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Exploring avifaunal diversity in two different lakes of Mysuru

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Abstract
A field survey was conducted to record the diversity of avifauna in the two selected lakes of Mysuru City (Kukkarahalli Lake and Lingambudhi Lake). A survey performed during the month of May to July 2024 by Line Transect Method (LTM) and Visual encounter method (VEM). The birds were observed from morning 6:00 am to 10 am and evening 4:00 pm to 6:00 pm for every 10 days interval. Photographs were captured using digital camera (Canon EOS Rebel DSLR,24.1MP) for further identification. A total of 39 species belonging 25 different families were recorded. Ardeidae was the dominant family having the highest number of species recorded (12.82%), followed by Rallidae (10.25%), Threskiornithidae (7.69%) and families Psitlaculidae, Columbidae, Phasianidae, Corvidae, Picidae, Sturnidae, Cuculidae, Accipitridae, Strigidae, Anatidae, Apodidae, Charadriidae, Jacanidae, Recurvirostridae, Scolopacidae, Alcedinidae, Motacillidae, Podicipedidae, Anhingidae, Phalacrocoracidae, Bucerotidae and Ciconiidae with one or two species each (2-4%). Graphical representation was showed in order to differentiate the occurrence of birds in three different months. The result showed that highest species occurred in the month of June with 38 species.

Keywords: Avifauna, avifaunal diversity, kukkarahalli lake, lingambudhi lake

Introduction

Diversity of avifauna is one of the most important ecological markers to evaluate the quality of habitats. Due to human activity and environmental degradation, avifaunal diversity has been declining (Shruthi and Basavarajappa, 2016) [12]. The majority of birds are beneficial to people. Birds play a useful role in the control of insects of pests of agricultural crops, as predators of rodents, as scavengers, as seed dispensers and as pollinating agents, birds thus form an important component in natural ecosystem (Chethan, 2020) [4]. Protection and maintaining of avifaunal diversity are important in maintaining species diversity and plants and animals. Therefore, birds are reared not only for plants, animals and also birds are reared not only for preserving ecological balance but also for products of economic importance and as down feathers (Manjunath and Joshi, 2012) [9]. Due to the non-conductive nature of their feathers, birds, being warm-blooded animals, helps in controlling body temperature.

Compared to mammals, they have a quicker metabolism and no sweat glands (Ali, 1996) [1]. Birds are significant in the fields of ecology, economics, ethics, medicine, and science due to their unique characteristics, such as their warm blood, feathers, and ability to walk on two feet (Basavarajappa, 2016). The existence of aquatic birds in the natural environment makes them a significant and abundant source of biodiversity among living organisms (Barve and Warrier, 2013) [2]. Birds are among the most adapted and widely dispersed species on the planet; their capacity to adjust is solely based on their body mass anddietary preferences (Krishna, 2018) [6]. A vital element and link in any ecosystem's food chain is avifauna. According to Sujosha *et al*, 2020 [13], birds have been considered as excellent biological markers because of their ecological adaptability and capacity to exist in a variety of settings. Birds are one of the best means of identifying environmental changes. According to Prajapati *et al*. (2023) [10], they are visually arresting and sensitive to changes in their environment. The best biological indicators for monitoring environmental health are believed to be these. As common occupants of the environment, birds have been considered an indicator species of inhabited places (Lakshmi *et al*., 2020) [8].

In contrast to other vertebrates, aves are found all across the world. Based on their habitat and feeding habits, avifauna behavior is categorized. According to Puri and Virani (2016) [11], birds are found almost everywhere on Earth, from the poles to the equator, and they differ significantly based on their habitat and geographic location. Birds play a significant ecological role in the biodiversity of the world.

The most prevalent animal on the planet, aves are sensitive to environmental changes (Kumar and Gupta, 2009) [7].

Methods and methodology

Study site

The present study was conducted from the month of May to July 2024 in the two different sites in Mysuru (12.2958°N 76.6394°E) the studied sites are rich in the floral diversity. Kukkarahalli is the first site (12°18´N 76°38´E / 12.3°N 76.63°E / 12.3;76.63).

It is a marshy area with wild grass, thick bushes, shrubs, herbs and bamboo species. It also includes teak and sandal wood etc. Site – 2 is Ligambudhi lake 12°16´9.74´´ N 76°36´43.12´´ E / 12.2693722° N. This lake is freshwater and is situated in the city of Mysuru. The main purpose of this lake is to provide water for irrigation and drinking. It provides shelter for wide variety of aquatic birds. Lingambudhi also consists of botanical garden which attracts the tourists. The birds at the different site observed carefully and identified. Line Transect Method and Visual Encounter Method were followed during the study.

Photography The photographs were captured using the digital camera (Canon EOS Rebel DSLR,24. 1MP) used to observe and for documenting the birds. Salim Ali (1996) [1]

and the standard field guide (Grimmett *et al*., 2021) [5] were used to identify several bird species.

Result and discussion

Totally 39 bird species belonging to 25 families were observed and recorded at the different lakes of Mysuru and the selected lakes were Kukkarahalli and Lingambudhi lakes. Psitlaculidae, Columbidae, Phasianidae, Corvidae, Picidae, Sturnidae, Cuculidae, Accipitridae, Sturnidae, Cuculidae, Accipitridae, Strigidae, Ardeidae, Bucerotidae, Ciconiidae, Anatidae, Apodidae, Charadriidae, Jacanidae, Recurvirostridae, Scolopacidae, Alcedinidae, Rallidae, Motacillidae, Threskiornithidae, Podicipedidae, Anhingidae, Phalacrocoracidae were different families represented during the month May to July at the different lakes of mysore. Psitlaculidae represented by 1 species namely Rose ringed parakeet, Columbidae represented by 1 species namely Pigeon, Phasianidae represented by 1 species are Peafowl, Corvidae represented by 1 species namely crow, Picidae represented by 1 species namely Woodpecker, Sturnidae represented by 1 species namely Common Myna, Cuculidae represented by 1 species namely Common Koel, Accipitridae represented by 1 species namely Kite, Strigidae represented by 1 species namely Spotted Owlet, Ardeidae represented by 5 species namely Pond heron, Purple heron, Grey Heron, Cattle egret, Little egret, Bucerotidae represented by 1 species namely Indian grey hornbill, Ciconiidae represented by1 species namely Painted stork, Anatidae represented by 2 species namely Northern shoveler and Spot-billed Duck, Apodidae represented by 1 species namely Asian-Palm Swift, Charadriidae represented by 2 species namely Red-wattle lapwing and yellow-wattle lapwing, Jacanidae represented by 1 species namely Bronze-winged Jacana, Recurvirostridae represented by 1 species namely Black-winged Stilt, Scolopacidae represented by 2 species namely Common sandpiper and wood sandpiper,Alcedinidae represented by 2 species namely Common Kingfisher and White throated kingfisher, Rallidae represented by 4 species namely White breasted water hen, Common Coot, Common Moorhen, and Purple Moorhen are members of the Motacillidae family; Black-headed Ibis, Glossy Ibis, and Red-napped Ibis are members of the Threskiornithidae family; and the Little Grebe is a member of the Podicipediae family.

the Anhingidae family includes 1 Oriental Darter, Phalacrocoracidae family includes 2 species namely the Great and Little Cormorants.

In the month of May total 28 birds were recorded and they are accounted by 71.79%, in the month of June 38 birds were recorded and they are accounted by 97.43% and in the month of July 37 birds were recorded they were recorded by 94.87%.Among May, June and July the highest species were recorded in the month of June because due to several reasons migration, nesting, food availability, sudden changes in the environment and climate, Habitat condition and early breeding.

Table 1: Checklist of recorded birds in the selected study sites

Sl no	Family	Scientific name	Common name
1.	Psitlaculidae	*Psitacula krameria*	Rose ring parakeet
2.	Columbidae	*Columba livia*	Blue rock pigeon
3.	Phasianidae	*Pavo cristatus*	Indian peafowl
4.	Corvidae	*Corvus capensis*	Jungle crow
5.	Picidae	*Dinopiumbenghalense*	Lessergolden woodpecker
6.	Sturnidae	*Acridotheres tristis*	Jungle Myna
7.	Cuculidae	*Centropus sinensis*	Greater coucal
8.	Accipitridae	*Haliastur indus*	Brahminy kitte
9.	Strigidae	*Strix occidentalis*	Spotted owlet
10.	Ardeidae	*Ardeola grayii*	Pond heron
11.		*Ardea purpurea*	Purple heron
12.		*Ardea cinereal*	Grey heron
13.		*Ardea alba*	Large egret
14.		*Egretta garzetta*	Little egret
15.	Bucerotidae	*Ocyceros birostris*	Indian grey hornbill
16.	Ciconiidae	*Mycteria leucocephala*	Painted stork
17.	Anatidae	*Spatula* clypetata	Northern shoveler
18.		*Anas poecilorhyncta*	Spot-billed Duck
19.	Apodidae	*Apus apus*	Asian-Palm swift
20.	Charadriidae	*Vanellus indicus*	Red-wattle Lapwing
21.		*Vanellus malabaricus*	Yellow-wattle Lapwing
22.	Jacanidae	*Metopidius indicus*	Bronze-winged Jacana
23.	Recurvirostridae	*Himantopus himantopus*	Black-winged Stilt
24.	Scolopacidae	*Actitis hypoleucos*	Common Sandpiper
25.		*Tringa Glareola*	Wood Sandpiper
26.	Alcedinidae	*Alcedo atthis*	Common Kingfisher
27.		*Halcyon smyrnensis*	White-throated Kingfisher
28.	Rallidae	*Fulica atra*	Common Coot
29.		*Gallinula chloropus*	Common Moorhen
30.		*Porphyrio porphyrio*	Purple Moorhen
31.		*Amaurornis phoenicurus*	White breasted water hen
32.	Motacillidae	*Motacillamaderaspatensis*	White browed Wagtail
33.	Threskiornithidae	*Threskiornis melanoceplalus*	Black-headed Ibis
34.		*Plegadis falcinellus*	Glossy Ibis
35.		*Pseudibis papillosa*	Red-napped Ibis

36.	Podicipedidae	*Tachybaptus ruficollis*	Little Grebe
37.	Anhingidae	*Anhinga melanogaster*	Oriental Darter
38.	Phalacrocoracidae	*Phalacrocorax carbo*	Great Cormorant
39		*Microcarbo niger*	Little Cormorant

Table 2: Showing the percentage of bird species according to their families

Sl.no	Family	Total Species	Percentage
1.	Psitlaculidae	1	2.564 %
2.	Columbidae	1	2.564%
3.	Phasianidae	1	2.564%
4.	Corvidae	1	2.564%
5.	Picidae	1	2.564%
6.	Sturnidae	1	2.564%
7.	Cuculidae	1	2.564%
8.	Accipitridae	1	2.564%
9.	Strigidae	1	2.564%
10.	Ardeidae	5	12.82%
11.	Bucerotidae	1	2.564%
12.	Ciconiidae	1	2.564%
13.	Anatidae	2	5.128%
14.	Apodidae	1	2.564%
15.	Charadriidae	2	5.128%
16.	Jacanidae	1	2.564%
17.	Recurvirostridae	1	2.564%
18.	Scolopacidae	2	5.128%
19.	Alcedinidae	2	5.128%
20.	Rallidae	4	10.256%
21.	Motacillidae	1	2.564%
22.	Threskiornithidae	3	7.692%
23.	Podicipedidae	1	2.564%
24.	Anhingidae	1	2.564%
25.	Phalacrocoracidae	2	5.128%
	Total	39	94.86%

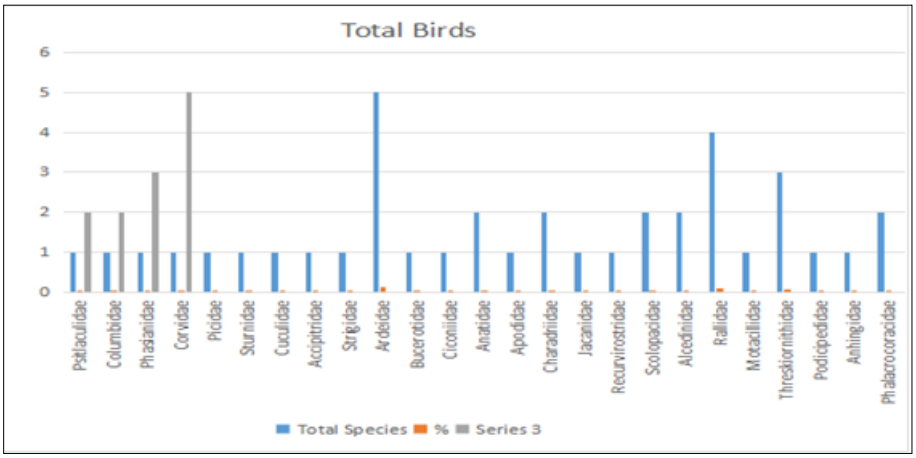

Fig 1: Graph showing the number of individuals in different families

Table 3: Checklist of bird species present in different months at the selected sites

Sl no	Common name	May	June	July
1.	Rose ringed parakeet	+	+	+
2.	Black rock pigeon	+	+	+
3.	Indian Peafowl	+	+	+
4.	Jungle crow	+	+	+
5.	Woodpecker	+	+	+
6.	Jungle Myna	+	+	+
7.	Greater coucal	+	+	+
8.	Brahminy kite	+	+	+
9.	Spotted Owlet	+	+	+
10.	Pond heron	+	+	+
11.	Purple heron	_	_	+
12.	Grey heron	+	+	+

13.	Large egret	+	+	+
14.	Little egret	+	+	+
15.	Indian grey hornbill	_	+	+
16.	Painted stork	+	+	+
17.	Northern shoveler	_	+	+
18.	Spot-billed Duck	+	+	+
19.	Asian-Palm swift	_	+	+
20.	Red-wattle Lapwing	+	+	+
21.	Yellow-wattle Lapwing	+	+	_
22.	Bronze-winged Jacana	_	+	+
23.	Common sandpiper	+	+	+
24.	Wood sandpiper	_	+	+
25.	Common Kingfisher	+	+	+
26.	White-throated Kingfisher	_	+	+
27.	Common Coot	+	+	+
28.	Purple Moorhen	+	+	_
29.	White breasted water hen	_	+	+
30.	White browed Wagtail	+	+	+
31.	Black-headed ibis	+	+	+
32.	Glossy Ibis	_	+	+
33.	Red-napped Ibis	_	+	+
34.	Little Grebe	+	+	+
35.	Oriental Darter	+	+	+
36.	Great Cormorant	+	+	+
37.	Little Cormorant	+	+	+
38.	Black-winged Stilt	_	+	+
39.	Common Moorhen	+	+	+

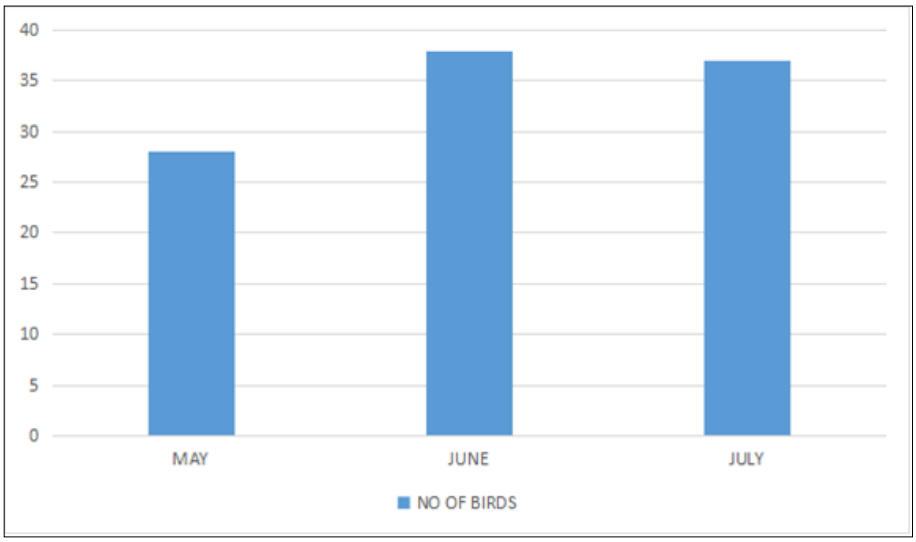

Fig 2: Graph showing occurrence of number of birds in the different months

Conclusion A total of 39 bird species were identified in Lingambudi Lake and Kukkarahalli Lake. Twenty-five families were represented by the bird species. They are abundant in aquatic and terrestrial environments. They function in ecosystems as biological agents as well as environmental quality bio-indicators of high diversity, abundance, and rapid reaction to environmental changes. The best pollinators are them. For farmers, they are environmentally friendly. This kind of research should be conducted on a regular basis to document the many bird species that may aid in the gathering of scientific data. This kind of survey aids in raising awareness about the need to conserve bird species.

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