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A Study on Avifaunal Composition in and around Hiremagaluru Lake, Chikkamagaluru Taluk, Karnataka, India

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Abstract: ***Wetlands are the unique and most productive ecosystem of the world. They support a wide range of flora and fauna. The present study deals with the study of the Avifaunal diversity of Hiremagaluru Lake and adjoining area in Chikkamagaluru. The survey was carried for the period of one year i.e. from February 2024 to January 2025. During the study period sixty one species of birds, belonging to 16 orders and 29 families were recorded. This includes both local and migratory birds. Birds belonging to the order Passeriformes were found to be dominated by the representation of 20 species followed by Pelicaniformes (9 species), Accipitriformes (5 species) Coraciiformes and Columbiformes (4 species each), Suliformes and Gruiformes (3 species each), Charadriiformes, Cuculiformes, Ciconiiformes, Apodiformes (2 species each), and Strigiformes, Bucerotiformes, Galliformes Psittaciformes and Piciformes, and Psittaculidae with 1 species each. The study also revealed that the study sites harbour many resident as well as migratory birds. Two species like Black headed ibis (Threskiornis melanocephalus) and Painted Stork (Mycteria leucocephala) were near threatened and have a protected status under the schedule IV of Indian Wild life Protection Act,1972.***

Keywords*: Avifauna, Passeriformes, Wetlands, Ecosystem, Chikkamagaluru*,

I. INTRODUCTION

Wetlands are specialized ecosystems which perform important ecological functions and have many ecological, socio– economic and cultural values. Wetlands are known to be the most productive and diverse ecosystems on earth because they provide direct and indirect benefits to people as sources of food, recharge of aquifers, regulating water quality, natural purification of waste water, reducing sediment load, water recharge, recycling of bio-genic salts as a source of agricultural water, animal husbandry, aquaculture and also as a refuse for rare and endangered species of plants and animals (Harish and Hosetti, 2018).Wetlands are the important bird habitats as they use them for feeding; roosting and breeding (Weller, 1999; Stewart,2001). Birds are essential animal group of an ecosystem and maintain the trophic level. They play a functional role in the ecosystem as potential pollinators and scavengers, and are rightly called as bio indicators (Puri and Virani, 2016**)**. Water birds have an important social function, providing food, recreation and tourism opportunities.

The abundance of avifauna indicates the healthy status of lakes owing the availability of water, safe habitat and food sources for both adults and nestlings, and essential nesting roosting sites in and around the lakes are important for the occurrence and abundance of aquatic bird populations (Joshi, 2012). So far about 1313 species of birds have been identified in India and the Indian subcontinent which contributes about 13% of world avian population (Grimmett *et al*. 2013).There are about 9000 species of birds in the World out of which approximately 23% (310 of 1340) of the bird species found in India (Manakadan and Pittie,2001) are known to be dependent on wetlands. The Western Ghats consist of unique mountain range running parallel to the western coast of the Indian peninsula, and harbour an incredible biodiversity. The Western Ghats stretching about 1,600 Km from the north of Mumbai to the southern tip of India, form one of the 25 biodiversity hotspot in the world. It contains a large proportion of the fauna and flora diversity in the country.

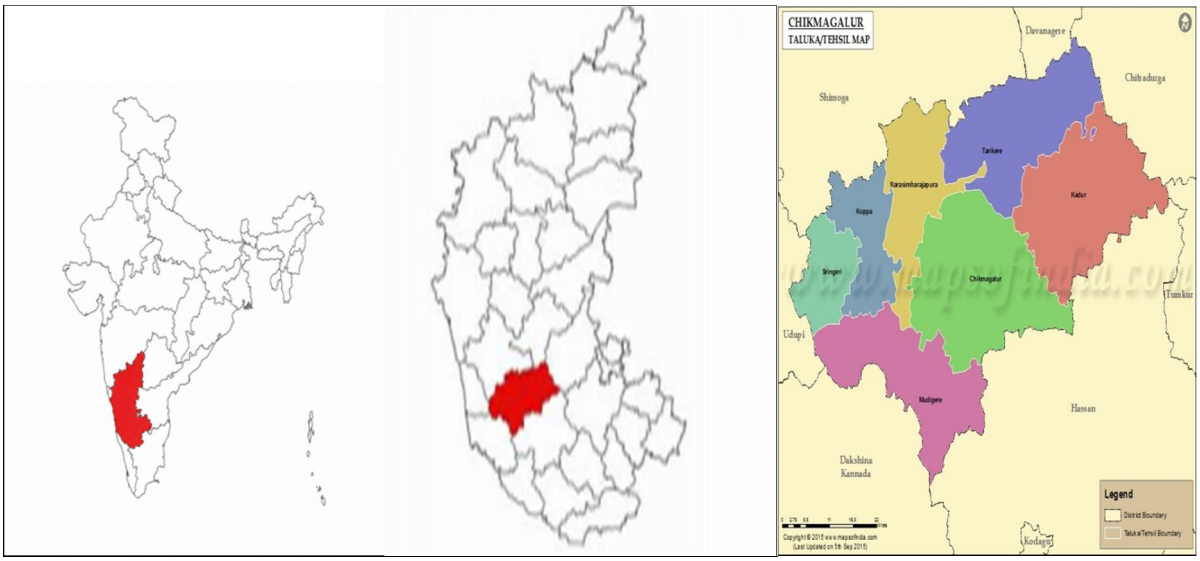
Karnataka, with its remarkable avifaunal richness, is one of the most important regions for bird diversity in India .The state encompasses a wide range of ecosystems, including the Western Ghats, coastal wetlands, dry deciduous forests, grasslands, and riverine habitats, which together support nearly 560 bird species, accounting for around 35% of India's bird diversity (Praveen et *al*., 2016)

Several studies have been conducted on the avifaunal diversity of different wetlands across Karnataka,. Ravishankar *et al*., (2022) reported 140 species in Kokkare Bellur Bird Sanctuary. Similarly, Angadi (2022) conducted a study to prepare a checklist of birds from two water bodies located in Belagavi Taluka, Belagavi District. A total of 35 species belonging to 28 families and 13 orders were recorded in and around these water bodies Jamakhandi and Kadadevaru (2024),who recorded 196 species from Unkal Lake; A semiarid urban wetland in Karnataka, representing 35% of Karnataka's avian diversity. Moolemane and Majagi (2025) documented 52 bird species, belonging to 35 families and 16 orders in different habitats of Semi-Arid Region of Karnataka. Among these, 67.03% were resident species, while 32.69% comprised local, partially migratory, and highly migratory species. The family Ardeidae represented, with 17 species. It has been recorded that Hiremagaluru Lake in Chikkamagaluru Taluk is lagging behind the avifaunal studies. In this context, in order to evaluate wet land bird diversity, the present investigation was undertaken to assemble a check list of avifaunal diversity of the study area.

II. MATERIALS AND METHODS

A. Study area

Hiremagaluru Lake (Fg.1) is located 3.5 km towards south from Chikkamagaluru. It is located in upper Hemavati sub-basin and Cauvery Basin of Karnataka. It lies between latitudes 75°48'2" east and 13°18'36" north. This lake covers a total geographical area of 98.74 ha, of which the water spread area is 26.70 ha, and its total catchment area is 8.20 sq. Km.



India Karnataka Chikkamagaluru District

Fig:1. Location map of the study area

III. METHODOLOGY

1) Survey Time: The bird observation was carried during the early hours of their activity from 6:30 AM to 10:00 AM and in the evening from 4:00 PM to 6:00 PM, twice in a month from February 2024 to January 2025 for a period of one year.
2) Identification of Birds: Observation of birds was done by using a 10 x 50 wide angle Olympus binocular and Nikon Coolpix p950 digital camera was used for potography.The birds were identified with the help of different field guides (Ali and Ripley, 1995; and Grimmett *et al.*,2013).The common and scientific names for identified birds were compiled following Manakandan and Pittie (2002). The conservation status of birds was adopted from IUCN Red List of Threatened Species (IUCN 2023).The recorded birds were classified into different feeding guilds depending upon their food ecological similarities, such as carnivore, insectivore, omnivore, nectarivore, and herbivore (Basnet *et al*. 2016)
3) Monitoring: Point count and line transect methods (Bibby *et al*., 1992) were used for the counting of birds.
4) Statistical Analysis**:** MS excel and Graph pad were used to tabulate the collected data, to prepare necessary tables, figures and graphs.

IV. RESULT AND DISCUSSION

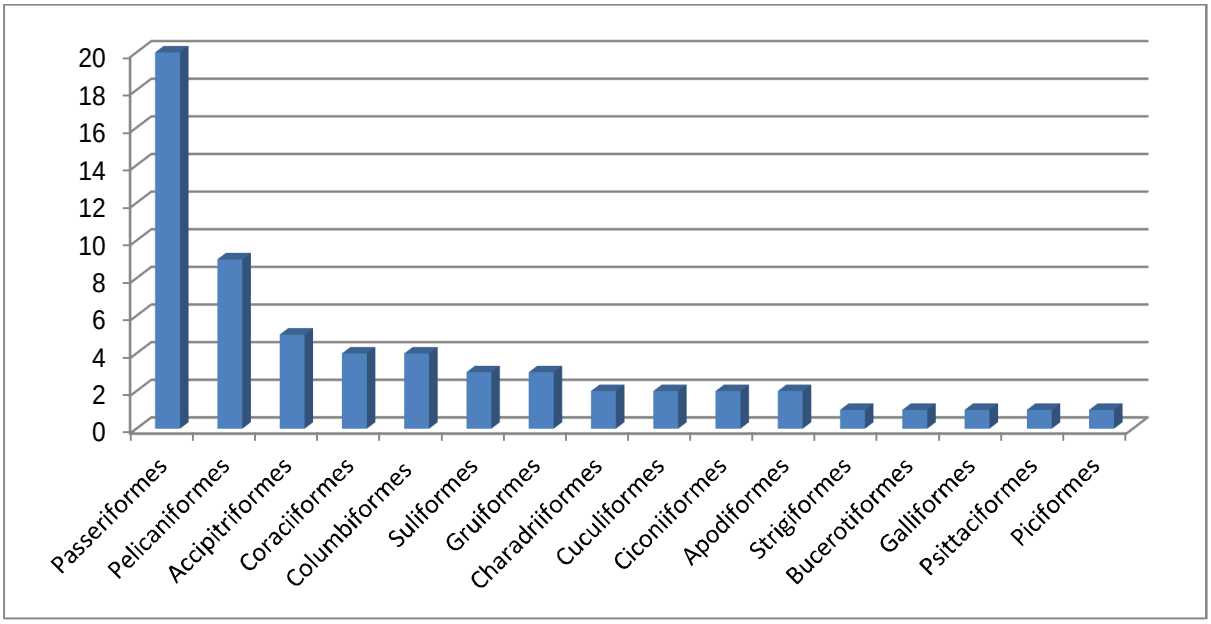


Fig:2. Avian Species Distribution by Orders

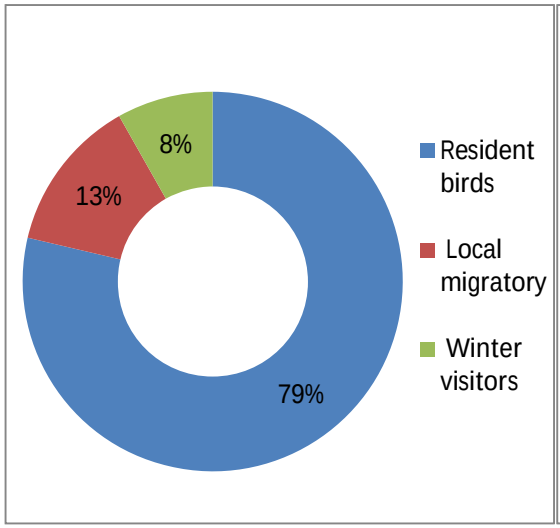


Fig:3. Residential status of birds.

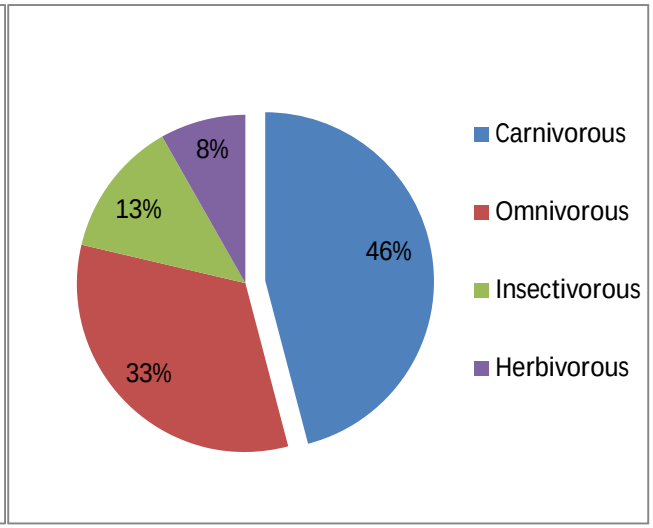


Fig: 4.Feeding Guilds in Hiremagaluru Lake

A. Avian Species Distribution by Orders

In the present study 61 bird species belonging to 16 orders (Fig.2) and 29 families were recorded from Hiremagaluru Lake, Passeriformes were found to be the most dominant order represented by 20 species. It is known that passerines are highly adaptable to diverse environments and widely distributed in Indian agricultural habitat (Srinivasulu, and Reddy 2025).High population density of the group in the area studied can be explained by adaptability of birds to the environment during agricultural activities because passerines are insectivores, granivores, and omnivores. They are characterized by small body size, and great ability to disperse, making these birds successful occupiers of fragmented and heterogeneous habitats such as those found in agricultural lands (Das *et al*., 2025). Passeriformes were followed by Pelicaniformes (9 species), Accipitriformes (5 species) Coraciiformes and Columbiformes (4 species each) Suliformes and Gruiformes (3 species each), Charadriiformes, Cuculiformes, Ciconiiformes, Apodiformes (2 species each), and Strigiformes, Bucerotiformes, Galliformes Psittaciformes and Piciformes, and Psittaculidae with 1 species each (Praveen *et al*., 2016; Harisha *et al*.,2021).

B. Avian Species Distribution by Families

In this study 29 families (Table.1)were recorded. Among the bird species recorded, Ardeidae with 8 species (27.58%) was most dominated family in the study area followed by Accipitridae with 5 species (17.24%), Columbidae and Motacillidae with 4 species each, Phalacrocoracidae, Alcedinidae, Rallidae with 3 species each (13.7 %), Charadriidae, Cuculidae, Muscicapidae Sturnidae, Pychnonotidae, Corvidae, Nectariniidae, Ciconiidae, Apodidae with 2 species each (6.89%),Threskiornithidae,Cisticolidae,Laniidae,Ploceidae,Passeridae,Estrildidae,Dicruridae Bucerotidae, Meropidae, Strigidae, Picidae, Phasianidae, and Psittaculidae with 1 species each (3.44%) (Neelgund and Kadadevaru, 2020; Ahmad *et al*.,2024).Ardeidae was found to be most dominant family in the study area due to rich diversity of wet land habitat (Abhilas and Sylvester 2026), crop fields, and open landscapes that supply abundant food resources and suitable nesting and roosting sites. Birds of Ardeidae are primarily dependent on wetlands where fish, amphibians, crustaceans, and aquatic invertebrates are widely available.

C. Residential status of birds

According to the residential status of aquatic birds, the majority of species reported from the study area were residents accounting for 48 species, which contribute 78.68 % followed by the Local migratory with 8 species, contribute 13.11 % (Fig.3). While winter visitors with Five species contribute 8.19 % of the total bird species (Angadi, 2022; Biswas *et al*., 2025).

D. Feeding Guild composition

Based on the feeding habits from the present data it has been found that the avifauna of this study area is dominated by Carnivorous with 28 species (45.94%) (Asha *et al.*, 2025) followed by Omnivorous with 20 specie (32.78%),Insectivorous with 8 species (13.11%), Herbivorous with 5 species (8.19%)(Fig.4) , It was observed that carnivorous birds were most dominant in the study area. They were feeding on fish, crustacea, mollusca, frogs, toads and snakes. Omnivorous birds had both carnivorous and vegetarian diet; their food includes fish, crustacea, mollusca, frogs, toads and snakes, grains and seeds. Insectivorous bird species were feeding on insect larvae, aquatic insects, grasshopper, dragonflies and honey bees. The sufficient availability of food resources results in the dominance of carnivorous birds in the study area. (Rajashekara and Venkatesha, 2011).

E. IUCN Status of Birds

According to the IUCN Red List, among the total of 61 bird species recorded during the survey, 59 (96.72%) birds belonged to the category of Least Concern (LC), and 2 (3.27%) bird species were Near Threatened (NT). Species Black-headed Ibis (*Threskiornis melanocephalus*) and Painted Stork (*Mycteria leucocephala)* are Near Threatened and have a decreasing population due to wetland degradation, hunting, and disturbance in their colonies (Bird Life International,2023).Presence of Near Threatened species highlight the importance of conservation of the studied agricultural landscape and necessitates its preservation.

V. CONCLUSION

The present study of Avifaunal composition in and around Hiremagaluru Lake, in Chikkamagaluru, District highlights the ecological importance of the avifauna in the study area. In spite of mere anthropogenic pressure due to immense agricultural practices, and extensive deforestation, the study recorded 61 bird species. The highest diversity of Passeriformes and the presence of wetland birds in the study area reveal the area's diverse habitats, supporting both resident and migratory species. The presence of 'Near Threatened' species according to the IUCN Red list, offers the preference for conservation of such neglected ecosystems.

The study suggests the enhanced monitoring of migratory and wetland species, habitat preservation to support different feeding guilds, and also aims to protect threatened and endemic species.

Table 1. Checklist of birds in Hiremagaluru Lake and its surrounding area.

Sl. No	Common name	Scientific name	Migratory Status	IUCN Status	Occurrence	Food
		Order:Pelecaniformes **Family: Ardeidae**				
1	Indian Pond Heron	*Ardeola grayii*	R	LC	C	Cr
2	Black crowned Night Heron	*Nycticorax nycticorax*	R	LC	C	Cr
3	Grey Heron	*Ardea cinerea*	L M	LC	C	Cr
4	Purple Heron	*Ardea purpurea*	LM	LC	C	Cr
5	Cattle Egret	*Bubulcus ibis*	R	LC	C	Cr
6	Great Egret	*Casmerodius albus*	R	LC	C	Cr
7	Intermediate Egret	*Mesophoyx intermedia*	R	LC	C	Cr
8	Little egret	*Egretta garzetta*	R	LC	C	Cr
		Family:Threskiornithidae				
9	Oriental white Ibis/Black headed Ibis	*Threskiornis melanocephalus*	LM	NT	C	Cr
		Order:Suliformes **Family:Phalacrocoracidae**				
10	Indian Cormorant	*Phalacrocorax fuscicollis*	LM	LC	C	Cr
11	Great Cormorant	*Phalacrocorax carbo*	WV	LC	C	Cr
12	Little Cormorant	*Phalacrocorax niger*	LM	LC	C	Cr
		Order:Charadriiformes				
		Family:Charadriidae				
13	Yellow wattled Lapwing	*Vanellus malabaricus*	R	LC	C	Cr
14	Red wattled Lapwing	*Vanellus indicus*	R	LC	C	Cr
		Order:Accipitriformes				
		Family: Accipitridae				
15	Shikra	*Tachyspiza badia*	R	LC	C	Cr
16	Oriental Honey buzzard	*Pernis ptilorhynchus*	R	LC	C	Cr
17	Brahminy Kite	*Haliastur indus*	R	LC	C	Cr
18	Black-winged kite	*Elanus caeruleus*	R	LC	C	Cr
19	Pariah/Black Kite	*Milvus migranus*	R	LC	C	Cr
		Order: Cuculiformes **Family:** Cuculidae				
20	Asian koel	*Eudynamys scolopaceus*	R	LC	C	O
21	Pheasant/Greater Coucal	*Centropussinensis*	R	LC	C	O
		Order: Passeriformes **Family:Muscicapidae**				
22	Indian Robin	*Copsychus fulicatus*	R	LC	C	Cr
23	Oriental Magpie-Robin	*Copsychus saularis*	R	LC	C	Cr
		Family: Sturnidae				

24	Common Myna	*Acridotheres tristis*	R	LC	C	O
25	Jungle Myna	*Acridotheresfuscus*	R	LC	C	O
		Family:Pychnonotidae				
26	Red whiskered Bul bul	*Pycnonotusjocosus*	R	LC	C	O
27	Red vented bul bul	*Pycnonotus cafer*	R	LC	C	O
		Family:Corvidae				
28	Jungle crow	*Corvus macrorhynchos*	R	LC	C	O
29	House crow	*Corvus splendens*	R	LC	C	O
		Family:Cisticolidae				
30	Ashy prinia	*Prinia socialis*	R	LC	C	Cr
		Family:Laniidae				
31	Bay backed shrike	*Lanius vittatus*	R	LC	C	Cr
		Family:Ploceidae				
32	Baya Weaver bird	*ploceus philippinus*	LM	LC	C	O
		Family:Passeridae				
33	House sparrow	*Passer domesticus*	R	LC	C	O
		Family:Nectariniidae				
34	Purple-rumped Sunbird	*Leptocomazeylonica*	R	LC	C	N/I
35	Purple sunbird	*Cinnyrisasiaticus*	R	LC	C	N/I
		Family:Estrildidae				
36	Scaly breasted Munia	*Lonchura punctulata*	R	LC	C	O
		Family:Dicruridae				
37	Black drongo	*Dicrurus macrocercus*	R	LC	C	O
		Family:Motacillidae				
38	White-browed Wagtail	*Motacilla maderaspatensis*	R	LC	C	I
39	Yellow Wagtail	*Motacilla flava*	WV	LC	UC	I
40	White Wagtail	*Motacilla alba*	WV	LC	UC	I
41	Grey Wagtail	*Motacilla cinerea*	WV	LC	UC	I
		Order: Columbiformes				
		Family:Columbidae				
42	Spotted Dove	*Spilopelia chinensis*	R	LC	C	H
43	Eurasian Collared Dove	*Streptopelia decaocto*	R	LC	C	H
44	Laughing Dove	*Stigmatopelia senegalensis*	R	LC	C	H
45	Rock pigeon	*Columba livia*	R	LC	c	H
		Family: Ciconiiformes				
46	Painted Stork	*Mycteria leucocephala*	LM	NT	C	Cr
47	White stork	*Ciconia ciconia*	WV	LC	UC	Cr
		Order: Apodiformes				
		Family: Apodidae				
48	Little Swift	*Apus Affinis*	R	LC	C	I
49	Asian Palm Swift	*Cypsiurus balasiensis*	R	LC	C	I
		Order: Bucerotiformes **Family :** Bucerotidae				
50	Indian Grey Hornbill	*Ocyceros birostris*	R	LC	C	O
		Order:Coraciiformes **Family:** Alcedinidae				
51	Common Kingfisher	*Alcedo atthis*	R	LC	C	Cr

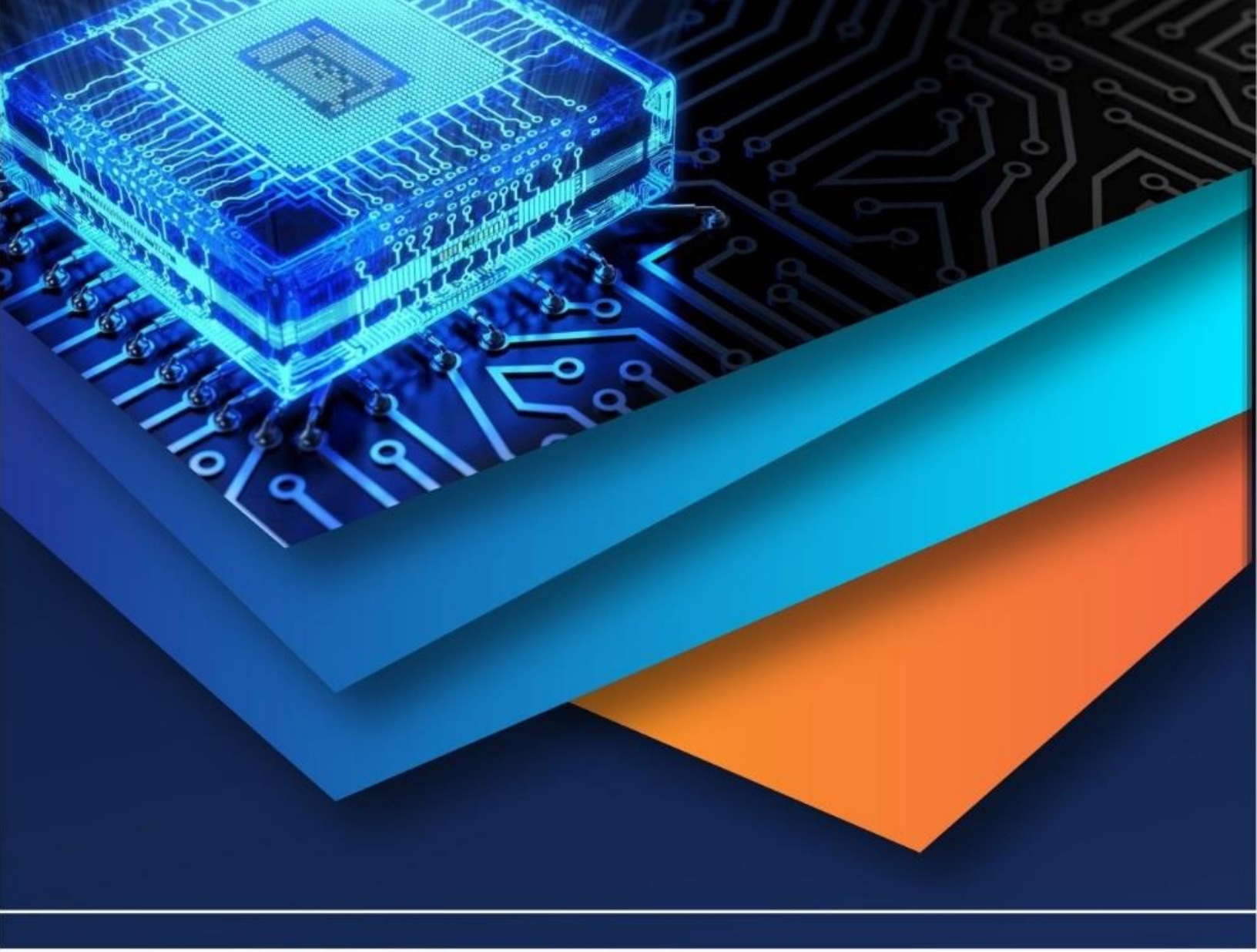
52	White Throated Kingfisher	*Halcyon smyrnensis*	R	LC	C	Cr
53	Pied kingfisher	*Ceryle rudis*	R	LC	C	Cr
		Family: Meropidae				
54	Green Bee-eater	*Dicrurus macrocercus*	R	LC	C	O
		Order: Gruiformes **Family:** Rallidae				
55	Grey Headed Swamp hen	*Porphyrio porphyrio*	LM	LC	C	O
56	Indian Moor hen	*Gallinula chloropus*	R	LC	C	O
57	White Breasted Water hen	*Amaurornis phoenicurus*	R	LC	C	O
		Order: Strigiformes **Family:** Strigidae				
58	Spotted Owlet	*Athene brama*	R	LC	C	O
		Order: Piciformes **Family:** Picidae				
59	Lesser Golden back	*Dinopium benghalense*	R	LC	C	O
		Order: Galliformes **Family:** Phasianidae				
60	Indian peafowl	*Pavo cristatus*	R	LC	C	O
		Order: Psittaciformes				
		Family: Psittaculidae				
61	Rose ringed Parakeet	*Psittacula krameri*	R	LC	C	H

Note: Resident (R), Local Migratory (LM), Winter Migratory (WM), Least Concerned (LC), Near Threatened (NT), Common(C), Uncommon (UC), Carnivorous (C), Omnivorous (O), Granivorous (G), Herbivorous (H), Insectivorous (I),Nectivorous (N).

REFERENCES

[1] H. R. Abhilash and C. Sylvester, “Avian species richness and feeding guild patterns in urban lakes of Mysore, Southern India,” Indian Journal of Ecology, vol. 52, 2026.
[2] S. Ali and S. D. Ripley, Handbook of the Birds of India and Pakistan, 2nd ed. Bombay, India: University Press, 1995.
[3] S. Ahmad, G. Yousuf, and S. Majagi, “Diversity and ecology of avifauna in some selected lakes of Tumakuru City, Karnataka, India,” Journal of Experimental Zoology India, vol. 27, no. 2, pp. 2297–2309, 2024.
[4] G. Asha, B. P. Deepthi, and K. N. Achyuth, “Evaluation of water quality and sustainable management strategies for Varthur Lake, Bengaluru,” International Journal of Innovation Studies, vol. 9, no. 1, pp. 345–354, 2025.
[5] C. J. Bibby, N. D. Burgess, D. A. Hill, and S. Mustoe, Bird Census Techniques, 2nd ed. London, U.K.: Academic Press, 2000.
[6] Bird Life International, “Species factsheet/data entry,” 2023. [Online]. Available: https://www.birdlife.org
[7] A. Biswas *et al.*, “Investigating avian fauna diversity and exploring their possible threats in and around wet-landscape of Rudrasagar Lake: An Indian Ramsar site,” Wetlands Ecology and Management, vol. 33, no. 2, art. 22, 2025.
[8] R. Grimmett and T. Inskipp, Birds of Southern India. New Delhi, India: Om Books International, 2013.
[9] M. N. Harisha and B. B. Hosetti, “Status and conservation issues of wetland birds in Komaranahalli Lake, Davanagere District, Karnataka, India,” Journal of Threatened Taxa, vol. 10, no. 2, pp. 11290–11294, 2018.
[10] M. N. Harisha, K. A. Samad, and B. B. Hosetti, “Conservation status, feeding guilds, and diversity of birds in Daroji Sloth Bear Sanctuary, Karnataka, India,” Journal of Threatened Taxa, vol. 13, no. 7, pp. 18738–18751, 2021.
[11] IUCN, IUCN Red List of Threatened Species (Version 2013.1), 2013. [Online]. Available: https://www.iucnredlist.org
[12] J. Jason, “Habitat selection studies in avian ecology: A critical review,” The Auk, vol. 118, no. 2, pp. 557–562, 2001.
[13] H. Jamakhandi and G. G. Kadadevaru, “Avifaunal diversity and feeding guild structure in and around Unkal Lake: A semiarid urban wetland in Karnataka, India,” Indian Journal of Ecology, vol. 51, no. 2, pp. 453–467, 2024.
[14] P. S. Joshi, “An annotated checklist of aquatic avifauna of Rajura, Godada and Dhanora lakes of Buldhana district (M.S.), India,” Science Research Reporter, vol. 2, no. 1, pp. 30–33, 2012.
[15] R. Manakadan and A. Pittie, “Standardized English and common names of the birds of the Indian subcontinent,” Newsletter for Bird Watchers, vol. 42, no. 3, pp. 1–36, 2002.
[16] H. D. Neelgund and G. Kadadevaru, “Avifaunal diversity of some selected water bodies of Khanapur Taluka, Belagavi District, Karnataka, India,” Journal of Threatened Taxa, vol. 12, no. 5, pp. 15572–15586, 2020.
[17] J. Praveen, R. Jayapal, and A. Pittie, “A checklist of the birds of India,” Indian BIRDS, vol. 11, no. 5–6, pp. 113–172, 2016.

[18] S. D. Puri and R. S. Virani, "Avifaunal diversity from Khairbandha Lake in Gondia District, Maharashtra State, India," Bioscience Discovery, vol. 7, no. 2, pp. 140–146, 2016.
[19] S. Rajashekara and M. G. Venkatesha, "Community composition of aquatic birds in lakes of Bangalore, India," Journal of Environmental Biology, vol. 32, no. 1, pp. 77–83, 2011.
[20] C. Srinivasulu and S. Reddy, "A checklist of avifauna of Telangana, India," Journal of Threatened Taxa, vol. 17, no. 7, pp. 27249–27282, 2025.
[21] R. E. Stewart, "Technical aspects of wetlands: Wetlands as bird habitats," in National Water Summary on Wetland Resources, U.S. Geological Survey Water Supply Paper 2425, 200
[22] M. W. Weller,Wetland Birds: Habitat Resources and Conservation Implications. Cambridge, U.K.: Cambridge University Press, 1999.



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