



Status and Diversity of Avifauna in and around Magadi Lake, Chikkamagaluru, Karnataka, India

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KEYWORDS	ABSTRACT:
Avifauna, diversity, Magadi Lake, Threatened, Chikkamagaluru	<p>Introduction: Avifaunal diversity and abundance serve as essential indicators of ecosystem quality, playing a crucial role in maintaining ecological balance and securing overall environmental stability. Wetlands in India provide a unique habitat to many aquatic flora and fauna as well as several birds including migratory species. Understanding and protecting the roles of birds in wetlands is essential for keeping these habitats healthy and diversity of the birds.</p> <p>Objectives: To document avifaunal diversity and to identify the predominant bird species in Magadi Lake. To understand the feeding and breeding habitat of birds in and around the study area.</p> <p>Methods: The Study was carried out from February 2024 to January 2025 for a period of one year. The point count and line transect methods were used for bird documentation. Birds were identified with the help of different field guides.</p> <p>Results: A total of 60 bird species belonging to 14 orders and 26 families were recorded in Magadi Lake, Chikkamagaluru District. Among these Passeriformes (18 species) dominated the study area, followed by Peliconiformes (11 species), Charadriiformes, Accipitriformes, Gruiformes (4 species each), Coraciiformes, Columbiformes, Suliformes (3 species each), Ciconiiformes, Apodiformes, Anseriformes and Cuculiformes (2 species each), Strigiformes and Bucerotiformes (1 species). In the study three globally red listed Near Threatened species, Painted Stork (<i>Mycteria leucocephala</i>), Black headed Ibis (<i>Threskiornis melanocephalus</i>) and Curlew sandpiper (<i>Calidris ferruginea</i>) were recorded.</p> <p>Conclusion: In the present investigation, the order Passeriformes was the most dominant in the study area. From the above observation it can be concluded that Magadi Lake accommodates wide variety of bird species. The rich bird diversity of this lake is due to the heterogeneous vegetation cover, which provides shelter, microhabitats, favourable feeding and breeding grounds.</p>

INTRODUCTION:

Water is one of the essential natural resources preserving life on earth. About 70% of earth's surface is covered with water that constitutes about 97% salt water and only 3% fresh water. Only 1% of total water present is being utilized by living organisms and that is why its quality must be maintained. All the human activities such as drinking, irrigation, washing and industrial activities are relying on water and in turn

almost every human developmental activity is directly or indirectly depended on water [26].

Wetlands are defined as 'lands transitional between terrestrial and aquatic eco-systems where the water table is usually at or near the surface or the land is covered by shallow water [16]. Wetlands are often referred to as "biological supermarkets" for the extensive food chain and rich biodiversity they support [17]. They provide variety of functions and values like,



biodiversity, nutrient recycling, purification of water, flood control and ground water recharge. Life in aquatic environment is largely regulated by physico-chemical properties and their stability. The birds which inhabit and dependant on wetland directly or indirectly for feeding, nesting, breeding and roosting are commonly called as water birds or wetland birds [13,7]. Water birds and wetlands are intertwined elements [5].

In India 243 species of water birds and 67 species of wetland dependent and associated birds have been reported [12]. They form indispensable prey base for many living creatures in the food webs of wetlands and are important elements of wetland ecosystem. Presently, Wetlands are facing several threats from climate change and human interventions such as loss of habitat through inflow of domestic and industrial effluents, agricultural runoffs, agricultural expansion, overgrazing of the grasslands, and urbanization [6]. The loss of aquatic habitats due to human induced activities has led to a decrease in various water bird populations. The wetlands of South Asia are facing tremendous anthropogenic pressure, which can greatly influence the composition of the bird community. The collection of basic data is necessary for the effective implementation of the conservation strategy. Monitoring of wetland birds provides valuable information on the ecological health and status of wetlands and can be an essential tool for developing awareness regarding the conservation value of the wetlands. It has been recorded that Magadi Lake in Chikkamagaluru District is lagging behind the avifaunal studies. In this context, in order to evaluate wetland bird diversity, the present investigation was undertaken to document the status and diversity of Avifauna in the study area.

OBJETIVES:

The present survey was conducted with the following objectives.

- To record the different avian species in the study area: Various bird species in the study area recorded were classified in to different orders, families, residential status and feeding guilds.
- To understand the dominant group of birds: During the survey, the group with highest number of species were identified.
- To understand the feeding and breeding habitat of birds: The rich bird diversity depends on the

diverse feeding and breeding habitats. The lake providing diverse food resources and also this lake is surrounded by agricultural land providing feeding and breeding grounds for both resident and migratory birds.

MATERIALS AND METHODS

Study area

Magadi Lake, located in Chikkamagaluru District, Karnataka, India. It is an important freshwater ecosystem located 12 km south of Chikkamagaluru town near the Yagachi River. The lake occupies a water spread area of about 28.41 hectares and has a catchment area of 4.25 square kilometres, making it one of the significant natural water bodies in the region. Geographically, the lake lies at 13.2687°N latitude and 75.8446°E longitude and is positioned adjacent to the Hassan–Chikkamagaluru state highway (NH 3). The surrounding area of lake is mainly used for the cultivation of Maize, Paddy, vegetables and arecanut. These crop fields provide additional feeding and nesting opportunities for many wetland-dependent bird species. The lake serves as an important habitat for a large number of resident and migratory birds, including numerous species of waterfowl, waders, and shorebirds.

Methodology

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.

Identification of Birds: The birds were observed using a 10 x 50 wide angle Olympus binocular and Photographs were taken with the aid of Nikon Coolpix p950 digital camera. The birds were identified with the help of different field guides [1, 4]. The common names and scientific names for identified birds were compiled following Manakandan and Pittie (2002).

Monitoring: Point count (Ralpzh *et al.*, 1995) and line transect (Burnham *et al.*, 1980) methods were used for the counting of birds. **Statistical Analysis:** MS excel was used to tabulate the collected data, to prepare necessary tables, figures and graphs

Results: Out of the 60 bird species recorded from Magadi Lake (Table. 1), order Passeriformes were found to be the most dominant represented by 18



species followed by Peliconiformes (11species), Charadriiformes, Gruiformes and Accipitriformes, (4species each). Coraciiformes, Suliformes and Columbiformes (3 species each), Ciconiiformes, Cuculiformes, Apodiformes and Anseriformes (2 species each) and Strigiformes and Bucerotiformes (1species each) (Fig.1). Among the bird species recorded (Fig.2), family Ardeidae with 8 species (13.3%) was most dominated family in the study area, followed by Accipitridae and Rallidae with 4 species each (6.6 %) Phalacrocoracidae, Threskiornithidae, Columbidae, Alcedinidae, Motacillidae with 3 species each (5%), Anatidae, Charadriidae, Scolopacidae, Cuculidae, Muscicapidae, Sturnidae, Pychnonotidae, Corvidae, Nectariniidae, Ciconiidae, Apodidae with 2 species each (3.3%) and Laniidae, Passeridae, Ploceidae, Bucerotidae, Dicruridae, Estrildidae, Strigidae with 1 species each (1.6 %). According to the residential status of aquatic birds, the majority of species reported from the study area were residents (Table 2) accounting for 48 species, which contribute 80 % followed by the residential migratory with 11 species, contribute 18.20 %. While only one species contribute 1.8 % of the total bird species. Based on the feeding habits from the present data it has been found that the avifauna of this study area is dominated by (Fig.3) Carnivorous (26 species), followed by Omnivorous (21species), Insectivorous (7 species), Herbivorous (3 species), Insectivorous and Nectivorous (2 species) and Insectivorous and Frugivorous (1species). In the present study Three IUCN listed Near Threatened (Table 3) species such as Painted Stork (*Mycteria leucocephala*), Black headed Ibis (*Threskiornis melanocephalus*) and Curlew sandpiper (*Calidris ferruginea*) (5 %) and 57 least concern bird species were documented (95 %).

Discussion:

Out of the 60 bird species recorded from Magadi Lake, Passeriformes were found to be the most dominant order; similar results have been reported by other investigators (shahbaz *et al.*, 2023; Abhishek Bharadwaj and Devi Prasad, 2021; Shairali and Naik, 2023). [23, 1, 24]. Among the bird species recorded family Ardeidae was most dominated family in the study area, Similar finding was reported previously by (Neelgund and Kadadevaru, 2020; Kaulgud *et al.*, 2016; Parimala and

Asiya, 2018) [19, 10, 20]. According to the residential status of aquatic birds, the majority of species reported from the study area were residents. Based on the feeding habits from the present data it has been found that the avifauna of this study area is dominated by carnivorous species. Similar results have been reported by other investigators (Biswas *et al.*, 2025; Shruthi and Basavarajappa, 2016; Harisha *et al.*, 2021). [3, 24, 7]. Based on the feeding habits from the present data it has been found that the avifauna of this study area is dominated by Carnivorous species. 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. Similar feeding habits have also been reported by earlier studies (JamaKhandi and Kadadevaru, 2024; Khan *et al.*, 2019); Rajashekara and Venkatesha, 2011) [9, 11, 22]. The lake supplying diverse food resources and also this lake is surrounded by agricultural land which provides feeding and breeding grounds for both resident and migratory birds. This indicates that the environment is more suitable and supports a wide variety of birds by providing abundant food resources and adequate breeding grounds. In the present study Three Near Threatened species were recorded have a protected status under the schedule IV of Indian Wildlife protection Act, 1972. The occurrence of these species highlights the ecological importance of Magadi Lake. Similar finding was reported previously by (Kumar *et al.*, 2016; Rai *et al.*, 2017; Harisha and Hosetti, 2018) [14, 21].

Conclusion:

In the present investigation, a total of 60 bird species representing 12 orders and 26 families were documented. Among these, the order Passeriformes was the most dominant in the study area. From the above observation it can be concluded that Magadi Lake accommodates wide variety of bird species. The rich bird diversity of this lake is due to the heterogeneous vegetation cover, which provides shelter, microhabitats, favourable feeding and breeding grounds. In spite of its ecological importance, the lake is exposed to different man made activities like Fishing, agricultural runoff, release of sewage, disposing of house hold waste, expansion of land for cultivation of vegetables;



disturbances caused by heavy vehicular movement collectively apply negative effect on diversity of avifauna. So the human interferences should be reduced to preserve the species diversity and abundance. There is an urgent need to conserve this lake as it serves as an important habitat for both migratory and resident avifauna. Further studies on the avifauna of Magadi Lake are needed to conserve bird diversity and protect their habitats.

References

1. Abhishek Bharadwaj, R., and Devi Prasad, A. G. (2021). Studies of avifaunal diversity in Sasihithlu estuary of Dakshina Kannada, Karnataka, India. *Applied Ecology and Environmental Sciences* 9(1)1–7 (<http://www.sciepub.com/AEES/abstract/12493>).
2. Ali, S., and Ripley, S. D. (1995). Handbook of the birds of India and Pakistan (2nd ed.). University Press, Bombay, India.
3. Biswas, A., Debnath, P., Basu Roy, A., Chatterjee, L., Mitra, B., Mitra, S., and Chaudhuri, P. (2025). 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*, 33(2), 22.
4. Burnham, P. Kenneth. David, Raymond Anderson and Jeffrey, L. Laake (1980). "Estimation of Density from Line Transect Sampling of Biological Populations". Wildlife Society. Wildlife Monograph Number 72.
5. Grimmett, R., and Inskipp, T. (2007). Birds of Southern India. Om Books International.
6. Manakadan, R., and Pittie, A. (2002). Standardized English and common names of the birds of the Indian subcontinent. Newsletter for Bird Watchers, 42(3), 1–36.
7. Harisha, M. N. (2016). Assessment of status, diversity and threats of wetland birds of Bathi Lake, Doddabathi Village, Davanagere District, Karnataka. *Indian Journal of Entomology and Zoology Studies*, 4, 586–590.
8. Harisha, M. N., and Hosetti, B. B. (2018). Status and conservation issues of wetland birds in Komaranahalli Lake, Davanagere District, Karnataka, India. *Journal of Threatened Taxa*, 10(2), 11290–11294.
9. <https://moef.gov.in>
10. Jamakhandi, H., and Kadadevaru, G. G. (2024). Avifaunal diversity and feeding guild structure in and around Unkal Lake: A semiarid urban wetland in Karnataka, India. *Indian Journal of Ecology*, 51(2), 453–467.
11. Kaulgud, S., Neelgund, H. D., and Kadadevaru, G. G. (2016). Some studies on bird communities of Magadi Lake: With reference to diversity and abundance. *Asia Pacific Journal of Research*, (Print) 2320, 5504.
12. Khan, Y. I., Nautiyal, S., and Venkatesha, M. G. (2019). Avian diversity of semi-arid landscape: A study from Chitradurga District, Karnataka, India. *Environment and Ecology*, 37(3B), 1037–1049.
13. Kumar, A., Sati, J. P., Tak, P. C., and Alfred, J. R. B. (2005). Handbook of Indian wetland birds and their conservation. Zoological Survey of India.
14. Kumar, P., and Gupta, S. K. (2013). Status of wetland birds of Chhilchhila Wildlife Sanctuary, Haryana, India. *Journal of Threatened Taxa*, 5, 3969–3976.
15. Kumar, P., Rai, D., and Gupta, S. K. (2016). Wetland bird assemblage in rural ponds of Kurukshetra, India. *Waterbirds*, 39(1), 86–98.
16. Mitsch, W. J., and Gosselink, J. G. (1993). Wetlands (2nd ed.). Van Nostrand Reinhold Co., New York.
17. Mitsch, W. J., and Gosselink, J. G. (2015). Wetlands (5th ed.). Van Nostrand Reinhold Co., New York.
18. Neelgund, H. D., and Kadadevaru, G. (2020). Avifaunal diversity of some selected water bodies of Khanapur Taluka, Belagavi District, Karnataka, India. *Journal of Threatened Taxa*, 12(5), 15572–15586.
19. Parimala, B., and Asiya Nuzhat, F. B. (2018). Avifaunal diversity and status of Bhimasandra Pond, Tumakuru District, Karnataka, India. *International Journal of Innovative Research in Science, Engineering and Technology*, 7(4), 4313–4320.
20. Rai, D., Chopra, G., Gulia, R., and Vats, P. (2017). Avian diversity of Basai wetlands, Haryana (India): An IBA site. *Journal of Experimental Zoology India*, 20(1), 109–117.



21. Rajashekara, S., and Venkatesha, M. G. (2011). Community composition of aquatic birds in lakes of Bangalore, India. *Journal of Environmental Biology*, 32(1), 77–83.
22. Ralph, C. J., Sauer, J. R., and Droege, S. (1995). Monitoring bird populations by point counts U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. (Gen. Tech. Rep. PSW-GTR-149, pp. 161–168).
23. Shahbaz, M., Alam, A., Zafar, M. M., Sulaiman, M. A., Kumari, A., Sharma, G., and Yasmin, S. (2023). Comparison of avian diversity between managed and unmanaged wetlands in Patna, Bihar, India. *Ornis Hungarica*, 31(2), 13–28.
24. Shairali, S. A., and Naik, K. N. L. (2023). Avian species diversity in different habitats of Shivamogga, Karnataka, India. *Asian Journal of Biological and Life Sciences*, 12(1), 161.
25. Shruthi, H. S., and Basavarajappa, S. (2016). Study on avian diversity at few aquatic ecosystems of Mysore District, Karnataka, India. *Journal of Entomology and Zoology Studies*, 4(6), 272–279.
26. Vasanthkumar, G. B. B. K. A., and Manjappa, S. (2012). Physico-chemical characteristics of Queen Lake in Arasikere, Karnataka, India. *International Journal of Pharmacy and Life Sciences*, 3(11), 2135–2137.

Table.1: Avifaunal diversity in Magadi Lake, Chikkamagaluru.

Order	Family	Common name	Scientific name	Migratory Status	IUCN Status	Occurrence	Food
Anseriformes	Anatidae	Spot billed Duck	<i>Anas poecilorhyncha</i>	RM	LC	UC	H
		Lesser whistling Duck	<i>Dendrocygna javanica</i>	R	LC	C	O
Pelecaniformes	Ardeidae	Indian Pond Heron	<i>Ardeola grayii</i>	R	LC	C	Cr
		Black crowned Night Heron	<i>Nycticorax nycticorax</i>	R	LC	UC	Cr
		Grey Heron	<i>Ardea cinerea</i>	RM	LC	C	Cr
		Purple Heron	<i>Ardea purpurea</i>	RM	LC	C	Cr
		Cattle Egret	<i>Bubulcus ibis</i>	R	LC	C	Cr
		Great Egret	<i>Casmerodius albus</i>	R	LC	C	Cr
		Intermediate Egret	<i>Mesophoyx intermedia</i>	R	LC	C	Cr
		Little egret	<i>Egretta garzetta</i>	R	LC	C	Cr
		Threskiornithidae	Threskiornithidae	Oriental white Ibis/Black headed Ibis	<i>Threskiornis Melanocephalus</i>	RM	NT
Eurasian Spoonbill	<i>Platalea leucorodia</i>			RM	LC	UC	Cr



		Red naped Ibis	<i>Pseudibis papillosa</i>	RM	LC	U C	Cr
Suliformes	Phalacrocoracidae	Indian Cormorant	<i>Phalacrocorax fuscicollis</i>	RM	LC	C	Cr
		Great Cormorant	<i>Phalacrocorax carbo</i>	RM	LC	C	Cr
		Little cormorant	<i>Phalacrocorax niger</i>	RM	LC	C	Cr
Charadriiformes	Charadriidae	Yellow wattled Lapwing	<i>Vanellus malabaricus</i>	R	LC	C	I
		Red wattled Lapwing	<i>Vanellus indicus</i>	R	LC	C	O
	Scolopacidae	Common Sandpiper	<i>Actitis hypoleucos</i>	R	LC	C	Cr
		Curlew sandpiper	<i>Calidris ferruginea</i>	WM	NT	U C	O
Accipitriformes	Accipitridae	Black Eagle	<i>Ictinaetus malaiensis</i>	R	LC	C	Cr
		Indian Spotted Eagle	<i>Clanga hastate</i>	R	LC	C	Cr
		Pariah/Black Kite	<i>Milvus migrans</i>	R	LC	C	Cr
		Brahminy Kite	<i>Haliastur indus</i>	R	LC	C	Cr
Gruiformes	Rallidae	Common coot	<i>Fulica atra</i>	R	LC	C	O
		Grey Headed Swamp hen	<i>Porphyrio porphyrio</i>	R	LC	C	O
		Indian Moorhen	<i>Gallinula chloropus</i>	R	LC	C	O
		White Breasted Water hen	<i>Amaurornis phoenicurus</i>	R	LC	C	O
Cuculiformes	Cuculidae	Asian koel	<i>Eudynamis</i>	R	LC	C	O



			<i>scolopaceus</i>				
		Pheasant/Greater Coucal	<i>Centropussinensis</i>	R	LC	C	Cr
Passeriformes	Muscicapidae	Indian Robin	<i>Copsychus fulicatus</i>	R	LC	C	I
		Oriental Magpie-Robin	<i>Copsychus saularis</i>	R	LC	C	O
	Sturnidae	Common Myna	<i>Acridotheres tristis</i>	R	LC	V C	O
		Jungle Myna	<i>Acridotheres fuscus</i>	R	LC	C	O
	Pychonotidae	Red whiskered Bul bul	<i>Pycnonotus jocosus</i>	R	LC	C	I/F
		Red vented bul bul	<i>Pycnonotus cafer</i>	R	LC	C	O
	Corvidae	Jungle crow	<i>Corvus macrorhynchos</i>	R	LC	V C	O
		House Crow	<i>Corvus splendens</i>	R	LC	C	Cr
	Laniidae	Long-tailed shrike	<i>Lanius schach</i>	R	LC	V C	O
	Passeridae	House sparrow	<i>Passer domesticus</i>	R	LC	C	O
	Nectariniidae	Purple-rumped Sunbird	<i>Leptocomazeylonica</i>	R	LC	C	I/N
		Purple Sunbird	<i>Cinnyris asiaticus</i>	R	LC	C	I/N
	Ploceidae	Baya Weaver bird	<i>ploceus philippinus</i>	R	LC	C	O
	Motacillidae	White-browed wagtail	<i>Motacilla maderaspatensis</i>	R	LC	C	I
White wagtail		<i>Motacilla alba</i>	R	LC	C	I	



		Yellow Wagtail	<i>Motacilla flava</i>	R	LC	C	I
	Estrildidae	Scaly breasted munia	<i>Lonchura punctulata</i>	R	LC	C	O
	Dicruridae	Black drongo	<i>Dicrurus macrocercus</i>	R	LC	C	O
Ciconiiformes	Ciconiidae	Painted Stork	<i>Mycteria leucocephala</i>	RM	NT	U C	Cr
		Open bill Stork	<i>Anastomus oscitans</i>	RM	LC	U C	Cr
Bucerotiformes	Bucerotidae	Indian Grey Hornbill	<i>Ocyeros birostris</i>	R	LC	C	O
Coraciiformes	Alcedinidae	Common Kingfisher	<i>Alcedo atthis</i>	R	LC	C	Cr
		White Throated Kingfisher	<i>Halcyon smyrnensis</i>	R	LC	C	Cr
		Pied kingfisher	<i>Ceryle rudis</i>	R	LC	C	Cr
Apodiiformes	Apodidae	Asian palm Swift	<i>Cypsiurus balasiensis</i>	R	LC	C	I
		House Swift	<i>Apus nipalensis</i>	R	LC	C	I
Columbiformes	Columbidae	Spotted Dove	<i>Spilopelia chinensis</i>	R	LC	C	H
		Ring Dove	<i>Streptopelia decaocto</i>	R	LC	C	H
		Rock pigeon	<i>Columba livia</i>	R	LC	V C	O
Strigiformes	Strigidae	Spotted Owlet	<i>Athene brama</i>	R	LC	C	O

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

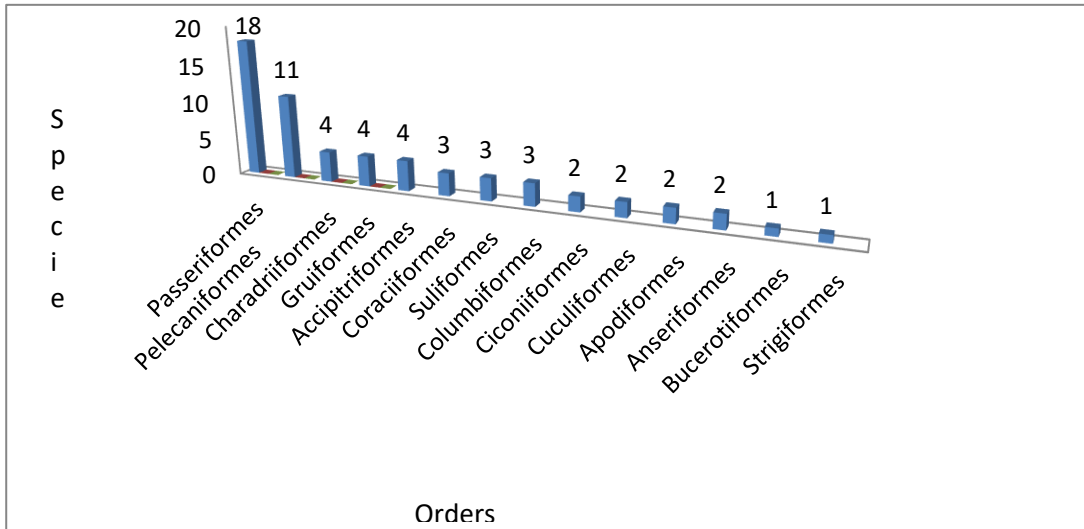


Figure. 1: Avian fauna diversity among various orders found at the Magadi Lake.

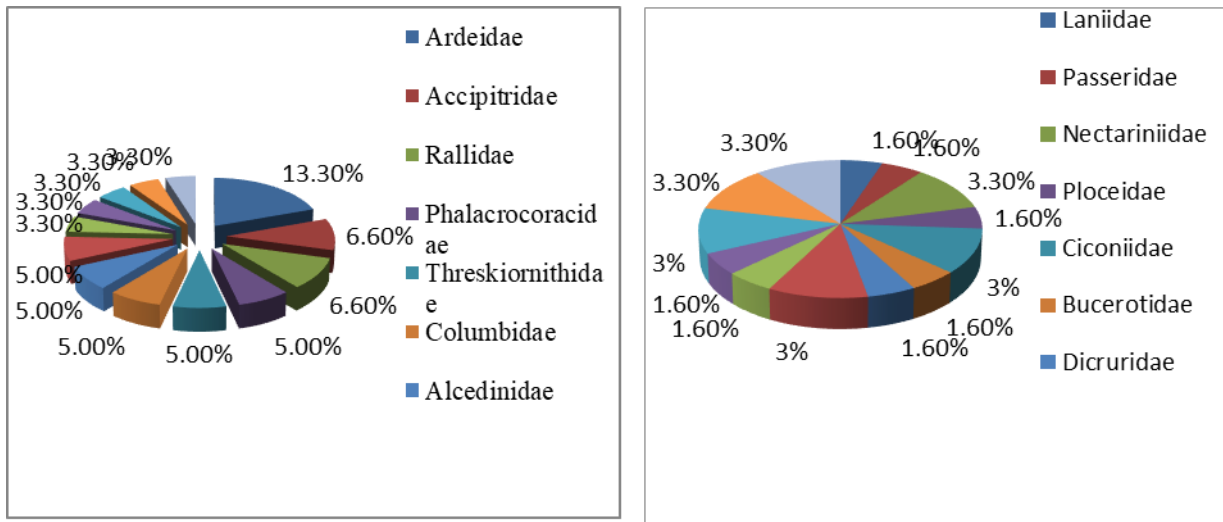


Figure. 2: Family wise percentage composition of birds recorded in Magadi Lake.

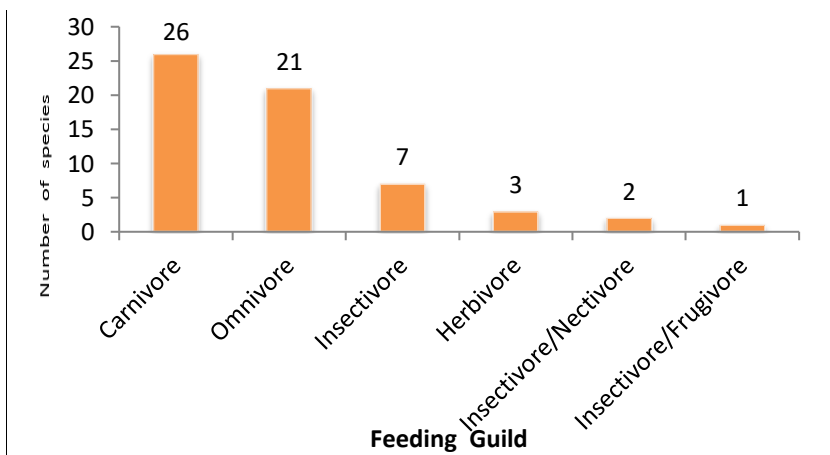


Figure.3: Distribution of birds according to their feeding habits in the Magadi Lake



Table 2: Residential status of birds recorded in Magadi Lake. Table.3: Conservation status of birds

SL.NO	Residential status of birds	No. of Species	% Occurrence
1	Resident birds	48	80%
2	Resident migratory	11	18.20%
3	Winter Migratory	1	1.80%

SL.NO	Conservation Status	No. of Species	% Occurrence
1	Least Concern	57	95%
2	Near Threatened	3	5%

Some of the birds documented at the Magadi Lake (©Annapoorneshwari H)

Grey heron



Spot billed duck



Pond heron



Purple moorhen



Great egret



Asian open bill





Red Wattled lapwing



Indian Robin



Indian Cormorant

