

Status and Diversity of Wetland Birds of Basavanahalli Lake and Hiremagaluru Lake, Chikmagaluru, 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 wetlands and adjoining area of lake. In this survey two wetlands of Chikmagaluru have been studied which include Basavanahalli Lake, and Hiremagaluru Lake. The survey was carried for the period of 14 months i.e. from October 2016 to November 2017. During the study period forty two species of birds, belonging to thirteen families were recorded. Which includes both local and migratory birds. Birds belonging to the family Ardeidae found to be dominated by the representation of 8 species, followed by Anatidae 7 species, Scolopacidae 5 species, Phalacrocoracidae, Threskiornithidae and Ralidae 3 species each, Ciconiidae, Laridae, Jacanidae, Charadriidae and Alcedinidae 2 species each and Podicipedidae 1 species. The study also revealed that the study sites harbor many resident as well as migratory birds. Four species like Black headed ibis (*Threskiornismelanocephalus*), Black tailed God wit (*Limosalimosa*), Painted Stork (*Mycteria leucocephala*) and River tern (*Sterna aurantia*) were near threatened and have a protected status under the schedule IV of Indian Wild life Protection Act, 1972.

Keywords: Avifauna, Wetland birds, Chikmagaluru, Diversity, Anthropogenic

1. Introduction

Wetlands are the complex and productive ecosystems (R G Wetzel, 2001) on the Earth. They occupy 6% of the earth's land surface. Wetlands are known as 'biological supermarkets' because of the extensive food chains and rich biodiversity. They support providing unique habitats for a wide range of flora and fauna. India has a large number of wetlands with a total area of around 15 million hectares accounting nearly 4.7% of the total geographical area of the country. Out of this, the area under inland wetlands accounts for 69%, coastal wetlands 27% and about 4% other wetlands. Wetlands and water birds are inseparable elements and wetlands support a rich array of water bird communities. Water birds are important component of most of the wetland ecosystem as they occupy several trophic levels in the food web of wetland nutrient cycles. Activities of water birds are considered as indicator of quality of the wetland ecosystem and form the terminal links in many aquatic food chains and as a result they reflect changes originating in several different ecosystem components. The various lakes and wetlands in any city serve as a balancing reservoir for sustaining native flora and fauna. The aquatic bird communities are important bioindicators of lake ecosystem (NandhaKumar, et al., 2014) which should be protected to conserve the biodiversity and environment. However, man has caused destruction and degradation of wetlands worldwide. Almost half the world's natural wetlands, including those from India, have disappeared in the last century due to imprudent anthropogenic activities, while the others are variously affected. Parallely, artificial wetlands such as ponds, man-made lakes, reservoirs have increased worldwide, and these provide alternative, often suitable, habitats for water birds. However, the net consequences of such habitat transformation for water birds remain inconclusive. In fact, we have very little information about the water bird species which are capable of adopting such transformed habitats, and which fail to do so. India is unique

in the mega diversity of its flora and fauna. The unmatched variety of flora and fauna that makes it extensively different from the rest of the world. In India fresh water sources support a large diversity of biota representing almost all taxonomic groups. Birds are the part of natural habitats of the Indian sub-continent. In India there is no off season for birds. Native birds in any particular area are visible. The Indian sub-continent supports more than 1340 species of birds, which contribute more than 15% of the world's bird species. Birds are among the nature's most beautiful animal and undoubtedly, bird habitat particularly within the lake areas seems to be strongly influenced by climatic changes and immediate human impact. Habitat change also become an ultimate cause for long term changes in the bird distribution. Some of the important studies on wetland bird and their habitat were carried out by many researchers.

In India large water bodies like Chilka lake Orissa, Salimali's bird sanctuary in Panjim, Bharatpur bird sanctuary in Rajasthan, Ranganthittu, bird sanctuary in Karnataka are well managed and conserved. However there is no comprehensive study on small water body's conservation and diversity of birds. In this background the present study has undertaken in and around Chikmagaluru City. The study was conducted from October 2016 to November 2017 and summarizes all the birds sighted. The wetland bird habitats were explored to study the bird diversity.

2. Materials and Method

Study Area

Chikmagaluru is a town located at 13.31 53° N, latitude 75.77 54° E longitude in the Indian state of Karnataka. Chikmagaluru is situated in the Malenadu region of Karnataka in the Deccan plateau in the foothills of the Western Ghats. It is situated at an elevation of 1,090 meters (3,580 ft) above mean sea level. The Yagachi River has its

source near the town and flows in the south-easterly direction before uniting with the Kaveri River. Chikmagaluru generally has a moderate to cool climate. The temperature of the city varies from 11-20 °C during winter to 25-32 °C during summer. In this survey two wetlands of chikmagaluru have been studied which include Basavanahalli Lake, and Hiremagaluru Lake. The predominating vegetation is a lush or semi evergreen type. Common plant species are Acacia, Eucalyptus sp., Lantana camara, Ipomoea fistula, Cassia sp. etc. Aquatic plants of these areas are Hydrillasp, Eichornia, Salvinia, Pistia, and lotus.. The climate of Chikmagaluru is tropical wet and dry.

Survey was carried out in early morning and late evening hours (as the peak activity of birds lasts 1 or 2 hours after

sunrise and before sunset) throughout the study period from October 2016 to November 2017.

Birds were sighted with the help of field binoculars (Celestron 8x40 magnification) and were photographed with Panasonic DMCFZ200. Calls of some birds were also recorded. The birds were identified by referring the field guide given by Salim Ali (2002) and birds of the Indian Subcontinent by Richard Grimmett . Birds were categorized based on the status of birds as R-Resident (species found throughout the year in the study area), M-Migrant (species migrate from other countries and migrate locally within the country).



Basavanahalli Lake



Hiremagaluru Lake

3. Result and Discussion

In the present study 42 species belonging to 13 families were recorded between October 2016 to November 2017. Details such as common name, scientific names, Residing status and number of species are Listed in the Table:1. During the study it was revealed that, among 13 families Ardeidae was found to be the most dominant family represented by 8 bird species. Surana (2007) recorded Anatidae to be most dominant family with 12 species and Aradidae with 9 species in Chimdi Lake of Nepal. In the present study Antidae found to be the second dominant family with 7 species, Scolopacidae 5 species, Phalacrocracidae and Threskiornithidae 3 species each and Ralidae 4 species each, Ciconiidae, Laridae, Jacanidae, Charadriidae and Alcedinidae 2 species each and Podicipedidae 1 species (Figure:1). The study also revealed that study sites harbor many resident as well as few migratory birds. Residential birds were observed in most of the months of investigation period. But the migratory birds were observed mostly in the winter months. Out of 42 bird species recorded

27 bird species were residential and 15 bird species were migratory (Table:1). The study also revealed that of the total wet land birds recorded ,38 species were least concerned(LC)and only 4 species were near threatened (NT) (Table: 2). Four species like Black headed ibis (*Threskiornismelanocephalus*), Black tailed God wit (*Limosalimosa*), Painted Stork (*Mycteria leucocephala*) and River tern (*Sterna aurantia*) were near threatened. Similar pattern of study was reported by Nandha Kumar, et al., (2014) Avifaunal Diversity of Ukkadam Lake in Coimbatore District of Tamilnadu, Rubina Nadaf , et al., (2007) A Study on Avifaunal Diversity Status in Lakes of Dharwad, Karnataka State. Rajashekar, et al., (2010) Community composition of aquatic birds in lakes of Bangalore, India . Khan, et al., (2005) Population trends and community composition of migratory water birds in three emerging wetlands of global significance in southwestern Bengal, India. These studies also recorded the diversity of residential, migratory avifauna of which some are near threatened species.

Table 1: Check list of water birds in different study area

Family	Common Name	Scientific Name	Residing Status	Number of Species
Anatidae	Cotton Pygmy Goose	<i>Nettapus coromandelianus</i>	R	7
	Eurasian Teal	<i>Anas crecca</i>	M	
	Garganey	<i>Anas querquedula</i>	M	
	Northern Pintail	<i>Anas acuta</i>	M	
	Northern Shoveler	<i>Anas clypeata</i>	M	
	Spot billed Duck	<i>Anas poecilorhyncha</i>	R	
	Whistling Teal	<i>Dendrocygna javanica</i>	R	

Alcedinidae	Small Blue Kingfisher	<i>Alcedoatthis</i>	R	2
	White Throated Kingfisher	<i>Halcyon smyrnesis</i>	R	
Ardeidae	Cattle egret	<i>Bubulcus ibis</i>	R	8
	Grey Heron	<i>Ardacinera</i>	R	
	Indian Pond Heron	<i>Ardeolagrayii</i>	M	
	Large Egret	<i>Arda alba</i>	R	
	Little Egret	<i>Egretta garzetta</i>	R	
	Median Egret	<i>Ardeaintermedia</i>	R	
	Purple Heron	<i>Ardeapurpurea</i>	R	
	Yellow Bittern	<i>Ixobrychus sinensis</i>	R	
Charadriidae	Little Ringed Plover	<i>Charadrius dubius</i>	M	2
	Red Watted Lapwing	<i>Vanellus indicus</i>	R	
Ciconiidae	Open Billed Stork	<i>Mycteria ibis</i>	R	2
	Painted Stork	<i>Mycteria leucocephala</i>	M	
Jacanidae	Bronze Winged Jacana	<i>Metopidius indicus</i>	R	2
	Pheasant Tailed Jacana	<i>Hydrophasianus chirurgus</i>	R	
Laridae	Little Tern	<i>Sterna albifrons</i>	M	2
	River Tern	<i>Sterna aurantia</i>	R	
Phalacrocoracidae	Indian Cormorant	<i>Phalacrocorax fuscicollis</i>	R	3
	Large Cormorant	<i>Phalacrocorax carbo</i>	R	
	Little Cormorant	<i>Microcarboniger</i>	R	
Podicipedidae	Little Grebe	<i>Tachybaptus ruficollis</i>	R	1
Rallidae	Eurasian Coot	<i>Fulica atra</i>	R	4
	Grey Headed Swamp hen	<i>Porypyroloiocephalus</i>	R	
	Indian Moorhen	<i>Gallinula chloropus</i>	R	
	White Breasted Waterhen	<i>Amaurornis phoenicurus</i>	R	
Recurvirostridae	Black winged stilt	<i>Himantopus himantopus</i>	M	1
Scolopacidae	Black Tailed Godwit	<i>Limosalimosa</i>	M	5
	Common Sandpiper	<i>Actitis hypoleucos</i>	M	
	Common Snipe	<i>Gallinago gallinago</i>	M	
	Marsh sandpiper	<i>Tringa stagnatilis</i>	M	
	Wood Sandpiper	<i>Tringa glareola</i>	M	
Threskiornithidae	Black Headed Ibis	<i>Threskiornis melanocephalus</i>	M	3
	Glossy Ibis	<i>Plegadis falcinellus</i>	R	
	Red Naped Ibis	<i>Pseudibis papillosa</i>	R	

R= Resident M=Migratory

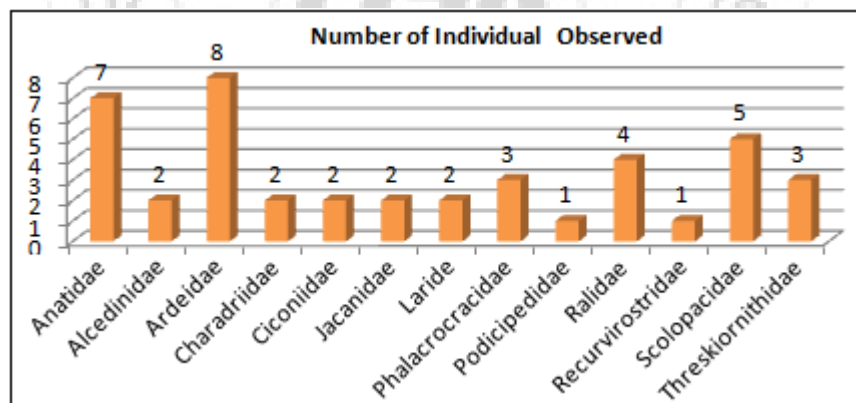


Figure 1: Number of species in different family

Table 2: IUCN Status of water fowls found in different study area:

S.N	Common Name	Scientific Name	Family	Conservation Status
1	Black Tailed Godwit	<i>Limosalimosa</i>	Scolopacidae	NT
2	Black Headed Ibis	<i>Threskiornis melanocephalus</i>	Threskiornithidae	NT
3	Bronze Winged Jacana	<i>Metopidius indicus</i>	Jacanidae	LC
4	Black winged stilt	<i>Himantopus himantopus</i>	Recurvirostridae	LC
5	Cattle egret	<i>Bubulcus ibis</i>	Ardeidae	LC
6	Cotton Pygmy Goose	<i>Nettion coromandelianus</i>	Anatidae	LC
7	Common Sandpiper	<i>Actitis hypoleucos</i>	Scolopacidae	LC
8	Common Snipe	<i>Gallinago gallinago</i>	Scolopacidae	LC
9	Eurasian Coot	<i>Fulica atra</i>	Rallidae	LC
10	Eurasian Teal	<i>Anas crecca</i>	Anatidae	LC

11	Garganey	Anasquerquedula	Anatidae	LC
12	Glossy Ibis	Plegadisfalcinellus	Threskiornithidae	LC
13	Grey Headed Swampphen	Porypyropoliocephalus	Rallidae	LC
14	Grey Heron	Ardacina	Ardeidae	LC
15	Indian Pond Heron	Ardeolagraysii	Ardeidae	LC
16	Indian Cormorant	Phalacrocoraxfuscicollis	Phalacrocoracidae	LC
17	Indian Moorhen	Gallinulachloropus	Rallidae	LC
18	Large Cormorant	Phalacrocoraxcarbo	Phalacrocoracidae	LC
19	Large Egret	Ardea alba	Ardeidae	LC
20	Little Cormorant	Microcarboniger	Phalacrocoracidae	LC
21	Little Egret	Egretta garzetta	Ardeidae	LC
22	Little Grebe	Tachybaptus ruficollis	Podicipedidae	LC
23	Little Ringed Plover	Charadrius dubius	Charadriidae	LC
24	Little Tern	Sterna albifrons	Laridae	LC
25	Marsh sandpiper	Tringastagnatilis	Scolopacidae	LC
26	Median Egret	Ardea intermedia	Ardeidae	LC
27	Northern Pintail	Anas acuta	Anatidae	LC
28	Northern Shoveler	Anas clypeata	Anatidae	LC
29	Open Billed Stork	Mycteria ibis	Ciconiidae	LC
30	Painted Stork	Mycteria leucocephala	Ciconiidae	NT
31	Pheasant Tailed Jacana	Hydrophasianus chirurgus	Jacaniidae	LC
32	Purple Heron	Ardea purpurea	Ardeidae	LC
33	Red Naped Ibis	Pseudibis papillosa	Threskiornithidae	LC
34	Red Watled Lapwing	Vanellus indicus	Charadriidae	LC
35	River Tern	Sterna aurantia	Laridae	NT
36	Small Blue Kingfisher	Alcedo atthis	Alcedinidae	LC
37	Spot billed Duck	Anas poecilorhyncha	Anatidae	LC
38	Whistling Teal	Dendrocygna javanica	Anatidae	LC
39	White Throated Kingfisher	Halcyon smyrnensis	Alcedinidae	LC
40	White Breasted Waterhen	Amaurornis phoenicurus	Rallidae	LC
41	Wood Sandpiper	Tringalareola	Scolopacidae	LC
42	Yellow Bittern	Ixobrychus sinensis	Ardeidae	LC

4. Conclusion

Present study illustrates the importance of the area as a good habitat for avifauna. The presence of resident and migrant birds in and around the lake indicates that the habitat is rich enough to attract them and make them spend their winter months. In the present study 42 species belonging to 13 families were recorded. Control of habitat destruction, exploitation of its wilderness, human interference and pollution by tourism can be helpful in conservation of these winged beauties. This requires planned maintenance of the following lakes with an aim of conservation of its native fauna. Present study could effectively provide the base line for research which could be used for conservation purpose of birds.

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