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Cover: A male Scarlet Skimmer perching on vegetation by the banks of a waterbody. Ink and watercolour illustration by Anandita Pascal.

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COMMUNICATION

A preliminary assessment of avifaunal diversity in Parwati Arga Bird Sanctuary, Uttar Pradesh, India

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Abstract: Birds are important for the proper functioning of an ecosystem. In this study, the avifaunal diversity of the Important Bird and Biodiversity Area, Parwati Arga Bird Sanctuary situated in Gonda District, Uttar Pradesh was assessed using point count method from March 2024 to February 2025. A total of 140 bird species (53 families and 19 orders) were recorded, of which 110 species (78%) were resident, 29 species (21%) were winter visitors and one species (1%) was a summer visitor. One 'Endangered' species, four 'Vulnerable' species, and six 'Near Threatened' species were recorded as per the IUCN Red List. According to the global population trend, 49 species (35%) were decreasing, 39 species (27%) were stable, 26 species (19%) were increasing, and 26 species (19%) were unknown. This scientific documentation is essential for the forest department to ensure better management and conservation in the sanctuary area.

Keywords: Bird survey, global population trend, Gonda District, Important Bird Area, IUCN Red List status, oxbow lake, point count method, Ramsar site, residential status, wetland.

पक्षी किसी भी पारिस्थितिकी तंत्र के समुचित कार्यन्वयन में महत्वपूर्ण भूमिका निभाते हैं। इस अध्ययन में उत्तर प्रदेश के गोंडा जनपद स्थित "पार्वती अर्गा पक्षी अभयारण्य" जो कि एक महत्वपूर्ण पक्षी एवं जैव विविधता क्षेत्र है, की पक्षी विविधता का मूल्यांकन मार्च 2024 से फरवरी 2025 तक पॉइंट काउंट पद्धति के माध्यम से किया गया। कुल 140 प्रजातियों की पहचान की गई जो 53 कुलों (families) और 19 गणों (orders) से संबंधित थीं। इनमें से 110 प्रजातियाँ (78%) निवासी थीं, 29 प्रजातियाँ (21%) शीतकालीन आगंतुक तथा 1 प्रजाति (1%) ग्रीष्मकालीन आगंतुक के रूप में दर्ज की गई। अंतर्राष्ट्रीय प्रकृति संरक्षण संघ (IUCN) की रेड लिस्ट के अनुसार, 1 प्रजाति 'संकटग्रस्त' (Endangered), 4 प्रजातियाँ 'असुरक्षित' (Vulnerable) तथा 6 प्रजातियाँ 'निकट संकटग्रस्त' (Near Threatened) श्रेणियों में रखी गईं। वैश्विक जनसंख्या प्रवृत्ति के अनुसार, 49 प्रजातियाँ (35%) घटाव की स्थिति में, 39 प्रजातियाँ (27%) स्थिर, 26 प्रजातियाँ (19%) वृद्धि पर तथा 26 प्रजातियों (19%) की प्रवृत्ति अज्ञात पाई गई। यह वैज्ञानिक अभिलेख वन विभाग के लिए संरक्षण और अभयारण्य क्षेत्र के प्रभावी प्रबंधन हेतु अत्यंत आवश्यक है।

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Author contributions: Y-U conceived and designed the study, conducted the fieldwork and finalized the manuscript. MS compiled the data, analyzed the data and prepared the draft manuscript. Both the authors read and approved the final manuscript.

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INTRODUCTION

Avifauna represent highly reliable bio-indicators and serve as effective model organisms for addressing a wide spectrum of environmental concerns due to their pronounced sensitivity to even subtle ecological alterations. They provide critical insights into the health status and functional productivity of ecosystems (Newton 1995; Desai & Shanbhag 2007; Li & Mundkur 2007). Within the Indian subcontinent, the extensive diversity of wetland habitats contributes to a rich avian assemblage, simultaneously functioning as significant wintering refuges for numerous migratory waterbird species. The state of Uttar Pradesh has 31 Important Bird and Biodiversity Areas (IBAs) and 25 protected areas (Rahmani et al. 2016). In the past, studies have been conducted on bird diversity in rural-urban gradients (Siddiqui et al. 2019), agricultural landscapes (Yashmita-Ulman & Singh 2021), unprotected wetlands (Yashmita-Ulman & Singh 2022), riverine systems (Varghese et al. 2007; Yashmita-Ulman 2022) and university campus (Yashmita-Ulman 2023) in Uttar Pradesh. Bird diversity of protected areas in Uttar Pradesh, such as Hastinapur Wildlife Sanctuary (Khan et al. 2013), Okhla Bird Sanctuary (Upadhyay et al. 2019), and Sandi Bird Sanctuary (Khan & Khalid 2024) have been assessed. Previous studies in Parwati Arga Bird Sanctuary have been conducted on biodiversity (Verma et al. 2023), and floristic composition (Khanna 2015; Singh et al. 2016; Singh & Srivastava 2023). But to date, the bird diversity studies are unreported, making this study a pioneering attempt in preparing an inventory of birds in Parwati Arga Bird Sanctuary.

MATERIALS AND METHODS

Study Area

The present investigation was undertaken at the Parwati Arga Bird Sanctuary, situated in Tarabganj Tehsil of Gonda District, Uttar Pradesh, encompassing an area of approximately 1,084.47 ha (Rahmani et al. 2016). The site was officially designated as a Bird Sanctuary on 23 May 1990. The sanctuary is characterized by extensive vegetation interspersed with oxbow lakes, namely, Parwati (a deep-water lake) and Arga (a shallow-water lake), both originating from natural depressions and forming a hoof-shaped configuration (Rahmani et al. 2011) (Figure 1).

Geomorphologically, the area represents a part of the paleochannel of the Ghaghara River, which, during its southward course, left behind several minor streams (Agarwal & Mishra 1987). These lakes maintain hydrological connectivity with the Terhi River via the Gulriha Nala. Geographically, the Parwati and Arga lakes are located between 26.955° N, 82.174° E, having an elevation of approximately 93 m. The prevailing climate can be classified as moist mid-latitude, with moderately cold winters and intensely hot summers. The region receives an average annual rainfall of about 1,240 mm, while the temperature ranges from a minimum of 4°C in winter to a maximum of 48°C in summer (Rahmani et al. 2016). Importantly, the Parwati Arga Wetland holds international conservation significance as it has been designated a Ramsar site on 2 December 2019, having fulfilled criteria 2, 3, 4, 5, and 8 under the Ramsar Convention framework (Ramsar Convention 1971; Site Management Plan 2011). The sanctuary also has been accorded IBA status in criteria A1, A4iii (Rahmani et al. 2016).

Method

Bird surveys were conducted monthly using the point-count method (Bibby et al. 2000) from March 2024–February 2025. On the perimeter of each wetland (Parwati and Arga), two points were fixed, making a total of four points, each of which was 250 m apart from each other (Figure 1). Each point was surveyed four times in a month, making a total of 48 replicates of each point during the one-year duration. Observations were made from 0600–1000 h during clear weather for 15 min at each point count. The species name and number of individuals of the species detected within 150 m of the observer were noted down. A Nikon 7 x 35 binocular was used to aid the sighting of species. Bird identification and residential status classification for each species were done using the standard field guide (Grimmett et al. 2011). Both the conservation status and global population trend of each bird species recorded were updated using the Red List of IUCN (2025).

RESULTS

In the present study, a total of 140 species of birds belonging to 53 families and 19 orders were recorded in the Parwati Arga Bird Sanctuary (Table 1). The order Passeriformes recorded the highest number of bird species (45) (Table 1). Out of recorded bird species, resident bird species were 110 (78%), winter visitors were 29 (21%) and summer visitor was 1 (1%) (Table 1 & Figure 2). One 'Endangered' species (Egyptian

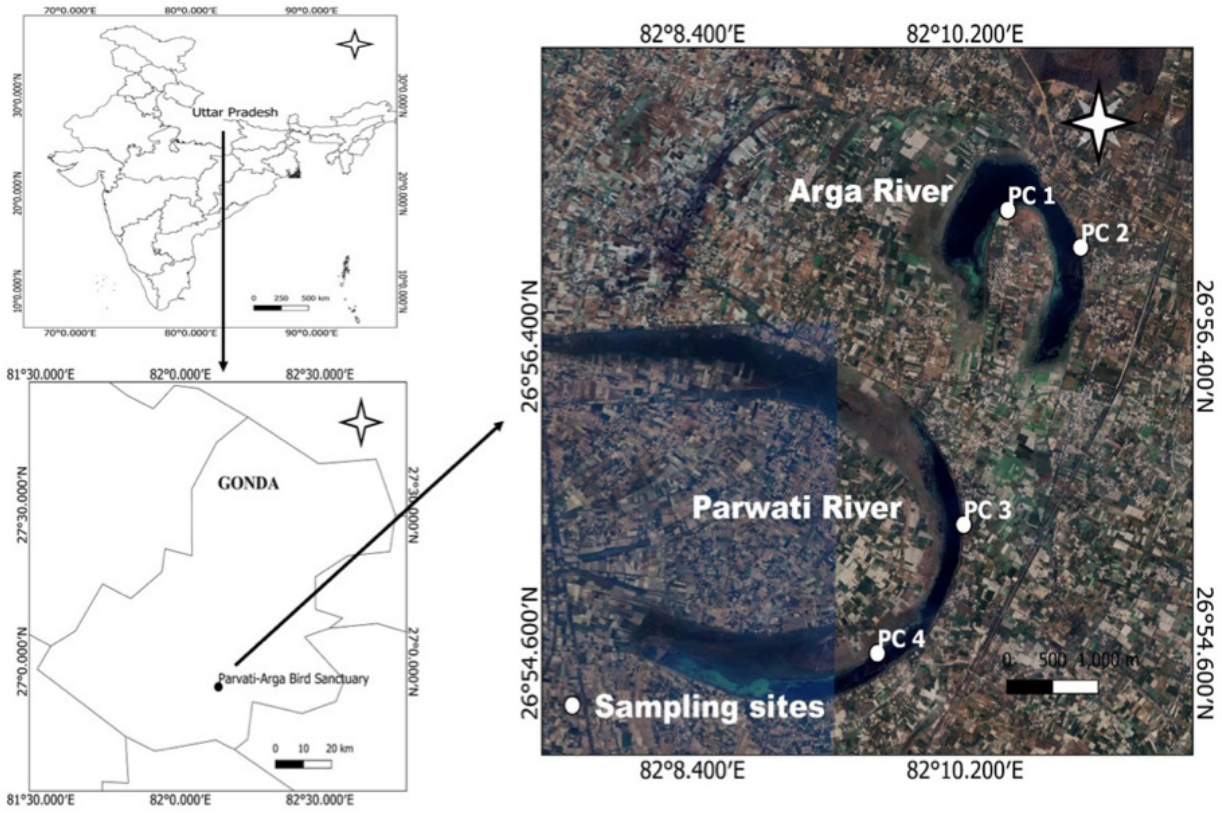

Figure 1. The study area and sampling locations. PC—Point count.

Vulture *Neophron percnopterus*), four 'Vulnerable' species (Sarus Crane *Grus antigone*, Common Pochard *Aythya ferina*, Indian Spotted Eagle C*langa hastata,* and River Tern *Sterna aurantia*), and six 'Near Threatened' species (Great Thick-knee *Esacus recurvirostris*, River Lapwing *Vanellus duvaucelii*, Black-necked Stork *Ephippiorhynchus asiaticus*, Lesser Adjutant *Leptoptilos javanicus*, Asian Woollyneck *Ciconia episcopus*, and Oriental Darter *Anhinga melanogaster*) were recorded (Table 1 & Figure 3). According to the global population trend of IUCN (2025), 49 species (35%) were decreasing, 39 species (27%) were stable, 26 species (19%) were increasing, and 26 species (19%) were unknown (Table 1 & Figure 4). Overall, 29 families recorded single species each and five families recorded two species each (Table 1).

The family Anatidae recorded the highest species richness (14 species), followed by the families Accipitridae (9 species) and Ardeidae (8 species) (Table 1). Families Anatidae and Scolopacidae comprised mostly of all winter migrants, exceptions being Knob-billed Duck *Sarkidiornis melanotos*, Cotton Pygmy-goose *Nettapus coromandelianus*, Lesser Whistling-duck *Dendrocygna javanica*, and Indian Spot-billed Duck *Anas poecilorhyncha*, which are resident (Table 1). Families Ardeidae, Strigidae, Columbidae, Cisticolidae, and Sturnidae comprised of all resident birds. The Blue-tailed Bee-eater *Merops philippinus* was the only summer visitor (Table 1).

DISCUSSION

The current study records 140 species of birds, which is higher than the number of species recorded in other bird sanctuaries of Uttar Pradesh, e.g., Hastinapur Wildlife Sanctuary (117 species) (Khan et al. 2013), but lesser than the species recorded at Okhla Bird Sanctuary (302 species) (Upadhyay et al. 2019). Other studies from different bird sanctuaries in Tamil Nadu such as Therthangal (96) (Byju et al. 2024), Chitrankudi (122), Melsevanoor-Kelselvanoor (117), Sakkarakottai (116) (Byju et al. 2025) and Pakhibitan Bird and Wildlife Sanctuary, West Bengal (124) (Roy et al. 2024) reported lower bird species than the current study, whereas Manjeera Wildlife Sanctuary, Andhra Pradesh (164) (Prasad et al. 2014) and Samanatham Bird Sanctuary, Tamil Nadu (150) (Byju et al. 2023) reported higher bird

Table 1. Avian diversity recorded in Parwati Arga Bird Sanctuary.

	Scientific name	Common name	IUCN Red List status	GPT	RS
	Accipitriformes Accipitridae (9)				
1	*Accipiter badius*	Shikra	LC	→	R
2	*Circaetus gallicus*	Short-toed Eagle	LC	→	R
3	*Circus melanoleucos*	Pied Harrier	LC	↓	WV
4	*Clanga hastata*	Indian Spotted Eagle	VU	↓	R
5	*Elanus caeruleus*	Black-winged Kite	LC	→	R
6	*Milvus migrans*	Black Kite	LC	→	R
7	*Neophron percnopterus*	Egyptian Vulture	EN	↓	R
8	*Pernis ptilorhynchus*	Oriental Honey-buzzard	LC	↓	R
9	*Spilornis cheela*	Crested Serpent-eagle	LC	→	R
	Anseriformes Anatidae (14)				
10	*Anas crecca*	Common Teal	LC	?	WV
11	*Anas platyrhynchos*	Mallard	LC	↑	WV
12	*Anas poecilorhyncha*	Indian Spot-billed Duck	LC	↓	R
13	*Anser anser*	Greylag Goose	LC	↑	WV
14	*Anser indicus*	Bar-headed Goose	LC	↓	WV
15	*Aythya ferina*	Common Pochard	VU	↓	WV
16	*Dendrocygna javanica*	Lesser Whistling-duck	LC	↓	R
17	*Mareca strepera*	Gadwall	LC	↑	WV
18	*Nettapus coromandelianus*	Cotton Pygmy-goose	LC	?	R
19	*Sarkidiornis melanotos*	Knob-billed Duck	LC	↓	R
20	*Spatula clypeata*	Northern Shoveler	LC	↓	WV
21	*Spatula querquedula*	Garganey	LC	↓	WV
22	*Tadorna ferruginea*	Ruddy Shelduck	LC	?	WV
23	*Tadorna tadorna*	Common Shelduck	LC	↑	WV
	Apodiformes Apodidae (1)				
24	*Cypsiurus balasiensis*	Asian Palm Swift	LC	→	R
	Bucerotiformes Bucerotidae (1)				
25	*Ocyceros birostris*	Indian Grey Hornbill	LC	→	R
	Bucerotiformes Upupidae (1)				
26	*Upupa epops*	Common Hoopoe	LC	↓	R
	Charadriiformes Burhinidae (2)				
27	*Burhinus indicus*	Indian Thick-knee	LC	?	R
28	*Esacus recurvirostris*	Great Thick-knee	NT	↓	R
	Charadriiformes Charadriidae (4)				
29	*Charadrius dubius*	Little Ringed Plover	LC	→	R
30	*Vanellus duvaucelii*	River Lapwing	NT	↓	R
31	*Vanellus indicus*	Red-wattled Lapwing	LC	?	R
32	*Vanellus malabaricus*	Yellow-wattled Lapwing	LC	→	R
	Charadriiformes Glareolidae (1)				
33	*Glareola lactea*	Little Pratincole	LC	?	R
	Charadriiformes Jacanidae (2)				
34	*Hydrophasianus chirurgus*	Pheasant-tailed Jacana	LC	?	R
35	*Metopidius indicus*	Bronze-winged Jacana	LC	?	R
	Charadriiformes Laridae (1)				
36	*Sterna aurantia*	River Tern	VU	↓	R
	Charadriiformes Recurvirostridae (1)				
37	*Himantopus himantopus*	Black-winged Stilt	LC	↑	WV
	Charadriiformes Scolopacidae (4)				
38	*Actitis hypoleucos*	Common Sandpiper	LC	↓	WV
39	*Calidris minuta*	Little Stint	LC	↑	WV
40	*Gallinago gallinago*	Common Snipe	LC	↓	WV
41	*Tringa nebularia*	Common Greenshank	LC	→	WV
	Ciconiiformes Ciconiidae (7)				
42	*Anastomus oscitans*	Asian Openbill	LC	?	R
43	*Ciconia ciconia*	White Stork	LC	↑	WV
44	*Ciconia episcopus*	Asian Woollyneck	NT	↓	R
45	*Ciconia nigra*	Black Stork	LC	?	WV
46	*Ephippiorhynchus asiaticus*	Black-necked Stork	NT	↓	R
47	*Leptoptilos javanicus*	Lesser Adjutant	NT	?	R
48	*Mycteria leucocephala*	Painted Stork	LC	↑	WV
	Columbiformes Columbidae (5)				
49	*Columba livia*	Blue Rock Pigeon	LC	↓	R
50	*Spilopelia chinensis*	Spotted Dove	LC	↑	R
51	*Streptopelia decaocto*	Eurasian Collared-dove	LC	↑	R
52	*Streptopelia orientalis*	Oriental Turtle-dove	LC	↓	R
53	*Treron phoenicopterus*	Yellow-footed Green-pigeon	LC	↑	R
	Coraciiformes Alcedinidae (3)				
54	*Alcedo atthis*	Common Kingfisher	LC	↓	R
55	*Halcyon smyrnensis*	White-throated Kingfisher	LC	↑	R

	Scientific name	Common name	IUCN Red List status	GPT	RS
56	*Pelargopsis capensis*	Stork-billed Kingfisher	LC	↓	R
	Coraciiformes Coraciidae (1)				
57	*Coracias benghalensis*	Indian Roller	LC	↑	R
	Coraciiformes Meropidae (1)				
58	*Merops philippinus*	Blue-tailed Bee-eater	LC	→	SV
	Cuculiformes Cuculidae (1)				
59	*Centropus sinensis*	Greater Coucal	LC	→	R
	Falconiformes Falconidae (1)				
60	*Falco tinnunculus*	Common Kestrel	LC	↓	R
	Galliformes Phasianidae (3)				
61	*Francolinus pondicerianus*	Grey Francolin	LC	→	R
62	*Gallus gallus*	Red Junglefowl	LC	↓	R
63	*Pavo cristatus*	Indian Peafowl	LC	→	R
	Gruiformes Gruidae (1)				
64	*Grus antigone*	Sarus Crane	VU	↓	R
	Gruiformes Rallidae (5)				
65	*Amaurornis phoenicurus*	White-breasted Waterhen	LC	?	R
66	*Fulica atra*	Eurasian Coot	LC	↑	WV
67	*Gallicrex cinerea*	Watercock	LC	↓	R
68	*Gallinula chloropus*	Common Moorhen	LC	→	R
69	*Porphyrio poliocephalus*	Grey-headed Swamphen	LC	?	R
	Passeriformes Aegithinidae (1)				
70	*Aegithina tiphia*	Common Iora	LC	?	R
	Passeriformes Cisticolidae (5)				
71	*Cisticola juncidis*	Zitting Cisticola	LC	?	R
72	*Orthotomus sutorius*	Common Tailorbird	LC	→	R
73	*Prinia hodgsonii*	Grey-breasted Prinia	LC	↓	R
74	*Prinia inornata*	Plain Prinia	LC	→	R
75	*Prinia socialis*	Ashy Prinia	LC	→	R
	Passeriformes Corvidae (3)				
76	*Corvus macrorhynchos*	Large-billed Crow	LC	↓	R
77	*Corvus splendens*	House Crow	LC	→	R
78	*Dendrocitta vagabunda*	Rufous Treepie	LC	↓	R
	Passeriformes Dicruridae (3)				
79	*Dicrurus caerulescens*	White-bellied Drongo	LC	↓	R
80	*Dicrurus leucophaeus*	Ashy Drongo	LC	?	R
81	*Dicrurus macrocercus*	Black Drongo	LC	?	R

	Scientific name	Common name	IUCN Red List status	GPT	RS
	Passeriformes Estrildidae (4)				
82	*Amandava amandava*	Red Avadavat	LC	→	R
83	*Euodice malabarica*	Indian Silverbill	LC	→	R
84	*Lonchura malacca*	Tricoloured Munia	LC	→	R
85	*Lonchura punctulata*	Scaly-breasted Munia	LC	→	R
	Passeriformes Hirundinidae (1)				
86	*Hirundo rustica*	Barn Swallow	LC	↓	WV
	Passeriformes Laniidae (1)				
87	*Lanius schach*	Long-tailed Shrike	LC	?	R
	Passeriformes Leiothrichidae (1)				
88	*Turdoides striata*	Jungle Babbler	LC	→	R
	Passeriformes Monarchidae (1)				
89	*Terpsiphone paradisi*	Asian Paradise Flycatcher	LC	→	R
	Passeriformes Motacillidae (4)				
90	*Anthus rufulus*	Paddyfield Pipit	LC	→	R
91	*Motacilla alba*	White Wagtail	LC	→	WV
92	*Motacilla cinerea*	Grey Wagtail	LC	→	WV
93	*Motacilla citreola*	Citrine Wagtail	LC	↑	WV
	Passeriformes Muscicapidae (6)				
94	*Copsychus malabaricus*	White-rumped Shama	LC	↓	R
95	*Copsychus saularis*	Oriental Magpie-robin	LC	→	R
96	*Eumyias thalassinus*	Verditer Flycatcher	LC	↓	WV
97	*Luscinia svecica*	Bluethroat	LC	→	WV
98	*Oenanthe fusca*	Brown Rockchat	LC	→	R
99	*Saxicola ferrea*	Grey Bushchat	LC	→	WV
	Passeriformes Nectariniidae (1)				
100	*Cinnyris asiaticus*	Purple Sunbird	LC	→	R
	Passeriformes Oriolidae (1)				
101	*Oriolus xanthornus*	Black-hooded Oriole	LC	→	R
	Passeriformes Paridae (1)				
102	*Parus cinereus*	Cinereous Tit	LC	→	R
	Passeriformes Passeridae (1)				
103	*Passer domesticus*	House Sparrow	LC	↓	R
	Passeriformes Ploceidae (1)				
104	*Ploceus philippinus*	Baya Weaver	LC	→	R
	Passeriformes Pycnonotidae (1)				
105	*Pycnonotus cafer*	Red-vented Bulbul	LC	↑	R
	Passeriformes Rhipiduridae (1)				
106	*Rhipidura albicollis*	White-throated Fantail	LC	↓	R

	Scientific name	Common name	IUCN Red List status	GPT	RS
	Passeriformes Sittidae (1)				
107	*Sitta castanea*	Indian Nuthatch	LC	↑	R
	Passeriformes Stenostiridae (1)				
108	*Culicicapa ceylonensis*	Grey-headed Canary-flycatcher	LC	↓	WV
	Passeriformes Strunidae (5)				
109	*Acridotheres fuscus*	Jungle Myna	LC	↓	R
110	*Acridotheres ginginianus*	Bank Myna	LC	↑	R
111	*Acridotheres tristis*	Common Myna	LC	↑	R
112	*Gracupica contra*	Asian Pied Starling	LC	↑	R
113	*Sturnia pagodarum*	Brahminy Starling	LC	?	R
	Passeriformes Zosteropidae (1)				
114	*Zosterops palpebrosus*	Indian White-eye	LC	↓	R
	Pelecaniformes Ardeidae (8)				
115	*Ardea cinerea*	Grey Heron	LC	?	R
116	*Ardea purpurea*	Purple Heron	LC	↓	R
117	*Ardeola grayii*	Indian Pond-heron	LC	?	R
118	*Dupetor flavicollis*	Black Bittern	LC	?	R
119	*Egretta alba*	Great White Egret	LC	?	R
120	*Egretta garzetta*	Little Egret	LC	↑	R
121	*Egretta intermedia*	Intermediate Egret	LC	↓	R
122	*Nycticorax nycticorax*	Black-crowned Night-heron	LC	↓	R
	Pelecaniformes Threskiornithidae (2)				
123	*Pseudibis papillosa*	Red-naped Ibis	LC	↓	R
124	*Threskiornis melanocephalus*	Black-headed Ibis	LC	↑	R
	Piciformes Megalaimidae (1)				
125	*Psilopogon haemacephalus*	Coppersmith Barbet	LC	↑	R
	Podicipediformes Podicipedidae (2)				
126	*Podiceps cristatus*	Great Crested Grebe	LC	?	WV
127	*Tachybaptus ruficollis*	Little Grebe	LC	↓	R
	Psittaciformes Psittaculidae (2)				
128	*Alexandrinus krameri*	Rose-ringed Parakeet	LC	↑	R
129	*Himalayapsitta cyanocephala*	Plum-headed Parakeet	LC	↓	R
	Strigiformes Strigidae (6)				
130	*Athene brama*	Spotted Owlet	LC	→	R
131	*Bubo bengalensis*	Indian Eagle-owl	LC	↓	R
132	*Glaucidium radiatum*	Jungle Owlet	LC	↓	R
133	*Ketupa zeylonensis*	Brown Fish-owl	LC	↓	R
134	*Ninox scutulata*	Brown Hawk-owl	LC	↓	R
135	*Otus bakkamoena*	Indian Scops-owl	LC	→	R
	Strigiformes Tytonidae (1)				
136	*Tyto alba*	Common Barn-owl	LC	→	R
	Suliformes Anhingidae (1)				
137	*Anhinga melanogaster*	Oriental Darter	NT	↑	R
	Suliformes Phalacrocoracidae (3)				
138	*Microcarbo niger*	Little Cormorant	LC	?	R
139	*Phalacrocorax carbo*	Great Cormorant	LC	↑	R
140	*Phalacrocorax fuscicollis*	Indian Cormorant	LC	?	R

IUCN Red List status (IUCN 2025): LC—Least concern | NT—Near Threatened | VU—Vulnerable | EN—Endangered. GPT (Global Population Trend) (IUCN 2025): →—Stable | ↓—Decreasing | ↑—Increasing | ?—Unknown. RS (Residential Status): R – Resident, WV – Winter Visitor, SV – Summer Visitor

species than the current study. The number of winter migrants (n = 29) recorded in this study is higher than that recorded in Hastinapur Wildlife Sanctuary, Uttar Pradesh (19 species; Joshi et al. 2021) and lower than that recorded in Okhla Bird Sanctuary, Uttar Pradesh (40 species; Mazumdar 2019). The current study recorded 11 threatened bird species, which is similar to the results obtained in Hastinapur Wildlife Sanctuary, Uttar Pradesh (11 species; Joshi et al. 2021) and higher than the species recorded in Bhimbandh Wildlife Sanctuary, Bihar (five species; Khan & Pant 2017) and Okhla Bird Sanctuary, Uttar Pradesh (10 species; Mazumdar 2019).

Parwati Arga Bird Sanctuary hosts diverse flora and fauna, including many resident, rare, and migratory species due to its diverse habitats consisting of two oxbow lakes having freshwater ecosystems, along with marshes, swamps, interspersed with agricultural fields and adjoining Tikri Reserve Forest (Image 1). These habitats support the foraging, nesting, and roosting activities of waterbirds and terrestrial birds (Hattori & Mae 2001). The availability of fish in lakes, grains, and insects in the adjacent agricultural fields & grasslands provides good foraging ground for the birds (Prasad et al. 2014; Anand et al. 2023), whereas the aquatic vegetation and adjoining forests provide shelter, escape routes, cover, and nesting sites, attracting diverse birds

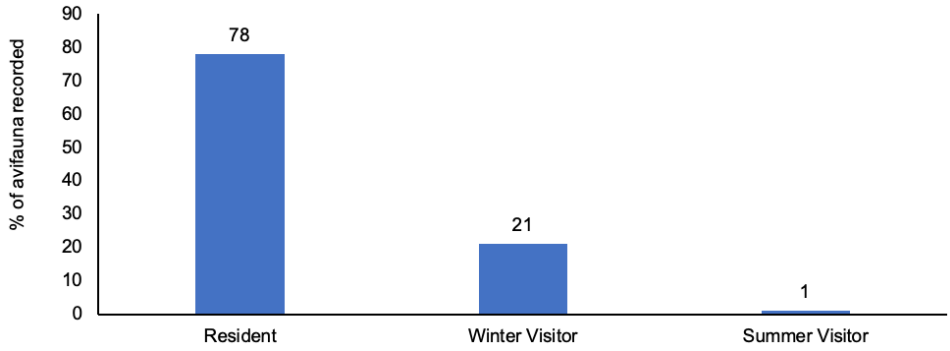

Figure 2. Residential status of the avifaunal species recorded in Parwati Arga Bird Sanctuary.

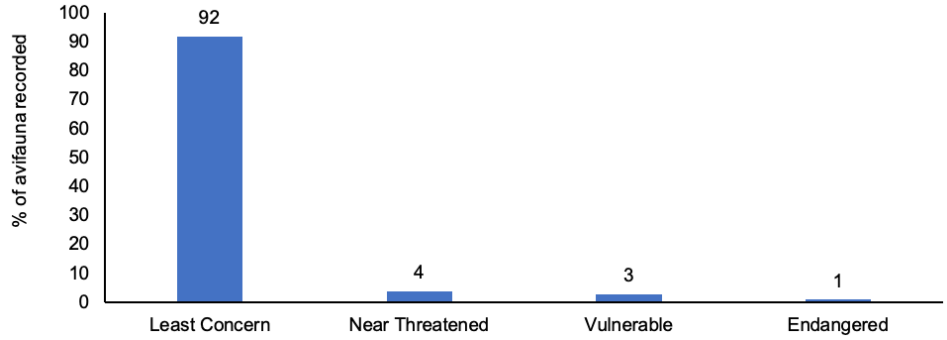

Figure 3. IUCN Red List status of the avifaunal species recorded in Parwati Arga Bird Sanctuary.

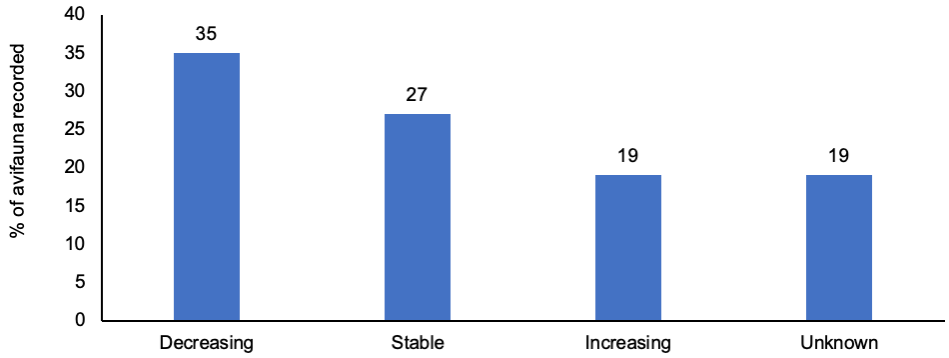

Figure 4. Global population trend of the avifaunal species recorded in Parwati Arga Bird Sanctuary.

(Yashmita-Ulman & Singh 2022). The shallow water bodies with variable depths (Colwell & Taft 2000) might also be a factor attracting birds in the Sanctuary. In the current study, the family Anatidae recorded the highest species richness. This is similar to the findings of Kumar & Gupta (2013) in Chhilchhila Wildlife Sanctuary, Haryana and Prasad et al. (2014) in Manjeera Wildlife Sanctuary, Andhra Pradesh. Families Anatidae and Scolopacidae comprised most of the winter migratory birds, and only one summer visitor was found, which is similar to the results obtained by Prasad et al. (2014) in Manjeera Wildlife Sanctuary, Andhra Pradesh.

The study results highlight the importance of the Sanctuary for the resident and migratory birds. Therefore, long-term monitoring of birds and threat assessment is required to assess the impact of the changing environment and surrounding landscapes on the birds of the Sanctuary. This scientific database is a prerequisite for scientific management and conservation of the sanctuary by the forest department.

Aquatic vegetation in Parwati Arga Bird Sanctuary.

Agricultural fields and forests adjacent Parwati Arga Bird Sanctuary

Image 1. Diverse habitats of Parwati Arga Bird Sanctuary. © Rajesh Kumar.

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