

Diversity and Composition of Wetland Birds Associated with Ujani Reservoir, Maharashtra, India: A Synthesis of Published Records

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Abstract: Ujani Reservoir is an important wetland ecosystem supporting diverse bird communities in Maharashtra, India. The present study synthesizes published records of wetland birds reported from Ujani Reservoir and its associated wetlands. A consolidated checklist prepared from available studies revealed 83 bird species belonging to 11 orders and 24 families. Charadriiformes was the most represented order, while Anatidae was the dominant family. The checklist included waterfowl, waders, herons, storks, ibises, gulls, terns and other wetland-associated birds. The findings highlight the ecological significance of Ujani Reservoir as an important habitat for resident and migratory birds and provide a baseline for future monitoring and conservation efforts.

Keywords: Ujani Reservoir, wetland birds, avian diversity, checklist, Maharashtra, conservation.

Introduction

Wetlands support a wide variety of plants and animals and are especially important for birds. They provide suitable areas for feeding, breeding, nesting and resting. The availability of water, aquatic vegetation, food and suitable shelter influences the occurrence and distribution of wetland birds.

Ujani Reservoir, located on the Bhima River in Solapur District, Maharashtra, is one of the important wetland areas of the region. The reservoir and its surrounding areas contain different habitats such as open water, shallow water, mudflats, marshes, agricultural fields and islands. These habitats provide suitable conditions for different groups of birds. The study area described in the research synopsis includes Palasdeo, Bhigwan, Diksal, Kondhar Chincholi, Katraj, Takali and Old Railway Bridge.

Earlier studies have reported considerable bird diversity from the Ujani wetland system. Kumbhar and Mhaske recorded 38 wader species belonging to 14 families during a study carried out from December 2015 to November 2017 at five wetland sites. Another study covering 15 wetland sites reported 81 aquatic bird species belonging to 59 genera, 11 orders and 23 families.

The published records include both resident and migratory species. Birds also differ in their feeding habits and habitat preferences. Therefore, bringing together the available information can help in understanding the overall importance of Ujani Reservoir for wetland birds.

The present paper aims to summarize the published information on wetland birds of Ujani Reservoir and to examine their taxonomic composition, feeding guilds, migratory status and habitat use.

Materials and Methods

1. Study area

Ujani Reservoir is situated on the Bhima River in Solapur District, Maharashtra. The reservoir and its adjoining wetlands contain a variety of habitats that are used by aquatic and wetland birds.

2. Data sources

The study was based on published information on wetland birds recorded from Ujani Reservoir and its associated wetlands. The main sources were the studies of Kumbhar and Mhaske on wader diversity and aquatic birds.

The information was compiled under the following categories:

- Species and family
- Feeding guild
- Migratory status
- Microhabitat
- Conservation status
- Study site

The research synopsis also contains a checklist based on earlier published records and supplementary records from other Ujani-specific studies. Therefore, the present paper is treated as a synthesis of published information rather than an analysis of a new quantitative field dataset.

Species totals from different publications were not combined because some species were reported in more than one study.

Results

i. Published records of wetland birds

The published studies indicate considerable diversity of wetland birds associated with Ujani Reservoir and its adjoining wetlands. Kumbhar and Mhaske (2021) reported 81 aquatic bird species belonging to 59 genera, 11 orders and 23 families, while their earlier study (2020) documented 38 wader species belonging to 14 families. When the species lists from both published studies were consolidated and duplicate records were removed, a total of 83 distinct bird species were represented in the combined checklist.

Table 1. Major published studies on wetland birds of Ujani Reservoir

Study	Study period	No. of sites	Bird group	Reported diversity
Kumbhar & Mhaske (2020)	2015–2017	5	Waders	38 species, 14 families
Kumbhar & Mhaske (2021)	Two years	15	Aquatic birds	81 species, 59 genera, 11 orders, 23 families

Table 2. Consolidated Checklist of Wetland Birds Reported from Ujani Reservoir Based on Kumbhar & Mhaske (2020, 2021)

Sr. No.	Common Name	Scientific Name	Order	Family	Source
1	Little Grebe	<i>Tachybaptus ruficollis</i>	Podicipediformes	Podicipedidae	2021
2	Indian Shag	<i>Phalacrocorax fuscicollis</i>	Suliformes	Phalacrocoracidae	2020, 2021
3	Little Cormorant	<i>Microcarbo niger</i>	Suliformes	Phalacrocoracidae	2020, 2021
4	Oriental Darter	<i>Anhinga melanogaster</i>	Suliformes	Anhingidae	2021
5	Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	Pelecaniformes	Ardeidae	2021
6	Indian Pond Heron	<i>Ardeola grayii</i>	Pelecaniformes	Ardeidae	2020, 2021
7	Striated Heron	<i>Butorides striata</i>	Pelecaniformes	Ardeidae	2021
8	Purple Heron	<i>Ardea purpurea</i>	Pelecaniformes	Ardeidae	2020, 2021
9	Grey Heron	<i>Ardea cinerea</i>	Pelecaniformes	Ardeidae	2020, 2021
10	Cattle Egret	<i>Bubulcus ibis</i>	Pelecaniformes	Ardeidae	2020, 2021
11	Little Egret	<i>Egretta garzetta</i>	Pelecaniformes	Ardeidae	2020, 2021
12	Median Egret	<i>Mesophoyx intermedia</i>	Pelecaniformes	Ardeidae	2021
13	Large (Great) Egret	<i>Casmerodius albus</i>	Pelecaniformes	Ardeidae	2021
14	Painted Stork	<i>Mycteria leucocephala</i>	Ciconiiformes	Ciconiidae	2020, 2021
15	Asian Openbill	<i>Anastomus oscitans</i>	Ciconiiformes	Ciconiidae	2020, 2021
16	White-naked Stork	<i>Ciconia episcopus</i>	Ciconiiformes	Ciconiidae	2020, 2021
17	Oriental White Ibis	<i>Threskiornis melanocephalus</i>	Pelecaniformes	Threskiornithidae	2020, 2021
18	Black Ibis	<i>Pseudibis papillosa</i>	Pelecaniformes	Threskiornithidae	2020, 2021
19	Glossy Ibis	<i>Plegadis falcinellus</i>	Pelecaniformes	Threskiornithidae	2020, 2021
20	Eurasian Spoonbill	<i>Platalea leucorodia</i>	Pelecaniformes	Threskiornithidae	2020, 2021

Sr. No.	Common Name	Scientific Name	Order	Family	Source
21	Greater Flamingo	<i>Phoenicopterus roseus</i>	Phoenicopteriformes	Phoenicopteridae	2020, 2021
22	Lesser Whistling Duck	<i>Dendrocygna bicolor</i>	Anseriformes	Anatidae	2021
23	Bar-headed Goose	<i>Anser indicus</i>	Anseriformes	Anatidae	2021
24	Ruddy Shelduck	<i>Tadorna ferruginea</i>	Anseriformes	Anatidae	2021
25	Comb Duck	<i>Sarkidiornis melanotos</i>	Anseriformes	Anatidae	2021
26	Eurasian Wigeon	<i>Anas penelope</i>	Anseriformes	Anatidae	2021
27	Gadwall	<i>Anas strepera</i>	Anseriformes	Anatidae	2021
28	Common Teal	<i>Anas crecca</i>	Anseriformes	Anatidae	2021
29	Mallard	<i>Anas platyrhynchos</i>	Anseriformes	Anatidae	2021
30	Spot-billed Duck	<i>Anas poecilorhyncha</i>	Anseriformes	Anatidae	2021
31	Northern Pintail	<i>Anas acuta</i>	Anseriformes	Anatidae	2021
32	Garganey	<i>Anas querquedula</i>	Anseriformes	Anatidae	2021
33	Northern Shoveler	<i>Spatula clypeata</i>	Anseriformes	Anatidae	2021
34	Red-crested Pochard	<i>Rhodonessa rufina</i>	Anseriformes	Anatidae	2021
35	Common Pochard	<i>Aythya ferina</i>	Anseriformes	Anatidae	2021
36	Demoiselle Crane	<i>Grus grus</i>	Gruiformes	Gruidae	2021
37	Baillon's Crane	<i>Porzana pusilla</i>	Gruiformes	Rallidae	2021
38	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	Gruiformes	Rallidae	2020, 2021
39	Common Moorhen	<i>Gallinula chloropus</i>	Gruiformes	Rallidae	2020, 2021
40	Purple Swampphen	<i>Porphyrio porphyrio</i>	Gruiformes	Rallidae	2020, 2021
41	Eurasian Coot	<i>Fulica atra</i>	Gruiformes	Rallidae	2020, 2021
42	Pheasant-tailed Jacana	<i>Hydrophasianus chirurgus</i>	Charadriiformes	Jacanidae	2020, 2021
43	Bronze-winged Jacana	<i>Metopidius indicus</i>	Charadriiformes	Jacanidae	2021
44	Greater Painted Snipe	<i>Rostratula benghalensis</i>	Charadriiformes	Rostratulidae	2020, 2021
45	Black-winged Stilt	<i>Himantopus himantopus</i>	Charadriiformes	Recurvirostridae	2020, 2021
46	Collared Pratincole	<i>Glareola pratincola</i>	Charadriiformes	Glareolidae	2021
47	Small Pratincole	<i>Glareola lactea</i>	Charadriiformes	Glareolidae	2020, 2021

Sr. No.	Common Name	Scientific Name	Order	Family	Source
48	Yellow-wattled Lapwing	<i>Vanellus malabaricus</i>	Charadriiformes	Charadriidae	2021
49	Red-wattled Lapwing	<i>Vanellus indicus</i>	Charadriiformes	Charadriidae	2020, 2021
50	Little Ringed Plover	<i>Charadrius dubius</i>	Charadriiformes	Charadriidae	2020, 2021
51	Kentish Plover	<i>Charadrius alexandrinus</i>	Charadriiformes	Charadriidae	2021
52	Black-tailed Godwit	<i>Limosa limosa</i>	Charadriiformes	Scolopacidae	2020, 2021
53	Eurasian Curlew	<i>Numenius arquata</i>	Charadriiformes	Scolopacidae	2020, 2021
54	Common Redshank	<i>Tringa tetanus</i>	Charadriiformes	Scolopacidae	2021
55	Marsh Sandpiper	<i>Tringa stagnatilis</i>	Charadriiformes	Scolopacidae	2020, 2021
56	Common Greenshank	<i>Tringa nebularia</i>	Charadriiformes	Scolopacidae	2021
57	Green Sandpiper	<i>Tringa ochropus</i>	Charadriiformes	Scolopacidae	2020, 2021
58	Wood Sandpiper	<i>Tringa glareola</i>	Charadriiformes	Scolopacidae	2020, 2021
59	Common Sandpiper	<i>Actitis hypoleucos</i>	Charadriiformes	Scolopacidae	2020, 2021
60	Common Snipe	<i>Gallinago gallinago</i>	Charadriiformes	Scolopacidae	2021
61	Jack Snipe	<i>Lymnocyptes minimus</i>	Charadriiformes	Scolopacidae	2021
62	Little Stint	<i>Calidris minuta</i>	Charadriiformes	Scolopacidae	2021
63	Ruff	<i>Philomachus pugnax</i>	Charadriiformes	Scolopacidae	2021
64	Black-headed Gull	<i>Larus ridibundus</i>	Charadriiformes	Laridae	2020
65	Brown-headed Gull	<i>Larus brunnicephalus</i>	Charadriiformes	Laridae	2020, 2021
66	Gull-billed Tern	<i>Gelochelidon nilotica</i>	Charadriiformes	Laridae	2020
67	Whiskered Tern	<i>Chlidonias hybridus</i>	Charadriiformes	Laridae	2021
68	River Tern	<i>Sterna aurantia</i>	Charadriiformes	Laridae	2020, 2021
69	Common Tern	<i>Sterna hirundo</i>	Charadriiformes	Laridae	2021
70	Brahminy Kite	<i>Haliastur indus</i>	Accipitriformes	Accipitridae	2021
71	Pallas's Fish-Eagle	<i>Haliaeetus leucoryphus</i>	Accipitriformes	Accipitridae	2021

Sr. No.	Common Name	Scientific Name	Order	Family	Source
72	Osprey	<i>Pandion haliaetus</i>	Accipitriformes	Pandionidae	2021
73	Small Blue Kingfisher	<i>Alcedo atthis</i>	Coraciiformes	Alcedinidae	2021
74	Stork-billed Kingfisher	<i>Halcyon capensis</i>	Coraciiformes	Halcyonidae	2021
75	White-breasted Kingfisher	<i>Halcyon smyrnensis</i>	Coraciiformes	Halcyonidae	2021
76	Lesser Pied Kingfisher	<i>Ceryle rudis</i>	Coraciiformes	Cerylidae	2021
77	Common Swallow	<i>Hirundo rustica</i>	Passeriformes	Hirundinidae	2021
78	Wire-tailed Swallow	<i>Hirundo smithii</i>	Passeriformes	Hirundinidae	2021
79	Red-rumped Swallow	<i>Hirundo daurica</i>	Passeriformes	Hirundinidae	2021
80	White Wagtail	<i>Motacilla alba</i>	Passeriformes	Motacillidae	2021
81	Large Pied Wagtail	<i>Motacilla maderaspatensis</i>	Passeriformes	Motacillidae	2020, 2021
82	Yellow Wagtail	<i>Motacilla flava</i>	Passeriformes	Motacillidae	2020, 2021
83	Grey Wagtail	<i>Motacilla cinerea</i>	Passeriformes	Motacillidae	2020, 2021

ii. Family composition of waders

Among the 38 wader species recorded in the earlier study, Scolopacidae was the most represented family, with six species. Ardeidae followed with five species. Laridae, Rallidae and Threskiornithidae were represented by four species each, while Ciconiidae and Motacillidae had three species each.

The presence of several wader families suggests that different types of feeding areas are available around the reservoir, particularly shallow-water areas and exposed wetland margins.

iii. Feeding guilds

The published aquatic-bird study reported birds belonging to different feeding guilds. Carnivorous birds formed the largest group (36%), followed by omnivorous birds (25%). Insectivorous, piscivorous and herbivorous birds accounted for 9%, 6% and 5%, respectively.

Table 3. Feeding guilds of aquatic birds reported from Ujani Reservoir

Feeding guild	Proportion
Carnivorous	36%
Omnivorous	25%
Insectivorous	9%
Piscivorous	6%
Herbivorous	5%

The occurrence of different feeding groups indicates that the reservoir provides a range of food resources for wetland birds.

iv. Migratory status

The 81 aquatic bird species were classified into three groups:

Migratory category	Number of species
Resident	26
Migratory	19
Resident-migratory	36

The relatively large number of resident-migratory species shows that the reservoir is used by birds with different seasonal patterns.

v. Microhabitat use

The aquatic-bird study recorded five divers, 15 swimmers, 19 large waders, 27 small waders and 15 aerial foragers. Species differed in the number of microhabitats they used.

The wader study also included birds associated with open water, shallow water, marshy areas and mudflats.

This variation in habitat use is important because it shows that different parts of the wetland are used by different bird groups.

vi. Conservation status

The published aquatic-bird study reported 76 species as Least Concern, six as Near Threatened, two as Vulnerable and one as Endangered according to the categories used by the authors.

However, these reported numbers do not add up to the stated total of 81 species. Since the original species-level dataset is not available, the values have not been recalculated in this paper. This discrepancy is therefore treated as a limitation of the published source.

Discussion

The published studies clearly show that Ujani Reservoir is an important habitat for wetland birds. The record of 81 aquatic bird species from 15 wetland sites and 38 wader species from five sites indicates considerable bird diversity in the reservoir landscape.

Waders form an important part of this diversity. Their occurrence is closely related to the availability of suitable feeding areas such as shallow water, mudflats and exposed wetland margins. The higher representation of Scolopacidae in the wader records may be related to the availability of such habitats.

The presence of different feeding guilds also reflects the variety of food resources available in the reservoir. Birds feeding on fish, insects, aquatic organisms, plants and other food items can use different parts of the wetland. This allows several groups of birds to occur within the same wetland system.

Migratory birds are another important component of the Ujani avifauna. The published study recorded 19 migratory and 36 resident-migratory species. Their presence indicates that the reservoir provides suitable conditions for birds during different parts of their annual cycle.

Habitat diversity is likely to be one of the main reasons for the occurrence of different bird groups. Open water, shallow water, mudflats, marshes, agricultural fields and islands provide different feeding and resting opportunities. The research synopsis also describes these habitats as important components of the Ujani wetland landscape.

At the same time, the wetland is exposed to several human activities. The synopsis lists sand mining, fishing, livestock grazing, agricultural runoff, tourism, vehicular movement, habitat encroachment, water extraction and solid-waste disposal among the disturbances associated with the wetland.

Such activities can alter feeding areas and other habitats used by birds. Regular monitoring is therefore important, particularly at sites that support large numbers of resident or migratory birds.

Conclusion

Published records show that Ujani Reservoir supports a diverse assemblage of wetland birds, including resident, migratory and resident-migratory species. The reported diversity of 81 aquatic bird species and 38 wader species from different parts of the reservoir highlights its importance as a wetland habitat.

The occurrence of different feeding guilds and microhabitat users indicates that the reservoir provides a range of resources for birds. The presence of migratory species further increases its ecological importance.

Protection of shallow-water areas, mudflats, marshes and other important bird habitats, together with regular bird monitoring, will be important for maintaining the bird diversity of Ujani Reservoir.

References

- 1) Ali, S. (1996). The Book of Indian Birds. Bombay Natural History Society, Oxford University Press, Mumbai.
- 2) Bharucha, E. & Gogte, P. (1990). Avian profile of a man-modified aquatic ecosystem in the backwaters of the Ujjani Dam. Journal of the Bombay Natural History Society, 87(1): 73–90.
- 3) Bibby, C.J., Burgess, N.D., Hill, D.A. & Mustoe, S.H. (2000). Bird Census Techniques. 2nd ed. Academic Press, London.

- 4) Chavan, S. & Kumbhar, A. (2020). Breeding ecology of River Tern (*Sterna aurantia*) at Ujjani-Bhigwan Reservoir Bird Sanctuary near Pune-Solapur Highway, India. *Asian Journal of Conservation Biology*, 9(2): 352–358.
- 5) Chavan, S.P., Hiremath, S., Kumbhar, R. & Kumbhar, A. (2021). The status of raptors in steppe area around Solapur City, Maharashtra. *Ela Journal of Forestry and Wildlife*, 10(4): 1040 onward.
- 6) Dhadke, S.L. & Kumbhar, A. Avifauna of Galorgi Lake, Akkalkot Tahasil, Dist. Solapur. *International Journal of Multidisciplinary Educational Research*, 12(2).
- 7) Deshmukh, G.D. (2019). Diversity of wetland birds at Bikli Lake near Nagbhid, Maharashtra, India. *International Journal of Life Sciences*.
- 8) Grimmett, R., Inskipp, C. & Inskipp, T. (2013). *Birds of the Indian Subcontinent*. 2nd ed. Bloomsbury Publishing, London.
- 9) Islam, M.Z. & Rahmani, A.R. (2004). *Important Bird Areas in India: Priority Sites for Conservation*. Indian Bird Conservation Network, Bombay Natural History Society and BirdLife International.
- 10) Islam, M.Z. & Rahmani, A.R. (2012). *Threatened Birds of India: Their Conservation Status*. Indian Bird Conservation Network, Bombay Natural History Society, Mumbai.
- 11) Karikar, S.P., Mali, S.V., Kulkarni, P. & Aphale, P. (2019). An assessment of bird communities across Ujjani and its five satellite wetlands in Solapur District of Maharashtra, India. *Journal of Threatened Taxa*, 11(15): 14989–14997. DOI: 10.11609/jott.4741.11.15.14989-14997.
- 12) Koparde, P. & Raote, N. (2016). Areas of avian richness across an urban-rural setting: A case study of selected water bodies from Pune, Maharashtra, India. *Indian BIRDS*, 12(2&3): 50–55.
- 13) Kumbhar, D., Lanka, L. & Mhaske, D. (2025). Evaluating the aquatic health: A comprehensive study of physico-chemical properties of Ujani Reservoir, Maharashtra. *The Bioscan*, 20(Special Issue-1): 104–110. DOI: 10.63001/tbs.2025.v20.i01.S.I(1).pp104-110.
- 14) Kumbhar, D.S. & Mhaske, D.K. (2020). Study of waders diversity in the catchment area of Ujani Reservoir, Solapur District (MS), India. *International Journal of Biological Innovations*, 2(2): 287–294. DOI: 10.46505/IJBI.2020.2225.
- 15) Kumbhar, D.S. & Mhaske, D.K. (2021). Status and distribution of aquatic birds associated to wetlands of Ujani Reservoir, Maharashtra, India. *Uttar Pradesh Journal of Zoology*, 42(14): 19–32.
- 16) Kumar, P. & Gupta, S.K. (2009). Diversity and abundance of wetland birds around Kurukshetra, India. *Our Nature*, 7: 212–217.
- 17) Kumar, P. & Gupta, S.K. (2013). Status of wetland birds of Chhilchhila Wildlife Sanctuary, Haryana, India. *Journal of Threatened Taxa*, 5(5): 3969–3976.
- 18) Mahabal, A., Pande, S., Pandit, P. & Ponkshe, A. (2011). *Fauna of Maharashtra*, State Fauna Series 20 (Part 1). Zoological Survey of India, Kolkata.
- 19) Ma, Z., Cai, Y., Li, B. & Chen, J. (2010). Managing wetland habitats for waterbirds: An international perspective. *Wetlands*, 30: 15–27.

- 20) Mitsch, W.J. & Gosselink, J.G. (2009). Wetlands. 4th ed. John Wiley & Sons.
- 21) Nilange, M. & Kumbhar, A. (2023). Study of avifauna in and around Chaphal Reservoir of Patan Tahasil, Dist. Satara (M.S.). Review of Research, 13(2).
- 22) Nilange, M.S. & Kumbhar, A.C. (2021). Diversity of birds in Shree Siddheshwar Van Vihar, Solapur, Maharashtra, India. Review of Research, 10(10).
- 23) Novitski, R.P., Smith, R.D. & Fretwell, J.D. (1996). Wetland functions, values, and assessment. National Summary on Wetland Resources, USGS Water-Supply Paper 2425: 79–86.
- 24) Praveen, J., Jayapal, R. & Pittie, A. (2016). A checklist of the birds of India. Indian BIRD, 11(5&6): 113–172.
- 25) Rahmani, A.R., Islam, M.Z. & Kasambe, R.M. (2016). Important Bird and Biodiversity Areas in India: Priority Sites for Conservation. Bombay Natural History Society, Mumbai.
- 26) Vagare, M., Shingade, A., Deshmukh, R., Jadhav, P. & Kumbhar, A. (2019). Checklist of avifauna of Khudus Vanaushadhi and Nakshatravan of Forest Department of Malshiras Tahasil, Dist. Solapur, Maharashtra. Review of Research, 8(5).
- 27) Washington, H.G. (1984). Diversity, biotic and similarity indices: A review with special relevance to aquatic ecosystems. Water Research, 18(6): 653–694.
- 28) Weller, M.W. (1999). Wetland Birds: Habitat Resources and Conservation Implications. Cambridge University Press.

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