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**Journal of
Threatened
Taxa**

10.11609/jott.2026.18.2.28262-28454
www.threatenedtaxa.org

26 February 2026 (Online & Print)
18(2): 28262-28454
ISSN 0974-7907 (Online)
ISSN 0974-7893 (Print)



ISSN 0974-7907 (Online); ISSN 0974-7893 (Print)

Publisher
Wildlife Information Liaison Development Society
www.wild.zooreach.org

Host
Zoo Outreach Organization
www.zooreach.org

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Cover: Digital illustration of *Impatiens chamchumroonii* in Krita by Dupati Poojitha.



Assessing avian diversity and conservation status in Dhamapur Lake World Heritage Irrigation Structure, Sindhudurg, Maharashtra, India

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Abstract: We present a preliminary checklist of bird species in the wetland of Dhamapur Lake, a World Heritage irrigation structure in Sindhudurg District, Maharashtra, derived from studies between July 2019 and November 2024. A total of 153 species belonging to 56 families, along with their IUCN Red List status, are documented. Family-wise analysis revealed that the Ardeidae (8 species) dominated, followed by the Accipitridae and Muscipidae. We documented 102 residents, 21 migratory, and 30 local migratory species in the study area. Categorized according to the IUCN Red List, we documented six 'Near Threatened' species, *Coracias benghalensis*, *Ciconia episcopus*, *Anhinga rufa*, *Anthracoceros cornutus*, *Melanogaster fuscus*, and *Esacus recurvirostris*, and four 'Vulnerable' species, *Ocyrceros griseus*, *Buceros bicornis*, *Pluvialis squatarola*, and *Sterna aurantia*, highlighting the urgent need to conserve this site.

Keywords: Checklist, ecosystem, indicator, migratory, ornithology, residential, sustainable, threatened, vulnerable, wetland.

Editor: H. Byju, Coimbatore, Tamil Nadu, India.

Date of publication: 26 February 2026 (online & print)

Citation: Koli, Y., P. Sawant & M. Chavan (2026). Assessing avian diversity and conservation status in Dhamapur Lake World Heritage Irrigation Structure, Sindhudurg, Maharashtra, India. *Journal of Threatened Taxa* 18(2): 28387–28398. <https://doi.org/10.11609/jott.10130.18.2.28387-28398>

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Funding: Self-funded.

Competing interests: The authors declare no competing interests.

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Author contributions: YK & MC wrote the manuscript and collected data in the field by surveying birds at different locations. PS photographed all birds species. PS helped YK in collecting the data during field work.

Acknowledgements: We thank the principal, Sant Rawool Maharaj Mahavidyalaya, Kudal for providing necessary facilities for this research work; Mr. Tejas Sawant, Mr. Faiyz Talikot & Mr. Gurunath Kadam for their kind help during field work.



INTRODUCTION

Wetlands serve as a connecting link between land and water ecosystems (Havril et al. 2018), typically having a water table near the ground surface or submerged vegetation under shallow water (Mitsch & Gosselink, 2015). Often referred to as 'nature's kidney' and 'supermarket' as they manage the regulation of water supply, support a wide range of biodiversity, and filter polluted water (Mitsch & Gosselink 2015), protecting shorelines, and making them crucial habitats (Byju et al. 2025a). The high-yield ecosystems, covering 6% of land surface (Mitsch & Gosselink 2007) are crucial for many bird species, providing essential habitats for feeding, breeding, & resting and serve as stopover and wintering areas for migratory birds (Piersma & Lindström 2004; Grimmett et al. 2011; Byju et al. 2025b). Waterbirds are essential to the nutrient cycling of wetlands, occupying different trophic levels, and serve as important bioindicators of an ecosystem's ecological health (Byju et al. 2025c).

Dhamapur Lake is associated with ecologically rich wetlands having considerable biodiversity. It was the first wetland from Maharashtra to receive a World Heritage Irrigation Structure (WHIS) award (<https://icid-ciid.org/award>).

Prior ornithological studies in Sindhudurg District include a preliminary survey conducted in 2018, which recorded 247 bird species (Koli et al. 2018). A year later, this number increased to 307 species covering coastal and forest bird diversity (Rao et al. 2019). Along with this, one of the popular hotspots of biodiversity in Sindhudurg District, Amboli, was found to host 208 bird species (Satose et al. 2018). Altogether, these studies emphasize the avifaunal richness of Sindhudurg District, but the available literature is restricted to broad landscapes such as the coastal region, forest, and hill ecosystems. Though 57 wetlands had been officially recognized in the Sindhudurg District, one of the most productive ecosystems remains significantly understudied, except for a single study from Pat wetland, in which 39 bird species were recorded (Patil et al. 2015), and no detailed or updated assessment has been made for other wetlands. Therefore, the present study highlights the baseline data of the avian fauna of the Dhamapur wetland, and addresses potential environmental issues. Researchers and stakeholders can use these findings for management purposes and to develop sustainable growth strategies while protecting Dhamapur wetland.

MATERIALS AND METHODS

Study area

Dhamapur Lake (16.033° N 73.594° E), is located in the Sahyadri Hills of the Western Ghats at the southern tip of Maharashtra (Image 1). It supplies the largest wetland in Sindhudurg District, extending over 32 ha, with 21% is covered by forest, 72% by agriculture, and 5% by grassland and scrubland (ICID-CIID 2022). The lake was established almost 500 years ago with the construction of a dam using rice straw as fiber, mud as binding material, and tree trunks as pipes and conduits. This is testament to ancient methods of using knowledge of local geography to harvest water and ensure a year-round supply. The periphery of the wetland is covered by a reserve deciduous forest separating the Dhamapur and Kasle forests. Dhamapur Village has diverse habitats that include semi-evergreen forest, low-elevation terraced plateaus and grasslands. Sixty-one minor streams, along with water emerging from two major streams, the Kovadewadi Dam and the Guramwadi Dam, fill the wetland with water, supporting the needs of humans and wildlife. The old stream, which has provided water to the wetland for centuries, starts from the Kalse mountains. Major sites of the present study covered backwater areas of the wetlands of Pendur Bhatwadi, Mograne Kalse, and Dhamapur. The study area of the Dhamapur wetland is shown in Image 1.

The study was conducted for five years, from July 2019–December 2024. Field surveys were carried out in winter (November–February), summer (March–June), and monsoon (July–October) seasons, seven days a month, 0600–1100 h and 1500–1700 h. Direct observations were done with binoculars (Olympus 80X) and photographs of birds taken by Canon 200D and Canon R10, lens Tamron 150–600 mm and 55–250 mm. All identification was done with the help of a standard field guide, Grimmett et al. (2011). The residential status of birds was classified as Migratory (M), Resident (R), and Local migratory (LM).

RESULTS

The 153 species belonging to 56 families that were recorded along with their IUCN Red List status, are listed in Table 1 and few rarely sighted Images present image 2 & 3. Family-wise, we recorded eight Ardeidae species, seven each for Accipitridae and Muscicapidae, and singles for, Aegithinidae, Anhingidae, Apodidae, Artamidae, Burhinidae, Coraciidae, Dicaeidae, Hirundinidae,

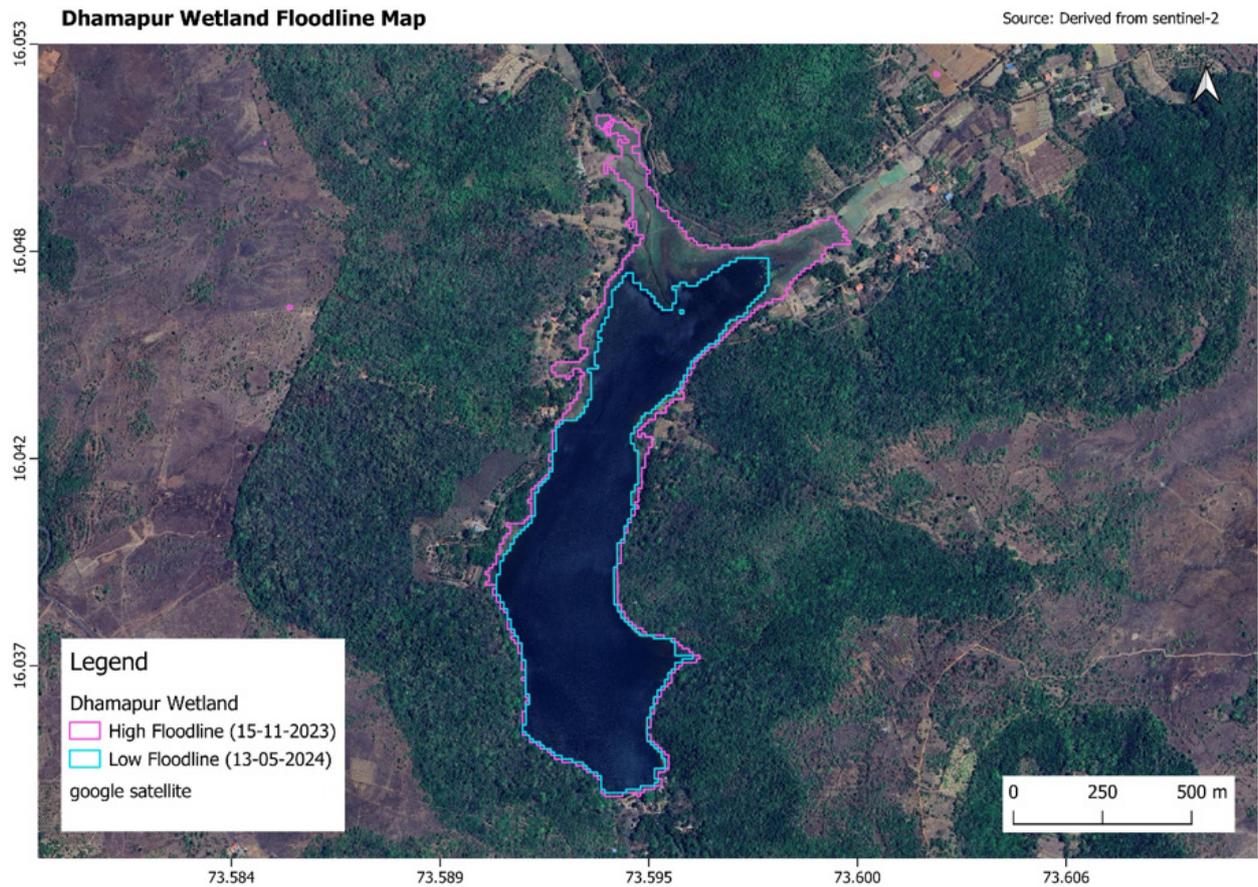


Image 1. Map of Dhamapur wetland study region.

Laridae, Passeridae, Pellorneidae, Pittidae, Ploceidae, Podargidae, Podicipedidae, Rostratulidae, Trogonidae, Turdidae, Tytonidae, and Zosteropidae consist of single species. An analysis of documented species indicates 102 resident species, 21 migrants and 30 local migrants (Figure 2). According to the IUCN (2025), six species, *Coracias benghalensis*, *Ciconia episcopus*, *Anhinga rufa*, *Anthracoceros cornutus*, *Melanogaster fuscus*, and *Esacus recurvirostris* are 'Near Threatened', and four species *Ocyrceros griseus*, *Buceros bicornis*, *Pluvialis squatarola*, and *Sterna aurantia* are categorized as 'Vulnerable' globally (Figure 1). The remaining 144 species fall under the 'Least Concern' category. During the observation period, the Dhamapur wetland exhibited a rich assemblage of avifauna, highlighting its ecological significance as a key habitat for both aquatic and terrestrial birds. Among the waterbirds, five species were particularly dominant in terms of abundance and frequency of occurrence. These included the Lesser Whistling-duck *Dendrocygna javanica* (n = 534) and the Little Cormorant *Microcarbo niger* (n = 360). The Indian Pond Heron *Ardeola grayii* (n = 266) were commonly

seen foraging in the shallow margins and vegetated zones of the wetland. The Asian Openbill *Anastomus oscitans* and Painted Stork *Mycteria leucocephala* (n = 252 each) were other prominent species, often found in shallow margins, moving in small flocks across open water.

In addition to these aquatic species, the surrounding terrestrial habitats supported a variety of landbirds, four of which were notably abundant. The Red-wattled Lapwing *Vanellus indicus* (n = 217) was regularly recorded along the exposed part of the grassland. The White-throated Kingfisher *Halcyon smyrnensis* (n = 175) was frequently observed perched near the waterbody's edge, preying on small fish and amphibians. The Asian Green Bee-eater *Merops orientalis* (n = 142) actively foraged in open areas around the wetland, while the Red-whiskered Bulbul *Pycnonotus jocosus* (n = 134) was also a regular inhabitant, often observed scavenging near human settlements adjacent to the wetland.

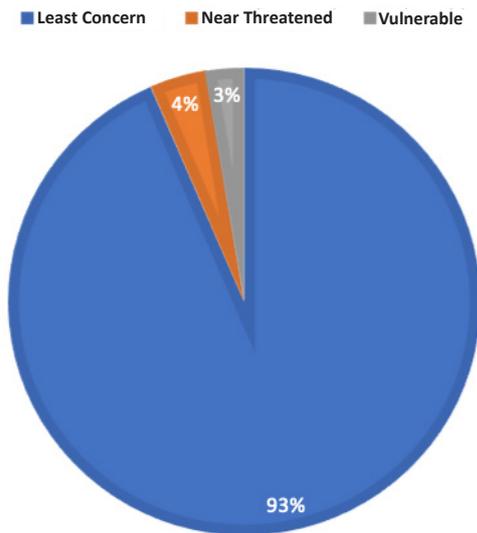


Figure 1. Representation of the IUCN Red List status of the avian fauna of Dhamapur.

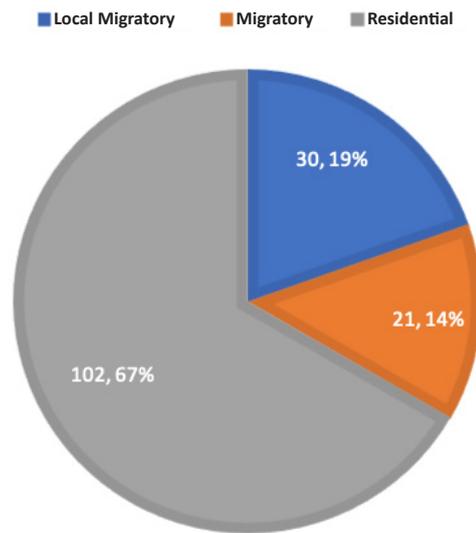


Figure 2. Migratory status of avian species documented from Dhamapur.

DISCUSSION

The present study is a baseline study of avian diversity of the Dhamapur wetland of Sindhudurg. Among the recorded bird families in the study area, the Ardeidae family is found to be dominant. Furthermore, all species within this family are typically resident, except for *Nycticorax nycticorax*, which migrates locally, suggesting that Dhamapur wetland serves as a suitable and stable resource throughout the year.

After assessment of recorded bird species, it indicates a strong presence of residential bird species, i.e., 102, indicating that Dhamapur wetland and its surrounding areas offer consistent and reliable resources. This underscores that the wetland serves as a permanent area for breeding, nesting, and foraging (Byju et al. 2023). Furthermore, the presence of 21 migratory birds highlights the importance of Dhamapur wetland as a wintering ground and stopover location (Anand et al. 2023). Also, with the presence of 30 local migratory species shows the seasonal movement within the Konkan region, implying an additional habitat in conjunction with nearby wetlands like rivers and coastal areas (Rao et al. 2019). The existence of six ‘Near Threatened’ and four ‘Vulnerable’ bird species showcases the ecological significance of Dhamapur wetland and indicates its role as a critical habitat for species of global concern.

Human activities such as land reclamation, pollution, and excessive withdrawal of water resources have negatively impacted Indian wetlands (Gopi et al. 2014; Byju et al. 2024), which shows the significant risks for

birds. Such concerns are also rising in our study area. The increase in tourism around Dhamapur has led to heightened physical disruptions, such as trampling along the banks and increased noise levels, as well as more on-water activities, like boating. These changes due to anthropogenic activities can drive birds away from their feeding and resting spots, disturb sediments in the water, diminish water clarity, and ultimately impact the quality of their habitats which leads to reduced species richness, loss of habitat specialists with a rise in generalists, disrupted migration and greater migratory mortality, reduced fitness, limited food & foraging efficiency, heightened competition, and decreased nest success (Patil et al. 2015).

In 2021, the water quality of Dhamapur wetland showed deviations in key physicochemical parameters (Yogesh Koli pers. obs. 2021). The slightly acidic pH (6.38) and elevated COD (78 mg/L), and BOD (24 mg/L) (Table 2) values indicate high organic pollution and oxygen depletion. These changes are mainly attributed to anthropogenic inputs, particularly idol immersion activities involving plaster of paris and chemical paints. Due to these changes and a sudden increase in water temperature in 2022, dead fish were sighted in Dhamapur wetland (Joshi 2022).

It not only threatens the quality of the habitat and food sources within the wetland but also endangers the diversity of bird species that rely on these ecosystems. Additionally, there has been a growing number of houses being built around the lake, the reclamation of wetland areas, and the annual practice of immersing

Table 1. Checklist of avian fauna of Dhamapur wetlands.

	Family	Common name	Scientific name	Local name	Status	IUCN Red List status
1	1. Accipitridae	Black-winged Kite	<i>Elanus caeruleus</i>	कापशी घार	Residential	LC
2		Brahminy Kite	<i>Haliastur indus</i>	समुद्री घार	Residential	LC
3		White-bellied Sea Eagle	<i>Ichthyophaga leucogaster</i>	समुद्री गरुड	Residential	LC
4		Black Kite	<i>Milvus migrans</i>	घार	Residential	LC
5		Oriental Honey-buzzard	<i>Pernis ptilorhynchus</i>	मधुवाज	Local Migratory	LC
6		Crested Serpent Eagle	<i>Spilornis cheela</i>	तुरेवाला सर्पगरुड	Residential	LC
7		Shikra	<i>Tachyspiza badia</i>	शकिरा	Residential	LC
8	2. Aegithinidae	Common Iora	<i>Aegithina tiphia</i>	सुभग	Residential	LC
9	3. Alcedinidae	Common Kingfisher	<i>Alcedo atthis</i>	सामान्य धीवर	Residential	LC
10		Blue-eared Kingfisher	<i>Alcedo meninting</i>	नळिया कानाचा धीवर	Local Migratory	LC
11		Oriental Dwarf Kingfisher	<i>Ceyx erithaca</i>	तीबोटी धीवर	Migratory	NT
12		Pied Kingfisher	<i>Ceryle rudis</i>	कवड्या धीवर	Residential	LC
13		White-throated Kingfisher	<i>Halcyon smyrnensis</i>	पांढर्या छातीचा धीवर	Residential	LC
14		Stork-billed Kingfisher	<i>Pelargopsis capensis</i>	बलाकचोच धीवर	Residential	LC
15	4. Anatidae	Common Teal	<i>Anas crecca</i>	चक्राग	Local Migratory	LC
16		Indian Spot-billed Duck	<i>Anas poecilorhyncha</i>	हळदीकुंकू बदक	Local Migratory	LC
17		Lesser Whistling-duck	<i>Dendrocygna javanica</i>	अडई	Local Migratory	LC
18		Knob-billed Duck	<i>Sarkidiornis melanotos</i>	नंदीमुखी	Migratory	LC
19		Northern Shoveler	<i>Spatula clypeata</i>	थापट्या बदक	Migratory	LC
20		Ruddy Shelduck	<i>Tadorna ferruginea</i>	चक्रवाक	Migratory	LC
21	5. Anhingidae	Oriental Darter	<i>Anhinga melanogaster</i>	तरिदाज	Local Migratory	LC
22	6. Apodidae	Little Swift	<i>Apus affinis</i>	पेंसीफकि पाकोळी	Residential	LC
23	7. Ardeidae	Great Egret	<i>Ardea alba</i>	मोठा बगळा	Residential	LC
24		Grey Heron	<i>Ardea cinerea</i>	राखी बगळा	Residential	LC
25		Western Cattle Egret	<i>Ardea ibis</i>	गाय बगळा	Residential	LC
26		Medium Egret	<i>Ardea intermedia</i>	मध्यम बगळा	Residential	LC
27		Purple Heron	<i>Ardea purpurea</i>	जांभळा बगळा	Residential	LC
28		Indian Pond Heron	<i>Ardeola grayii</i>	ढोकरी	Residential	LC
29		Little Egret	<i>Egretta garzetta</i>	छोटा बगळा	Residential	LC
30		Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	रात ढोकरी	Local Migratory	LC
31	8. Artamidae	Ashy Woodswallow	<i>Artamus fuscus</i>	राखी रानपाकोळी	Migratory	LC
32	9. Bucerotidae	Malabar Pied Hornbill	<i>Anthracoceros coronatus</i>	मलबारी कवड्या धनेश	Residential	VU
33		Great Hornbill	<i>Buceros bicornis</i>	महाधनेश	Residential	VU
34		Malabar Grey Hornbill	<i>Ocyrceros griseus</i>	मलबारी राखी धनेश	Residential	NT
35	10. Burhinidae	Great Thick-knee	<i>Esacus recurvirostris</i>	मोठा करवानक	Local Migratory	NT
36	11. Campephagidae	Small Minivet	<i>Pericrocotus cinnamomeus</i>	छोटा गोमेट	Residential	LC
37		Orange Minivet	<i>Pericrocotus flammeus</i>	नारंगी गोमेट	Residential	LC
38	12. Caprimulgidae	Indian Nightjar	<i>Caprimulgus asiaticus</i>	रानरातवा	Residential	LC
39		Jerdon's Nightjar	<i>Caprimulgus atripennis</i>	जेरडनचा रातवा	Residential	LC

	Family	Common name	Scientific name	Local name	Status	IUCN Red List status
40	13. Charadriidae	Kentish Plover	<i>Anarhynchus alexandrinus</i>	कॅंटीश चखिल्या	Migratory	LC
41		Pacific Golden Plover	<i>Pluvialis fulva</i>	सोन चखिल्या	Migratory	LC
42		Grey Plover	<i>Pluvialis squatarola</i>	राखी चखिल्या	Local Migratory	VU
43		Little Ringed Plover	<i>Thinornis dubius</i>	छोटा कंठेरी चखिल्या	Migratory	LC
44		Red-wattled Lapwing	<i>Vanellus indicus</i>	टटिवी	Local Migratory	LC
45		Yellow-wattled Lapwing	<i>Vanellus malabaricus</i>	माळटटिवी	Local Migratory	LC
46		14. Ciconiidae	Asian Openbill	<i>Anastomus oscitans</i>	उघड्या चोचीचा करकोचा	Residential
47	Woolly-necked Stork		<i>Ciconia episcopus</i>	पांढर्या मानेचा करकोचा	Local Migratory	NT
48	Painted Stork		<i>Mycteria leucocephala</i>	रंगीत करकोचा	Migratory	LC
49	15. Cisticolidae	Common Tailorbird	<i>Orthotomus sutorius</i>	शप्पी	Residential	LC
50		Gray-breasted Prinia	<i>Prinia hodgsonii</i>	राखी छातीचा वटवट्या	Residential	LC
51		Ashy Prinia	<i>Prinia socialis</i>	राखी वटवट्या	Residential	LC
52		Jungle Prinia	<i>Prinia sylvatica</i>	रान वटवट्या	Residential	LC
53	16. Columbidae	Emerald Dove	<i>Chalcophaps indica</i>	पाचू होला	Residential	LC
54		Rock Pigeon	<i>Columba livia</i>	पारवा	Residential	LC
55		Spotted Dove	<i>Spilopelia chinensis</i>	ठपिकेवला होला	Residential	LC
56		Grey-fronted Green Pigeon	<i>Treron affinis</i>	राखी कपाळाची हरीळी	Residential	LC
57		Yellow-footed Green Pigeon	<i>Treron phoenicopterus</i>	पविळ्या पायाची हरीळी	Residential	LC
58	17. Coraciidae	Indian Roller	<i>Coracias benghalensis</i>	भारतीय नीलपंख	Residential	NT
59	18. Corvidae	Indian Jungle Crow	<i>Corvus macrorhynchos</i>	डोमकावळा	Residential	LC
60		House Crow	<i>Corvus splendens</i>	कावळा	Residential	LC
61		Rufous Treepie	<i>Dendrocitta vagabunda</i>	टकाचोर	Local Migratory	LC
62	19. Cuculidae	Greater Coucal	<i>Centropus sinensis</i>	भारदवाज	Residential	LC
63		Pied Cuckoo	<i>Clamator jacobinus</i>	चातक	LM	LC
64		Asian Koel	<i>Eudynamys scolopaceus</i>	कोकीळ	Residential	LC
65		Common Hawk Cuckoo	<i>Hierococcyx varius</i>	पावश्या	Local Migratory	LC
66	20. Dicaeidae	Thick-billed Flowerpecker	<i>Pachyglossa agilis</i>	जाड चोचीचा फुलदोचा	Local Migratory	LC
67	21. Dicruridae	Ashy Drongo	<i>Dicrurus leucophaeus</i>	राखी कोतवाल	Residential	LC
68		Black Drongo	<i>Dicrurus macrocercus</i>	कोतवाल	Residential	LC
69		Greater Racket-tailed Drongo	<i>Dicrurus paradiseus</i>	भुंगराज कोतवाल	Residential	LC
70	22. Estrilidae	Red Avadavat	<i>Amandava amandava</i>	-	Residential	LC
71		Black-throated Munia	<i>Lonchura kelaarti</i>	काळ्या गळ्याची मनोली	Residential	LC
72		Scaly-breasted Munia	<i>Lonchura punctulata</i>	ठपिकेवली मनोली	Residential	LC
73		White-rumped Munia	<i>Lonchura striata</i>	पांढर्या पुठ्याची मनोली	Residential	LC
74	23. Hirundinidae	Wire-tailed Swallow	<i>Hirundo smithii</i>	तारवाली भगिरी	Residential	LC
75	24. Jacanidae	Pheasant-tailed Jacana	<i>Hydrophasianus chirurgus</i>	लांब शेपटीचा कमळपक्षी	Local Migratory	LC
76		Bronze-winged Jacana	<i>Metopidius indicus</i>	कांस्यपंखी कमळपक्षी	Local Migratory	LC

	Family	Common name	Scientific name	Local name	Status	IUCN Red List status
77	25. Laniidae	Brown Shrike	<i>Lanius cristatus</i>	तपकरी खाटकि	Residential	LC
78		Long-tailed Shrike	<i>Lanius schach</i>	लांब शेपटीचा खाटकि	Residential	LC
79		Bay-backed Shrike	<i>Lanius vittatus</i>	उदपिठीचा खाटकि	Residential	LC
80	26. Laridae	River Tern	<i>Sterna aurantia</i>	नदी सुरय	Local Migratory	VU
81	27. Leiothrichidae	Common Babbler	<i>Argya caudata</i>	सामान्य सातभाई	Residential	LC
82		Large Grey Babbler	<i>Argya malcolmi</i>	राखी सातभाई	Residential	LC
83		Jungle Babbler	<i>Argya striata</i>	जंगली सातभाई	Residential	LC
84	28. Megalaimidae	Coppersmith Barbet	<i>Psilopogon haemacephalus</i>	तांबट	Residential	LC
85		White-cheeked Barbet	<i>Psilopogon viridis</i>	पांढर्या गालाचा कुदर्या	Residential	LC
86		Brown-headed Barbet	<i>Psilopogon zeylanicus</i>	तपकरी डोक्याचा कुदर्या	Residential	LC
87	29. Meropidae	Blue-bearded Bee-eater	<i>Nyctornis athertoni</i>	दाढीवाला राघू	Local Migratory	LC
88		Asian Green Bee-eater	<i>Merops orientalis</i>	वेडाराघू	Residential	LC
89		Blue-tailed Bee-eater	<i>Merops philippinus</i>	नळिया शेपटीचा राघू	Local Migratory	LC
90	30. Monarchidae	Black-naped Monarch	<i>Hypothymis azurea</i>	काळ्या मानेची आकाशी माशीमार	Residential	LC
91		Asian Paradise Flycatcher	<i>Terpsiphone paradisi</i>	सुवर्णीय नर्तक	Local Migratory	LC
92	31. Motacillidae	Paddyfield Pipit	<i>Anthus rufulus</i>	धान तीरचमिणी	Local Migratory	LC
93		White Wagtail	<i>Motacilla alba</i>	पांढरा धोबी	Migratory	LC
94		Citrine Wagtail	<i>Motacilla citreola</i>	पविल्या डोक्याचा धोबी	Migratory	LC
95		Yellow Wagtail	<i>Motacilla flava</i>	पविला धोबी	Migratory	LC
96	32. Muscicapidae	Indian Robin	<i>Copsychus fulicatus</i>	चीरक	Residential	LC
97		White-rumped Shama	<i>Copsychus malabaricus</i>	शामा	Residential	LC
98		Oriental Magpie Robin	<i>Copsychus saularis</i>	दयाळ	Residential	LC
99		Tickell's Blue Flycatcher	<i>Cyornis tickelliae</i>	टकिलची नळी माशीमार	Residential	LC
100		Bluethroat	<i>Luscinia svecica</i>	शंकर	Migratory	LC
101		Malabar Whistling Thrush	<i>Myophonus horsfieldii</i>	मलबार शीळ कसूर	Residential	LC
102		Siberian Stonechat	<i>Saxicola maurus</i>	सामान्य गप्पीदास	Local Migratory	LC
103	33. Nectariniidae	Vigors's Sunbird	<i>Aethopyga vigorsii</i>	वगोरचा शजीर	Residential	LC
104		Little Spiderhunter	<i>Arachnothera longirostra</i>	छोटा कोळीखाऊ	Residential	LC
105		Purple Sunbird	<i>Cinnyris asiaticus</i>	जांभळा शजीर	Residential	LC
106		Crimson-backed Sunbird	<i>Leptocoma minima</i>	छोटा शजीर	Residential	LC
107		Purple-rumped Sunbird	<i>Leptocoma zeylonica</i>	जांभळ्या पुठ्याचा शजीर	Residential	LC
108	34. Oriolidae	Indian Golden Oriole	<i>Oriolus kundoo</i>	हळदया	Residential	LC
109		Black-hooded Oriole	<i>Oriolus xanthornus</i>	बुरख्याधारी हळदया	Residential	LC
110	35. Passeridae	House Sparrow	<i>Passer domesticus</i>	चमिणी	Residential	LC
111	36. Pelloroneidae	Puff-throated Babbler	<i>Pellorneum ruficeps</i>	ठपिकेवाला सातभाई	Residential	LC
112	37. Phalacrocoracidae	Little Cormorant	<i>Microcarbo niger</i>	छोटा पाणकावळा	Residential	LC
113		Indian Cormorant	<i>Phalacrocorax fuscicollis</i>	भारतीय पाणकावळा	Residential	LC

	Family	Common name	Scientific name	Local name	Status	IUCN Red List status
114	38. Phasianidae	Grey Junglefowl	<i>Gallus sonneratii</i>	राखी रानकॉबडी	Residential	LC
115		Red Spurfowl	<i>Galloperdix spadicea</i>	लाल चकोत्री	Residential	LC
116		Indian Peafowl	<i>Pavo cristatus</i>	मोर	Residential	LC
117		Jungle Bush Quail	<i>Perdica asiatica</i>	जंगली लावा	Residential	LC
118	39. Picidae	Lesser Goldenback	<i>Dinopium benghalense</i>	छोटा सोनपाठी सुतार	Residential	LC
119		Yellow-crowned Woodpecker	<i>Leiopicus mahrattensis</i>	पविल्या मुकुटाचा सुतार	Residential	LC
120		Rufous Woodpecker	<i>Micropternus brachyurus</i>	तांबूस सुतार	Residential	LC
121	40. Pittidae	Indian Pitta	<i>Pitta brachyura</i>	नवरंग	Migratory	LC
122	41. Ploceidae	Baya Weaver	<i>Ploceus philippinus</i>	सुगरण	Residential	LC
123	42. Podargidae	Sri Lanka Frogmouth	<i>Batrachostomus moniliger</i>	बेड्कलॉइया	Residential	LC
124	43. Podicipedidae	Little Grebe	<i>Tachybaptus ruficollis</i>	टबिकली	Residential	LC
125	44. Psittaculidae	Vernal Hanging Parrot	<i>Loriculus vernalis</i>	पचि पोपट	Residential	LC
126		Plum-headed Parakeet	<i>Psittacula cyanocephala</i>	टोई पोपट	Residential	LC
127		Rose-ringed Parakeet	<i>Psittacula krameri</i>	पोपट	Residential	LC
128	45. Pycnonotidae	Yellow-browed Bulbul	<i>Acritillas indica</i>	पविल्या भुवईचा बुलबुल	Residential	LC
129		Red-vented Bulbul	<i>Pycnonotus cafer</i>	लालबुड्या बुलबुल	Residential	LC
130		Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	शपिई बुलबुल	Residential	LC
131	46. Rallidae	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	पांढर्या छातीची पाणकोबडी	Residential	LC
132		Eurasian Coot	<i>Fulica atra</i>	वारकरी	Local Migratory	LC
133		Grey-headed Swampen	<i>Porphyrio poliocephalus</i>	जांभळी पाणकोबडी	Local Migratory	LC
134		Slaty-legged Crane	<i>Rallina eurizonoides</i>	मातकट पायाची फटाकडी	Residential	LC
135	47. Rostratulidae	Great Painted-snipe	<i>Rostratula benghalensis</i>	भेंडलावा	Migratory	LC
136	48. Scolopacidae	Common Sandpiper	<i>Actitis hypoleucos</i>	सामान्य तुतारी	Local Migratory	LC
137		Common Snipe	<i>Gallinago gallinago</i>	पानलावा	Migratory	LC
138	49. Strigidae	Spotted Owllet	<i>Athene brama</i>	ठपिकेवला पगिळा	Residential	LC
139		Brown Fish Owl	<i>Ketupa zeylonensis</i>	मासेमार घुबड	Residential	LC
140		Brown Wood Owl	<i>Strix leptogrammica</i>	तपकरी वनघुबड	Residential	LC
141	50. Sturnidae	Jungle Myna	<i>Acridotheres fuscus</i>	जंगली मैना	Residential	LC
142		Common Myna	<i>Acridotheres tristis</i>	साळुंकी	Residential	LC
143		Chestnut-tailed Starling	<i>Sturnia malabarica</i>	करड्या डोक्याची मैना	Migratory	LC
144	51. Threskiornithidae	Eurasian Spoonbill	<i>Platalea leucorodia</i>	चमच्या	Migratory	LC
145		Glossy Ibis	<i>Plegadis falcinellus</i>	मोर शराटी	Local Migratory	LC
146		Red-naped Ibis	<i>Pseudibis papillosa</i>	काळा शराटी	Local Migratory	LC
147		Black-headed Ibis	<i>Threskiornis melanocephalus</i>	काल्या डोक्याचा शराटी	Local Migratory	LC
148	52. Trogonidae	Malabar Trogon	<i>Harpactes fasciatus</i>	मलबारी करणा	Migratory	LC
149	53. Turdidae	Orange-headed Thrush	<i>Geokichla citrina</i>	नारंगी डोक्याचा कसुत्र	Residential	LC
150	54. Tytonidae	Barn Owl	<i>Tyto alba</i>	गव्हाणी घुबड	Residential	LC
151	55. Vangidae	Bar-winged Flycatcher Shrike	<i>Hemipus picatus</i>	कवड्या माशीमार-खाटक	Migratory	LC
152		Common Woodshrike	<i>Tephrodornis pondicerianus</i>	रानखाटक	Migratory	LC
153	56. Zosteropidae	Indian White-eye	<i>Zosterops palpebrosus</i>	चष्मेवाला	Residential	LC

Table 2. Physicochemical parameters of Dhamapur Wetland.

Parameter	Observed value	Normal range (Freshwater standard)	Remarks
pH	6.38	6.5–8.5	Slightly acidic, near lower limit
Chemical Oxygen Demand (COD)	78 mg/L	< 20 mg/L	Significantly higher, indicates organic pollution
Biochemical Oxygen Demand (BOD)	24 mg/L	< 3 mg/L	Very high, suggests heavy organic load
Sulphate (SO ₄ ²⁻)	1.75 mg/L	< 200 mg/L	Well within safe limit
Iron (Fe)	< 0.687 mg/L	< 0.3 mg/L	Within permissible limit
Lead (Pb)	< 0.035 mg/L	< 0.05 mg/L	Within permissible limit but close to upper range
Nickel (Ni)	< 0.075 mg/L	< 0.1 mg/L	Within acceptable range
Zinc (Zn)	< 0.0096 mg/L	< 5 mg/L	Well below permissible limit
Copper (Cu)	0.054 mg/L	< 1.5 mg/L	Within safe limit
Chromium (Cr)	< 0.035 mg/L	< 0.05 mg/L	Within acceptable range

*Normal ranges are based on BIS (IS:10500–2012) and WHO standards for freshwater and drinking water quality.

Ganesh idols, which adds considerable amounts of Shadu soil into the water. During the Sustainable Ganesh Idol Immersion Campaign in 2023, run by a few NGOs and college students, around four tons of accumulated shadu soil from the immersion 'kund' were collected and measured. This data highlights a huge amount of shadu soil accumulated in the wetland over the past decades. This accumulation of clay from shadu soil binds with sand particles at the bottom of the wetland and alters the water filtration process. This clay contains metals like silica, magnesium, and iron, which eventually enter aquatic pathways and contribute to ecological changes (Federal 2021). In 2018, the Sindhudurg Wetland Brief Documentation Committee had reported 12 Violations at Dhamapur Lake in its report (Joshi 2022). Out of these 12 violations, only one violation, which was constructed by the government itself, was demolished after the intervention of the National Green Tribunal (NGT 2018).

As a result of these pressures, the Dhamapur wetland was assigned a C+ rating in the 2019 National Wetland Health Report Card, which was compiled using data from the Ministry of Environment, Forest and Climate Change (MoEF&CC). The report indicated that this poor rating can be largely attributed to the government's insufficient conservation efforts.

This study serves as essential and valuable baseline data on avian species in the need to conserve and manage this region.

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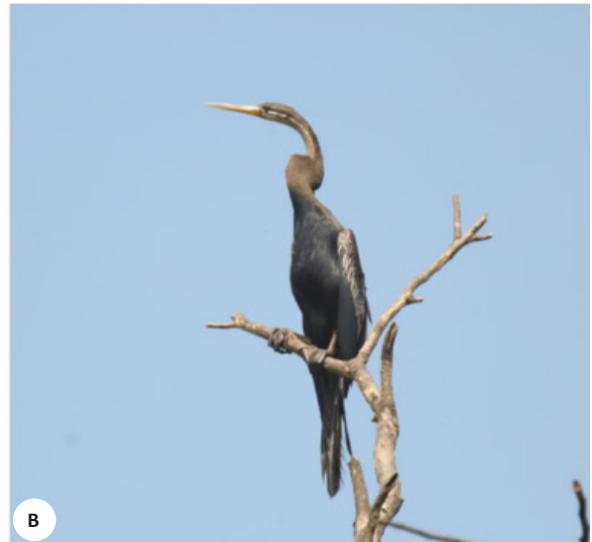
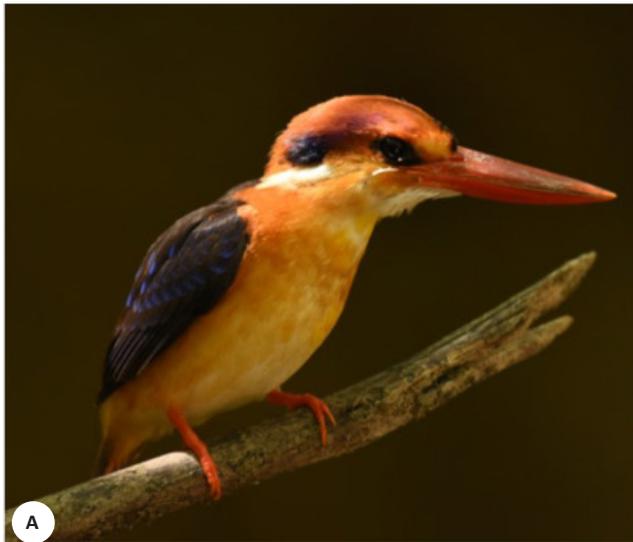


Image 2. A—*Ceyx erithaca* | B—*Aninga melanogaster* | C—*Ocyeros griseus* | D—*Esacus recurvirostris* | E—*Ciconia episcopus* | F—*Mycteria leucocephala*. © Yogesh Koli.



Image 3. A—*Harpactes fasciatus* | B—*Terpsiphone paradise* | C—*Ichthyophaga leucogaster* | D—*Sterna aurantia* | E—*Alcedo meninting* | F—*Thinornis dubius*. © Pravin Sawant.

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Journal of Threatened Taxa is indexed/abstracted in Bibliography of Systematic Mycology, Biological Abstracts, BIOSIS Previews, CAB Abstracts, EBSCO, Google Scholar, Index Copernicus, Index Fungorum, JournalSeek, National Academy of Agricultural Sciences, NewJour, OCLC WorldCat, SCOPUS, Stanford University Libraries, Virtual Library of Biology, Zoological Records.

NAAS rating (India) 5.64

Print copies of the Journal are available at cost. Write to:
The Managing Editor, JoTT,
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ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

February 2026 | Vol. 18 | No. 2 | Pages: 28262–28454

Date of Publication: 26 February 2026 (Online & Print)

DOI: 10.11609/jott.2026.18.2.28262-28454

www.threatenedtaxa.org

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