

## Avifaunal diversity of Koradi Lake in Nagpur District of central India

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**ABSTRACT:**

Birds, the feathered bipeds have immense ecological value and serve as the bio indicators of ecosystem health. Present study deals with the study on the avifaunal diversity of Koradi lake (Lat.- 21°15'0N; Longi.- 79°5'60E) which is situated 10 km. North to Nagpur city of Central India. Lake and the adjoining area was surveyed on fortnightly basis for a period of two years from 2008 to 2010. Out of total 76 species belonging to 15 orders in and around the lake 54 species were recorded as resident; 09 species as seasonal local migrant and 13 species as winter migrant. Order Passeriformes (26 species) dominated the avifauna of the lake which was followed by order Ciconiiformes (10 species). Birds like Purple moorhen, Purple heron, Indian pond heron, Parakeet, Green bee eater etc. were found to be native while Grey heron, Black-winged stilt, Painted Stork, Woolly-necked stork migrated locally. Birds like Red-crested Pochard, Gadwall, Northern Pintail, Wood Sandpiper, Northern Shoveler, Eurasian Wigeon, Chestnut-tailed Starling, Black Redstart and Blue-tailed Bee-eater as well as the raptors like Osprey, Eurasian Marsh Harrier and Common Kestrel were recorded as migrants. Presence of such diversified avifauna indicate the healthy status of the lake and needs proper management practices to avoid anthropogenic disturbances.

**Keywords:**

Koradi lake, avifauna, health status, anthropogenic disturbances.

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## INTRODUCTION

Many species of birds respond to small changes in habitat structure and composition, therefore they serve as good indicators of changes in the environment (Robert et. al., 2001). Out of more than 9,000 bird species of the world, the Indian subcontinent contains 1,300 species or over 13% of the world's bird species (Grimmet et.al., 2004). Wetlands are one of the most threatened habitats because of their vulnerability and attractiveness for their development (Hollis et al.,1988). India has a diverse range of wetland types that harbor not only a variety of breeding resident species of birds, but also attracts a number of waterfowl breeding in Central and North Asia in winter. One such important freshwater wetland ecosystem in Central India is Koradi lake in Nagpur district of Maharashtra state. Although, the diverse avifaunal assemblage and easy access has established Koradi lake as a routine and favorite stop for bird experts and enthusiasts, a proper checklist of avifauna of this particular water body is yet to be documented. The bird checklist of Nagpur area stands at 284 (Kasambe et.al., 2009), wherein, Koradi reservoir was considered as one of the boundaries to compile the list.

## STUDY AREA

Koradi lake (Latitude - 21°15'0N; Longitude- 79°5'60E) lies 10km. North to Nagpur city (the centermost point of India) at an altitude of 297 meters. The water body is a small manmade reservoir established along with Koradi Thermal Power Station in 1975. It is property of MAHAGENCO (previously known as Maharashtra State Electricity Board). It receives water from Navegaon Khairi dam on Pench River, Maharashtra. The 07 meters deep lake is surrounded by Koradi village on South-west and Nanda village on North-west . Jagdamba temple lies on South-east and MAHAGENCO on the eastern side of the lake. The water body is flanked by agricultural patches and scrubs on the Western, North-eastern and South-eastern side. There are tall trees on the North-western and Western

region. A bridge which is a part of National Highway No. 69 divides the lake into two parts. A tar road extends from the Highway to the North-east towards Nanda village from which three mud tracks extend allowing easy access to the periphery at the North-western side of the lake on foot. The catchment area has a variety of aquatic weeds like *typha*, *ipomea*, *nelumbo*, *nymphaea*, etc. Thick reed bed patches are scattered over the lake. Duckweed is found in abundance. Fish like Rohu, Catla Mrigal, etc. are found here.

## METHODOLOGY

The study area was visited fortnightly throughout the study period from 2008 to 2010. On some visits, author was accompanied by a group of bird enthusiasts. Data on present bird species was collected by direct observations with the help of binoculars (Olympus 8X40 and 10X50). Almost all the species mentioned in the checklist were photographed. For this purpose, digital camera of the make SONY model-DSC-H7 was used. The birds were observed from the bridge and since the birds congregate at the western side of the lake, the western periphery was surveyed on foot regularly. On some occasions the North-eastern periphery was also surveyed. The lake was visited in morning and evening time when the birds are most active. Some visits were also made in afternoon to check the activities of the avifauna at different times.

On 14 occasions ,the boat of fishermen was hired to observe and photograph the birds more closely on the western side. The tar road leading to Nanda village at North-western side was also surveyed on two-wheelers to observe the birds found in nearby fields, on electric cables and on shrubs, bushes and tall trees surrounding the lake. Identification and status of the birds was based on the field guides given by Salim Ali and Ripley (1995), Salim Ali(1996 and 2002) and Grimith et.al., (1999). Status of the birds was classified as R- Resident (Species found throughout the year in the study area), WM-Winter



Migrant (Species migrate from the northern hemisphere and were found in the study area during winter only) and LM- Local Migrant (Species migrate locally within the country and were found in the study area).

## RESULT AND DISCUSSION

Nagpur city, located at the centre of India has remained an important birding place since the pre-independence in India. Some of the then available birding records in and around Nagpur city are Armour (1978), Blanford (1871), Jones (1923) and D'Abreu (1935). But any record with reference to avifaunal diversity of Koradi lake is not yet available. During the study 76 species of birds were recorded in and around the Koradi lake which represented about 27 % of total 284 species found in and around Nagpur city. 54 species belonging to 14 Orders were counted as resident, 09 species of 06 orders as seasonal local migrant and 13 species of 04 orders as migrant. Order Passeriformes (26 species) dominated the avifauna of the lake which was followed by order Ciconiiformes (10 species).

Dominance of order Passeriformes was also recorded by Reginald et. al., (2007) in Singanallur lake of Tamilnadu. The resident birds such as waterhens, herons, kingfishers, jacanas, parakeets, green bee eater, bulbul, shrike, Common Coot and Little Cormorant etc. were found regularly throughout the study period (**Table 1**). Dhanwatey, A (1987) had recorded Great Crested Grebe (*Podiceps cristatus*) at Nagpur but during the study only Little Grebe (*Tachybaptus ruficollis*) was recorded as resident.

The seasonal local migrants observed throughout the study period were Black-headed Ibis (*Threskiornis melanocephalus*), Grey Heron (*Ardea cinerea*), Black-winged Stilt (*Himantopus himantopus*), Woolly-necked Stork (*Ciconia episcopus*), Darter (*Anhinga melanogaster*), River Tern (*Sterna aurantia*), Painted Stork (*Mycteria leucocephala*), Pied cuckoo (*Clamator jacobinus*) and Rosy Starling (*Sturnus roseus*) (**Table 2**).

The regular wintering of 13 species of migratory birds such as Red-crested Pochard (*Rhodonessa rufina*), Gadwall (*Anas strepera*), Ruddy Shelduck (*Tadorna ferruginea*), Northern Pintail (*Anas acuta*), Wood Sandpiper (*Tringa glareola*), Northern Shoveler (*Anas clypeata*), Eurasian Wigeon (*Anas penelope*), Chestnut-tailed Starling (*Sturnus malabaricus*), Black Redstart (*Phoenicurus ochruros*) and Blue-tailed Bee-eater (*Merops philippinus*) as well as the raptors like Osprey (*Pandion haliaetus*), Eurasian Marsh Harrier (*Circus aeruginosus*) and Common Kestrel (*Falco tinnunculus*) was also significant (**Table 3**). Dayananda .G. (2009) also observed 11 species of winter visitors in wetlands of Gudavi bird sanctuary, Karnataka. Order Anseriformes dominated the migrant avifauna of the Koradi lake which was followed by Falconiformes, Passeriformes, Ciconiiformes and Coraciiformes respectively. Similar trend was also observed by Kafle et al (2008) in Rupa lake of Nepal.

Some of the species that were seen only once during the entire survey are mentioned below.

### Common Kestrel (*Falco tinnunculus*) :

A single male was observed on 27-11-2009 at 8:30 am. Author was observing the wire-tailed swallows (*Hirundo smithii*) when suddenly this small, slender falcon swooped down on one of the swallows and carried it away. It all happened in a flash. It flew with the prey in its talons till it disappeared from our sight, but didn't bother to settle till then.

### Osprey (*Pandion haliaetus*) :

A single bird was seen on 02-01-2010 at 7:45 am flying over the water and scanning the surface for its chief prey-fish. It is also commonly called Fish-hawk. This dark brown hawk with whitish head and black stripe through eye is commonly found in winter on many of our freshwater wetlands. The bird was observed for at least 50 minutes. It was seen circling over the water at a height of about 20 meters on the western side of the lake, swooping down only once and flying very close to the

Table 1: Resident Birds recorded in and around Koradi lake during 2008-2010

Sr. No.	Common Name	Zoological name	Order
1	Purple Swamp hen	<i>Porphyrio porphyrio</i>	Gruiformes
2	Common Moorhen	<i>Gallinula chloropus</i>	Gruiformes
3	White-breasted waterhen	<i>Amaurornis phoenicurus</i>	Gruiformes
4	Common Coot	<i>Fulica atra</i>	Gruiformes
5	Purple heron	<i>Ardea purpurea</i>	Ciconiiformes
6	Indian Pond heron	<i>Ardeola grayii</i>	Ciconiiformes
7	Pheasant-tailed jacana	<i>Hydrophasianus chirurgus</i>	Charadriiformes
8	Bronze-winged jacana	<i>Metopidius indicus</i>	Charadriiformes
9	Little Grebe	<i>Tachybaptus ruficollis</i>	Podicipediformes
10	Spot-billed duck	<i>Anas poecilorhynca</i>	Anseriformes
11	Common kingfisher	<i>Alcedo atthis</i>	Coraciiformes
12	White-throated kingfisher	<i>Halcyon smyrnensis</i>	Coraciiformes
13	Pied Kingfisher	<i>Ceryle rudis</i>	Coraciiformes
14	Little Cormorant	<i>Phalacrocorax niger</i>	Pelecaniformes
15	Great Cormorant	<i>Phalacrocorax carbo</i>	Pelecaniformes
16	Little egret	<i>Egretta garzetta</i>	Ciconiiformes
17	Cattle egret	<i>Bubulcus ibis</i>	Ciconiiformes
18	Intermediate egret	<i>Mesophoyx intermedia</i>	Ciconiiformes
19	Cotton pygmy-goose	<i>Nettapus coromandelianus</i>	Anseriformes
20	Red-wattled lapwing	<i>Vanellus indicus</i>	Charadriiformes
21	Wire-tailed swallow	<i>Hirundo smithii</i>	Passeriformes
22	House Swift	<i>Apus affinis</i>	Apodiformes
23	Blue-winged leafbird	<i>Chloropsis cochinchinensis</i>	Passeriformes
24	Pied Bushchat	<i>Saxicola caprata</i>	Passeriformes
25	Asian Openbill	<i>Anastomus oscitans</i>	Ciconiiformes
26	Ashy prinia	<i>Prinia socialis</i>	Passeriformes
27	Indian Silver bill	<i>Lonchura malabarica</i>	Passeriformes
28	Green bee-eater	<i>Merops orientalis</i>	Coraciiformes
29	Black drongo	<i>Dicrurus macrocercus</i>	Passeriformes
30	Laughing dove	<i>Streptopelia senegalensis</i>	Columbiformes
31	Red-vented bulbul	<i>Pycnonotus cafer</i>	Passeriformes
32	Long-tailed Shrike	<i>Lanius schach</i>	Passeriformes
33	Brahminy Starling	<i>Sturnus pagodarum</i>	Passeriformes
34	House Sparrow	<i>Passer domesticus</i>	Passeriformes
35	Ashy-crowned Sparrow Lark	<i>Eremopterix grisea</i>	Passeriformes
36	House Crow	<i>Corvus splendens</i>	Passeriformes
37	Indian Robin	<i>Saxicoloides fulicata</i>	Passeriformes
38	Oriental Magpie Robin	<i>Copsychus saularis</i>	Passeriformes
39	Yellow-eyed Babbler	<i>Chrysomma sinense</i>	Passeriformes
40	Jungle Babbler	<i>Turdoides striatus</i>	Passeriformes
41	Asian Pied starling	<i>Sturnus contra</i>	Passeriformes
42	Common mynah	<i>Acridotheres tristis</i>	Passeriformes
43	Common Iora	<i>Aegithina tiphia</i>	Passeriformes
44	Orange-headed Thrush	<i>Zoothera citrina</i>	Passeriformes
45	Verditer Flycatcher	<i>Eumyias thalassina</i>	Passeriformes
46	Tickell's Blue Flycatcher	<i>Cyornis tickelliae</i>	Passeriformes
47	Ultramarine Flycatcher	<i>Ficedula superciliaris</i>	Passeriformes
48	Asain Koel	<i>Eudynamis scolopacea</i>	Cuculiformes
49	Black-rumped flameback	<i>Dinopium benghalense</i>	Piciformes
50	Rain Quail	<i>Coturnix coromandelica</i>	Galliformes
51	White-browed Bulbul	<i>Pycnonotus luteolus</i>	Passeriformes
52	Rose-ringed Parakeet	<i>Psittacula krameri</i>	Psittaciformes
53	Spotted Dove	<i>Streptopelia chinensis</i>	Columbiformes
54	Eurasian Golden Oriole	<i>Oriolus oriolus</i>	Passeriformes

**Table 2: Seasonal Local Migrants recorded in and around Koradi lake during 2008-2010**

Sr.No.	Common Name	Zoological name	Order
1	Black-headed Ibis	<i>Threskiornis melanocephalus</i>	Ciconiiformes
2	Grey Heron	<i>Ardea cinerea</i>	Ciconiiformes
3	Black-winged Stilt	<i>Himantopus himantopus</i>	Charadriiformes
4	Woolly-necked Stork	<i>Ciconia episcopus</i>	Ciconiiformes
5	Darter	<i>Anhinga melanogaster</i>	Pelecaniformes
6	River Tern	<i>Sterna aurantia</i>	Charadriiformes
7	Painted Stork	<i>Mycteria leucocephala</i>	Ciconiiformes
8	Pied cuckoo	<i>Clamator jacobinus</i>	Cuculiformes
9	Rosy Starling	<i>Sturnus roseus</i>	Passeriformes

water surface, but not finding any fish (as if it was a trial and error method of hunting) regained its height of circling and kept looking for its prey. But suddenly, after 35 minutes, 3 house crows (*Corvus splendens*) started mobbing the predator. Mobbing possibly alerts all the birds in a given area and distracts the predator away from discovering young birds in the area during breeding season (Shukla and Tyagi, 2004). The mobbing crows harassed the predator to an extent that it had to leave its hunting ground and fly away.

**Darter (*Anhinga melanogaster*):**

On 12-12-2009 at 9:05 am, a single bird was seen perched on a tree on the western bank of the lake. It was just resting there and not looking below to the water for its staple food-fish. This cormorant-like water bird with its snake-like neck and dagger-like bill is found throughout the Indian Union, mainly inland waters (Salim Ali, 2002).

**River Tern (*Sterna aurantia*):**

On 05-01-2010 at 9:15 am, a single bird was observed resting on the western bank of the lake. This grey and white tern with deep yellow bill and short red legs is found throughout the Indian Union in large inland waters.

**Painted Stork (*Mycteria leucocephala*):**

This bird was sighted twice during the study period. On 27-11-2009 at 7:00 am, 4 individuals were sighted on the western side of the lake amongst the reeds, occasionally standing on one leg for some time and then putting the other leg down and walked for some distance and then disappeared behind the tall reed bed. On 03-12-2009 at 6:30 am, again 4 individuals were sighted standing 'hunched up' with one leg up close to the body. All the other species were sighted quite often. Painted Stork is a Near Threatened Species (IUCN, 2007).

**Table 3: Winter Migrants recorded in and around Koradi lake during 2008-2010**

Sr.No.	Common Name	Zoological name	Order
1	Red-crested Pochard	<i>Rhodonessa rufina</i>	Anseriformes
2	Gadwall	<i>Anas strepera</i>	Anseriformes
3	Ruddy Shelduck	<i>Tadorna ferruginea</i>	Anseriformes
4	Northern Pintail	<i>Anas acuta</i>	Anseriformes
5	Osprey	<i>Pandion haliaetus</i>	Falconiformes
6	Eurasian Marsh Harrier	<i>Circus aeruginosus</i>	Falconiformes
7	Wood Sandpiper	<i>Tringa glareola</i>	Ciconiiformes
8	Common Kestrel	<i>Falco tinnunculus</i>	Falconiformes
9	Northern Shoveler	<i>Anas clypeata</i>	Anseriformes
10	Eurasian Wigeon	<i>Anas penelope</i>	Anseriformes
11	Chestnut-tailed Starling	<i>Sturnus malabaricus</i>	Passeriformes
12	Black Redstart	<i>Phoenicurus ochruros</i>	Passeriformes
13	Blue-tailed Bee-eater	<i>Merops philippinus</i>	Coraciiformes

## CONCLUSION

Survey of the Koradi lake revealed the presence of 76 birds which is a remarkable number for such a small area. The presence of resident and migrant birds in and around the lake indicate that the habitat is rich enough to attract them and make them spend their winter months. Wetlands are relatively safe areas which provide the birds with abundance of food and safe place for roosting, nesting and moulting (Imran Dar, 2009). The results of the surveys and observations highlight the fact that avifauna here is abundant which indicates healthy status of the lake. Abundance is due to the rich habitat and easy availability of protein-rich invertebrates and other food. Koradi reservoir is therefore an important refuge for birds.

Increasing anthropogenic activities are resulting into destruction of habitat and poor quality of water. Currently, the major human disturbances are fishing, dumping of garbage and use of harmful chemicals in agricultural practices on the periphery of the lake. The reservoir is given on lease to the fishermen community. Once, during a boat survey a dead bird was found in the water which couldn't be identified because of the degrading body. It presumably was a diving duck and most probably died by getting caught into fishing net. People bring loads of garbage in big plastic bags to dump it into the lake which has led to poor water quality. In order to avoid anthropogenic disturbances proper conservation management practices of the lake are needed.

## REFERENCES

- Armour J. 1978.** Birding in Nagpur, *Newsletter for Birdwatchers* 18(9):4-5
- Blanford. 1871.** Note on Colonel McMaster's list of birds from Nagpore and Central Provinces. *Journal of Asiatic Society of Bengal.* 40(2):216-217.
- D'Abreau EA. 1935.** A list of the birds of the Central Provinces. *J. Bombay Nat. Hist.Soc.*,38:95-116.
- Dayananda G. 2009 :** Avifaunal diversity of Gudavi bird sanctuary, Sorab, Shimoga, Karnataka. *Our Nature* 7:100-109.
- Dhanwatey A. 1987 .**Great Crestde Grebe sighting at Nagpur . *J. Bombay Nat. Hist. Soc.*, 84(2):431
- Grimmet Richard, Inskipp Carol and Inskipp Tim. 1999.** A pictorial guide to the birds of the Indian Subcontinent , Oxford University Press, Mumbai.
- Grimmet R, Inskip T, Islam MZ. 2004.** Birds of Northern India. Christopher Helm A and C Bleak Publishers Ltd. London.
- Hollis GE, Holand MM and Larson JS. 1988.** Wise use of wetlands. *Nature and Resources* 24(1):2-13.
- Imran A Dar and Mithas A Dar. 2009.** Seasonal Variations of Avifauna of Shallabug Wetland, Kashmir, *Journal of Wetlands Ecology* 2:20-34.
- IUCN 2007.** IUCN Red List of Threatened Species <[www.iucnredlist.org](http://www.iucnredlist.org)>.
- Jones WTW. 1923 .**A curious incident while duck shooting .*J. Bombay Nat. Hist. Soc.*, 29(2):563.
- Joseph Reginald, Mahendran C, Surshkumar S and Pramod P. 2007.** Birds of Singanallur lake, Coimbatore, Tamilnadu .*Zoo's Print Journal* 22(12):2944-2948.
- Kafle G, Marcus C, Chaidhary JR, Pariyar H, Adhikari H, Bohara S, Chaudhari U, Ram Ashok and Regmi B. 2008.** Status of threats to waterbirds of Rupa lake, Pokhara, Nepal .*Journal of Wetland ecology* 1(1/2) 9-12.
- Kasambe R and Tarique Sani. 2009.** Avifauna in and around Nagpur city of Maharashtra ;an annotated, contemporary checklist. *Newsletter for birdwatchers* 49(3):35-40.



**Renigald, Joseph L. Mahendran C. Sureshkumar S and Pramod P. 2007.** Birds of Singanallur lake, Coimbatore, Tamil Nadu. *Zoo's Print Journal* 22 (12):2944-2948.

**Robert A Fimbel, John AG and Robinson G. 2001.** The Cutting Edge: Conserving Wildlife in Logged Tropical Forest.

**Salim Ali and Ripley SD. 1995.** A pictorial guide to the birds of Indian Subcontinent. Bombay Natural History Society, Mumbai .

**Salim Ali. 1996.** The book of Indian birds, Twelveth Revised Edition, Bombay Natural History Society Oxford University Press, Mumbai.

**Salim Ali. 2002.** The book of Indian birds, Thirteenth Revised Edition, Bombay Natural History Society Oxford University Press, Mumbai.

**Shukla A and Rajiv Tyagi. 2004.** *Encyclopaedia of Birds*. Anmol Publications PVT. LTD, 234. ISBN 81-261-0967-X. <http://books.google.com/books?id=WMOtas3jbPQC>. Retrieved 2008-09-25.

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