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SHORT COMMUNICATION

STATUS AND CONSERVATION ISSUES OF WETLAND BIRDS IN KOMARANAHALLI LAKE, DAVANAGERE DISTRICT, KARNATAKA, INDIA

M.N. Harisha & B.B. Hosetti

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Abstract: This study was carried out to assess the status and conservation issues of migratory water birds in Komaranahalli Kere, a lake in Malebennur, Harihar Taluk, Davanagere District from November 2012 to October 2013. The dominant family was Ardeidae represented by 10 species, followed by the Scolopacidae with seven species. The families with lowest representations of one species were Podicipidae, Anhingidae, Rostratulidae and Recurvirostridae. The study revealed that the lake harbors many resident and a few migratory bird species. Among the species recorded five species namely the Black-headed Ibis *Threskiornis melanocephalus*, Oriental Darter *Anhinga melanogaster*, Black-tailed Godwit *Limosa limosa*, Painted Stork *Mycteria leucocephala* and River Tern *Sterna aurantia* are Near Threatened. The present study location is also facing tremendous conservation challenges by the impact of anthropogenic alteration of the habitats in and around the lake. Though the lake is highly disturbed, it still provides some potential habitats for a few migratory and several resident water bird species.

Keywords: Conservation threats, freshwater birds, Komaranahalli Lake, migratory birds, status, wetland birds.

India has around 67,429 wetlands, covering an area of about 4.1 million hectares. Out of these, 2,175 are natural and 65,254 are manmade. Wetlands in India (excluding rivers), account for 18.4% of the country's geographic area, of which 70% is under paddy cultivation (MoEF 1990; Parekh & Gadhi 2013).

The birds inhabiting and/or found to be dependent on wetland directly or indirectly for feeding, breeding, nesting or roosting are commonly called water birds or wetland birds (Kumar & Gupta 2013). Selection of wetland by waterfowl is influenced by complex characteristics including water chemistry, aquatic vegetation, invertebrate fauna and physical features (Heglund et al. 1994).

Wetlands in India provide a unique habitat to many aquatic flora and fauna as well as numerous birds including migratory species. Out of 310 species of wetland birds found in India (Kumar et al. 2005; Kumar & Gupta 2009, 2013) almost half are migratory which visit India from cold areas of different parts of China, Russia, central Asia, and from across the entire range of the Himalaya.

Birds play a significant role in many food webs of aquatic system nutrient cycles. But wetlands are facing tremendous anthropogenic pressure caused by an increase of human disturbances. Thus these disturbances threaten these ecosystems and can greatly influence the population structure and diversity of the bird community (BirdLife International 2003). In the last century, over 50% of wetlands in the world have

STATUS AND CONSERVATION ISSUES OF WETLAND BIRDS IN KOMARANAHALLI LAKE, DAVANAGERE DISTRICT, KARNATAKA, INDIA

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been lost, and the remaining wetlands have degraded to different degrees because of adverse anthropogenic activities (Fraser & Keddy 2005).

An assessment of abundance and diversity of bird species in any ecosystem serves as a good indication of the health of the environment in and around the ecosystem (Jorvinen & Vaisenen 1978; Bowden 1990). Successful conservation and recovery of water bird species depends on an improved understanding of the ecological requirements of these birds (Fellowes et al. 2001).

MATERIALS AND METHODS

Study Area

The Komaranahalli Lake is located between 14.33361111°N latitude and 75.73472222°E longitude. The lake is about 182 acres, situated adjacent to the famous historical heritage, Helavankatte Ranganathaswamy Temple and beside the state highway road of Harihar-Shimoga. The lake is situated 18km away from Harihar and 26km from Davanagere City. This wetland provides water for irrigation to the surrounding agricultural fields of Komaranahalli Village of Malebennur grampanchayath of Harihar Taluk, Davanagere District and drinking water to wildlife from the surrounding Komaranahalli forest as well as to cattle from the nearby villages.

Methods

The checklist is prepared primarily based on the field work conducted from November 2012 to October 2013 across Komaranahalli Lake on foot, i.e., road side count (Simpson 1949; Burnham et al. 1980). A total of 12 field visits (1 visit per month) were conducted observing the status and diversity of birds. Birds were observed from 06:00–11:00 hr and identified using Olympus binoculars (10x50) and field guides (Ali & Ripley 1983; Grimmett et al. 2001), and were also given standardized common and scientific names (Praveen et al. 2016). The birds are grouped under three categories namely LM - Local migrants, WM - Winter migrants and R- Residents depending on their timing and duration of occurrence (Table 1).

RESULTS AND DISCUSSION

The present study revealed the occurrence of a total of 51 wetland bird species belonging to 15 families and eight orders from the study area. Details such as common names, scientific names, frequency and conservation status of the wetland birds are presented in Table 1. The order Charadriiformes dominated the list

(5 families with 14 species) followed by Ciconiiformes (3 families with 15 species), Pelecaniformes (2 families with 3 species), Gruiformes (1 family with 6 species), Anseriformes (1 family with 5 species), Passeriformes (1 family with 4 species), Coraciiformes (1 family with 3 species), and the least was Podicipediformes (1 family with 1 species) (Table 1; Images 1–2).

The family Ardeidae dominated by the representation of 10 species (19%) followed by Scolopacidae with seven species (13%), Rallidae with six species (12%), Anatidae with five species (10%), Motacillidae with four species (8%), Alcedinidae, Charadriidae, Ciconiidae with three species each, (6% each), Laridae, Threskiornithidae, Phalacrocoracidae with two species each (4% each), Podicipididae, Anhingidae, Rostratulidae, Recurvirostridae with one species each (2%) each of the total family wise frequency of occurrence of water birds community of the study area (Fig. 1).

Among the 51 species, 19 (37%) were residents, 16 species (31.5%) were winter migrants and 16 species (31.5%) were local migrants (Fig. 2). As per IUCN Red List (IUCN 2014.3) threatened categories, 46 species recorded from the study areas fall under the Least Concern (LC) category, which account for 90% and five species (10%) were categorized as Near Threatened (NT). The five Near Threatened species—Black-headed Ibis *Threskiornis melanocephalus*, Oriental Darter *Anhinga melanogaster*, Black-tailed Godwit *Limosa limosa*, Painted Stork *Mycteria leucocephala* and River Tern *Sterna aurantia*—are protected under Schedule IV of the Indian Wildlife Protection Act, 1972 (Arora 2003).

In general, wetland birds are heterogeneous in their feeding habits (Ali & Ripley 1987). These water birds were found to utilize different wetland habitats and

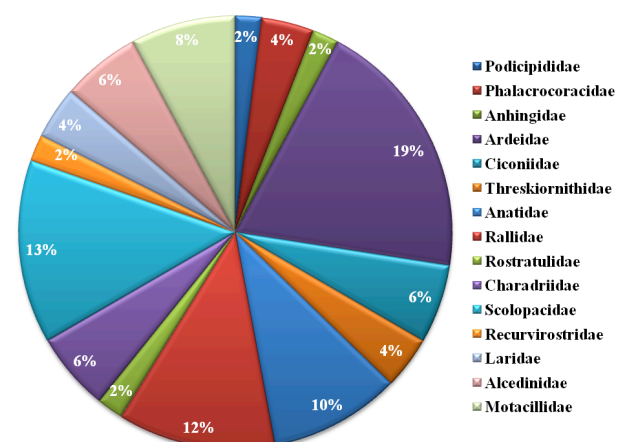


Figure 1. Family wise distribution of wetland birds in Komaranahalli Lake, Harihar Taluk, Davanagere District.

Table 1. A systematic list of migratory wetland birds with their conservation status in Kundavada Lake, Davanagere District, Karnataka

	Common name ¹	Scientific name ²	Status ³	CS ⁴ (IUCN 2014.3)
	Order: Podicipediformes			
	Family: Podicipididae			
1	Little Grebe	<i>Tachybaptus ruficollis</i>	LM	LC
	Order: Pelecaniformes			
	Family: Phalacrocoracidae			
2	Little Cormorant	<i>Microcarbo niger</i>	LM	LC
3	Indian Cormorant	<i>Phalacrocorax fuscicollis</i>	LM	LC
	Family: Anhingidae			
4	Oriental Darter	<i>Anhinga melanogaster</i>	LM	NT
	Order: Ciconiiformes			
	Family: Ardeidae			
5	Little Egret	<i>Egretta garzetta</i>	R	LC
6	Cattle Egret	<i>Bubulcus ibis</i>	R	LC
7	Great Egret	<i>Ardea alba</i>	R	LC
8	Intermediate Egret	<i>Ardea intermedia</i>	R	LC
9	Grey Heron	<i>Ardea cinerea</i>	WM	LC
10	Purple Heron	<i>Ardea purpurea</i>	LM	LC
11	Indian Pond Heron	<i>Ardeola grayii</i>	R	LC
12	Striated Heron	<i>Butorides striata</i>	LM	LC
13	Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	LM	LC
14	Cinnamon Bittern	<i>Ixobrychus cinnamomeus</i>	LM	LC
	Family: Ciconiidae			
15	Wholly-necked Stork	<i>Ciconia episcopus</i>	LM	LC
16	Asian Openbill Stork	<i>Anastomus oscitanus</i>	LM	LC
17	Painted Stork	<i>Mycteria leucocephala</i>	R	NT
	Family: Threskiornithidae			
18	Black-headed Ibis	<i>Threskiornis melanocephalus</i>	R	NT
19	Indian Black Ibis	<i>Pseudibis papillosa</i>	R	LC
	Order: Anseriformes			
	Family: Anatidae			
20	Lesser Whistling Duck	<i>Dendrocygna javanica</i>	LM	LC
21	Indian Spot-billed Duck	<i>Anas poecilorhyncha</i>	R	LC
22	Cotton Teal	<i>Nettapus coromandelianus</i>	R	LC
23	Common Teal	<i>Anas crecca</i>	WM	LC
24	Garganey	<i>Spatula querquedula</i>	WM	LC
	Order: Gruiformes			
	Family: Rallidae			
25	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	R	LC

	Common name ¹	Scientific name ²	Status ³	CS ⁴ (IUCN 2014.3)
26	Slaty-legged Crake	<i>Rallina eurizonoides</i>	LM	LC
27	Slaty-breasted Rail	<i>Lewinia striata</i>	R	LC
28	Brown Crake	<i>Zapornia akool</i>	R	LC
29	Common Coot	<i>Fulica atra</i>	WM	LC
30	Common Moorhen	<i>Gallinula chloropus</i>	LM	LC
	Order: Charadriiformes			
	Family: Rostratulidae			
31	Greater Painted Snipe	<i>Rostratula benghalensis</i>	R	LC
	Family: Charadriidae			
32	Little Ringed Plover	<i>Charadrius dubius</i>	WM	LC
33	Yellow-wattled Lapwing	<i>Vanellus malabaricus</i>	LM	LC
34	Red-wattled Lapwing	<i>Vanellus indicus</i>	R	LC
	Family: Scolopacidae			
35	Black-tailed Godwit	<i>Limosa limosa</i>	WM	NT
36	Common Redshank	<i>Tringa totanus</i>	WM	LC
37	Marsh Sandpiper	<i>Tringa stagnatilis</i>	WM	LC
38	Common Greenshank	<i>Tringa nebularia</i>	WM	LC
39	Common Sandpiper	<i>Actitis hypoleucos</i>	WM	LC
40	Little Stint	<i>Calidris minuta</i>	WM	LC
41	Common Snipe	<i>Gallinago gallinago</i>	WM	LC
	Family: Recurvirostridae			
42	Black-winged Stilt	<i>Himantopus himantopus</i>	LM	LC
	Family: Laridae			
43	River Tern	<i>Sterna aurantia</i>	LM	NT
44	Common Tern	<i>Sterna hirundo</i>	WM	LC
	Order: Coraciiformes			
	Family: Alcedinidae			
45	Common Kingfisher	<i>Alcedo atthis</i>	R	LC
46	Lesser Pied Kingfisher	<i>Ceryle rudis</i>	R	LC
47	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	R	LC
	Order: Passeriformes			
	Family: Motacillidae			
48	Western Yellow Wagtail	<i>Motacilla flava</i>	WM	LC
49	Grey Wagtail	<i>Motacilla cinerea</i>	WM	LC
50	White-browed Wagtail	<i>Motacilla maderaspatensis</i>	R	LC
51	White Wagtail	<i>Motacilla alba</i>	WM	LC

¹ Common names & ² Scientific names after Praveen et al. 2016

³ Residential status of the birds observed as Resident (R), Winter Migratory (WM), Local Migratory (LM), and Resident Migratory (RM)

⁴ Conservation status: LC - Least Concern; NT - Near Threatened



Image 1. Flock of Indian Black Ibis roosted on tree

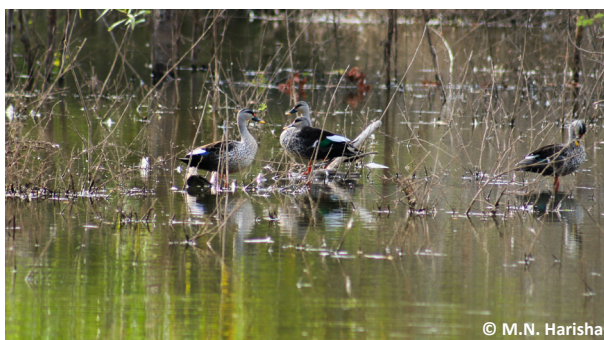


Image 2. Indian Spot-billed Duck

depend on a mosaic of microhabitats extensively for their survival. In the present study, irrigated agricultural fields surrounding the lake with scattered trees probably provided shelter and suitable foraging grounds, nesting and roosting on the emergent and fringed vegetation for the wetland birds (Images 1 & 2) (Kumar & Gupta 2009).

This wetland has been a main source of water for recharging the surrounding bore wells and agricultural fields around it. During the present study, most of the migratory species recorded were winter visitors and the resident birds were observed throughout the year. Most of the winter migrants exhibited a distinct species-specific pattern of arrival and departure from the wetland. Every year from October onwards and the middle of November a significant number of water birds appeared at the wetland and stayed up to the end of March. The highest species richness and density was recorded during the winter months, when there are less anthropogenic activities (Images 3 & 4). The peak population of migratory birds was seen during the month of January and February (in winter) and almost all of them left the wetland by the end of March. The basic requirements of the migratory water birds at their wintering sites are adequate food supply and safety

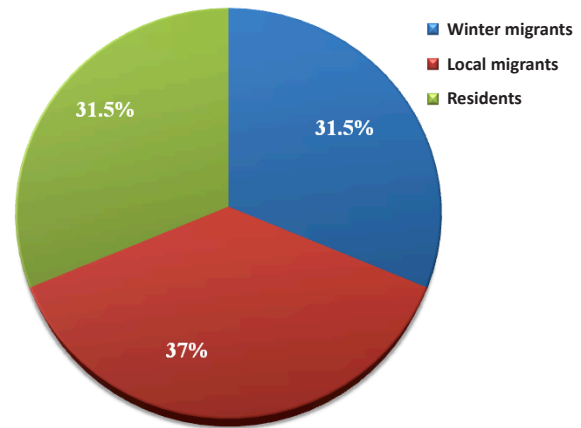


Figure 2. Residential Status of wetland birds of Komaranahalli Lake, Harihar Taluk, Davanagere District.

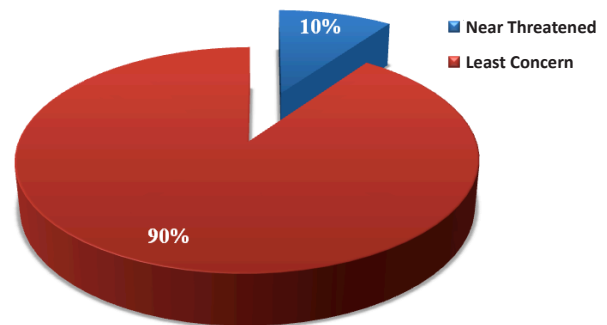


Figure 3. Conservation status of wetland birds of Komaranahalli Lake, Harihar Taluk, Davanagere District.

(Lakshmi 2006).

Water birds, being generally at or near the top of most wetland food chains are highly susceptible to habitat disturbances and are therefore good indicators of the general condition of wetland habitats (Kushlan 1992; Jayson & Mathew 2002; Kler 2002).

When compared to other animal population, birds are more responsive to livestock grazing (Sivaperuman et al. 2005). As this wetland is located adjacent to the state highway road (Shimoga-Harihar), the movement of heavy vehicles is one of the main disturbances to the birds (Images 5), also frequent cleaning of vehicles, cattle bathing and grazing often disturbed the avifauna. Also, habitat degradation due to encroachment for expansion of agricultural land for paddy, sugarcane cultivation and areca, coconut plantations, siltation, lower water retention for a longer period and less availability of abundant food (Harisha et al. 2011) not only disturbed distribution of the birds but resulted in a loss of avifaunal diversity of the lake ecosystem (Alexandar 2010).

The present study emphasizes the need for the conservation of wetlands and their biodiversity and



Images 3 & 4. Anthropogenic activities. © M.N. Harisha

specially the wetland migratory birds. The urgency is verified due to the international significance of these globally Near Threatened birds of importance. Hence, small urban wetlands should be also prioritized for conservation and their values should be recognized for the protection of avifauna.

CONCLUSION

The study proved that the present ecological characteristics of the lake made the birds unable to inhabit the lake throughout the year. Siltation, habitat degradation, encroachment in the name of agricultural expansion, noise pollution and grazing are the major threats to the avifauna. The present study revealed that, though the lake is highly disturbed it still provides some potential habitats for a few migratory as well as all residents, including some threatened species which have a declining population trend by providing food and space to breed. It is the need of the hour to monitor systematically in the rapidly changing environment with a focused study on the avifauna of the region. This can be achieved only through strengthening public participation in the study of status, distribution and conservation of birds of Komaranahalli Lake, Davanagere District, Karnataka.

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Image 5. Movement of vehicles on highway road adjacent to lake

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