baj               | Crested Serpent Eagle      |
|                                     | 12     | <i>Ichthyophaga ichthyaetus</i> (Horsfield, 1821) | Boro Machmural         | Grey-Headed fish Eagle     |
|                                     | 13     | <i>Elanus caeruleus</i>                           | Dhola Chil             | Black-Shouldered Kite      |
| 2. (Ardeidae)                       | 14     | <i>Pernis ptilorhynchus</i> (Temminck, 1821)      | Modhu Baj              | Oriental Honey Buzzard     |
|                                     | 15     | <i>Bubulcus ibis</i> (Boddaert, 1783)             | Go Bok                 | Cattle Egret               |
|                                     | 16     | <i>Nycticorax nycticorax</i> (Linnaeus, 1758)     | Nishi Bok              | Night Heron                |
|                                     | 17     | <i>Ardeola grayii</i> (Sykes, 1832)               | Kani Bok               | Indian Pond Heron          |
|                                     | 18     | <i>Ixobrychus cinnamomeus</i> (Gmelin, 1789)      | Lal Bok                | Cinnamon Bittern           |
|                                     | 19     | <i>Casmerodius albus</i> (Gray, 1831)             | Boro Sada Bok          | Great Egret                |
|                                     | 20     | <i>Ardea cinerea</i> (Linnaeus, 1758)             | Dhusor Bok             | Gray Heron                 |
|                                     | 21     | <i>Ardea purpurea</i> (Linnaeus, 1766)            | Beguni Bok             | Purple Heron               |
|                                     | 22     | <i>Egretta garzetta</i> (Linnaeus, 1766)          | Choto Sada Bok         | Little Egret               |
|                                     | 23     | <i>Butorides striatus</i> (Horsfield, 1857)       | Choto / Shabuj Bok     | Little (Green) Heron       |
| 3. (Ciconiidae)                     | 24     | <i>Anastomus oscitans</i> (Boddaert, 1873)        | Shamuk khol            | Asian Openbill             |
| 4. (Charadriidae)                   | 25     | <i>Pluvialis squatarola</i> (Linnaeus, 1758)      | Boro Batan             | Grey Plover                |
|                                     | 26     | <i>Charadrius hiaticula</i> (Linnaeus, 1758)      | Pati Noth Jiria        | Common Ringed Plover       |
|                                     | 27     | <i>Vanellus duvaucellii</i> (Lesson, 1826)        | Hottiti                | River Lapwing              |
|                                     | 28     | <i>Vanellus indicus</i> (Boddaert, 1783)          | Hottiti                | Red-Wattled Lapwing        |
| 5. (Scolopacidae)                   | 29     | <i>Gallinago gallinago</i> (Linnaeus, 1758)       | Metey Chega            | Common Snipe               |
|                                     | 30     | <i>Tringa ochropus</i> (Linnaeus, 1758)           | Sobuj Cha Pakhi        | Green Sandpiper            |
|                                     | 31     | <i>Tringa glareola</i> (Linnaeus, 1758)           | Balu Batan             | Wood Sandpiper             |
|                                     | 32     | <i>Actitis hypoleucos</i> (Linnaeus, 1758)        | Cha Pakhi              | Common Sandpiper           |
|                                     | 33     | <i>Calidris minuta</i> (Leisler, 1812)            | Choto Chaha            | Little Stint               |
|                                     | 34     | <i>Tringa nebularia</i> (Gunnerus, 1767)          | Gotra                  | Common Greenshank          |
| 6. (Phalacrocoracidae)              | 35     | <i>Phalacrocorax carbo</i> (Linnaeus, 1758)       | Boro Pankouri          | Great Cormorant            |
|                                     | 36     | <i>Phalacrocorax niger</i> (Vieillot, 1817)       | Choto Pankouri         | Little Cormorant           |
| Columbiformes<br>(Columbidae)       | 37     | <i>Columba livia</i> (Gmelin, 1789)               | Jalali Kobutor         | Rock Pigeon                |
|                                     | 38     | <i>Streptopelia chinensis</i> (Gmelin, 1789)      | Tila Ghughu            | Spotted Dove               |
|                                     | 39     | <i>Streptopelia decaocto</i> (Frisvaldszky, 1838) | Konhi Ghughu           | Eurasian Collared Dove     |
|                                     | 40     | <i>Streptopelia orientalis</i> (Latham, 1790)     | Ram Ghughu             | Oriental Turtle Dove       |
| Coraciiformes 1. (Alcedinidae)      | 41     | <i>Alcedo atthis</i> (Gmelin, 1788)               | Pati Machranga         | Common Kingfisher          |
| 2. (Coraciidae)                     | 42     | <i>Coracias bengalensis</i> (Linnaeus, 1758)      | Nilkontho              | Indian Roller              |
| 3. (Cerylidae)                      | 43     | <i>Ceryle rudis</i> (Linnaeus, 1758)              | Pakra Machranga        | Pied Kingfisher            |
| 4. (Dalcelonidae)                   | 44     | <i>Pelargopsis capensis</i> (Linnaeus, 1766)      | Megh-Hou               | Stork-Billed Kingfisher    |
|                                     | 45     | <i>Halcyon smyrnensis</i> (Linnaeus, 1758)        | Sada-Buk Machranga     | White-Throated Kingfisher  |
| 5. (Meropidae)                      | 46     | <i>Merops orientalis</i> (Latham, 1801)           | Shobuj Shuichora       | Green Bee-Eater            |
|                                     | 47     | <i>Merops philippinus</i> (Linnaeus, 1758)        | Nil -Lej Shuichora     | Blue-tailed Bee-Eater      |
| Cuculiformes<br>1. (Centropodidae)  | 48     | <i>Centropus krameri</i> (Scopoli, 1769)          | Choto Kanakukka        | Lesser Coucal              |
|                                     | 49     | <i>Centropus sinensis</i> (Hume, 1873)            | Boro Kanakukka         | Greater Coucal             |
| 2. (Cuculidae)                      | 50     | <i>Clamator jacobinus</i> (Boddaert, 1783)        | Pakra papaya           | Pied Cuckoo                |
|                                     | 51     | <i>Hierococcyx varius</i> (Vahl, 1797)            | Pati Chokh Gelo        | Common Hawk-Cuckoo         |
|                                     | 52     | <i>Cuculus micropterus</i> (Gould, 1838)          | Bou- Kotha -Kou        | Indian Cuckoo              |
|                                     | 53     | <i>Eudynamis scolopacea</i> (Linnaeus, 1758)      | Kokil                  | Asian Koel                 |
| Gruiformes (Rallidae)               | 54     | <i>Amaurornis phoenicurus</i> (Pennant, 1769)     | Dahuk                  | White-Breasted Waterhen    |
| Passeriformes<br>1. (Corvidae)      | 55     | <i>Dendrocitta vagabunda</i> (Latham, 1790)       | Harichacha             | Rufous Treepie             |
|                                     | 56     | <i>Oriolus xanthornus</i> (Linnaeus, 1758)        | Haldey Pakhi / ktiturn | Black-Hooded Oriole        |
|                                     | 57     | <i>Corvus splendens</i> (Vieillot, 1817)          | Pati Kak               | House Crow                 |
|                                     | 58     | <i>Corvus macrorhynchos</i> (Lesson, 1831)        | Dar Kak                | Large-Billed / Jungle Crow |
|                                     | 59     | <i>Rhipidura albicollis</i> (Vieillot, 1818)      | Lej Nachune            | Fantail Flycatcher         |

|                               |     |  |                          |                               |
|-------------------------------|-----|--|--------------------------|-------------------------------|
|                               | 60  | <i>Terpsiphone paradise</i> (Linnaeus,1758)        | Dudhraj / Sah Bulbul     | Asian Paradise Flycatcher     |
|                               | 61  | <i>Aegithina tiphia</i> (Linnaeus,1758)            | Fotikijal / Taufiq       | Common Iora                   |
|                               | 62  | <i>Dicrurus macrocercus</i> (Vieillot,1817)        | Fingey / Kalo Fingey     | Black Drongo                  |
|                               | 63  | <i>Dicrurus leucophaeus</i> (Vieillot,1817)        | Dhushorav Fingy          | Ashy Drongo                   |
|                               | 64  | <i>Dicrurus aeneus</i> (Vieillot,1817)             | Bronze Fingey            | Bronzed Drongo                |
|                               | 65  | <i>Dicrurus paradiseus</i> (Linnaeus, 1766)        | Keshraj                  | Spangled Drongo               |
|                               | 66  | <i>Tephrodornis pondicerianus</i> (Gmelin 1789)    | Kath Kosai               | Common Wood Shrike            |
|                               | 67  | <i>Pericrocotus cinnamomeus</i> (Linnaeus,1766)    | Satsaheli                | Small Minivet                 |
|                               | 68  | <i>Pericrocotus flammeus</i> (froster, 1781)       | Altapori                 | Scarlet Minivet               |
| 2.(Hirundinidae)              | 69  | <i>Hirundo rustica</i> (Linnaeus, 1758)            | Ababil                   | Barn / Common Swallow         |
| 3.(Irenidae)                  | 70  | <i>Chloropsis cochinchinensis</i> (Gameline, 1789) | Choto horeal             | Golden fronted Leaf Bird      |
| 4.(Laniidae)                  | 71  | <i>Lanius schach</i> (Hodgson,1837)                | Kalomatha Kosai          | Long-Tailed Shrike            |
| 5.(Muscicapidae)              | 72  | <i>Zoothera citrina</i> (Latham,1790)              | Dama / Komla Bou         | Orange-Headed Thrush          |
|                               | 73  | <i>Copsychus saularis</i> (Linnaeus,1758)          | Doel                     | Oriental Magpie Robin         |
| 6.(Pycnonotidae)              | 74  | <i>Pycnonotus cafer</i> (Linnaeus,1766)            | Bulbuli                  | Red-Vented Bulbul             |
|                               | 75  | <i>Pycnonotuscafer</i> (Linnaeus,1758)             | Shipahi Bulbuli          | Red-whiskered Bulbul          |
| 7.(Passeridae)                | 76  | <i>Passer domestica</i> (Linnaeus,1758)            | Chorui                   | House Sparrow                 |
|                               | 77  | <i>Ploceus philippinus</i> (Linnaeus,1766)         | Babui                    | Baya weaver                   |
|                               | 78  | <i>Lonchura punctulata</i> (Linnaeus,1758)         | Tila munia               | Scaly breasted munia          |
|                               | 79  | <i>Anthus rufulus</i> (Vieillot, 1818)             | Dhani tulika             | Paddyfield pipit              |
|                               | 80  | <i>Motacilla maderaspatensis</i> (Gmelin,1789)     | Pakra Khonjon            | White-Browed Wagtail          |
|                               | 81  | <i>Motacilla alba</i> (Linnaeus,1758)              | Sada Khonjon             | White Wagtail                 |
| 8.(Sylviidae)                 | 82  | <i>Motacilla flava</i> (Linnaeus,1758)             | Halud Khonjon            | Yellow Wagtail                |
|                               | 83  | <i>Locustella naevia</i> (Boddaent, 1783)          | Foring Warbler           | Grasshopper Warbler           |
|                               | 84  | <i>Megalurus palustris</i> ,(Horsefield, 1821)     | Jolar chatare            | Striated Warbler              |
|                               | 85  | <i>Phylloscopus affinis</i> (Tickell, 1833)        | Tickeller pata futki     | Tickell’s Leaf Warbler        |
|                               | 86  | <i>Turdoides striatus</i> (Dumont,1823)            | Bon Chhatare             | Jungle Babbler                |
|                               | 87  | <i>Orthotomus sutorius</i> (Pennaut,1769)          | Tuntuni                  | Common Tailorbird             |
| 9.(Sturnidae)                 | 88  | <i>Acridotheres tristis</i> (Linnaeus,1766)        | Bhat Shalik              | Common Myna                   |
|                               | 89  | <i>Acridotheres fuscus</i> (Vagler,1827)           | Jhuti Shalik             | Jungle Myna                   |
|                               | 90  | <i>Sturnus malabaricus</i> (Gmelin,1789)           | Kath Shalik              | Chestnut-Tailed Starling      |
|                               | 91  | <i>Sturnus contra</i> (Linnaeus, 1758)             | Gobrey / Go Shalik       | Asian Pied Starling           |
| 10.(Nectariniidae)            | 92  | <i>Cinnyris asiaticus</i> (Latham,1790)            | Niltuni                  | Purple Sunbird                |
|                               | 93  | <i>Nectarinia zeylonica</i> (Linnaeus, 1766)       | Moutushi                 | Purple-rumped Sunbird         |
|                               | 94  | <i>Dicaeum cruenatum</i> (Linnaeus, 1758)          | Lal pati Fuljhuri        | Scarlet-backed Flowerpecker   |
| 11.(Paridae)                  | 95  | <i>Parus major</i> (Linnaeus, 1758)                | Ramgangra                | Great Tit                     |
| Piciformes (Picidae)          | 96  | <i>Dendrocopos macei</i> (Vicillot,1818)           | Pakra Kaththokra         | Fulvous-Breasted Woodpecker   |
|                               | 97  | <i>Dinopium benghalense</i> (Linnaeus,1758)        | Choto Lalpith Kaththokra | Black-rumped Flameback        |
|                               | 98  | <i>Dinopium javanicus</i> (Liungh, 1797)           | Pati kaththokra          | Indian Golden-back Woodpecker |
|                               | 99  | <i>Picus xanthopygaeus</i> (Gray And Gray,1874)    | Shobuj Kath Thokra       | Streak-Throated Woodpecker    |
|                               | 100 | <i>Megalaima asiatica</i> (Latham,1790)            | Boro Basantabauri        | Blue-throated Barbet          |
|                               | 101 | <i>Megalaima haemacephala</i> (Muller,1776)        | Choto Basantabauri       | Coppersmith Barbet            |
| Psittaciformes (Psittacidae)  | 102 | <i>Psittacula krameri</i> (Scopoli, 1769)          | Tia                      | Rose-Ringed Parakeet          |
| Strigiformes<br>1.(Strigidae) | 103 | <i>Ketupa zeylonensis</i> (Gmelin, 1788)           | Bhutub                   | Brow fish Owl                 |
|                               | 104 | <i>Athene brama</i> (Temminck, 1822)               | Khuruley pencha          | Spotted Owlet                 |
| 2.(Tytonidae)                 | 105 | <i>Tyto alba</i> (Scopoli, 1769)                   | Laxmi pencha             | Barn Owl                      |

**Table 2:** Local status, social status and feeding guild and IUCN status birds

| Sl. No | Name of birds          | Migration status | Social status | Feeding guild | IUCN status |
|--------|------------------------|------------------|---------------|---------------|-------------|
| 1      | Fulvous Whistling-duck | M (WV)           | LF/ SF        | OM            | LC          |
| 2      | Lesser Whistling-duck  | M (WV)           | LF/ SF        | OM            | LC          |
| 3      | Ruddy Shelduck         | M (WV)           | P/ LF         | OM            | LC          |
| 4      | Common Shelduck        | M (WV)           | SF            | OM            | LC          |
| 5      | Spot-Billed Duck       | R                | P             | OM            | LC          |
| 6      | Tufted Duck            | M (WV)           | P/ SF         | OM            | LC          |
| 7      | House Swift            | R (M)            | LF            | IV            | LC          |
| 8      | Palm Swift             | R                | LF            | IV            | LC          |
| 9      | Black Kite             | R                | S             | CV            | LC          |
| 10     | Brahminy Kite          | R                | S             | CV            | LC          |
| 11     | Crested Serpent Eagle  | R                | S             | CV            | LC          |
| 12     | Grey-Headed Fish Eagle | R (RR)           | S / P         | PV /CV        | NT          |
| 13     | Black-Shouldered Kite  | R                | S             | CV            | LC          |
| 14     | Oriental Honey Buzzard | R (M)            | S/ P          | CV            | LC          |
| 15     | Cattle Egret           | R                | S / LF        | IV + CV       | LC          |
| 16     | Night Heron            | R (M)            | SF / LF       | PV + CV       | LC          |
| 17     | Indian Pond Heron      | R                | S / SF /LF    | PV + CV       | LC          |
| 18     | Cinnamon Bittern       | R                | S / P         | PV + CV       | LC          |

|    |                            |        |             |         |    |
|----|----------------------------|--------|-------------|---------|----|
| 19 | Great Egret                | R (M)  | S / SF / LF | PV + CV | LC |
| 20 | Gray Heron                 | R      | S / P       | PV + CV | LC |
| 21 | Purple Heron               | R (M)  | S           | PV + CV | LC |
| 22 | Little Egret               | R      | SF          | PV + CV | LC |
| 23 | Little (Green) Heron       | R      | S           | PV + CV | LC |
| 24 | Asian Openbill             | R (M)  | SF / LF     | MV + CV | LC |
| 25 | Grey Plover                | M (WV) | S / P / SF  | IV      | LC |
| 26 | Common-ringed Plover       | R      | S / P / SF  | IV      | LC |
| 27 | River Lapwing              | R      | S / P / SF  | IV      | LC |
| 28 | Red-Wattled Lapwing        | R      | S / P / SF  | IV      | LC |
| 29 | Common Snipe               | M (WV) | S / P / SF  | IV      | LC |
| 30 | Green Sandpiper            | M (WV) | S / P / SF  | IV      | LC |
| 31 | Wood Sandpiper             | M (WV) | S / P / SF  | IV      | LC |
| 32 | Common Sandpiper           | M (WV) | S / P / SF  | IV      | LC |
| 33 | Little Stint               | M (WV) | S / P       | IV + PV | LC |
| 34 | Common Greenshank          | M (WV) | S / P       | IV + PV | LC |
| 35 | Great Cormorant            | R      | S / P / SF  | PV      | LC |
| 36 | Little Cormorant           | R (M)  | S / P / SF  | PV      | LC |
| 37 | Rock Pigeon                | R      | S / P / LF  | FV + GV | LC |
| 38 | Spotted Dove               | R      | S / P / LF  | FV + GV | LC |
| 39 | Eurasian Collared Dove     | R      | S / P       | FV + GV | LC |
| 40 | Oriental Turtle Dove       | R (M)  | S / P       | FV + GV | LC |
| 41 | Common Kingfisher          | R      | S           | PV      | LC |
| 42 | Indian Roller              | R (M)  | S           | CV      | LC |
| 43 | Pied Kingfisher            | R      | S / P       | PV      | LC |
| 44 | Stork-Billed Kingfisher    | R      | S           | PV      | LC |
| 45 | White-Throated Kingfisher  | R      | S           | PV      | LC |
| 46 | Green Bee-Eater            | R      | S / P       | IV      | LC |
| 47 | Blue-tailed Bea-Eater      | M (SV) | S / P       | IV      | LC |
| 48 | Lesser Coucal              | R      | S / P       | CV      | LC |
| 49 | Greater Coucal             | R      | S           | CV      | LC |
| 50 | Pied Cuckoo                | M (SV) | S           | IV      | LC |
| 51 | Common Hawk-cuckoo         | M (SV) | S           | IV      | LC |
| 52 | Indian Cuckoo              | R      | S / P       | IV      | LC |
| 53 | Asian Koel                 | R      | S / P       | OM      | LC |
| 54 | White-breasted Waterhen    | R      | S / P       | OM      | LC |
| 55 | Rufous Treepie             | R      | S / P       | OM      | LC |
| 56 | Black-hooded Oriole        | R      | S / P       | IV + FV | LC |
| 57 | House Crow                 | R      | S / P / LF  | OM      | LC |
| 58 | Large-Billed / Jungle Crow | R (M)  | S / P / LF  | OM      | LC |
| 59 | Fantail Flycatcher         | R      | S / P       | IV      | LC |
| 60 | Asian Paradise Flycatcher  | R (M)  | S / P       | IV + FV | LC |
| 61 | Common Iora                | R      | S / SF      | IV      | LC |
| 62 | Black Drongo               | R      | S / SF      | IV      | LC |
| 63 | Ashy Drongo                | R (M)  | S / SF      | IV      | LC |
| 64 | Bronzed Drongo             | R      | S / SF      | IV      | LC |
| 65 | Spangled Drongo            | R      | S / SF      | IV      | LC |
| 66 | Common Wood Shrike         | R      | S           | IV      | LC |
| 67 | Small Minivet              | R      | SF          | IV      | LC |
| 68 | Scarlet Minivet            | R      | SF          | IV      | LC |
| 69 | Barn / Common Swallow      | M (WV) | SF          | IV      | LC |
| 70 | Golden fronted Leaf Bird   | R      | S / P       | IV      | LC |
| 71 | Long-Tailed Shrike         | R      | S / P       | IV      | LC |
| 72 | Orange-Headed Thrush       | R      | S / P       | IV      | LC |
| 73 | Oriental Magpie Robin      | R      | S / P       | IV      | LC |
| 74 | Red-Vented Bulbul          | R      | S / P       | FV      | LC |
| 75 | Red-whiskered Bulbul       | R      | S / P       | FV      | LC |
| 76 | House Sparrow              | R      | S / P / SF  | FV + GV | LC |
| 77 | Baya Weaver                | R      | P / SF      | GV      | LC |
| 78 | Scaly breasted Munia       | R      | P / SF      | GV      | LC |
| 79 | Paddyfield Pipit           | R      | S / P       | IV      | LC |
| 80 | White-Browed Wagtail       | M (WV) | S / P / SF  | IV      | LC |
| 81 | White Wagtail              | M (WV) | S / P / SF  | IV      | LC |
| 82 | Yellow Wagtail             | M (WV) | P / SF      | IV      | LC |
| 83 | Grasshopper Warbler        | R      | P / SF      | IV      | LC |
| 84 | Striated Warbler           | R      | P / SF      | IV      | LC |
| 85 | Tickell's Leaf Warbler     | M (WV) | P           | IV      | LC |
| 86 | Jungle Babbler             | R      | S / SF      | IV      | LC |

|     |                               |   |            |         |    |
|-----|-------------------------------|---|------------|---------|----|
| 87  | Common Tailorbird             | R | S / P      | IV      | LC |
| 88  | Common Myna                   | R | S / SF     | IV + FV | LC |
| 89  | Jungle Myna                   | R | S / SF     | IV + FV | LC |
| 90  | Chestnut-tailed Starling      | R | S / SF     | IV + FV | LC |
| 91  | Asian Pied Starling           | R | S / SF     | IV + FV | LC |
| 92  | Purple Sunbird                | R | S / P / SF | NV      | LC |
| 93  | Purple-rumped Sunbird         | R | S / P / SF | NV      | LC |
| 94  | Scarlet-backed Flowerpecker   | R | P / SF     | NV      | LC |
| 95  | Great Tit                     | R | S / P      | IV      | LC |
| 96  | Fulvous-Breasted Woodpecker   | R | S / P      | IV      | LC |
| 97  | Black-rumped Flameback        | R | S / P      | IV      | LC |
| 98  | Indian Golden-back Woodpecker | R | S / P      | IV      | LC |
| 99  | Streak-throated Woodpecker    | R | S / P      | IV      | LC |
| 100 | Blue-Throated Barbet          | R | S / P      | FV      | LC |
| 101 | Coppersmith Barbet            | R | S / P      | FV      | LC |
| 102 | Rose-ringed Parakeet          | R | S / P / LF | FV      | LC |
| 103 | Brow fish Owl                 | R | S          | PV      | LC |
| 104 | Spotted Owlet                 | R | S / P      | CV      | LC |
| 105 | Barn Owl                      | R | S / P      | CV      | LC |

**Migration status**

R = Common Resident; R (RR) = Rare Resident; R (M) =Resident Migratory;  
 M (SV) = Migratory, summer visitors; M (WV) = Migratory, Winter Visitors.

**Feeding guild**

OM = Omnivorous; CV = Carnivorous; IV = Insectivorous; FV = Frugivorous; PV = Piscivorous, GV = Graminivorous; NV = Nectarivorous; MV = Molluscivorous.

**Social status**

S = Single; P = Paired; SF = Small Flock; LF = Large Flock.

**IUCN status:** LC = Least Concern; NT= Near-threatened

**Table 3:** Number and percentages of families and species under each Order and Relative abundance of bird species under each Family.

| Order          | Family               | No of bird spp. | No (%) of families under order | No (%) of species under families | Relative Diversity |
|----------------|----------------------|-----------------|--------------------------------|----------------------------------|--------------------|
| Anseriformes   | 1. Dendrocygnidae    | 2               | 6.06                           | 5.71                             | 1.90               |
|                | 2. Anatidae          | 4               |                                |                                  | 3.81               |
| Apodiformes    | 1. Apodidae          | 2               | 3.03                           | 1.90                             | 1.90               |
| Ciconiiformes  | 1. Accipitridae      | 6               | 18.18                          | 26.67                            | 5.71               |
|                | 2. Ardeidae          | 9               |                                |                                  | 8.57               |
|                | 3. Ciconiidae        | 1               |                                |                                  | 0.95               |
|                | 4. Charadriidae      | 4               |                                |                                  | 3.81               |
|                | 5. Scolopacidae      | 6               |                                |                                  | 5.71               |
|                | 6. Phalacrocoracidae | 2               |                                |                                  | 1.90               |
| Columbiformes  | 1. Columbidae        | 4               | 3.03                           | 3.81                             | 3.81               |
| Coraciiformes  | 1. Alcedinidae       | 1               | 15.15                          | 6.67                             | 0.95               |
|                | 2. Coraciidae        | 1               |                                |                                  | 0.95               |
|                | 3. Cerylidae         | 1               |                                |                                  | 0.95               |
|                | 4. Dalcelonidae      | 2               |                                |                                  | 1.90               |
|                | 5. Meropidae         | 2               |                                |                                  | 1.90               |
| Cuculiformes   | 1. Centropodidae     | 2               | 6.06                           | 5.71                             | 1.90               |
|                | 2. Cuculidae         | 4               |                                |                                  | 3.81               |
| Gruiformes     | 1. Rallidae          | 1               | 3.03                           | 0.95                             | 0.95               |
| Passeriformes  | 1. Corvidae          | 14              | 33.33                          | 39.05                            | 13.33              |
|                | 2. Hirundinidae      | 1               |                                |                                  | 0.95               |
|                | 3. Irenidae          | 1               |                                |                                  | 0.95               |
|                | 4. Laniidae          | 1               |                                |                                  | 0.95               |
|                | 5. Muscicapidae      | 2               |                                |                                  | 1.90               |
|                | 6. Pycnonotidae      | 2               |                                |                                  | 1.90               |
|                | 7. Passeridae        | 7               |                                |                                  | 6.67               |
|                | 8. Sylviidae         | 5               |                                |                                  | 4.76               |
|                | 9. Sturnidae         | 4               |                                |                                  | 3.81               |
|                | 10. Nectariniidae    | 3               |                                |                                  | 2.86               |
|                | 11. Paridae          | 1               |                                |                                  | 0.95               |
| Piciformes     | 1. Picidae           | 6               | 3.03                           | 5.71                             | 5.71               |
| Psittaciformes | 1. Psitacidae        | 1               | 3.03                           | 0.95                             | 0.95               |
| Strigiformes   | 1. Strigidae         | 2               | 6.06                           | 2.86                             | 1.90               |
|                | 2. Tytonidae         | 1               |                                |                                  | 0.95               |
| Total          |                      |                 |                                |                                  |                    |
| 11             | 33                   | 105             | 100                            | 100                              | 100                |

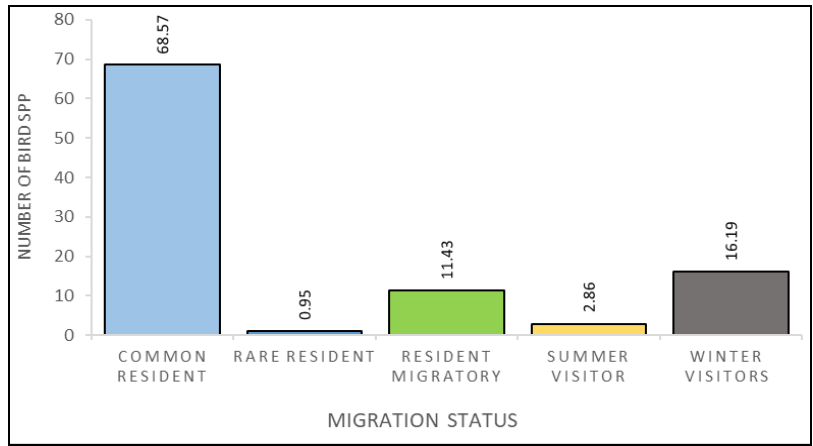


Fig 1: Migration status of birds in the study area

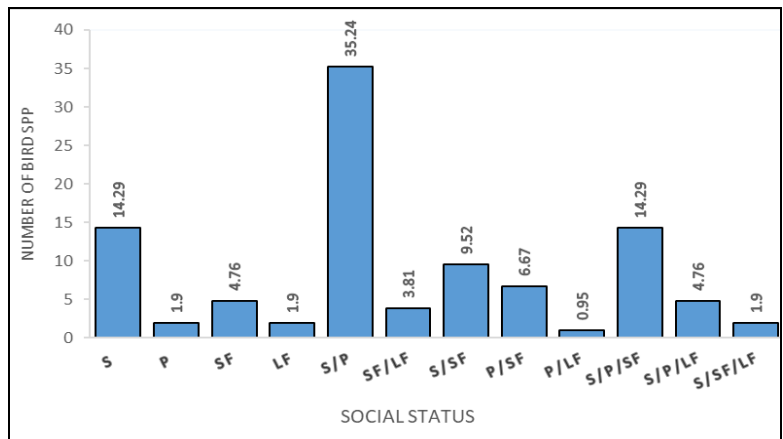


Fig 2: social status of birds in the study area. ( S = Single, P = Paired, SF = Small flock, LF = Large flock, S/P = Single or paired, SF/LF = Small or large flock, S/SF = Single or small flock, P/SF = Pared or small flock, P/LF = Pared or large flock, S/P/SF = Single or paired or small flock, S/P/LF = Single or paired or large flock, S/SF/LF = Single or Small flock or large flock.)

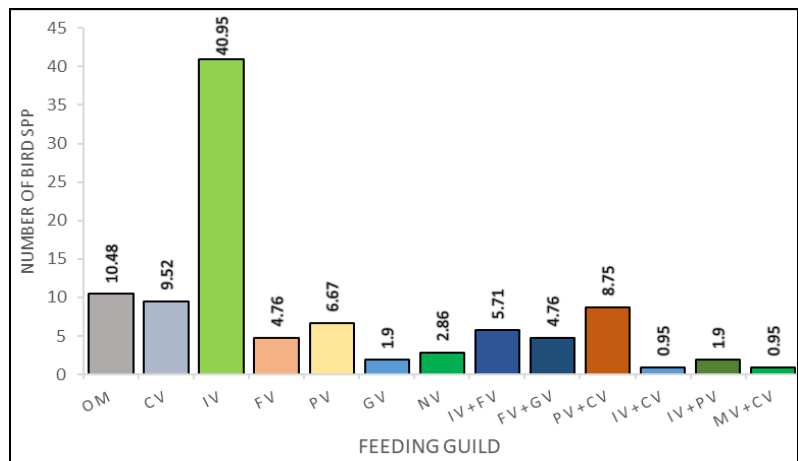


Fig 3: Feeding guild of birds of in study area (OM = Omnivorous, CV = Carnivorous, IV = Insectivorous, FV = Frugivorous, PV = Piscivorous, GV = Graminivorous, NV = Nectarivorous, IV+FV = Insectivorous and Frugivorous, FV + GV = Frugivorous and Graminivorous, PV + CV = Piscivorous and Carnivorous, IV + CV = Insectivorous and Carnivorous, IV + PV = Insectivorous and Piscivorous, MV + CV = Molluscivorous and Carnivorous.)

4. Conclusion

Though there are laws for conservation of natural habitats for wildlife, the laws are not implemented in Bangladesh especially in the rural areas. Encroachment of anthropological activities putting a toll on the wildlife species including birds. The number of beels and water bodies are present at Naogaon district. These beels and water bodies should be conserved as natural resources in

future.

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