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Avifaunal Diversity of Wetland Birds at Guhai, Sabarkantha, Gujarat, India

Manjurmahammad H. Dedhrotiya* and Chirag A. Acharya

Shri U P Arts, Smt M G Panchal Science and Shri V L Shah Commerce College, Pilvai, Gujarat 382850, India

*Corresponding Author

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Abstract: Wetlands are passages between land and water ecosystem. Birds are always considered as the best indicators of wetlands. Bird counts is the significant components for monitoring a wetland. The present study recorded a total of 46 wetland bird species belonging to fourteen (14) families and Nine (9) orders from Guhai reservoir. The family Ardeidae and Anatidae dominated the list by the representation of 8 species. The migratory status of the birds in reservoir revealed that 39% of the birds are resident while 37% of the birds are resident migratory.

Keywords: Avifauna, Migratory birds, Diversity, Wetlands, Ardeidae, Anatidae

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Introduction

Wetlands are environments that are saturated with water, either permanently or seasonally, and are characterized by distinct vegetation and wildlife adaptations. According to the Ramsar Convention on Wetlands, they play crucial roles in water regulation, carbon sequestration, habitat provision, and shoreline stabilization (Ramsar Convention Secretariat, 2013). Wetlands can be classified into various types, such as swamps, marshes, bogs, and fens, and can range from freshwater to brackish to saltwater habitats (Mitsch and Gosselink, 2015). Despite their ecological importance, wetlands are often drained

or destroyed for human development, leading to significant declines in biodiversity and reductions in the services they provide.

Wetlands are important habitats that support a diverse array of bird species, including ducks, geese, herons, ibises, and many more. These birds, known as waterbirds, are specially adapted to life in and around wetlands, where they find food, shelter, and breeding grounds (Manjurmahammad, 2022). Research has shown that wetlands support high bird diversity due to the availability of food and nesting sites. Wetlands provide a rich food source for waterbirds,

including insects, crustaceans, and fish. Additionally, the dense vegetation in wetlands provides cover and protection for nesting birds (Zhang *et al.*, 2020). Wetland birds also play critical ecological roles, serving as pollinators, seed dispersers, and predators that help maintain the balance of wetland ecosystems. However, human activities such as development, pollution, and drainage are major threats to wetlands and their bird populations. Wetland degradation caused a decline in waterbird populations, leading to declines in the overall biodiversity of wetland ecosystems (Knapp *et al.*, 2019). To protect and conserve wetland birds and their habitats, it is essential to preserve and restore wetlands. Restoring degraded wetlands can increase the populations of waterbirds and other wetland-dependent species. Additionally, implementing measures such as protecting important bird areas, promoting sustainable land use practices, and reducing pollution can help conserve wetland birds and their habitats (Grand *et al.*, 2020). In this study avifaunal diversity of wetland birds of Guhai reservoir were examined.

Materials and Methods

Study Area:

Guhai dam (reservoir) is a dam located in the district of Sabarkantha, northern Gujarat, India. It is located between 23°42'13"N latitude and 73°3'10"E longitude. It is 21 km away from the city Himatnagar. The dam has played a significant role in supporting agriculture in the region, providing irrigation water to farmlands and helping to increase crop yields. The dam provides a source of clean drinking water for the surrounding communities. The dam and reservoir receive water from rain.

Methodology:

The checklist is prepared based on the field work conducted across Guhai reservoir. Water birds were counted using the 'direct count method' (Simpson, 1949; Burnham *et al.*, 1980). Birds were observed between 06:00 to 11:00 h using Nikon Binocular (10 x 50). The recorded

birds were identified by using standard field guides (Ali *et al.*, 1987; Manakadan and Pittie, 2001). The status of birds was determined and categorized into three groups such as; LM- Local migratory, WM- winter migratory and R- Resident on the basis of their movement and seasonality of occurrence.

Results and Discussion

The present study recorded a total of 46 wetland bird species belonging to fourteen (14) families and nine (9) orders from Guhai reservoir. Details such as common name, scientific name, migratory status and conservation status of the wetland birds are presented in Table 1. Among the Nine orders, Pelecaniformes is the largest order based on the number of species recorded from the reservoir (2 families with 12 species), followed by Charadriiformes (4 families with 11 species), Anseriformes (1 family with 8 species), Gruiformes (1 family with 4 species), Suliformes (2 family with 4 species), Passeriformes (1 family with 3 species), Coraciiformes (1 family with 2 species), Ciconiiformes (1 family with 1 species), and Podicipediformes (1 family with 1 species). (Table 1).

The family Ardeidae and Anatidae dominated the list by the representation of 8 species which contributed 8.17%; followed by the Scolopacidae with 5 species, contributed 5.11%; Threskiornithidae and Rallidae with 4 species each, contributed 4.90% each; Phalacrocoracidae, Charadriidae, Motacillidae with 3 species each, contributed 3.70% each; Recurvirostridae and Alcedinidae with 2 species each, contributed 2.40% each and least Podicipedidae, Anhingidae, Ciconiidae and Glareolidae with one species each, contributed 1.20% each of total family wise frequency of occurrence of wetland birds of the study area (Fig 1).

Among the bird species of the reservoir, majority of the species were resident around 18 species which contributed 39%, followed by resident migratory which is around 17 species which contributed 37% and only 11 species were

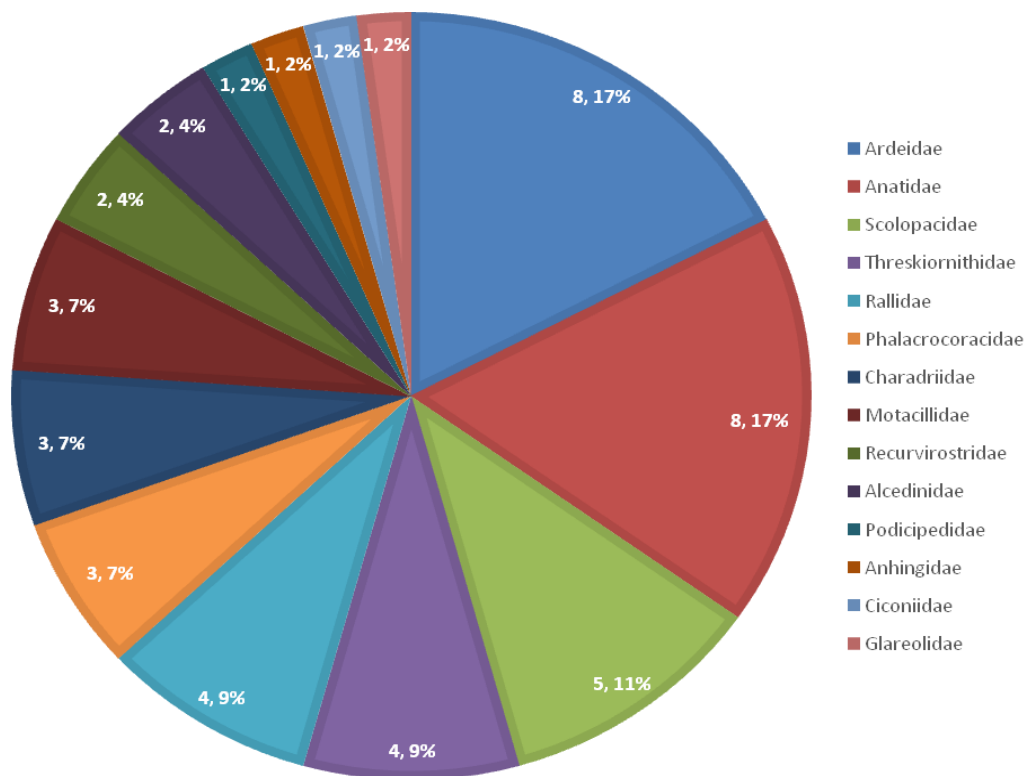


Fig. 1: Family wise species distribution and diversity of wetland birds in Guhai Reservoir.

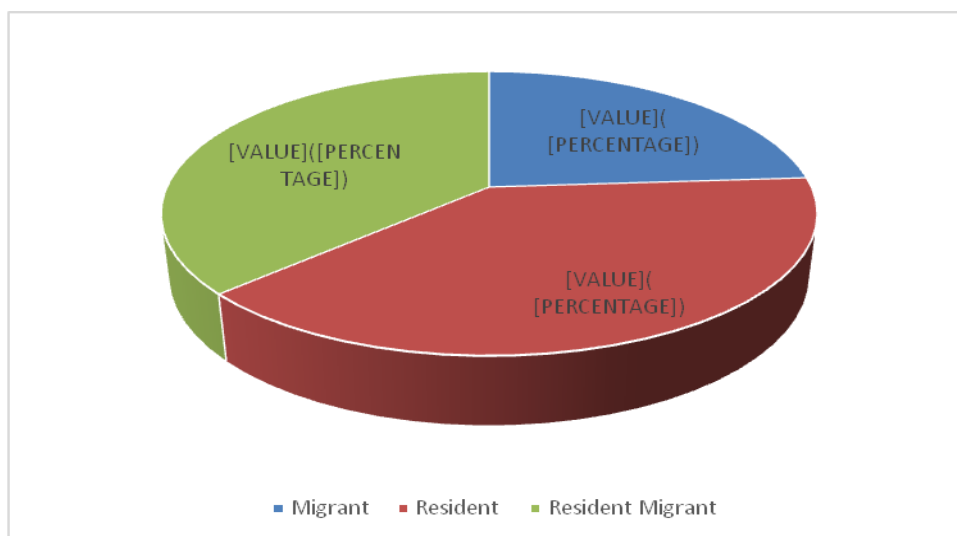


Fig. 2: Residential Status of Wetland birds of Guhai Reservoir.

migratory for the site which contributed 24% (Fig. 2).

The study also found that majority of the avifaunal species are categorised under Least concern species (41 species) while 4 species are

categorised as Near Threatened and rest one species is Vulnerable category as per IUCN (Table 1, Fig. 3).

From the study it has been found that the reservoir is a vulnerable wetland which provide

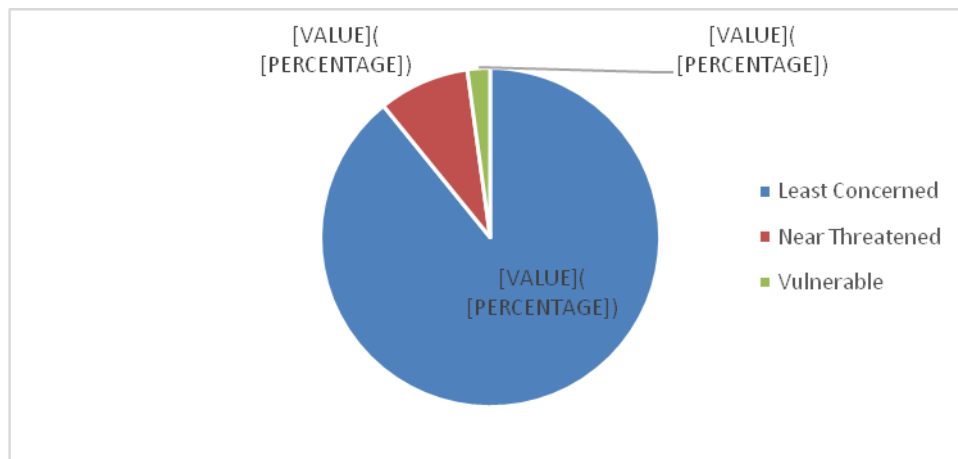


Fig. 3: Conservation Status of Wetland birds of Guhai Reservoir.

Table 1: Checklist of aquatic bird species recorded from Guhai Reservoir

No.	Common Name	Scientific Name	Migratory Status	IUCN 2018
Order: Podicipediformes Family: Podicipedidae				
1	Little Grebe	<i>Tachybaptus ruficollis</i>	R	LC
Order: Suliformes Family: Phalacrocoracidae				
2	Little Cormorant	<i>Microcarbo niger</i>	RM	LC
3	Great Cormorant	<i>Phalacrocorax carbo</i>	RM	LC
4	Indian Shag	<i>Phalacrocorax fuscicollis</i>	RM	LC
Family: Anhingidae				
5	Darter	<i>Anhinga melanogaster</i>	RM	NT
Order: Pelecaniformes Family: Ardeidae				
6	Grey Heron	<i>Ardea cinerea</i>	RM	LC
7	Indian Pond Heron	<i>Ardeola grayii</i>	R	LC
8	Purple Heron	<i>Ardea purpurea</i>	RM	LC
9	Black Crowned Night Heron	<i>Nycticorax nycticorax</i>	R	LC
10	Cattle Egret	<i>Bulbulcus ibis</i>	RM	LC
11	Intermediate Egret	<i>Ardea intermedia</i>	RM	LC
12	Little Egret	<i>Egretta garzetta</i>	R	LC
13	Large Great Egret	<i>Ardea alba</i>	RM	LC
Family: Threskiornithidae				
14	Black Headed White Ibis	<i>Threskiornis melanocephalus</i>	R	NT
15	Black Ibis (Red-naped Ibis)	<i>Pseudibis papillosa</i>	R	LC
16	Glossy Ibis	<i>Plegadis falcinellus</i>	RM	LC
17	Eurasian Spoonbill	<i>Platalea leucorodia</i>	RM	LC
Order: Ciconiiformes Family: Ciconiidae				
18	Painted Stork	<i>Mycteria leucocephala</i>	R	NT
Order: Gruiformes Family: Rallidae				
19	Common Coot	<i>Fulica atra</i>	RM	LC
20	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	R	LC
21	Common Moorhen	<i>Gallinula chloropus</i>	R	LC

22	Purple Swampphen	<i>Porphyrio porphyrio</i>	R	LC
Order: Charadriiformes Family: Charadriidae				
23	Red wattled Lapwing	<i>Vanellus indicus</i>	R	LC
24	Yellow wattled Lapwing	<i>Vanellus malabaricus</i>	R	V
25	Little Ringed Plover	<i>Charadrius dubius</i>	M	LC
Family: Recurvirostridae				
26	Black-winged stilt	<i>Himantopus himantopus</i>	R	LC
27	Pied Avocet	<i>Recurvirostra avosetta</i>	RM	LC
Family: Scolopacidae				
28	Common Greenshank	<i>Tringa nebularia</i>	M	LC
29	Common Sandpiper	<i>Actitis hypoleucos</i>	RM	LC
30	Marsh Sandpiper	<i>Tringa stagnatilis</i>	M	LC
31	Eurasian Curlew	<i>Numenius arquata</i>	M	NT
32	Black Tailed Godwit	<i>Limosa limosa</i>	M	LC
Family: Glareolidae				
33	Small Pratincole	<i>Glareola lactea</i>	R	LC
Order: Coraciiformes Family: Alcedinidae				
34	White Throated Kingfisher	<i>Halcyon smyrnensis</i>	R	LC
35	Pied Kingfisher	<i>Ceryle rudis</i>	R	LC
Order: Anseriformes Family: Anatidae				
36	Lesser Whistling Duck	<i>Dendrocygna javanica</i>	R	LC
37	Greylag Goose	<i>Anser anser</i>	M	LC
38	Brahminy Shelduck	<i>Tadorna ferruginea</i>	RM	LC
39	Common Pochard	<i>Aythya ferina</i>	M	LC
40	Common Teal	<i>Anas crecca</i>	M	LC
41	Northern Pintail	<i>Anas acuta</i>	M	LC
42	Indian Spot Billed Duck	<i>Anas poecilorhyncha</i>	RM	LC
43	Northern Shoveler	<i>Anas clypeata</i>	M	LC
Order: Passeriformes Family: Motacillidae				
44	White Wagtail	<i>Motacilla alba</i>	RM	LC
45	Citrine Wagtail	<i>Motacilla citreola</i>	M	LC
46	Large Pied Wagtail	<i>Motacilla maderaspatensis</i>	R	LC

R: Resident, RM: Resident Migratory, M: Migratory, LC: Least Concern, NT: Near Threatened, V: Vulnerable

shelter for resident, migrant and winter migrant. The resident birds were observed throughout the year, while winter migratory birds exhibit distinct pattern for arrival and departure from the wetland. Every year, the peak population was observed during the month of January and February. The basic requirements of the migratory

birds at their wintering sites are adequate food supply and safety (Lakshmi, 2006).

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