

# A Preliminary Study on Birdlife of Betana Wetland, Belbari, Morang District, SE-Nepal

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## Abstract

The present study conducted in Betana wetland, Morang, Nepal. The study based on the field survey in order to find out the avifaunal composition. Most of the birds were found belong to the order Passeriformes including nine families and 15 species, followed by Coraciiformes with three families and four species then Pelicaniformes with two families and six species. Of them, two species viz. Grey-headed fish eagle (*Ichthyophaga humilis*) and Lesser Adjutant Stork (*Leptoptilos javanicus*) are kept under Near Threatened (NT) and Vulnerable (VU) category of IUCN Red List of threatened species. About 70% of total bird recorded was resident type and about 35% of total recorded bird species were fairly common in abundance. The species richness and abundance of avifauna found higher in winter season than summer. Compared to the previous study, birds belonging to four more families and five more orders recorded this time.

**Keywords:** Betana; avifauna; wetland; *Ichthyophaga humilis*; *Leptoptilos javanicus*; Terai

## Introduction

After forest, more than a quarter (27%) of Nepal's nationally threatened birds inhabits in wetlands. Out of 886 species of Bird species recorded so far in Nepal, about 42 species recorded in Nepal are listed in IUCN Red List of globally threatened birds, 35 globally near threatened and 167 species are nationally threatened [2]. More than 230 species of birds have been found to be wetland-dependent in Nepal [10]. Wetlands are among the most productive ecosystem in the world. The wetlands of Nepal well known for their unusually rich biodiversity. They occupy approximately five percent of the total area of Nepal in the form of rivers, stream, lakes, reservoirs, village ponds, paddy fields, marsh and swampland. There are over 405 wetland areas in Nepal from the Terai to the Himalayas. The loss of diversity of the water birds reduces the natural resource base of the country. Wetlands are one of the most threatened habitats because of their vulnerability and attractiveness for development [7]. Betana wetland is an important recreational destination with great potential of wildlife including bird diversity. Now this area has been established as a picnic spot and other recreational activities that have created lots of problem on habitat, breeding and feeding activities of birds. Firewood collection and grazing are the prominent human-induced disturbances of this area. The forest

area of wetland dominated by Sal (*Shorea robusta*) followed by Khair-Sissoo (*Acacia catechu-Dalbergia sissoo*) and mixed forest. Grassland flora consisted of a combination of wetland herbs and moist grass species which are commonly composed of *Imperata cylindrica*, *Cyperus papyrus*, *Digitaria ciliaris*, *Bulbostylis barabata*, *Eragrostis tentella*, *Cyperus totundus*, *Polygonum spp.* etc. [11]. Data on the avifaunal composition of this area is not adequate to assess conservation needs. Only a little information from records of bird watchers, nature guides etc. are available [11]. Hence, the present study was essential to provide baseline data on avifaunal composition for the proper conservation and management initiatives.

## Study Area

Betana wetland is a freshwater pond situated between 26.659106° N to 87.428814° E and 26.662894° N to 87.434018° E at an elevation of 123 m msl, covering 5.5 ha area in Belbari municipality of Morang district. It is one kilometer far from the Belbari Bazar in the east. The wetland area remains surrounded by Sal forest from east, north and west sides whereas Mahendra highway lies adjacent on its south. The depth of the pond varies from 0.5 to 1.5 m in the dry season and 1 to 2.5 m in monsoon season [9]. The study area experiences a tropical monsoon climate with winter, summer and rainy seasons in a year. The soil is alluvial type and the average annual temperature of 24.6 °C. The average rainfall is 2256 mm per year and about 90% of rainfall occurs within three months of monsoon seasons (June-August).

## Materials and Methods

Study of the avifaunal composition of Betana wetland carried out for six months from February 2017 to July 2017. Therefore, the birds of summer, winter and monsoon season could be observed within a short field visit period. Regular visits of study site done almost once a week on every Saturday morning between 7 -10 am and 4-6 pm in the evening in order to know the avifaunal composition. The bird census was done by applying the Point Count Survey Method within the radius of 50m [6]. In the direct count method, counts performed in the four sampling stations (F1, F2, W1 and W2) repeatedly. Some birds were photographed with the help of Canon Power shot SX520 HS 42x

24-1008mm 16 MP optical zoom digital camera. The primary data were collected by direct observation of species with the help of Bushnell H<sub>2</sub>O Waterproof/Fogproof Prism Binocular 10 x42 mm. While secondary data collected by the help of questionnaire, reviewing literatures such as journals, articles, proceedings and books. The geographical coordinates were taken by using Garmin eTrex 10 Worldwide Handheld GPS navigator. The identification of birds was done by direct observation method. Birds were observed within transect of 100m and identified with the help of field guide books of Ali, et al. 1986, Fleming, et al. 2000, Shrestha, et al. 2000, Grimmett, et al.2000, Grimmett, et al. 2016, Pradhan, et al.2018 [1,3,4,5,8,10]. Photograph of unidentified species were identified with the help of subject expertise of Post-graduate campus, Biratnagar. For the birds, which are shy and could not be observed directly, the call count method was employed for their identification. The study area was divided into four pockets (Map1). Bird observation was done at these four pockets viz.

the forest area F1 (west) and forest area F2 (east), wetland area W1 (east) and wetland area W2 (west) of Betana wetland area. Four line transects were set along the two forests sampling areas (F1 and F2) and two wetland areas (W1 and W2). Each pocket was used as the reference points for the point count method. Observations of birds were carried out on each 50m radius of each pocket.

### Result and Discussion

In the present study, a total of 49 species of birds belonging to 30 families and 15 orders have been reported from Betana wetland based on field observation (Table 1). Among them, 34 species (69.38%) of birds were of the resident type, 9 species (18.36%) were winter visitor and 6 species (12.24%) were summer visitors (Figure 3). Of them, 34.69% species (n= 17) were fairly common, 24.48 % species (n=12) of birds were common, 22.44% (n=11) species were occasional and 18.36% (n=9) species were uncommon (Figure 4).

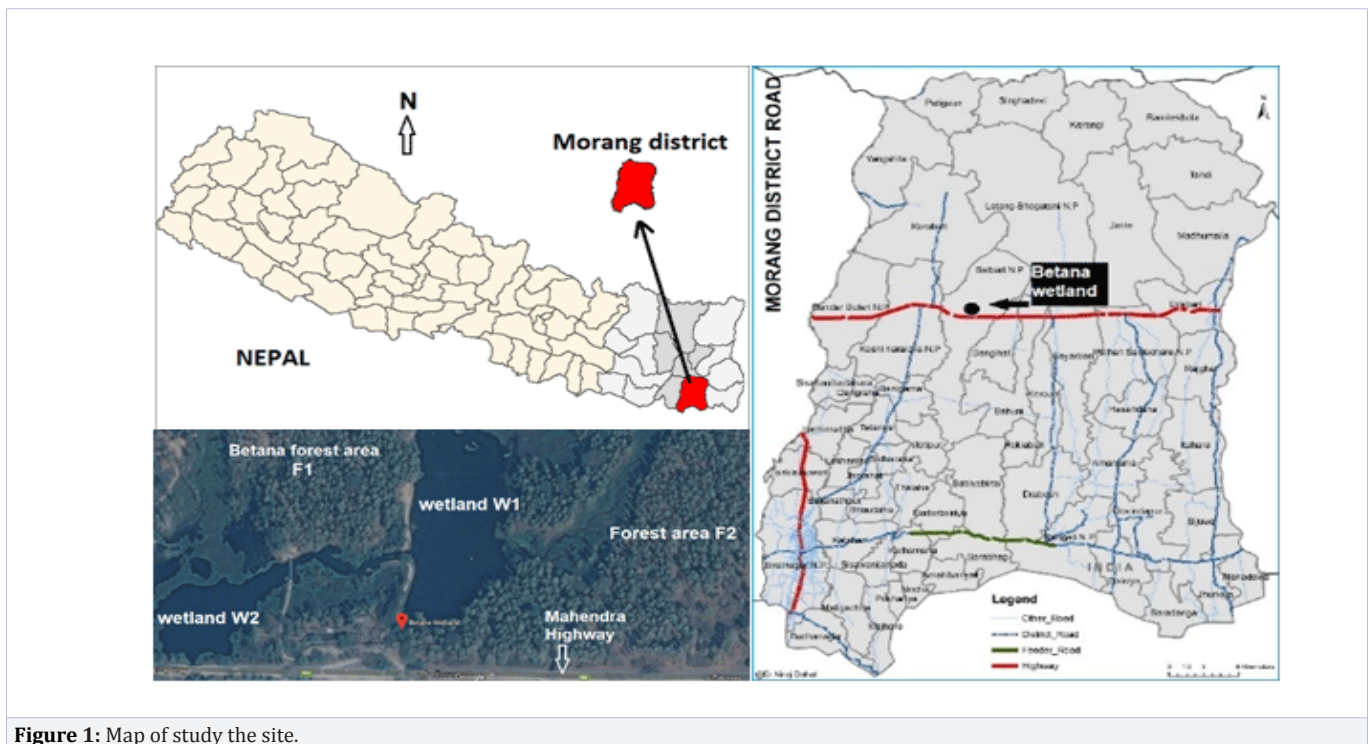
**Table 1:** Ornithological composition of Betana wetland

| S.No | Order           | Family         | Common name             | Scientific name                                    | Local name        | SS | AB |
|------|-----------------|----------------|-------------------------|--|-------------------|----|----|
| 1    | Accipitriformes | Accipitridae   | Black kite              | Milvus migrans (Boddaert,1783)                     | Kalocheel         | WV | UC |
| 2    | Accipitriformes | Accipitridae   | Grey-headed Fish eagle  | Ichthyophaga humilis a (Muller,S & Schlegel, 1841) | Machha-kul        | R  | O  |
| 3    | Accipitriformes | Pandionidae    | Osprey                  | Pandion haliaetus (Linnaeus,1758)                  | Malaha cheel      | WV | UC |
| 4    | Accipitriformes | Accipitridae   | Crested Serpent Eagle   | Spilornis cheela (Latham,1790)                     | Kakakul           | R  | UC |
| 5    | Anseriformes    | Anatidae       | Common Teal             | Anas crecca (Linnaeus,1758)                        | Vijula Gairi      | WV | C  |
| 6    | Anseriformes    | Dendrocygnidae | Lesser Whistling Duck   | Dendrocygna javanica (Horsfield, 1821)             | Silsile           | WV | UC |
| 7    | Bucerotiformes  | Upupidae       | Common Hoopoe           | Upupa epops (Linnaeus,1758)                        | Fafre chara       | R  | FC |
| 8    | Charadriiformes | Charadriidae   | Red- wattled Lapwing    | Vanellusindicus (Boddaert,1783)                    | Huttityaun        | R  | C  |
| 9    | Charadriiformes | Jacaniidae     | Bronze-winged Jacana    | Metopidiusindicus (Latham, 1790)                   | Lama aunle        | R  | FC |
| 10   | Ciconiiformes   | Ciconiidae     | Lesser Adjutant         | Leptoptilos javanicus b (Horsfield,1821)           | Bhundifor garud   | R  | O  |
| 11   | Ciconiiformes   | Ciconiidae     | Asian Open bill         | Anastomus oscitans (Boddaert,1783)                 | Ghungifor garud   | SV | UC |
| 12   | Columbiformes   | Columbidae     | Rock Pigeon             | Columba livia (Gmelin, 1789)                       | Parewa            | R  | FC |
| 13   | Columbiformes   | Columbidae     | Spotted dove            | Streptopelia chinensis (Scopoli, 1786)             | Kurle dhukur      | R  | FC |
| 14   | Columbiformes   | Columbidae     | Eurasian Collared Dove  | Streptopelia decaocto (Frisvaldszky, 1838)         | Kanthe dhukur     | R  | FC |
| 15   | Coraciiformes   | Alcedinidae    | Stork-billed Kingfisher | Halcyon capinsis (Linnaeus,1766)                   | Thulomatikore     | R  | O  |
| 16   | Coraciiformes   | Coraciidae     | Dollar bird             | Eurystomus orientalis (Linnaeus, 1766)             | Lal chuche theuwa | SV | O  |

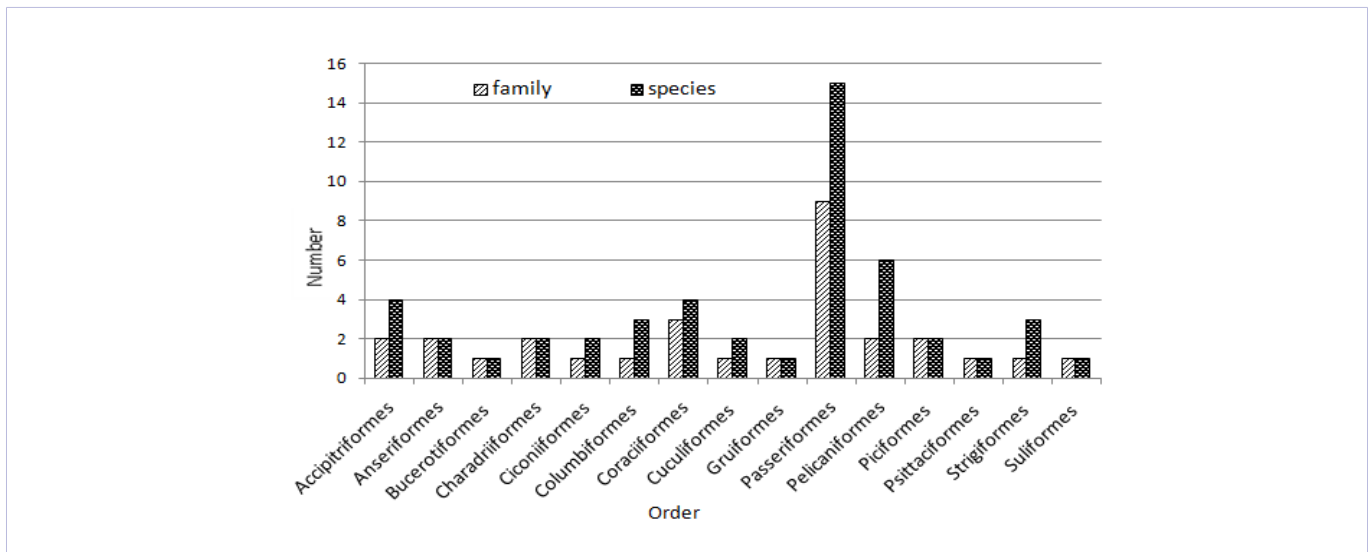
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|----|----------------|----------------|-----------------------------|---------------------------------------|--------------------------|----|----|
| 17 | Coraciiformes  | Alcedinidae    | White-throated Kingfisher   | Halcyon smyrnensis (Linnaeus, 1758)   | Setokanthematikore       | R  | O  |
| 18 | Coraciiformes  | Meropidae      | Chestnut-headed Bee-eater   | Merops leschenaultia (Linnaeus, 1758) | Katus tauke Murali chara | SV | UC |
| 19 | Cuculiformes   | Cuculidae      | Indian Cuckoo               | Cuculus micropterus (Gould, 1838)     | Kaphal pakyo             | SV | O  |
| 20 | Cuculiformes   | Cuculidae      | Greater Couckal             | Centropus sinensis (Stephens, 1815)   | Dhade gokul              | WV | C  |
| 21 | Gruiformes     | Rallidae       | White-breasted Waterhen     | Amauornis phoenicurus (Pennant, 1769) | Sim kukhura              | R  | FC |
| 22 | Passeriformes  | Corvidae       | Large-billed Crow           | Corvus macrorhynchos (Wagler, 1827)   | Kalokag                  | R  | C  |
| 23 | Passeriformes  | Corvidae       | Rufous Treepie              | Dendrocitta vagabunda (Latham, 1790)  | Kokale                   | R  | O  |
| 24 | Passeriformes  | Corvidae       | House Crow                  | Corvus splendens (Vieillot, 1817)     | Gharkag                  | R  | FC |
| 25 | Passeriformes  | Dicuridae      | Black Drongo                | Dicrurus macrocercus (Vieillot, 1817) | Kalochibe                | R  | FC |
| 26 | Passeriformes  | Dicuridae      | Crow billed Drongo          | Dicrurus annectans (Hodgson, 1838)    | Kagthude chibe           | SV | FC |
| 27 | Passeriformes  | Dicuridae      | Geater Racket-tailed Drongo | Dicrurus paradiseus (Linnaeus, 1766)  | Bhimraj chibe            | R  | C  |
| 28 | Passeriformes  | Oriolidae      | Golden Oriole               | Oriolus oriolus (Linnaeus, 1758)      | Gajale sunchari          | SV | UC |
| 29 | Passeriformes  | Oriolidae      | Black-headed Oriole         | Oriolus xanthornus (Linnaeus, 1758)   | Kalotauke sunchari       | R  | UC |
| 30 | Passeriformes  | Sturnidae      | Common Myna                 | Acridotheres tristis (Linnaeus, 1766) | Dangrerupi               | R  | FC |
| 31 | Passeriformes  | Sturnidae      | Asian Pied Starling         | Gracupica contra (Linnaeus, 1758)     | Danger saraun            | R  | FC |
| 32 | Passeriformes  | Laniidae       | Long-tailed Shrike          | Lanius schach (Linnaeus, 1758)        | Bhadrai                  | WV | UC |
| 33 | Passeriformes  | Passeridae     | House Sparrow               | Passer domesticus (Linnaeus, 1758)    | Bhagera                  | R  | FC |
| 34 | Passeriformes  | Pycnonotidae   | Red-vented Bulbul           | Pycnonotus cafer (Linnaeus, 1766)     | Jureli                   | R  | FC |
| 35 | Passeriformes  | Muscicapidae   | Oriental Magpie Robin       | Copsychus saularis (Linnaeus, 1758)   | Dhobi chara              | R  | FC |
| 36 | Passeriformes  | Leiothrichidae | Jungle Babbler              | Turdoides striata (Dumont, 1823)      | Bagale vyakur            | R  | C  |
| 37 | Pelicaniformes | Ardeidae       | Indian Pond Heron           | Ardeola grayii (Sykes, 1832)          | Askote bakulla           | R  | FC |
| 38 | Pelicaniformes | Ardeidae       | Purple Heron                | Ardea purpurea (Linnaeus, 1766)       | Dhyani bakulla           | WV | O  |
| 39 | Pelicaniformes | Ardeidae       | Great egret                 | Ardea alba (Linnaeus, 1758)           | Thulo seto bakulla       | R  | C  |
| 40 | Pelicaniformes | Ardeidae       | Cattle egret                | Bubulcus ibi (Linnaeus, 1758)         | Bastu bakulla            | R  | C  |
| 41 | Pelicaniformes | Ardeidae       | Intermediate Egret          | Ardea intermedia (Wagler, 1827)       | Sano bakulla             | R  | C  |

|    |                |                   |                            |   |              |    |    |
|----|----------------|-------------------|----------------------------|---|--------------|----|----|
| 42 | Pelicaniformes | Threskiornithidae | Black ibis                 | <i>Pseudibis papillosa</i> (Temminck, 1824) | Karra sawari | WV | O  |
| 43 | Piciformes     | Megalaimidae      | Blue-throated Barbet       | <i>Megalaima asiatica</i> (Latham, 1790)    | Kuthukre     | R  | O  |
| 44 | Piciformes     | Picidae           | Fulvous-brested woodpecker | <i>Dendrocopos macei</i> (Vieillot, 1818)   | Kastha kut   | R  | C  |
| 45 | Psittaciformes | Psittacidae       | Rose-ringed Parakeet       | <i>Psittacula krameri</i> (Scopoli, 1769)   | Kanthe suga  | R  | C  |
| 46 | Strigiformes   | Strigidae         | Spotted Owlet              | <i>Athene brama</i> (Temminck, 1821)        | Laatkosero   | R  | C  |
| 47 | Strigiformes   | Strigidae         | Jungle Owlet               | <i>Glaucidium radiatum</i> (Tickell, 1833)  | Dundul       | R  | C  |
| 48 | Strigiformes   | Strigidae         | Brawn Hawk Owl             | <i>Ninox scutulata</i> (Raffles, 1822)      | Kaal pechak  | R  | O  |
| 49 | Suliformes     | Phalacrocoracidae | Little Cormorant           | <i>Phalacrocorax niger</i> (Vieillot, 1817) | Saano jalewa | WV | FC |

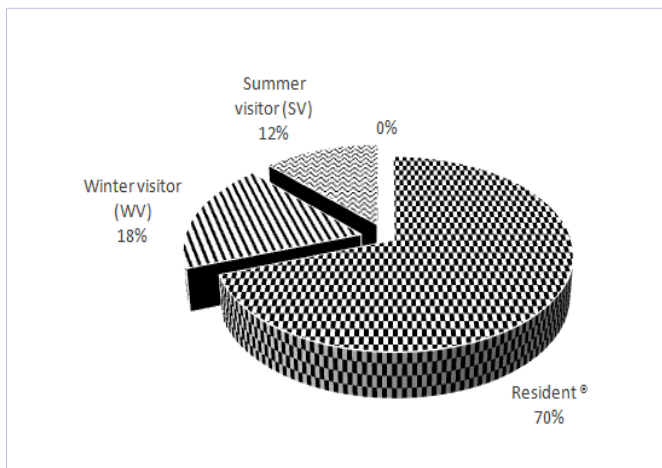
SS = Seasonal Status, AB = Abundance, R = Resident, WV = Winter Visitor, SV = Summer Visitor, C = Common, FC = Fairly Common, O = Occasional, UC = Uncommon, a = IUCN Red List status (2017) : a Near threatened, b vulnerable



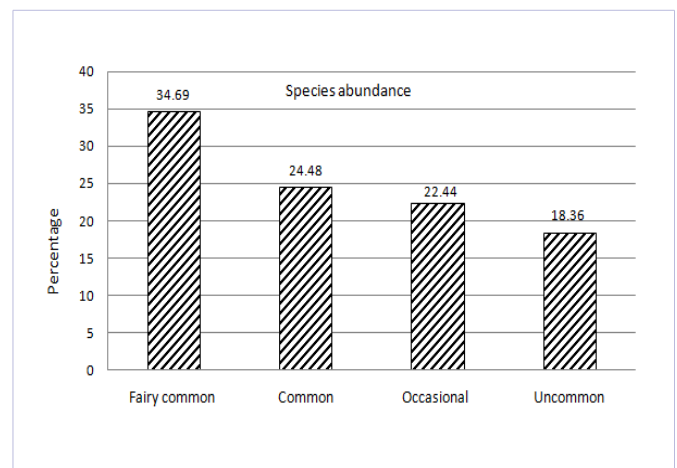
**Figure 1:** Map of study the site.



**Figure 2:** Avifaunal composition of Betana wetland (orderwise)



**Figure 3:** Pie showing seasonal status of avifauna on percentage basis



**Figure 4:** Species abundance of avifauna.

**Discussion**

In the present study most of the birds were found belong to the order Passeriformes including nine families and 15 species, followed by Coraciiformes with three families and four species then Pelicaniformes with two families and six species. Of them, two species Grey-headed fish eagle (*Ichthyophaga humilis*) and Lesser Adjutant Stork (*Leptoptilos javanicus*) are kept under near threatened (NT) and vulnerable (VU) categories of IUCN Red List status of threatened species respectively. In the previous study, 55 species of birds from 26 families and 10 orders were recorded but in the present study, 49 species of birds belonging to 30 families and 15 orders have been reported. Pokharel, et al. 2015 recorded Black Kite (*Milvus migrans*), Indian Roller (*Coracias benghalensis*) and White-throated Kingfisher (*Halcyon smyrnensis*) as very common species in the Betana wetland [12,13]. But this time these species were occasionally seen. This may be due to limitation of survey period or due to shortage of food resources (?). However, Red-vented Bulbul (*Pycnonotus*

*cafer*), Rose-ringed Parakeet (*Psittacula krameri*), Black Drongo (*Dicrurus macrocerus*), Oriental Magpie Robin (*Copsychus saularis*), Common Myna (*Acriderestris tristis*), Great Egret (*Casmerodius albus*), House Sparrow (*Passer domesticus*), Spotted Dove (*Streptopelia chinensis*) etc. were recorded as high population especially in winter season.

In the previous study, Out of 55 species, 44 species were resident, five species were winter visitor and six species were summer visitor but this time, out of 49 species, 34 species were resident (70%) , nine species (18%) were winter visitor and six species (12%) were summer visitor. Four more species of winter visitor birds were recorded this time.

**Conclusion**

Compared to the previous work, birds belonging to four more families and five more orders were recorded this time. However, total numbers of species were recorded less during the present study. The species richness was found higher in winter



season than summer. This may be due to easy availability of food, suitable climate, temperature and migration of species. During the present survey, 49 species of birds belonging to 30 families and 15 orders have been recorded from the Betana wetland, which proves that the study area is one of the suitable habitats for avifaunal abundance. About 70 % of total bird recorded was found to be the resident type and about 35% of total recorded bird species were found fairly common. The major threats to the avifauna in the study site were found to be deforestation, overgrazing, bird killing by using catapult and pollution due to recreational activities.

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