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Study of Biodiversity of Avian Fauna in a Wetland of Durg District, India

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ABSTRACT

Wetlands are known to have diverse habitats and are considered an essential part of a biodiversity hotspot. It possesses a habitat for residential species for breeding as well as providing wintering ground for migrant species. The present work focused on the relationship between the habitat of the wetland-covered area and the species richness of the avifaunal community in the Durg district (21.1904° N, 81.2849° E). The survey was done by the point count method from October 2021 to February 2022. Birds have been classified based on their Residential Status and Abundance. In this study, a total of 62 species of birds belonging to 28 families and 14 orders were recorded, out of which 37 are Resident (60%), 13 are Winter Migrants (21%), 11 are Local Migrants (18%) and 1 is Passage Migrant (1%). According to the abundance study of birds, 13 species are Frequent, 29 species are Common and 20 species are Rare.

Key words: *Avian fauna diversity, Residential status, Migrants, Wetland, Patan, Durg district.*

Introduction

Biodiversity loss has become a great concern in recent decades. The wide variety of birds in the wetland provides for an avian faunal diversity of that area, and this biodiversity is affected by the fluctuation in the population or loss of any particular species and degradation in the habitat in which they live. However, declines in wetland diversity are more likely when vital recourses of habitats are degraded. The quality of a habitat can be estimated by the number of total species, the abundance of particular species, or the population of that habitat.. This research work will help to study the avifaunal biodiversity and its interaction with their habitat. We focus mainly on the wetland habitat in which waders, wading birds, aquatic birds, and terrestrial birds are present.

Materials and Methods

Study area

Chhattisgarh is situated in the east-central part of India, bounded by Uttar Pradesh (North), Madhya Pradesh (North-West), Maharashtra (South-West), Jharkhand (North-East), Odisha (East), and Telangana and Andhra Pradesh (South). Chhattisgarh lies between latitudes 21.2787° N and longitudes 81.8661° E. Durg covers a total area of around 2,238 sq. km and is located in the southwest of the Chhattisgarh state. The present study was undertaken in the Santara tank of Patan, Durg (Chhattisgarh). The Santara Tank (20°03206.6" N and 81°27243.0" E) contains a wetland region with a total size of approximately 1,21,405 sq.m.

Study methods

The survey was done by using the Point Count method. For bird counting, a suitable vantage point

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was selected in the wetland areas and all the birds seen in that area were counted. The collection of field data is mainly based on the assessment of the status of birds including both aquatic and terrestrial. Sampling was done from October 2021 to February 2022. Birds have been sampled for the period of the day when the birds most active, i.e., in the morning and evening up to four hours. Birds were seen with the help of binoculars, and identification was done by using "Birds of the Indian Subcontinent" by Richard Grimmett. Photograph were also taken. Birds were categorized according to their residential status and abundance.

Results and Discussion

A total of 62 wetland bird species belonging to 28 families and 14 orders have been recorded from the wetland area. In this wetland habitat waders, wading birds, aquatic birds, and terrestrial birds are present. According to the abundance study of birds, 13 species are Frequent, 29 species are Common and 20 species are Rare. Out of the total species, 37 are Resident (60%), 13 are Winter Migrants (21%), 11 are Local Migrants (18%) and 1 is Passage Migrant (1%). Passeriformes is the dominant order represented by 11 families. Of all, the family Anatidae dominated the list with 10 species. Most of the migratory species were winter migrants, among which Garganey

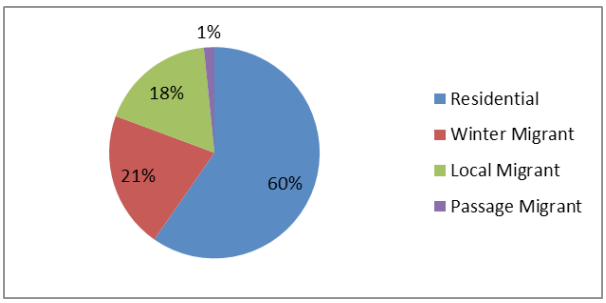

Fig. 1. Percentage distribution of residential status of bird species

Table 1. Diversity indices of total birds found in study area

Total Number of individuals	469
Average Population Size	7.5645
Shannon Diversity Index	3.64
Simpson Index	0.0328
Reciprocal Simpson Index	28.6669
Evenness/Equitability Index	0.8819
Richness	62

Table 2. List of birds with with their Status and Abundance

S.No.	Order	Family	Scientific Name	Birds	Status Abundance
1	Anseriformes	Anatidae	*Dendrocygna javanica*	Lesser Whistling Duck	Res	F
2			*Nettapus coromandelianus*	Cotton Pygmy-Goose	Res	F
3			*Spatula querquedula*	Garganey	WM	F
4			*Spatula clypeata*	Northern Shoveler	WM	R
5			*Mareca strepera*	Gadwall	WM	F
6			*Mareca penelope*	Eurasian Wigeon	WM	R
7			*Anas poecilorhyncha*	Indian Spot-billed Duck	Res	F
8			*Anas acuta*	Northern Pintail	WM	F
9			*Anas carolinensis*	Green-winged Teal	WM	C
10			*Netta rufina*	Red-crested Pochard	WM	F
11	Columbiformes	Columbidae	*Streptopelia decaocto*	Eurasian Collared-Dove	Res	C
12			*Spilopelia senegalensis*	Laughing Dove	Res	C
13	Cuculiformes	Cuculidae	*Centropus sinensis*	Greater Coucal	Res	R
14	Caprimulgiformes	Caprimulgidae	*Caprimulgus asiaticus*	Indian Nightjar	Res	R
15	Gruiformes	Rallidae	*Gallinula chloropus*	Eurasian Moorhen	Res	R
16			*Fulica atra*	Eurasian Coot	Res	C

Table 2. *Continued ...*

S.No.	Order	Family	Scientific Name	Birds	Status Abundance
17		*Porphyrio poliocephalus*	Gray-headed Swamphen	Res	C
18		*Amaurornis phoenicurus*	White-breasted Waterhen	Res	C
19	Ciconiiformes	Ciconiidae	*Anastomus oscitans*	Asian Openbill	LM C
20			*Ciconia episcopus*	Woolly-necked Stork	Res R
21	Suliformes	Phalacrocoracidae	*Microcarbo niger*	Little Cormorant	Res C
22			*Phalacrocorax fuscicollis*	Indian Cormorant	LM C
23	Pelecaniformes	Ardeidae	*Ixobrychus sinensis*	Yellow Bittern	LM R
24			*Ixobrychus flavicollis*	Black Bittern	LM R
25			*Ardea purpurea*	Purple Heron	LM C
26			*Ardea alba*	Great Egret	Res C
27			*Egretta garzetta*	Little Egret	Res F
28			*Bubulcus ibis*	Cattle Egret	Res C
29			*Ardeola grayii*	Indian Pond-Heron	Res C
30	Accipitriformes	Accipitridae	*Clanga hastata*	Indian Spotted Eagle	Res R
31			*Hieraaetus pennatus*	Booted Eagle	P M R
32			*Milvus migrans*	Black Kite	Res C
33		Pandionidae	*Pandion haliaetus*	Osprey	WM R
34	Bucerotiformes	Upupidae	*Upupa epops*	Eurasian Hoopoe	Res R
35	Coraciiformes	Alcedinidae	*Alcedo atthis*	Common Kingfisher	Res C
36			*Halcyon smyrnensis*	White-throated Kingfisher	Res R
37		Meropidae	*Merops orientalis*	Green Bee-eater	Res F
38		Coraciidae	*Coracias benghalensis*	Indian Roller	Res C
39	Passeriformes	Dicruridae	*Dicrurus macrocercus*	Black Drongo	Res F
40		Laniidae	*Lanius schach*	Long-tailed Shrike	Res C
41		Acrocephalidae	*Acrocephalus dumetorum*	Blyth's Reed Warbler	WM R
42		Hirundinidae	*Hirundo smithii*	Wire-tailed Swallow	Res C
43		Pycnonotidae	*Pycnonotus cafer*	Red-vented Bulbul	Res C
44		Paradoxornithidae	*Chrysomma sinense*	Yellow-eyed Babbler	Res C
45		Sturnidae	*Gracupica contra*	Asian Pied Starling	Res F
46			*Sturnia pagodarum*	Brahminy Starling	Res C
47			*Acridotheres tristis*	Common Myna	Res F
48		Muscicapidae	*Saxicoloides fulicatus*	Indian Robin	Res C
49			*Luscinia svecica*	Bluethroat	WM C
50			*Phoenicurus ochruros*	Black Redstart	WM R
51			*Saxicola caprata*	Pied Bushchat	LM C
52			*Cercomela fusca*	Brown Rock Chat	LM C
53		Nectariniidae	*Leptocoma zeylonica*	Purple-rumped Sunbird	LM C
54			*Cinnyris asiaticus*	Purple Sunbird	Res C

Table 2. *Continued ...*

S.No.	Order	Family	Scientific Name	Birds	Status
Abundance					
55	Ploceidae	*Ploceus philippinus*	Baya Weaver	LM	F
56	Estrildidae	*Euodice malabarica*	Indian Silverbill	LM	C
57		*Amandava amandava*	Red Avadavat	LM	C
58	Galliformes	Phasianidae	*Francolinus pondicerianus*	Gray Francolin	Res	R
59	Charadriiformes	Charadriidae	*Vanellus indicus*	Red-wattled Lapwing	Res	R
60			*Charadrius dubius*	Little Ringed Plover	Res	R
61		Scolopacidae	*Actitis hypoleucos*	Common Sandpiper	WM	R
62			*Tringa glareola*	Wood Sandpiper	WM	R

Res=Resident, WM=Winter Migrant, LM=Local Migrant, PM=Passage Migrant, F=Frequent, C=Common, R=Rare

(*Spatula querquedula*), Gadwall (*Mareca strepera*), Northern Pintail (*Anas acuta*), Red-crested Pochard (*Netta rufina)* were found frequently, while Green-winged Teal (*Anas carolinensis*) and Bluethroat (*Luscinia svecica*) the common species inhabiting this wetland. Avian faunal species found in this area were making use of different wetland vegetation for roosting, nesting, and foraging. During the present study, the biodiversity of the wetland birds was rich because of the availability of various feeding sources. Different food sources are available in the wetland habitat like fish and crustaceans, small invertebrates, aquatic plants, and plankton, which is the main cause of the diversity of wetland birds. Many human activities like removal of natural vegetation, throwing of domestic garbage, construction of roads, and sewage releasing are some major threats to the bird diversities of these wetland habitats. Water Hyacinth (*Eichhornia crassipes*) cover has been removed manually from the water surface by the local community. But the proper method is required for the effective removal of these Water Hyacinths.

Conflict of interest

The author has no conflict of interest.

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