Avian Diversity & Distribution of Kanketara Wetland Complex Rajnandgaon, Chhattisgarh (India)

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Abstract: Wetlands play a vital ecological systems sustaining diverse faunal communities and providing essential ecosystem services. The present investigation evaluates the avian diversity and spatial distribution of the Kanketara Wetland Complex, situated in Rajnandgaon district of Chhattisgarh, India. Field observations were systematically conducted across multiple microhabitats representing aquatic, semi-aquatic, and terrestrial zones from 2023 to 2024. The survey documented 74 bird species distributed among 41 families and 16 orders, reflecting the region's remarkable ecological heterogeneity. Diversity analysis revealed a Shannon–Wiener index (H′) of 4.051, Simpson Index (D) of 0.0215, Simpson's diversity (1–D) of 0.978, and evenness (J) of 0.941, signifying high species richness and an evenly structured avian community. The order Passeriformes contributed the greatest number of species (31), followed by Pelecaniformes and Anseriformes, demonstrating a balanced representation of both terrestrial and aquatic guilds. The Baya Weaver (Ploceus philippinus), Common Myna (Acridotheres tristis), and House Sparrow (Passer domesticus) were the most dominant species, whereas Butastur teesa and Pseudibis papillosa appeared as rare visitorsThe detection of Threskiornis melanocephalus (Black-headed Ibis, Near Threatened) accentuates the conservation significance of this ecosystem. The Kanketara Wetland Complex is vital for diverse bird species, akin to other central Indian wetlands. However, threats from agriculture, pollution, and encroachment necessitate enhanced conservation, habitat restoration, and ongoing ecological monitoring to preserve its biodiversity.

Keywords: Avian diversity, Wetland ecosystem, Rajnandgaon, Kanketara Wetland Complex,Migratory birds.

Introduction:

The wetlands of Rajnandgaon district, in particular, serve as vital habitats for both resident and migratory bird species, functioning as key stopover sites along major migratory routes (Pandey et al., 2024; Bhatia et al., 2024). Avifaunal diversity in these wetlands reflects the ecological health of the region, with species such as *Threskiornis melanocephalus* (Black-headed Ibis) and *Luscinia svecica* (Bluethroat*)* indicating the area's importance as a refuge for migratory birds (Chiranjeev & Bhatia, 2024). Wetlands are among the most productive ecosystems on Earth, supporting a high diversity of flora and fauna and playing crucial roles in hydrological and nutrient cycles (George et al., 2015). These habitats provide essential services such as groundwater recharge, flood regulation, and nutrient retention, while also acting as critical breeding, feeding, and roosting sites for resident and migratory avifauna (Vishwakarma et al.,

2020). In India, wetlands harbor a rich variety of bird species that serve a+s key ecological indicator of environmental health, reflecting changes in habitat quality, pollution levels, and climate patterns (Gajbhiye et al., 2024). Birds, being highly mobile and sensitive organisms, are therefore widely recognized as reliable bioindicators for assessing ecosystem stability and ecological integrity (Bhonsle et al., 2018).

Chhattisgarh, located in central India, supports extensive wetland systems that sustain remarkable avian diversity throughout the year. Studies in Bilaspur, Raipur, and Rajnandgaon have documented numerous resident and migratory bird species, highlighting the ecological significance of the state's aquatic habitats (Dwivedi et al., 2021; Vishwakarma et al., 2020; Pandey et al., 2024). The Kopra Reservoir of Bilaspur, for instance, supported 133 avifaunal species, including several near-threatened and vulnerable taxa such as *Mycteria leucocephala* and *Threskiornis melanocephalus* (Vishwakarma et al., 2020). Similarly, wetlands in New Raipur hosted 93 species from 14 orders, demonstrating their value as habitats for migratory waterbirds (George et al., 2015). In Rajnandgaon district, surveys recorded 94 species representing 30 families, underscoring the importance of these wetlands as vital nodes in the regional avian network (Pandey et al., 2024).

The Kanketara Wetland Complex, situated in the Rajnandgaon district of Chhattisgarh, represents a mosaic of natural and artificial wetlands that sustain diverse aquatic and terrestrial bird communities. These wetlands provide critical resources such as food, shelter, and nesting sites for both resident and migratory species. However, increasing anthropogenic pressures—such as pollution, agricultural runoff, and habitat encroachment—pose significant threats to avian populations in the region (Dutta, 2015; Pandey et al., 2024). Changes in hydrological regimes and land-use patterns have further intensified habitat fragmentation, affecting bird migration routes and breeding success (Gajbhiye et al., 2024).

Seasonal variations, habitat diversity, and human influence all have a major impact on avifaunal assemblages. Wetlands that support both terrestrial and aquatic biodiversity include the Kanketara complex. The diversity of microhabitats creates ecological niches for various bird guilds, such as omnivores, granivores, insectivores, and piscivores. Both resident and migratory bird populations are supported by these ecological variations, highlighting the wetlands' significance for local biodiversity. (Patel & Rahalkar, 2024; Tirkey et al., 2022).

High species richness and functional diversity are found in local wetlands in Chhattisgarh, according to studies. 140 species from 40 families, primarily Passeriformes and Charadriiformes, can be found in Kharung Dam; four of these species are considered threatened. (Patel & Rahalkar, 2024). 93 species were found in Raipur wetlands, demonstrating their significance for both migratory and resident birds (George et al., 2015). These wetland ecosystems serve as seasonal havens and breeding grounds for a variety of avifauna, according to research from Jashpur, Bilaspur, and Durg.(Tirkey et al., 2022; Chavhan et al., 2015).

The Rajnandgaon district, characterized by its mosaic of agricultural lands, reservoirs, and forest patches, has recently gained attention for its avifaunal diversity. Pandey et al. (2024)

reported 94 bird species from multiple wetlands across Rajnandgaon, including several migratory species and representatives from globally declining families such as Anatidae and Scolopacidae

The Kanketara Wetland Complex, situated within this district, forms part of the Shivnath River catchment and comprises a series of interconnected ponds and marshes. These water bodies act as important staging grounds for migratory birds such as storks, ducks, and waders, linking the Central Indian flyway with adjoining riverine systems.

However, increasing anthropogenic stress poses a significant threat to these ecological networks. Expanding agriculture, pollution from fertilizers, sand mining, and unregulated fishing have led to habitat alteration and reduction in wetland depth—thereby affecting food availability and nesting grounds for waterbirds (Toppo et al., 2019; Dutta, 2015). Unchecked land-use changes and invasive species such as *Ipomoea carnea* and *Eichhornia crassipes* further degrade habitat quality, diminishing the ecological resilience of these wetlands (George et al., 2015).

Beyond ecological importance, wetlands also hold socio-cultural and economic significance for surrounding rural communities. Studies in Rajnandgaon–Kabirdham highlight how tribal and local populations historically maintained a harmonious relationship with wildlife through sustainable practices such as regulated fishing and seasonal grazing (Thiske et al., 2024). Such traditional ecological knowledge offers valuable insights for community-based wetland management and avian conservation strategies.

Materials and Methods:

Study Area: The study was conducted at the Kanketara Wetland Complex**,** located in Rajnandgaon District, Chhattisgarh, India. Geographically, the site lies between 20°55′–21°10′ N latitude and 80°55′–81°05′ E longitude**,** at an elevation of approximately 315 meters above sea level.

Figure 01: Map of Study Area (Source Google Maps)

The wetland complex comprises a network of seasonal and perennial water bodies formed by natural rainwater accumulation and small inflows from adjoining agricultural fields. The total area of the wetland complex is approximately 65 hectares**,** bordered by agricultural fields, scrubland, and rural settlements. Aquatic vegetation such as *Eichhornia crassipes*, *Ipomoea carnea*, and *Typha angustifolia* dominate the margins, providing ideal habitats for both aquatic and terrestrial avifauna.

Climatically, the region experiences a tropical monsoon pattern with average annual rainfall of about 1200–1300 mm**,** concentrated between June and September, and mean temperatures ranging from 18°C in winter to 42°C in summer. These conditions support high productivity, attracting resident and migratory birds throughout the year, similar to wetland ecosystems in Bilaspur and Jashpur districts (Porte & Gupta, 2017; Tirkey et al., 2022).

Study Period**:** Field observations were carried out from November 2023 to October 2024**,** covering all three major seasons—winter (November–February), summer (March–June), and monsoon (July–October)—to assess both seasonal occurrence and migratory patterns of avifauna (Siva & Neelanarayanan, 2021; Abhishek & Singh, 2018).

Data Collection and Field Methods: Avian species were recorded using the line transect and point count methods, which are widely used for estimating species diversity and distribution in wetland habitats (Bibby et al., 1998; Porte & Gupta, 2017). Transects of **.5–1 km** was established along the periphery and within accessible parts of the wetland. Each transect was surveyed twice a month, early in the morning (06:00–09:00 hrs) and late in the evening (16:00–18:00 hrs), when bird activity is highest (Tirkey et al., 2022; Siva & Neelanarayanan, 2021). Birds were observed using binoculars (Nikon 10×50 and Olympus 8–16×40), and photographed using a Nikon D5600 DSLR with a 200 mm zoom lens for further confirmation. Species identification was performed using standard field guides by Ali and Ripley (1983) and Grimmett, Inskipp, and Inskipp (2011).

Data Analysis: The collected data were analyzed for species richness, abundance, and diversity indices. Shannon–Wiener Diversity Index (H′), Simpson Index (D), Margalef Index (d), Menhinick Index (D_mn), Simpson's Diversity Index (D), and evenness (J′) were calculated using **Biodiversity Pro v.2** software (Porte & Gupta, 2017). Birds were categorized into **ecological guilds**—insectivorous, carnivorous, omnivorous, granivorous, piscivorous, frugivorous, and nectarivorous—following Siva and Neelanarayanan (2021). The **IUCN Red List (2024)** was used to determine conservation status for each species, and occurrence frequency was used to distinguish between **common, uncommon, and rare** species. Avian taxonomy followed the classification proposed by the **IOC World Bird List (v.14.2)** and **Bird Life International (2024)**, ensuring standardization with global nomenclature. The data were also compared with regional avifaunal records from Bilaspur, Durg, and Jashpur to assess species overlap and biogeographical patterns (Patel & Rahalkar, 2024; Tirkey et al., 2022).

Results & Discussion:

Avian Composition and Species Richness: A total of 74 avian **species** belonging to **41 families and 16 orders** were recorded from the Kanketara Wetland Complex (Table 1). The total number of individuals observed during the study was 1,131, indicating a rich avifaunal population representative of both wetland and terrestrial ecosystems**.** The Shannon–Wiener diversity index (H′ = 4.0510), Simpson Dominance (D = 0.0215) and Simpson's Diversity (1 – D = 0.9774) reflect high community diversity and low dominance**,** suggesting stable coexistence among multiple avian guilds (Vishwakarma et al., 2020

Order-wise Diversity Patterns: Species distribution varied considerably among avian orders (Table 2). The order Passeriformes exhibited the highest richness **(**31 species; 534 individuals**)** and diversity (H′ = 3.17), indicating strong representation of insectivorous and omnivorous guilds similar to the findings of Meshram et al. (2015) in Durg district.

Waterbird groups such as Pelecaniformes (8 species) and Anseriformes (3 species) were dominant in aquatic zones, reflecting the trophic importance of open water and emergent vegetation zones. Wader communities including *Vanellus indicus* and *Himantopus himantopus* were frequently recorded along shallow margins, comparable to previous observations from Bilaspur wetlands (Vishwakarma et al., 2020).

Raptors (order Accipitriformes) such as *Milvus migrans*, *Elanus caeruleus*, and *Accipiter badius* were occasionally sighted (13 individuals total), serving as ecological regulators at higher trophic levels. The order Coraciiformes (five species) and Pelecaniformes (eight species) were well represented, emphasizing the wetland's structural heterogeneity and prey abundance (Chandra & Singh, 2004

Species Abundance and Distribution Trends: The most abundant species recorded were the Baya Weaver **(***Ploceus philippinus*, n = 58**),** House Sparrow **(***Passer domesticus*, n = 50) and Common Myna (*Acridotheres tristis***,** n = 46) (Table 3). These three collectively represented over 13% of total individuals, indicating their ecological adaptability and high reproductive success in semi-urban and wetland environments.

Other common species included *Anas poecilorhyncha*, *Pycnonotus cafer*, and *Vanellus indicus*, all of which were observed nesting in peripheral grasslands. Such patterns correspond with the results from the Bastar and Bilaspur wetlands, where *D. javanica* and *A. poecilorhyncha* were also dominant (Dutta, 2017; Vishwakarma et al., 2020). Rare species with low detection frequencies included *Butastur teesa*, *Accipiter badius*, and *Pseudibis papillosa*, each with fewer than five individuals (Table 4). The occurrence of *Threskiornis melanocephalus* (Near Threatened, IUCN) emphasizes the conservation value of the site as a potential refuge for regionally declining waterbirds (Dwivedi et al., 2021).

Comparative analysis with state-level inventories (Chandra & Singh, 2004; Dwivedi et al., 2021) confirms that the Kanketara Wetland supports a representative subset of central Indian

avifauna**,** including several aquatic and migratory taxa previously reported from Bastar, Bilaspur, and Durg.

The Kanketara Wetland Complex harbors a rich and diverse assemblage of avian species, with a total of 74 species belonging to 41 families and 16 orders, indicating high habitat heterogeneity and ecological productivity.

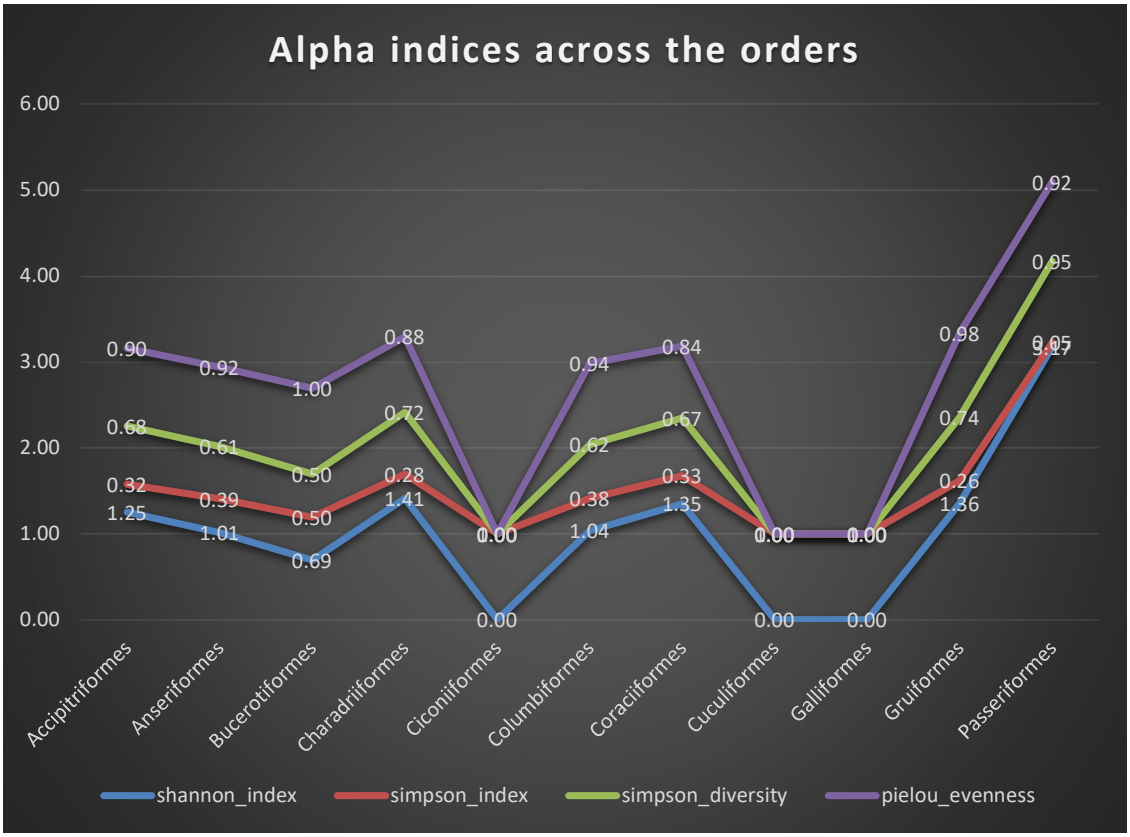

Figure 02: Shannon Index, Simpsonon Diversity Index, Simpsonon Dominance Index and Pielou_Evenness Diversity Index across Orders – Kanketara Wetland Complex

The dominance of Passeriformes (31 species, 496 individuals) reflects the prevalence of mixed terrestrial habitats, grasslands, and semi-urban areas surrounding the wetland, which provide nesting and foraging opportunities (Bhatia et al., 2024). The high Shannon–Wiener diversity index (H′ = 4.051) and evenness (J = 0.941) suggest a stable and evenly distributed bird community, comparable to similar wetland ecosystems of central India such as Dongargarh–Dhaara Forest (Bhatia et al., 2024) and Basna Wetlands (Bharos et al., 2019).

The abundance of Dendrocygna javanica (Lesser Whistling-Duck)(n=38) and Anas poecilorhyncha (Indian Spot-billed Duck)(n=21) aligns with previous observations from the Khutaghat and Ghungutta reservoirs, where these species represented key indicators of water quality and wetland integrity (Singh et al., 2020; Prajapati & Singh, 2018).

The occurrence of Near Threatened (NT) species such as Threskiornis melanocephalus (Black-headed Ibis) underscores the conservation importance of this wetland. Similar findings were noted by Neelanarayanan and Sivaperuman (2021) in Tamil Nadu wetlands, where NT species preferred minimally disturbed zones for roosting and feeding. Moreover, the balanced community structure, with low dominance index (D = 0.0215), highlights the absence of competitive exclusion and the coexistence of multiple guilds, including piscivores, granivores, and insectivores (Rahmani, 2012).

Comparatively, the diversity indices of Kanketara Wetland surpass those reported for smaller lentic systems in Jashpur (Prajapati & Singh, 2018) and approximate the richness of larger systems such as the Dongargarh–Dhaara Reserve (Bhatia et al., 2024). The high representation of resident (57 species) over migratory taxa (17 species) suggests a stable community adapted to the local hydrological regime. However, seasonal fluctuations may influence the abundance of winter visitors such as *Ficedula parva* (Red-breasted Flycatcher) and *Luscinia svecica* (Bluethroat), consistent with patterns reported by Bhatia et al. (2024) and Singh et al. (2020).

The dynamic avian population in Rajnandgaon's wetlands shows how urban water conditions affect bird diversity. Notably, these habitats are home to species like Ciconia episcopus and the Near Threatened Threskiornis melanocephalus. If disturbance is kept to a minimum, urban wetlands continue to be essential for birds despite human modifications. This demonstrates the ecological significance of artificial and temporary wetlands for preserving bird diversity and community balance in central India's rapidly urbanizing regions.(Pandey, Bhatia, & Damle, 2024)

Table No. 01: Checklist of Avian Fauna of Kanketara Wetland Complex

S.No.	Order	Family	Common Name	Scientific Name	IUCN Status	No. of Individuals	No. of Groups
1	Accipitriformes	Accipitridae	Black Kite	*Milvus migrans*	LC	8	2
2	Accipitriformes	Accipitridae	Black-winged Kite	*Elanus caeruleus*	LC	4	4
3	Accipitriformes	Accipitridae	Shikra	*Accipiter badius*	LC	3	3
4	Accipitriformes	Accipitridae	White-eyed Buzzard	*Butastur teesa*	LC	2	2
5	Anseriformes	Anatidae	Cotton Pygmy-Goose	*Nettapus coromandelianus*	LC	22	4
6	Anseriformes	Anatidae	Indian Spot-billed Duck	*Anas poecilorhyncha*	LC	21	8
7	Anseriformes	Anatidae	Lesser Whistling-Duck	*Dendrocygna javanica*	LC	38	6
8	Bucerotiformes	Upupidae	Eurasian Hoopoe	*Upupa epops*	LC	6	4
9	Bucerotiformes	Bucerotidae	Indian Gray Hornbill	*Ocyceros birostris*	LC	6	3

10	Charadriiformes	Recurvirostridae	Black-winged Stilt	*Himantopus himantopus*	LC	14	4
11	Charadriiformes	Jacanidae	Bronze-winged Jacana	*Metopidius indicus*	LC	25	14
12	Charadriiformes	Scolopacidae	Common Sandpiper	*Actitis hypoleucos*	LC	7	4
13	Charadriiformes	Scolopacidae	Green Sandpiper	*Tringa ochropus*	LC	7	4
14	Charadriiformes	Charadriidae	Red-wattled Lapwing	*Vanellus indicus*	LC	36	8
15	Ciconiiformes	Ciconiidae	Asian Openbill	*Anastomus oscitans*	LC	15	3
16	Columbiformes	Columbidae	Eurasian Collared-Dove	*Streptopelia decaocto*	LC	10	5
17	Columbiformes	Columbidae	Laughing Dove	*Spilopelia senegalensis*	LC	18	6
18	Columbiformes	Columbidae	Spotted Dove	*Spilopelia chinensis*	LC	08	6
19	Coraciiformes	Meropidae	Asian Green Bee-eater	*Merops orientalis*	LC	38	7
20	Coraciiformes	Alcedinidae	Common Kingfisher	*Alcedo atthis*	LC	6	6
21	Coraciiformes	Coraciidae	Indian Roller	*Coracias benghalensis*	LC	11	8
22	Coraciiformes	Alcedinidae	Pied Kingfisher	*Ceryle rudis*	LC	7	3
23	Coraciiformes	Alcedinidae	White-throated Kingfisher	*Halcyon smyrnensis*	LC	12	10
24	Cuculiformes	Cuculidae	Greater Coucal	*Centropus sinensis*	LC	8	5
25	Galliformes	Phasianidae	Gray Francolin	*Ortygornis pondicerianus*	LC	12	2
26	Gruiformes	Rallidae	Eurasian Coot	*Fulica atra*	LC	09	4
27	Gruiformes	Rallidae	Eurasian Moorhen	*Gallinula chloropus*	LC	14	5
28	Gruiformes	Rallidae	Gray-headed Swamphen	*Porphyrio poliocephalus*	LC	18	4
29	Gruiformes	Rallidae	White-breasted Waterhen	*Amaurornis phoenicurus*	LC	16	5
30	Passeriformes	Alaudidae	Ashy-crowned Sparrow-Lark	*Eremopterix griseus*	LC	20	6
31	Passeriformes	Ploceidae	Baya Weaver	*Ploceus philippinus*	LC	58	3

32	Passeriformes	Laniidae	Bay-backed Shrike	*Lanius vittatus*	LC	12	6
33	Passeriformes	Dicruridae	Black Drongo	*Dicrurus macrocercus*	LC	20	8
34	Passeriformes	Muscicapidae	Bluethroat	*Luscinia svecica*	LC	4	3
35	Passeriformes	Sturnidae	Brahminy Starling	*Sturnia pagodarum*	LC	13	4
36	Passeriformes	Leiothrichidae	Common Babbler	*Argya caudate*	LC	7	3
37	Passeriformes	Sturnidae	Common Myna	*Acridotheres tristis*	LC	46	18
38	Passeriformes	Phylloscopidae	Greenish Warbler	*Phylloscopus trochiloides*	LC	8	2
39	Passeriformes	Oriolidae	Indian Golden Oriole	*Oriolus kundoo*	LC	6	3
40	Passeriformes	Monarchidae	Indian Paradise-Flycatcher	*Terpsiphone paradise*	LC	8	3
41	Passeriformes	Sturnidae	Indian Pied Starling	*Gracupica contra*	LC	14	6
42	Passeriformes	Muscicapidae	Indian Robin	*Copsychus fulicatus*	LC	16	7
43	Passeriformes	Estrildidae	Indian Silverbill	*Euodice malabarica*	LC	36	4
44	Passeriformes	Cisticolidae	Jungle Prinia	*Prinia sylvatica*	LC	11	5
45	Passeriformes	Corvidae	Large-billed Crow	*Corvus macrorhynchos*	LC	8	4
46	Passeriformes	Sylviidae	Lesser Whitethroat	*Curruca curruca*	LC	3	2
47	Passeriformes	Muscicapidae	Oriental Magpie-Robin	*Copsychus saularis*	LC	16	6
48	Passeriformes	Motacillidae	Paddyfield Pipit	*Anthus rufulus*	LC	18	8
49	Passeriformes	Muscicapidae	Pied Bushchat	*Saxicola caprata*	LC	6	4
50	Passeriformes	Cisticolidae	Plain Prinia	*Prinia inornata*	LC	15	7
51	Passeriformes	Nectariniidae	Purple Sunbird	*Cinnyris asiaticus*	LC	19	8
52	Passeriformes	Nectariniidae	Purple-rumped Sunbird	*Leptocoma zeylonica*	LC	8	4
53	Passeriformes	Emberizidae	Red Avadavat	*Amandava amandava*	LC	21	3
54	Passeriformes	Pycnonotidae	Red-vented Bulbul	*Pycnonotus cafer*	LC	40	22
55	Passeriformes	Estrildidae	Scaly-breasted Munia	*Lonchura punctulata*	LC	27	17

56	Passeriformes	Muscicapidae	Taiga Flycatcher	*Ficedula albicilla*	LC	5	3
57	Passeriformes	Estrildidae	Tricolored Munia	*Lonchura Malacca*	LC	12	4
58	Passeriformes	Passeridae	House Sparrow	*Passer domesticus*	LC	50	14
59	Passeriformes	Corvidae	House Crow	*Corvus splendens*	LC	28	7
60	Passeriformes	Muscicapidae	Red-breasted Flycatcher	*Ficedula parva*	LC	4	2
61	Pelecaniformes	Ardeidae	Black-crowned Night Heron	*Nycticorax nycticorax*	LC	9	6
62	Pelecaniformes	Threskiornithidae	Black-headed Ibis	*Threskiornis melanocephalus*	NT	8	2
63	Pelecaniformes	Ardeidae	Eastern Cattle Egret	*Bubulcus coromandus*	LC	34	14
64	Suliformes	Phalacrocoracidae	Great Cormorant	*Phalacrocorax carbo*	LC	4	3
65	Pelecaniformes	Ardeidae	Great Egret	*Ardea alba*	LC	12	7
66	Suliformes	Phalacrocoracidae	Indian Cormorant	*Phalacrocorax fuscicollis*	LC	7	2
67	Pelecaniformes	Ardeidae	Indian Pond-Heron	*Ardeola grayii*	LC	30	12
68	Suliformes	Phalacrocoracidae	Little Cormorant	*Microcarbo niger*	LC	33	21
69	Pelecaniformes	Ardeidae	Little Egret	*Egretta garzetta*	LC	15	5
70	Pelecaniformes	Ardeidae	Purple Heron	*Ardea purpurea*	LC	4	4
71	Pelecaniformes	Threskiornithidae	Red-naped Ibis	*Pseudibis papillosa*	LC	6	2
72	Piciformes	Megalaimidae	Coppersmith Barbet	*Psilopogon haemacephalus*	LC	10	4
73	Podicipediformes	Podicipedidae	Little Grebe	*Tachybaptus ruficollis*	LC	6	4
74	Psittaciformes	Psittaculidae	Rose-ringed Parakeet	*Psittacula krameri*	LC	26	5

Table No. 02: Summary of Avian Diversity Indices and Community Structure

Parameter	**Symbol / Formula**	**Value**	**Ecological Interpretation**
Total number of species	S	**74**	High species richness indicating diverse wetland habitats.
Total number of individuals	N	**1,131**	Rich total abundance across sampling period.
Shannon Index (H')	$H' = -\Sigma\ p_i \ln(p_i)$	**4.051**	High diversity; community is complex and species are well distributed.
Simpson Index (D)	$D = \Sigma\ p_i^2$	**0.022**	Very low dominance; no single species overwhelmingly dominant.

Simpson Diversity (1-D)	1 − D	**0.978**	High probability that two randomly selected individuals belong to different species.
Pielou Evenness (J')	J = H′ / ln(S)	**0.941**	Community is evenly distributed; no extreme unevenness in abundance.
Margalef Index (d)		**10.383**	
Menhinick Index (D_mn)		**2.20**	
Species with highest abundance	–	*Ploceus philippinus* (58 individuals)	Dominant species in shrub areas near wetland zones.
Species with lowest abundance	–	*Butastur teesa* (2 individuals)	Rare or occasional visitor species.

Table No. 03: Order-wise Avian Diversity (Kanketara Wetland Complex)

Order	No. of Species (S)	No. of Individuals (N)		Remarks
Passeriformes	31	534		Highest diversity and abundance; rich passerine community.
Pelecaniformes	8	118		Diverse herons, egrets, and ibises in aquatic zones.
Charadriiformes	5	89		Common shorebirds and waders; moderate diversity.
Coraciiformes	5	74		Diverse kingfishers and rollers; indicator of aquatic health.
Anseriformes	3	73		Dominated by *D. javanica* and *A. poecilorhyncha*.
Gruiformes	4	57		Typical wetland rallids and coots; stable populations.
Columbiformes	3	36		Common urban-adapted doves and pigeons.
Suliformes	3	36		Cormorant diversity moderate.
Accipitriformes	4	17		Low abundance; top predators, ecological regulators.
Others (8 minor orders)	Each 1–2 spp.	6–26	0.0–0.7	Represent occasional or specialized species.

Table No. 04: Top Ten Abundant Species

Rank	Common Name	Scientific Name	IUCN	Individuals (N)	Relative Abundance (%)
1	Baya Weaver	*Ploceus philippinus*	LC	58	5.13
2	House Sparrow	*Passer domesticus*	LC	50	4.42
3	Common Myna	*Acridotheres tristis*	LC	46	4.07

4	Lesser Whistling-Duck	*Dendrocygna javanica*	LC	38	3.36
5	Asian Green Bee-eater	*Merops orientalis*	LC	38	3.36
6	Red-wattled Lapwing	*Vanellus indicus*	LC	36	3.18
7	Indian Silverbill	*Euodice malabarica*	LC	36	3.18
8	Eastern Cattle Egret	*Bubulcus coromandus*	LC	34	3.01
9	Little Cormorant	*Microcarbo niger*	LC	33	2.92
10	Indian Pond-Heron	*Ardeola grayii*	LC	30	2.65

Conclusion: The present investigation establishes that the Kanketara Wetland Complex is a dynamic and ecologically productive system sustaining high avian diversity throughout the year. The documentation of seventy-four bird species across fourteen orders and forty families demonstrates a well-balanced community structure and significant habitat heterogeneity. The predominance of Passeriformes indicates a rich assemblage of terrestrial and semi-aquatic birds, while the notable representation of Anseriformes and Pelecaniformes highlights the wetland's importance for waterfowl and wading species. The high Shannon–Wiener and evenness indices confirm stable coexistence among avian guilds, suggesting that the wetland provides adequate food, nesting, and sheltering opportunities. The observation of active nesting in over three-quarters of the species reflects the wetland's suitability as a breeding ground. The occurrence of a Near Threatened species, the Black-headed Ibis, further elevates its conservation significance. Nevertheless, anthropogenic pressures such as agricultural encroachment, pollution, and hydrological disturbance threaten the ecological balance. Sustained monitoring, community participation, and habitat restoration are therefore essential to preserve this avifaunal richness. The study concludes that the Kanketara Wetland Complex functions as an indispensable habitat within the central Indian landscape, contributing substantially to regional biodiversity conservation.

References:

1. Abhishek, P., & Singh, R. K. (2018). *Biodiversity of birds of Jashpur region. World Journal of Pharmacy and Pharmaceutical Sciences,* 7(7), 1140–1144. https://doi.org/10.20959/wjpps20187-11984
2. Ali, S., & Ripley, S. D. (1983). *Handbook of the birds of India and Pakistan.* Oxford University Press.
3. Bharos, A. M. K., Dutta, S., & Pandey, C. (2019). *Avifaunal diversity and conservation status in Basna Wetlands, Chhattisgarh. Asian Journal of Conservation Biology, 8*(2), 123–130.

4. Bhatia, G. S., Siddiqui, S., & Pandey, C. (2024). *Avian richness in Dongargarh-Dhaara forest area: A baseline study for future conservation, District Rajnandgaon, Chhattisgarh, India. Uttar Pradesh Journal of Zoology, 45*(19), 173–188. https://doi.org/10.56557/upjoz/2024/v45i194515
5. Bhonsle, O., Shrivastava, C. S., Jain, R., & Gaherwal, S. (2018). *A preliminary study on avian fauna at Govt. Holkar Science College, Indore (M.P.)*. *International Journal of Scientific Research in Biological Sciences*, 5(1), 18–27.
6. Bibby, C. J., Burgess, N. D., Hill, D. A., & Mustoe, S. (1998). *Bird census techniques* (2nd ed.). Academic Press.
7. Chandra, K., & Singh, R. K. (2004). *Avifauna of Madhya Pradesh and Chhattisgarh. Zoos' Print Journal, 19*(7), 1534–1539. https://doi.org/10.11609/JoTT.ZPJ.891.1534-9.
8. Chavhan, P., Sangode, V., Meshram, H., & Roy, P. (2015). *Avifaunal diversity of Durg, Chhattisgarh state. Journal of Entomology and Zoology Studies*, 3(2), 166–168.
9. Dutta, S. K. (2015). *First report of Rufous-bellied Eagle, Hieraaetus kienerii (E. Geoffroy, 1835) from Chhattisgarh, India. Biolife*, 3(2), 561–563.
10. Dutta, S. K. (2017). *Avifaunal diversity and conservation status in Bastar district of Chhattisgarh, India: An update. Ambient Science, 4*(2), 31–35. https://doi.org/10.21276/ambi.2017.04.2.ra06
11. Dwivedi, K., Tiwari, A., Parmar, K., Mishra, M. K., & Tripathi, R. (2021). *Avifaunal biodiversity in Chhattisgarh plain region of Madhya Pradesh. Science, Technology and Development*, 10(4), 131–134.
12. Dwivedi, K., Tiwari, A., Parmar, K., Mishra, M. K., & Tripathi, R. (2021). *Avifaunal biodiversity in Chhattisgarh Plain region of Madhya Pradesh. Science, Technology and Development, 10*(4), 131–138.
13. Gajbhiye, T., Pandey, S. K., Aharwar, A., & Deshmukh, N. (2024). *Species diversity, conservation status and feeding habitat of avifauna in Waraseoni Tehsil of Madhya Pradesh, India. Journal of Entomology and Zoology Studies*, 12(2), 45–59.
14. George, J. P., Ujjaini, M. M., & Yadav, K. C. (2015). *Status of wetlands and wetland birds in New Raipur, Raipur, Chhattisgarh, India. International Journal of Multidisciplinary Research and Development*, 2(9), 378–381.
15. Grimmett, R., Inskipp, C., & Inskipp, T. (2011). *Birds of the Indian subcontinent.* Oxford University Press.
16. Meshram, H., Sangode, V., Chavhan, P., & Roy, P. (2015). *Avifaunal diversity of Durg, Chhattisgarh state. Journal of Entomology and Zoology Studies, 3*(2), 166–168.
17. Neelanarayanan, P., & Sivaperuman, C. (2021). *Avifaunal diversity of wetlands in Tamil Nadu, India. Asian Journal of Conservation Biology, 10*(2), 145–152.
18. Pandey, C., Bhatia, G. S., & Damle, K. (2024). *Urban artificial wetlands as critical habitats: Observations on migratory birds in Rajnandgaon City, Chhattisgarh (India)*. Journal of Dynamics and Control, 8(9), 268–278.

19. Pandey, C., Bhatia, G. S., Damle, K. L., Thiske, S., Ali, M., & Rawte, K. (2024). *Diversity and abundance of wetland avian fauna of Rajnandgaon district, Chhattisgarh, India. Bulletin for Technology and History*, 24(12), 166–172.
20. Patel, R., & Rahalkar, S. (2024). *Species diversity and conservation status of avifauna around Kharung Dam, Bilaspur, Chhattisgarh, India. African Journal of Biomedical Research, 27*(3S), 2402–2412.
21. Porte, D. S., & Gupta, S. (2017). *Assessment of distribution patterns of wetland birds between unpolluted and polluted ponds at Ratanpur, District Bilaspur, Chhattisgarh, India. Indian Journal of Scientific Research, 12*(2), 204–215.
22. Rahmani, A. R. (2012). *Threatened birds of India: Their conservation requirements.* Oxford University Press.
23. Singh, R. K., & Pandey, C. (2020). *Biodiversity of migratory birds in Khutaghat Dam, Chhattisgarh. Journal of Environmental Biology, 41*(5), 1098–1106.
24. Siva, T., & Neelanarayanan, P. (2021). *Diversity of avifauna observed and recorded in Thinnanur Lake in Tiruchirappalli District, Tamil Nadu, India. Asian Journal of Conservation Biology, 10*(2), 308–316.
25. Thiske, S., Pandey, C., Mishra, S., Kumar, T., & Damle, K. L. (2024). *Tribal communities and wildlife conservation: A study of sustainable practices in Rajnandgaon-Kabirdham, Chhattisgarh (India). Revista Electrónica de Veterinaria (REDVET)*, 25(1S), 667–669.
26. Tirkey, J., Sahu, K. R., & Pandey, P. (2022). *A preliminary study on avifauna diversity and distribution in forest area, Jashpur, Chhattisgarh. International Journal of Food and Nutritional Sciences*, 11(10), 6456–6460.
27. Toppo, J. S., Toppo, R., Ujjaini, M. M., & Singh, M. K. (2019). *A checklist of avifaunal diversity in the Power Grid transmission line affected area under Raigarh Forest Division, Chhattisgarh, India. International Journal of Science, Environment and Technology*, 8(5), 1232–1240.
28. Vishwakarma, A., Anthony, F. M., Tiwari, S., & Choubey, S. (2020). *Avifaunal diversity of winter season in Kopra Reservoir of Bilaspur, Chhattisgarh, India. Proceedings of the Zoological Society*, 73(3), 1–9.