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Aquatic Bird Diversity in the Kishan Kareri Wetland of Chittorgarh District of Rajasthan, India

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Abstract: The role of birds is very important in the stabilization of any ecosystem, especially aquatic birds that are necessary for maintaining aquatic ecosystems like wetlands, ponds, lakes, etc. Their richness indicates the richness of any habitat. Our study of bird diversity was conducted at Kishan Kareri wetland, one of the 44 wetlands of the state recently declared by the government of Rajasthan in the year 2023, where many resident and migratory birds arrive mostly during the winter season. In this study, 64 species were identified. Among these 3 species reported as threatened category, 7 species at the verge of threatened category and the rest come in a less concerned category. Identified species are-- Sarus Crane, Great Crested Grebe, Great White Pelican, Greater Flamingo, Ruff, Black-tailed Godwit, Common Pochard, Eurasian Spoonbill, Bar-headed goose Black Ibis, River Tern, etc.

Keywords: Kishan Kareri, Threatened, Less concerned, Wetland, Ecosystem, Migratory, Aquatic bird, Diversity

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Introduction

Those birds that live around any aquatic ecosystem like pond, lake, wetland, etc., or migrate from other places due to favorable environmental conditions available there, can be kept in the category of aquatic birds. Wetlands are a favourable environment for the availability of food to various waterbirds in a moderate amount due to the enrichment of organic elements responsible for the growth of aquatic weeds, phytoplankton, and zooplankton (Parveen *et al.*, 2023). Around 310 of the 1340 bird species found in India

(Manakadan and Pittie, 2001) and approximately 9000 species of birds in the world are known to be dependent on wetlands (A. Kumar *et al.*, 2005). Over a hundred bird species are either endemic or threatened, and the number of birds has been steadily declining over the past few decades (Shukla and Lone, 2010). Wetland birds contain about 10% of the globally threatened species and 20% of Asian threatened species. Many species are close to extinction through disturbance or loss of their habitats, as well as through intensive



Fig. 1: GIS Map of Study Area Created by Using Google Earth Application.

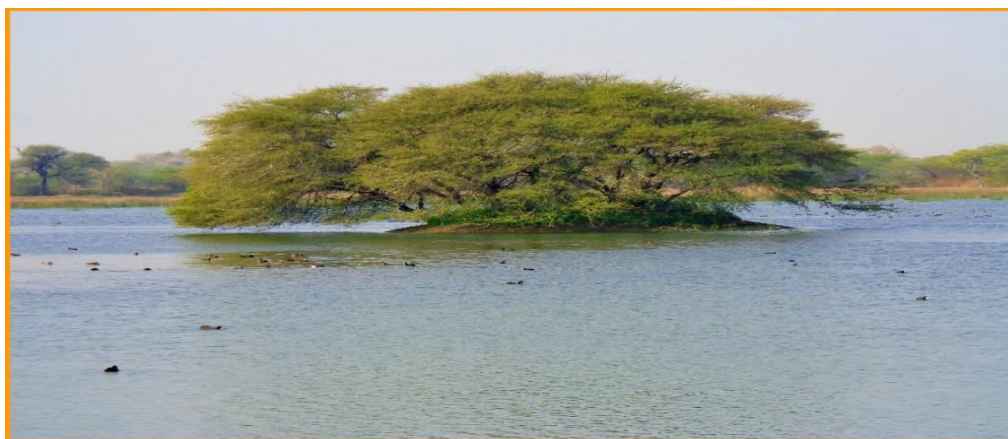


Fig. 2: Camera Picture of Studied Water Body.

searching pressure. The majority of the wetland species within the Indian subcontinent are not unusual and a quarter (24%) is rare. Of which, 34 are globally threatened species, 34 are critically endangered and one is conservation structured.

Chittorgarh is well known as a city of pride and honor and the best tourist destination in the country. There are many water bodies in the Chittorgarh district, out of which Badwai and Kishan Kareri wetlands are very famous for their enriched habitat and biodiversity as many water bird species migrate here in different seasons. This is the first scientific study of the aquatic bird diversity at Kishan Kareri wetland to understand the present status and the conservation measures that need to be done in future years.

Materials and Methods

Study Area:

The studied water body Kishan Kareri wetland (Figs. 1, 2) is situated near Kishan Kareri village which comes in the Chittorgarh district, Rajasthan, India. This pond is located on the boundary line of Udaipur and Chittorgarh district, which is about 70 km from Udaipur and about 65 km from Chittorgarh at $24^{\circ}49'19''$ N and $74^{\circ}28'51''$ E, at the elevation of 481 m with a perimeter of around 2.87 km and surface area of around 0.47 km^2 . Recently this area was notified as a wetland by the Department of Environment and Climate Change Government of Rajasthan under the Wetlands (Conservation and Management) Rules 2017. The main source of water here is rain. Natural

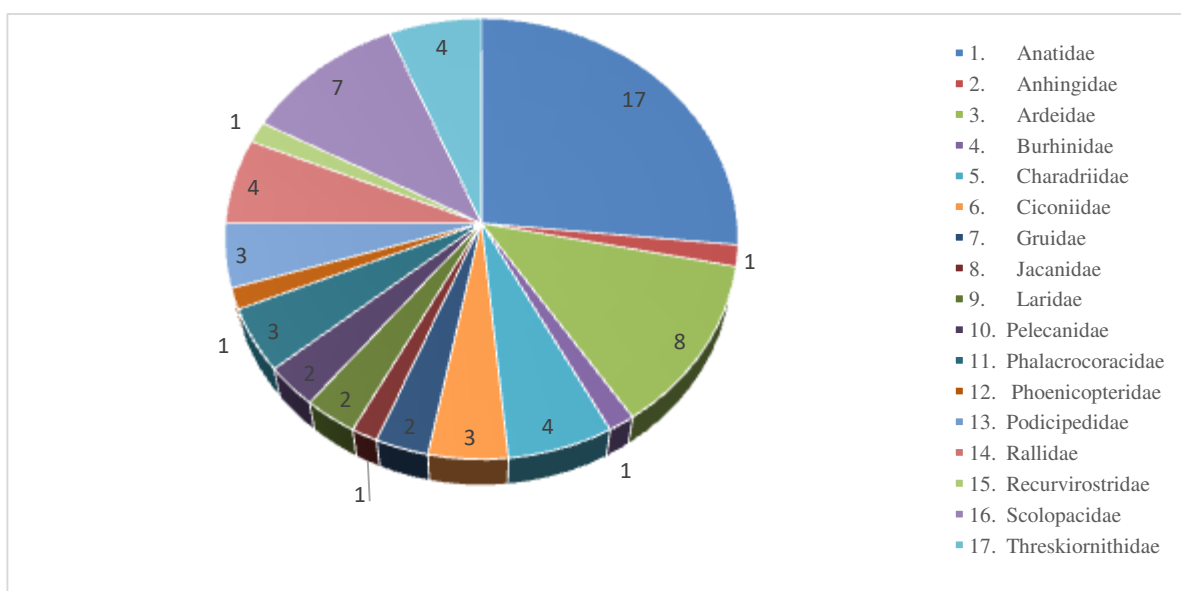


Fig. 2: Number of species according to family.

vegetation, fields, and barns can be seen in abundance around this wetland. In the middle of this wetland, there are some man-made islands on which vegetation has grown, which serves as a shelter, breeding, and feeding place for birds. Presently a society named Green Earth Natural Society, Kishan Kareri, is making an unprecedented contribution to the conservation and development of this area.

The survey for aquatic bird diversity at this wetland was carried from December 2022 to April 2023. Observations were done in the morning (7:00 am to 10:00 am) and evening (4:00 pm to 6:00 pm) hours using the open-ended line transect method. The birds were identified through naked eyes and with the help of binoculars (10 x 50) and photographs were taken with the help of a Nikon D5300 camera with 70-300 mm lens. The birds were identified using standard field guidebooks (Ali and Ripley, 1995, Ali, 2002; Grimmett *et al.*, 2011). The status of birds as residential or migratory has been denoted by R and M, respectively. Similarly, according to the red list category of the International Union for Conservation of Nature (IUCN), the status of birds has also been denoted as vulnerable (VU), near

threatened (NT), and least concerned (LC) category.

Results and Discussion

Number of species of the birds observed in the study area according to family has been depicted in Figure 2. The aquatic birds spotted during the study and their IUCN status are listed in Table 1. During the study, a total of 64 bird species were identified which belong to 17 different families named Anatidae, Anhingidae, Ardeidae, Burhinidae, Charadriidae, Ciconiidae, Gruidae, Jacanidae, Laridae, Pelecanidae, Phalacrocoracidae, Phoenicopteridae, Podicipedidae, Rallidae, Recurvirostridae, Scolopacidae, Threskiornithidae. Among these Anatidae was identified as the richest family comprising aquatic bird species in this area, while Anhingidae, Burhinidae, Jacanidae, Phoenicopteridae, and Recurvirostridae were the lowest comprising species. Figure 3 depicts the photographs of few species recorded in this study.

Conclusion

A total of 64 aquatic bird species belonging to 17 families were identified at Kishan Kareri wetland during the period from December 2022 to April 2023. This study gave us very important

Table 1: List of Aquatic Birds identified in the study area

S. No.	Common Name	Scientific Name	Family Name	Status R/M	IUCN Status VU/NT/LC
1.	Greylag Goose	<i>Anser anser</i>	Anatidae	M	LC
2.	Bar Headed Goose	<i>Anser indicus</i>	Anatidae	M	LC
3.	Comb Duck	<i>Sarkidiornis sylvicola</i>	Anatidae	M	LC
4.	Northern Pintail	<i>Anas acuta</i>	Anatidae	M	LC
5.	Red-crested Pochard	<i>Netta rufina</i>	Anatidae	M	LC
6.	Common Pochard	<i>Aythya ferina</i>	Anatidae	M	VU
7.	Common teal	<i>Anas crecca</i>	Anatidae	M	LC
8.	Northern Shoveler	<i>Spatula clypeata</i>	Anatidae	M	LC
9.	Cotton Pygmy-goose	<i>Nettapus coromandelianus</i>	Anatidae	M	LC
10.	Indian Spot-billed Duck	<i>Anas poecilorhyncha</i>	Anatidae	M	LC
11.	Eurasian Wigeon	<i>Mareca penelope</i>	Anatidae	M	LC
12.	Garganey	<i>Anas querquedula</i>	Anatidae	M	LC
13.	Lesser Whistling-duck	<i>Dendrocygna javanica</i>	Anatidae	R	LC
14.	Tufted Duck	<i>Aythya fuligula</i>	Anatidae	M	LC
15.	Ruddy Shelduck	<i>Tadorna ferruginea</i>	Anatidae	M	LC
16.	Ferruginous Duck	<i>Aythya nyroca</i>	Anatidae	M	NT
17.	Gadwall	<i>Mareca strepera</i>	Anatidae	M	LC
18.	Anhinga/Darter	<i>Anhinga anhinga</i>	Anhingidae	R	LC
19.	Grey Heron	<i>Ardea cinerea</i>	Ardeidae	M	LC
20.	Purple heron	<i>Ardea purpurea</i>	Ardeidae	M	LC
21.	Indian Pond-heron	<i>Ardeola grayii</i>	Ardeidae	R	LC
22.	Black-crowned Night-heron	<i>Nycticorax nycticorax</i>	Ardeidae	M	LC
23.	Little Egret	<i>Egretta garzetta</i>	Ardeidae	M	LC
24.	Cattle Egret	<i>Bubulcus ibis</i>	Ardeidae	M	LC
25.	Great White Egret	<i>Ardea alba</i>	Ardeidae	M	LC
26.	Intermediate Egret	<i>Ardea intermedia</i>	Ardeidae	M	LC
27.	Great Thick-knee	<i>Esacus recurvirostris</i>	Burhinidae	R	NT
28.	Red-wattled Lapwing	<i>Vanellus indicus</i>	Charadriidae	R	LC
29.	Yellow-wattled Lapwing	<i>Vanellus malabaricus</i>	Charadriidae	R	LC
30.	Little Ringed Plover	<i>Charadrius dubius</i>	Charadriidae	M	LC
31.	Grey Plover	<i>Pluvialis squatarola</i>	Charadriidae	M	LC
32.	Painted Stork	<i>Mycteria leucocephala</i>	Ciconiidae	R	LC
33.	Asian Openbill	<i>Anastomus oscitans</i>	Ciconiidae	R	LC
34.	Asian Woollyneck	<i>Ciconia episcopus</i>	Ciconiidae	R	NT
35.	Sarus Crane	<i>Grus antogone</i>	Gruidae	R	VU
36.	Common Crane	<i>Grus grus</i>	Gruidae	M	LC
37.	Bronze-winged Jacana	<i>Metopidius indicus</i>	Jacaniidae	R	LC
38.	River Tern	<i>Sterna aurantia</i>	Laridae	R	VU
39.	Whiskered Tern	<i>Chlidonias hybrid</i>	Laridae	M	LC
40.	Great White Pelican	<i>Pelecanus onocrotalus</i>	Pelecanidae	M	LC
41.	Dalmatian Pelican	<i>Pelecanus crispus</i>	Pelecanidae	M	NT
42.	Little Cormorant	<i>Microcarbo niger</i>	Phalacrocoracidae	R	LC
43.	Great Cormorant	<i>Phalacrocorax carbo</i>	Phalacrocoracidae	M	LC
44.	Indian Cormorant	<i>Phalacrocorax fuscicollis</i>	Phalacrocoracidae	R	LC
45.	Greater Flamingo	<i>Phoenicopterus roseus</i>	Phoenicopteridae	M	LC
46.	Little Grebe	<i>Tachybaptus ruficollis</i>	Podicipedidae	M	LC
47.	Great Crested Grebe	<i>Podiceps cristatus</i>	Podicipedidae	M	LC
48.	Black-necked Grebe	<i>Podiceps nigricollis</i>	Podicipedidae	M	LC
49.	Common Coot	<i>Fulica atra</i>	Rallidae	M	LC
50.	Purple Swamphen	<i>Porphyrio porphyrio</i>	Rallidae	R	LC

51	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	Rallidae	M	LC
52	Common Moorhen	<i>Gallinula chloropus</i>	Rallidae	M	LC
53	Black-winged Stilt	<i>Himantopus himantopus</i>	Recurvirostridae	M	LC
54	Black-tailed Godwit	<i>Limosa limosa</i>	Scolopacidae	M	NT
55	Bar-tailed Godwit	<i>Limosa lapponica</i>	Scolopacidae	M	NT
56	Common Redshank	<i>Tringa totanus</i>	Scolopacidae	M	LC
57	Green Sandpiper	<i>Tringa ochropus</i>	Scolopacidae	M	LC
58	Common Snipe	<i>Gallinago gallinago</i>	Scolopacidae	M	LC
59	Common Sandpiper	<i>Actitis hypoleucos</i>	Scolopacidae	M	LC
60	Ruff	<i>Philomachus pugnax</i>	Scolopacidae	M	LC
61	Euresian Spoonbill	<i>Platalea leucorodia</i>	Threskiornithidae	M	LC
62	Black-headed Ibis	<i>Threskiornis melanocephalus</i>	Threskiornithidae	M	NT
63	Glossy Ibis	<i>Plegadis falcinellus</i>	Threskiornithidae	M	LC
64	Red-naped Ibis	<i>Pseudibis papillosa</i>	Threskiornithidae	R	LC

R-Resident, M- Migratory, LC- Least Concern, VU- Vulnerable, NT-Near Threatened

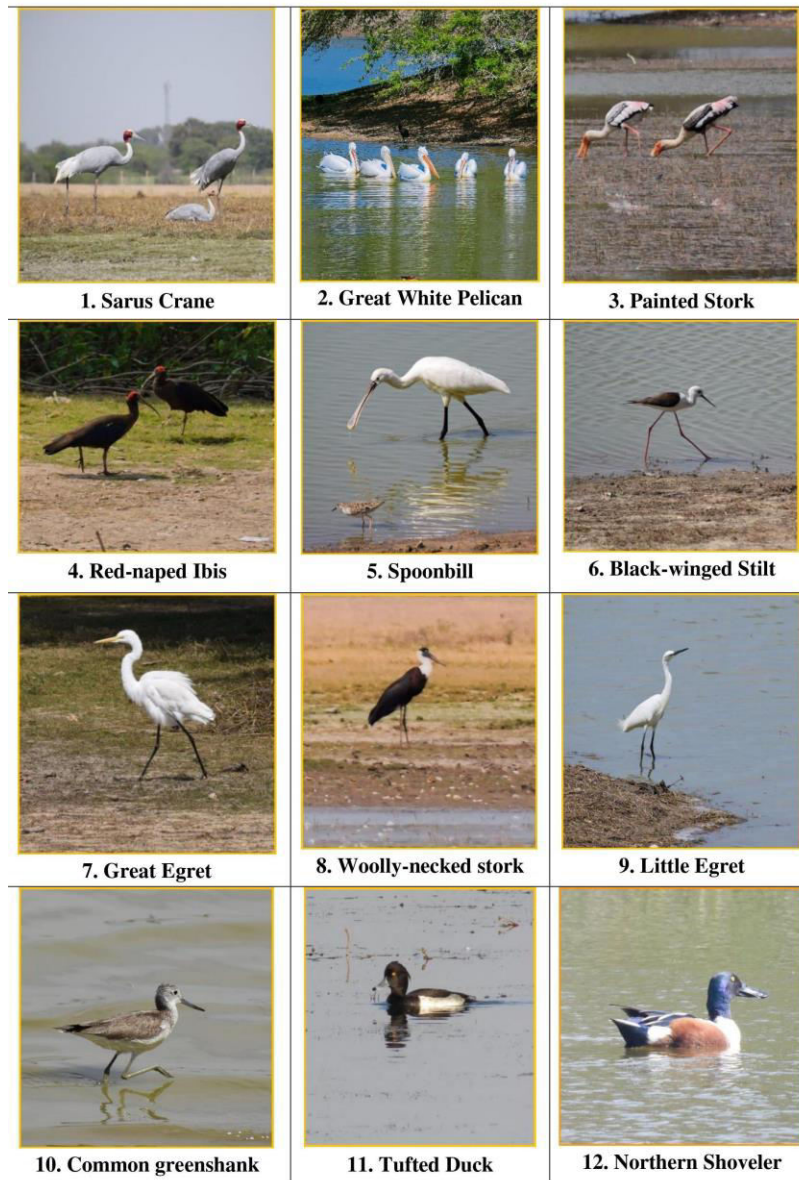


Fig. 3: Photographs of identified aquatic birds in Kishan Kareri Wetland

information about the biodiversity of aquatic birds in this particular area, which shows how strong, thriving, and diverse the ecosystem of this wetland is. This study can serve as a strong foundation for the conservation and management of the habitat of this wetland.

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