



AVIFAUNAL STATUS AND THEIR CONSERVATION IN NIBHI POND, DHOLPUR, RAJASTHAN

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Article Info:

Research Article

Received

17.01.2026

Reviewed

28.02.2026

Accepted

20.03.2026

Abstract: In Rajasthan's Dholpur district, Nibhi Pond is a significant freshwater wetland that is home to a wide variety of birds. Through methodical field surveys, the current study evaluated the wetlands conservation significance, residential status, and bird species diversity. During the study period, 123 Bird species belonging to 44 families and 18 orders were recorded. Passeriformes was the dominant order with 47 species, followed by Columbiformes and Charadriiformes. The presence of ducks, waders, raptors, and passerines in the assemblage demonstrated the pond ecosystem's ecological productivity and habitat variability. According to the IUCN Red List, a number of the species found there are classified as Near Threatened or Endangered, underscoring the site's importance for conservation. Most species (98.1%) were categorized as Least Concern, while one Near Threatened species was documented. However, avifaunal varieties may be threatened by growing human pressure like resource exploitation and habitat disruption. In order to the long-term viability of Nibhi Pond and its bird diversity, the study highlights the necessity of routine monitoring, habitat preservation, and community-based conservation tactics.

Keywords: Avifaunal diversity, Conservation, Freshwater pond, Habitat, Rajasthan, Wetland.

Cite this article as: Upadhyay R., Kumar Y., Rajput P., Lodhi R.K. and Rao R.J. (2026). Avifaunal status and their conservation in Nibhi Pond, Dholpur, Rajasthan. *International Journal of Biological Innovations*. 8(1): 121-128. <https://doi.org/10.46505/IJBI.2026.8113>

INTRODUCTION

The birds have always fascinated man for their exquisite coloration and courtship. They have their functional role in the ecosystem as potential pollinators and scavengers, indeed rightly called bioindicators (Dayananda, 2009). Diversity of the birds is one of the most important ecological indicators to give clues about the overall health of nature and status of habitats and the habitat fragmentation caused changes long term effects in their behavior, ability of reproduction and population (Verma and Prakash,

2017; Carpenter, 2019). The presence or absence of birds may indicate the ecological conditions of wetland habitats and form an essential link between the food web and the nutrient cycle (Prakash and Verma, 2023; Mostajeran *et al.*, 2025). Avifauna is a highly diverse, conspicuous, and significant component of freshwater wetland ecosystems (Siva and Neelanarayanan, 2021; Arya, 2024).

The microhabitats of a wetland provide rich and quality shelter and food for the avifauna populations



throughout the year. In addition, wetlands also provide essential ecological and economic services, including food and water source for domestic animals, climate change regulation, fish supply, recreational values, and medicinal plants (Kumar and Gupta, 2022; Jamakhandi and Kadavevaru, 2024). Moreover, birds may respond quickly to any change in habitat structure and climatic conditions (Fuller *et al.*, 1995; Verma and Prakash, 2018). The number of species and their relative abundance of birds depend upon wetland characteristics such as size, water level, quality of water, availability and distribution of food resources, and presence of suitable roosting and nursery sites (Wiens, 1989).

However, wetland ecosystems are increasingly under threat due to anthropogenic pressures and climate change (Prakash and Verma, 2022). Climate models predict a rise in the frequency and intensity of droughts, exacerbating water scarcity in these ecosystems (Londe *et al.*, 2023). Bird surveys represent a valuable tool in gathering pertinent information and aid in identifying priority conservation sites as the structural composition of bird communities within an area provides invaluable insights into landscape changes over time (Peterson *et al.*, 2000; Kattan and Franco, 2004). This comprehensive understanding has facilitated ecological assessments and conservation planning efforts leading to the development of management strategies and interventions (Kati and Sekercioglu, 2006).

India, home to over 1,376 bird species, with wetlands supporting a substantial proportion of migratory water birds, has also witnessed almost a similar trend (Kumbhar and Mhaske, 2020; Praveen and Jayapal, 2025). Lamba *et al.* (2024) reported a sharp decline in several wetland bird populations, attributing the decline to increased pollution, habitat destruction, and unregulated human activities (Singh *et al.*, 2023; Byju *et al.*, 2024). Birds are very sensitive to different levels and scales of environmental changes from individual bird to the entire bird community, and from short-term behavior to long-term population shifts (Meena and Sultana, 2024).

In Rajasthan, wetlands and other water bodies serve as essential habitats for diverse avifauna, including migratory and resident bird species. The present study is undertaken to describe the avian species diversity, resident status and threat concerns wetlands of Dholpur district, Rajasthan. The mentioned findings underscore the importance of gathering baseline data from previously unexplored regions to designate areas of conservation significance.

MATERIALS AND METHODS

Geographically, Dholpur lies in the eastern part of Rajasthan, close to the border of Madhya Pradesh, and forms part of the Chambal River basin landscape. The region is characterized by semi-arid climatic conditions with extreme seasonal variations. Summers are typically hot, with temperatures reaching up to 45°C, while winters remain relatively mild, ranging between 5°C and 20°C. The average annual rainfall of the area ranges between 500-700 mm, mainly received during the monsoon season. The present study was conducted at Nibhi Pond, located near Bari Road in Dholpur district, Rajasthan, India. The study site is situated approximately 20-22 km from Dholpur city along the Bari Road region. The pond covers approximately 437 ha with an average depth of 7.5 m and is primarily rain-fed/ perennial. The surrounding land use comprises agriculture and grazing fields, influencing nutrient influx and varied habitat structure. The dominant vegetation in the surrounding landscape includes species such as *Acacia nilotica*, *Prosopis juliflora*, *Azadirachta indica*, and various grasses and shrubs.

Field surveys were carried out during the designated study period from March, 2025 to February, 2026 to assess the biodiversity, with special emphasis on avifaunal diversity of the wetland ecosystem. Point count method and Line transect methods were followed for observation of bird species visually or acoustically; four points established to cover whole water body. Surveys were conducted during peak activity hours, primarily in the early morning (06:00-09:00 hrs.) and late afternoon (16:00-18:30 hrs), when bird activity is generally highest; observations were made for 20-30 minutes at each point. Species identification was carried out using binoculars and standard field guides, based on morphological characteristics such as size, plumage pattern, call, and behaviour. All observations were systematically recorded in field notebooks, including species name, number of individuals, habitat use, and behaviour. Photographic documentation was also undertaken whenever possible for verification purposes.

RESULTS AND DISCUSSION

During the study period, 123 bird species from 18 orders and 44 families were identified from Nibhi Pond in Dholpur, Rajasthan (Table 1). The ecological health and biodiversity of wetlands can be effectively assessed through the monitoring of water bird populations, which serve as bio-indicators of environmental conditions (Amat and Green, 2010). Céréghino *et al.* (2014) pointed out about large lacuna in biodiversity related basic knowledge associated

with pond ecosystems. In addition to their widely reported contribution to freshwater biodiversity, small ponds can also play an essential role in providing ecological services for terrestrial wildlife (Lison and Calvo, 2014).

Authors found the most prevalent order as Passeriformes with 47(38.21%) species, followed by Charadriiformes with 21 (17.07%) species, Anseriformes with 12 (9.75%) species, Pelecaniformes with 11 (8.94%) species, Columbiformes with five (4.06%) species, Coraciiformes and Suliformes with four (3.25%) species each, Galliformes, Cuculiformes, Gruiformes, Accipitriformes three (2.43%) species each, Ciconiiformes two (1.62%) species, Pteroclidiformes, Apodiformes, Bucerotiformes, Falconiformes and Psittaciformes one (0.81%) species each (Fig. 1).

The most species-rich families, according to a family-level analysis, were Anatidae with 12 (9.75 %) species, Scolopacidae with 9 (7.31%) species, Muscicapidae and Ardeidae with six (4.87%) species of each Motacillidae, Charadriidae, Columbidae with five (4.06%) species each, Alaudidae, Cisticolidae, Hirundinidae, Leiothrichidae, Sturnidae, Laridae with four (3.25%) species of each, Estrildidae, Threskiornithidae, Phalacrocoracidae, Phasianidae, Cuculidae, Rallidae, Accipitridae with three (2.43%) species of each, Pelecanidae, Corvidae, Passeridae, Jacanidae, Laniidae, Alcedinidae, Ciconiidae with 2 (1.62%) species each, Aegithinidae, Pycnonotidae, Phylloscopidae, Sylviidae, Zosteropidae, Nectariniidae, Ploceidae, Recurvirostridae, Meropidae, Coraciidae, Anhingidae, Pteroclididae, Apodidae, Bucerotidae, Falconidae one (0.81%) species of each.

Family-level analysis identified Anatidae as the predominant family, followed by Phasianidae and Muscicapidae. The significance of Anatidae suggests a robust adaptation to human-altered environments and the presence of food resources from adjacent agricultural activities and urban areas. In contrast, the presence of Phasianidae highlights the ecological function of the pond as a foraging habitat for herons and egrets, which rely on shallow water zones abundant in fish and invertebrates. These community structures correspond with research conducted in the inland wetlands of central and southern India, where the diversity of water birds is intricately associated with hydrological patterns, vegetation diversity, and levels of human disturbance (Jha and McKinley, 2015; Lodhi *et al.*, 2017).

According to the IUCN (2025) Red List assessment, the majority of recorded 123 species fall under the least

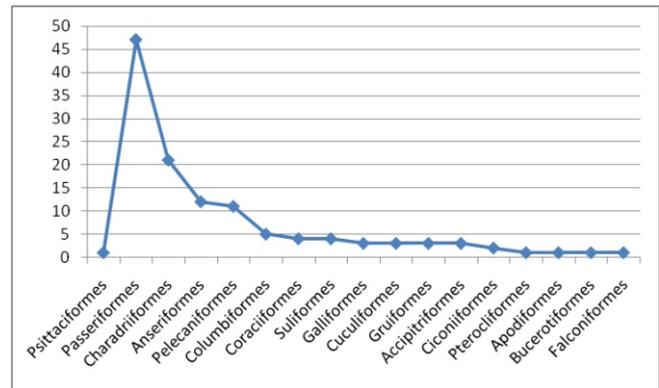


Fig. 1: Order-wise representation of avifaunal species.

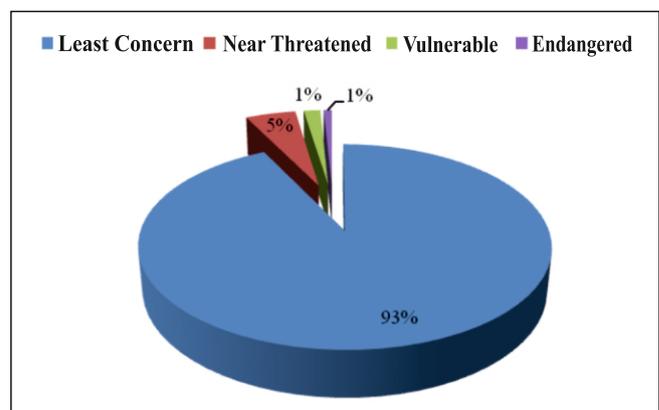


Fig. 2: IUCN status of avifaunal species.

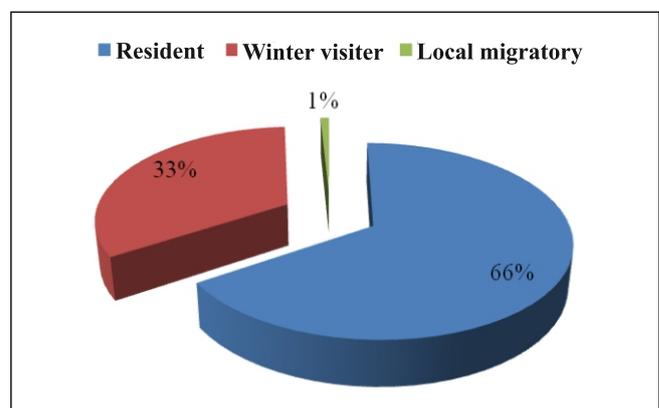


Fig. 3: Residential status of avifaunal species.

concern (LC) category with 114 (92.7%), six species were categorized as near threatened (NT) with 4.8%, endangered (EN) one species with 0.8% and two species as vulnerable (VU) with 1.6% (Table 1). The occurrence of these species indicates the conservation significance of the wetland habitat (Fig. 2). The conservation status pattern observed in this study clearly indicates that the pond currently sustains predominantly common and adaptable taxa. Although this may suggest ecological resilience, it could also signify initial signs of habitat simplification, wherein disturbance-sensitive species are progressively

Table 1: Checklist of recorded bird species with taxonomic position of study area.

Order	Family	Scientific Name	Common Name	IUCN Status	Res. Status
Passeriformes	Muscicapidae	<i>Luscinia svecica</i>	Bluethroat	LC	W V
		<i>Ficedula parva</i>	Red-breasted Flycatcher	LC	W V
		<i>Phoenicurus ochrurus</i>	Black Redstart	LC	W V
		<i>Saxicola maurus</i>	Siberian Stonechat	LC	W V
		<i>Saxicola caprata</i>	Pied Bushchat	LC	R
		<i>Oenanthe fusca</i>	Brown Rock Chat	LC	R
	Motacillidae	<i>Motacilla flava</i>	Western Yellow Wagtail	LC	W V
		<i>Motacilla citreola</i>	Citrine Wagtail	LC	W V
		<i>Motacilla maderaspatensis</i>	White-browed Wagtail	LC	R
		<i>Motacilla alba</i>	White Wagtail	LC	W V
		<i>Anthus rufulus</i>	Paddyfield Pipit	LC	R
	Alaudidae	<i>Ammomanes phoenicura</i>	Rufous-tailed Lark	LC	R
		<i>Eremopterix griseus</i>	Ashy-crowned Sparrow-Lark	LC	R
		<i>Mirafra erythroptera</i>	Indian Bushlark	LC	W V
		<i>Galerida cristata</i>	Crested Lark	LC	R
	Cisticolidae	<i>Orthotomus sutorius</i>	Common Tailorbird	LC	R
		<i>Prinia sylvatica</i>	Jungle Prinia	LC	R
		<i>Prinia socialis</i>	Ashy Prinia	LC	R
		<i>Prinia inornata</i>	Plain Prinia	LC	WV
	Hirundinidae	<i>Hirundo rustica</i>	Barn Swallow	LC	W V
		<i>Hirundo smithii</i>	Wire-tailed Swallow	LC	R
		<i>Cecropis daurica</i>	Eastern Red-rumped Swallow	LC	R
		<i>Petrochelidon fluvicola</i>	Streak-throated Swallow	LC	R
	Leiothrichidae	<i>Chrysomma sinense</i>	Yellow-eyed Babbler	LC	R
		<i>Argya malcolmi</i>	Large Gray Babbler	LC	R
		<i>Argya striata</i>	Jungle Babbler	LC	R
		<i>Argya caudata</i>	Common Babbler	LC	R
	Sturnidae	<i>Pastor roseus</i>	Rosy Starling	LC	WV
		<i>Gracupica contra</i>	Indian Pied Starling	LC	R
		<i>Sturnia pagodarum</i>	Brahminy Starling	LC	R
		<i>Acridotheres tristis</i>	Common Myna	LC	R
	Estrildidae	<i>Euodice malabarica</i>	Indian Silverbill	LC	R
		<i>Lonchura punctulata</i>	Scaly-breasted Munia	LC	R
		<i>Amandava amandava</i>	Red Avadavat	LC	R
	Laniidae	<i>Lanius vittatus</i>	Bay-backed Shrike	LC	R
		<i>Lanius schach</i>	Long-tailed Shrike	LC	R
	Corvidae	<i>Corvus splendens</i>	House Crow	LC	R
		<i>Corvus macrorhynchos</i>	Large-billed Crow	LC	R
	Passeridae	<i>Passer domesticus</i>	House Sparrow	LC	R
		<i>Gymnoris xanthocollis</i>	Yellow-throated Sparrow	LC	R
	Aegithinidae	<i>Aegithina tibia</i>	Common Iora	LC	R
Pycnonotidae	<i>Pycnonotus cafer</i>	Red-vented Bulbul	LC	R	
Phylloscopidae	<i>Phylloscopus collybita</i>	Common Chiffchaff	LC	W V	

	Sylviidae	<i>Curruca curruca</i>	Lesser Whitethroat	LC	W V	
	Zosteropidae	<i>Zosterops palpebrosus</i>	Indian White-eye	LC	R	
	Nectariniidae	<i>Cinnyris asiaticus</i>	Purple Sunbird	LC	R	
	Ploceidae	<i>Ploceus philippinus</i>	Baya Weaver	LC	R	
Charadriiformes	Scolopacidae	<i>Limosa limosa</i>	Black-tailed Godwit	LC	W V	
		<i>Gallinago gallinago</i>	Common Snipe	LC	W V	
		<i>Actitis hypoleucos</i>	Common Sandpiper	LC	W V	
		<i>Tringa ochropus</i>	Green Sandpiper	LC	W V	
		<i>Tringa stagnatilis</i>	Marsh Sandpiper	LC	W V	
		<i>Tringa glareola</i>	Wood Sandpiper	LC	W V	
		<i>Tringa totanus</i>	Common Redshank	LC	W V	
		<i>Tringa erythropus</i>	Spotted Redshank	NT	W V	
		<i>Philomachus pugnax</i>	Ruff	LC	W V	
		Charadriidae	<i>Charadrius dubius</i>	Little Ringed Plover	LC	R
			<i>Vanellus duvaucelii</i>	River Lapwing	LC	R
			<i>Vanellus indicus</i>	Red-wattled Lapwing	LC	R
			<i>Vanellus leucurus</i>	White-tailed Lapwing	LC	W V
			<i>Charadrius alexandrinus</i>	Kentish Plover	LC	W V
		Laridae	<i>Ichthyaeetus ichthyaeetus</i>	Pallas's Gull	LC	W V
			<i>Sternula albifrons</i>	Little Tern	LC	W V
			<i>Chlidonias hybrida</i>	Whiskered Tern	LC	W V
			<i>Sterna aurantia</i>	River Tern	LC	R
		Jacaniidae	<i>Hydrophasianus chirurgus</i>	Pheasant-tailed Jacana	LC	WV
		Jacaniidae	<i>Metopidius indicus</i>	Bronze-winged Jacana	LC	R
		Recurvirostridae	<i>Himantopus himantopus</i>	Black-winged Stilt	LC	R
Anseriformes	Anatidae	<i>Anser indicus</i>	Bar-headed Goose	LC	W V	
		<i>Anser anser</i>	Graylag Goose	LC	W V	
		<i>Sarkidiornis melanotos</i>	Knob-billed Duck	LC	R	
		<i>Tadorna ferruginea</i>	Ruddy Shelduck	LC	W V	
		<i>Spatula clypeata</i>	Northern Shoveler	LC	W V	
		<i>Mareca strepera</i>	Gadwall	LC	W V	
		<i>Mareca penelope</i>	Eurasian Wigeon	LC	W V	
		<i>Anas poecilorhyncha</i>	Indian Spot-billed Duck	LC	R	
		<i>Anas acuta</i>	Northern Pintail	LC	W V	
		<i>Anas crecca</i>	Green-winged Teal	LC	W V	
		<i>Netta rufina</i>	Red-crested Pochard	LC	WV	
		<i>Aythya ferina</i>	Common Pochard	VU	W V	
Pelecaniformes	Ardeidae	<i>Egretta garzetta</i>	Little Egret	LC	R	
		<i>Bubulcus coromandus</i>	Eastern Cattle Egret	LC	R	
		<i>Ardea alba</i>	Great Egret	LC	R	
		<i>Ardea intermedia</i>	Intermediate Egret	LC	R	
		<i>Ardea cinerea</i>	Grey Heron	LC	R	
		<i>Ardea purpurea</i>	Purple Heron	LC	R	
	Threskiornithidae	<i>Plegadis falcinellus</i>	Glossy Ibis	LC	R	
		<i>Threskiornis melanocephalus</i>	Black-headed Ibis	LC	R	

		<i>Pseudibis papillosa</i>	Red-naped Ibis	LC	R
	Pelecanidae	<i>Pelecanus onocrotalus</i>	Great White Pelican	LC	W V
		<i>Pelecanus crispus</i>	Dalmatian Pelican	NT	W V
Columbiformes		Columbidae	<i>Columba livia</i>	Rock Pigeon	LC
	<i>Streptopelia decaocto</i>		Eurasian Collared-Dove	LC	R
	<i>Streptopelia tranquebarica</i>		Red Collared-Dove	LC	R
	<i>Spilopelia senegalensis</i>		Laughing Dove	LC	R
	<i>Treron phoenicopterus</i>		Yellow-footed Green-Pigeon	LC	R
Coraciiformes	Meropidae	<i>Merops orientalis</i>	Asian Green Bee-eater	LC	R
	Alcedinidae	<i>Halcyon smyrnensis</i>	White-throated Kingfisher	LC	R
	Alcedinidae	<i>Ceryle rudis</i>	Pied Kingfisher	LC	R
	Coraciidae	<i>Coracias benghalensis</i>	Indian Roller	LC	R
Suliformes	Anhingidae	<i>Anhinga melanogaster</i>	Oriental Darter	NT	R
	Phalacrocoracidae	<i>Microcarbo niger</i>	Little Cormorant	LC	R
		<i>Phalacrocorax carbo</i>	Great Cormorant	LC	R
		<i>Phalacrocorax fuscicollis</i>	Indian Cormorant	LC	R
Galliformes	Phasianidae	<i>Pavo cristatus</i>	Indian Peafowl	LC	R
		<i>Ortygornis pondicerianus</i>	Gray Francolin	LC	R
		<i>Perdica asiatica</i>	Jungle Bush-Quail	LC	R
Cuculiformes	Cuculidae	<i>Centropus sinensis</i>	Greater Coucal	LC	R
		<i>Taccocua leschenaultii</i>	Sirkeer Malkoha	LC	R
		<i>Eudynamys scolopaceus</i>	Asian Koel	LC	R
Gruiformes	Rallidae	<i>Gallinula chloropus</i>	Eurasian Moorhen	LC	R
		<i>Porphyrio poliocephalus</i>	Grey-headed Swamphen	LC	R
		<i>Amaurornis phoenicurus</i>	White-breasted Waterhen	LC	R
Accipitriformes	Accipitridae	<i>Elanus caeruleus</i>	Black-winged Kite	LC	R
		<i>Neophron percnopterus</i>	Egyptian Vulture	EN	R
		<i>Circus aeruginosus</i>	Western Marsh Harrier	LC	W V
Ciconiiformes	Ciconiidae	<i>Ciconia episcopus</i>	Asian Woolly-necked Stork	NT	R
		<i>Mycteria leucocephala</i>	Painted Stork	NT	R
Pteroclitiformes	Pteroclididae	<i>Pterocles indicus</i>	Painted Sandgrouse	LC	R
Apodiformes	Apodidae	<i>Apus affinis</i>	Little Swift	LC	R
Bucerotiformes	Bucerotidae	<i>Ocyrceros birostris</i>	Indian Gray Hornbill	LC	R
Falconiformes	Falconidae	<i>Falco tinnunculus</i>	Eurasian Kestrel	LC	W V
Psittaciformes	Psittaculidae	<i>Psittacula krameri</i>	Rose-ringed Parakeet	LC	R

supplanted by tolerant generalists. Comparable trends of diminishing representation of conservation-priority water birds have been documented in wetlands experiencing land-use changes and hydrological modifications in India (Jain *et al.*, 2025).

A considerable amount of the overall diversity was made up of water birds, especially in the winter. Because migratory taxa arrived between November and February, species richness and abundance peaked during this time, demonstrating seasonal change. Throughout the course of the investigation, resident

species were regularly documented. Based on residential status, out of total recorded species 81 (65.85%) species were residents and 42 (34.14%) winter visitor (Fig. 3). Presence of resident (R), winter visitor (WV) species highlights the ecological importance of Nibhi Pond as a multifunctional wetland habitat that supports a variety of avifaunal guilds throughout the year. Despite its relatively limited functions as a seasonal refuge, breeding site, and feeding ground for numerous bird species, increasing anthropogenic utilization presents a significant threat to habitat quality and the long-term

sustainability of bird diversity. Consequently, conservation strategies that emphasize habitat restoration, regulation of human activities, and the maintenance of hydrological regimes are crucial for preserving the ecological integrity of this rural wetland ecosystem, as highlighted in recent wetland conservation assessments conducted across India (Rashiba *et al.*, 2022).

Habitat-wise distribution analysis showed that open water areas supported a higher diversity of Anatidae and Pelecanidae members, while mudflats were primarily utilized by Charadriidae and Scolopacidae species. Scrub and agricultural fringes were dominated by passerine assemblages. Overall, the study area exhibited considerable avifaunal diversity, representing multiple trophic guilds and habitat associations within a semi-arid wetland ecosystem.

CONCLUSIONS

According to the current study, Nibhi Pond in Dholpur, Rajasthan, is a freshwater wetland of ecological significance that supports a wide variety of birds. The coexistence of winter migratory and resident species suggests that the wetland serves as a significant foraging and resting area for migratory populations as well as a nesting habitat for local birds. The presence of species classified under different IUCN conservation categories emphasizes the site's conservation worth even more. Even though there is already a significant amount of avian diversity in the wetland, its ecological integrity may be threatened in the long run by growing anthropogenic pressures such as habitat disturbance, hydrological changes, and land-use changes. Thus, to guarantee Nibhi Pond's long-term viability, science-based management techniques, frequent biodiversity monitoring, and community-focused conservation projects are crucial. The results of this study support regional planning for wetland protection and offer baseline data for upcoming ecological evaluations.

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