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Wetland avifauna of Kundavada Lake, Davanagere dist., Karnataka

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ABSTRACT

This paper documents a list of wetland birds with reference to the migratory birds of Kundavada Lake, Davanagere Dist, Karnataka**.** Till date, there is no report on the wetland birds of Kundavada Lake and the present study is therefore first of its kind. Hence, the study becomes the preliminary data for future investigation and during the study, around 53 species of birds belonging to 16 families were collected.

KEY WORDS: Birds, diversity, Kundavada Lake, wetland

INTRODUCTION

Wetlands have been described as a halfway world between terrestrial and aquatic ecosystems that exhibit some of the characteristics of each (Wagner, 2004). They form part of a continuous gradient between uplands and open water. Wetlands have many distinguishing features, the most notable of which are the presence of water, unique soils and vegetation, adapted to or tolerant or saturated soils (Miller, 2000). According to Coward *et al.* 1979, "Wetlands are areas of marsh, fen, peat land or water, whether natural or artificial flowing, fresh brackish or salt, including areas of marine water, the depth of which at low tide does not exceeds six meters."

Wetlands are specialized ecosystems which perform important ecological functions and have many ecological, socio–economic and cultural values. Wetlands are known to be the most productive and diverse ecosystems on earth because they provide direct and indirect benefits to people as sources of food, recharge of aquifers, regulating water quality, natural purification of waste water, reducing sediment load, water recharge, recycling of bio-genic salts as a source of agricultural water, animal husbandry, aquaculture and also as a refuse for rare and endangered species of plants and animals (Hosetti, 2002). Wetlands preserve genetic and community diversity and provide food and habitat for migrating birds and other creatures. Birds are among the most eye-catching of wetland animals and various species are extremely sensitive to large hydrological changes (Crowder and Bristow, 1988).

The present study aims to document the checklist of aquatic avifaunal diversity of Kundavada Lake, Davanagere since no avifaunal studies are carried out on the birds prevailing in this area.

Study area

The Kundavada Lake is a spectacular and marvelous site for avifaunal diversity; it is located between latitude of N 14º 27' 30" and longitude of E 75º 53' 39". This wetland provides water for drinking to Davanagere city. The lake is about 243.27 acres and just near to the highway of Pune-Bangalore. The lake is an attracting sight for many wetland birds as the lake supports good nesting habit and habitats with aquatic flora including *Ipomea* species (sp), *Bergia* sp, *Salvinia* sp, *Ceratophyllum* sp, *Hydrilla* sp, *Alternanthara* sp and many more. The vegetation across the lake dwells with the Neem, Coconut, *Lantana* sp, *Calotrophis* sp, *Caesalpinia* sp, *Bauhinea* sp. and grasses. Animal food sources include Phytoplankton, Zooplankton, Pisces, Molluscans and insects. The lake has a water connection from the Channel of River TungaBhadra. Lake is free from sewage and agricultural drainage. It is also a good re-creational place for the people and the students to conduct research. The place is used for commercial game fishing also to avoid the disturbances for birds.

MATERIALS AND METHODS

The checklist is prepared based on the field work conducted during October 2007- September 2008 across Kundavada Lake of Karnataka, India by foot method i,e road side count (Burnham *et al*., 1980; Simpson 1949). A total of 12 visits (1 visit per month) were spent in the field observing the bird diversity. . Birds were observed from 6 a.m to 11 a.m and identified using Olympus binoculars (10x50) and field guides of Ali *et al.* (1983); Grimmett *et al.* (2001). In the heronry, total counts were carried out by direct and point counting methods for the birds. The nomenclature used here which was given Manakadan and Pittie (2001). The status on the movement and seasonality of occurrence, the parameters are listed as; LM-Local migratory, WM-winter migratory and R-Resident depending on its movement and seasonality (Table-1).

RESULTS AND DISCUSSION

The study reveals the occurrence of 53 species of birds belonging to 16 families and 8 orders have been recorded from the study area (Table .1). The details such as common and scientific names, status and abundance of the wetland birds are presented in Table 1. The order Charadriiformes dominated the list by 6 families with 16 species followed by Anseriformes with 12 species, 3 Ciconiiformes families with 11 species, Gruiformes with 4 species, Coraciiformes, Passeriformes, Pelecaniformes with 3 species each and Podicipediformes with 1 species respectively. Out of total 53 species, 27 were resident, 20 were winter, 3 were local and rest 3 were resident migratory birds recorded. Most of the migratory species were winter visitors except Cotton Teal (*Nettapus coromandelianus*) and Lesser Whistling Duck (*Dendrocygna javanica*) which were summer visitors. Based on the frequency of sightings of avifauna of the Kundavada lake, Little Grebe (*Tachybaptus ruficollis*), Little Cormorant (*Phalacrocorax niger*), Darter (Anhinga melanogaster), Little Egret (*Egretta garzetta*), Median Egret (*Mesophoyx intermedia*), Cattle Egret (*Bubulcus ibis*) and Indian Pond-Heron (*Ardeola grayii*), Oriental White Ibis (*Threskiornis melanocephalus*), Black Ibis (*Pseudibis papillosa*), Spot Billed Duck (*Anas poecilorhyncha*), Cotton Teal (*Nettapus coromandelianus*) Northern Shoveller (*Anas clypeata*), Northern Pintail (*Anas acuta*), White-Breasted Water Hen (*Amaurornis phoenicurus*), Common Moorhen (*Gallinula chloropus*), Little

Ringed Plover (*Charadrius dubius*), Red-Wattled Lapwing (*Vanellus indicus*), Yellow- Wattled Lapwing (*Vanellus malabaricus*), Black- tailed Godwit (*Limosa limosa*), Marsh Sandpiper (*Tringa stagnatilis*), Common Sandpiper (*Tringa hypoleucos*), Little Stint (*Calidris minuta*), Black- Winged Stilt (*Himantopus himantopus*), River Tern (*Sterna aurantia*), Small Blue Kingfisher (*Alcedo atthis*), Lesser Pied Kingfisher (*Ceryle rudis*), White-Breasted Kingfisher (*Halcyon smyrnensis*), Grey Wagtail (*Motacilla cinerea*), Large Pied Wagtail (*Motacilla maderaspatensis*), were the common and dominated species inhabiting 55% of these ponds/ water bodies (Fig. 1), while Indian Shag (*Phalacrocorax fuscicollis*), Gery Heron (*Ardea cinerea*), Purple Heron (*Ardea purpurea*), Black-crowned Night Heron (Nycticorax nycticorax), White-necked Stork (*Ciconia episcopus*), Glossy Ibis (*Plegadis falcinellus*), Bar-headed Goose (*Anser indicus*), Marbled Teal (*Marmaronetta angustirostris*), Spotted Redshank (*Tringa erythropus*), Common Redshank (*Tringa totanus*), Common Greenshank (*Tringa nebularia*), Green Sandpiper (*Tringa ochropus*), Yellow Wagtail (*Motacilla flava*) were rarely sighted with 24%. While Lesser Whistling Duck (*Dendrocygna javanica*), Garganey (*Anas querquedula*), Common Pochard (*Aythya ferina*), Purple Moorhen (*Porphyrio porphyrio*), Common Coot (*Fulica atra*), Pheasant-tailed Jacana (*Hydrophasianus chirurgus*), Bronze-winged Jacana (*Metopidius indicus*) were abundant with 13%. However Brahminy Shelduck (*Tadorna ferruginea*), Gadwall (*Anas strepera*), Eurasian Wigeon (*Anas Penelope*), Greater Painted Snipe (*Rostratula benghalensis*) were occasionally sighted with 8% of frequency of occurrence (Fig. 1).

Three globally threatened species were recorded, such as oriental white ibis (*Threskiornis melanocephalus*), oriental darter (*Anhinga melanogaster*) and black-tailed godwit (*Limosa limosa*) are listed in the near threatened category (IUCN 2010). These water birds were found to utilize different wetland habitats extensively for foraging, nesting and roosting on the emergent and fringed vegetation. 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 general condition of aquatic habitats (Kushlan, 1992; Jayson and Mathew, 2002; Kler, 2002). The rich diversity of the wetland birds documented during the present study may be because of availability of varied sources of feed as well as foraging. The wetland birds are in general being heterogeneous in their feeding habits (Ali and Ripley, 1987). Thus wetland birds exploit a variety of habitats and depend upon a mosaic of microhabitats for their survival. Paddy fields with stray trees and scattered vegetation cover might have extended comfortable shelter and suitable foraging grounds for the wetland birds. This habitat by supporting different food sources like fish, crustaceans, invertebrates, water plants and planktons further add to the diversity of wetland birds (Basavarajappa, 2004). This indicates that the habitat is more suitable and supports all the visitor birds as well as resident birds by providing immense food and little space to breed. Every year from October onwards a considerable number of water birds reach the wetland. Highest bird density was recorded during winter months, when the anthropogenic activities are minimum. The peak winter population of the migratory birds was seen during the month of January and February. The basic requirement of the migratory water birds at their wintering sites are

adequate food supply and safety (Bharat Lakshmi, 2006), almost all of them leave the wetland by March-end or early April.

CONCLUSION

The study documents the rich avifauna diversity showing the area still provides some potential habitats for the declining population of the threatened birds. Therefore, it is the need of the hour to monitor these areas systematically in the rapidly changing environment with a focused study on status, distribution and conservation of 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 Kundavada Lake, Davanagere district, Karnataka. The study could effectively provide the baseline for research and data which could be used for conservation purpose of avifauna diversity.

Table 1: Checklist of wetland birds of Kundavada Lake, Davanagere district, Karnataka with common/vernacular, scientific names, their status and abundance

S.No. No[1]	Common Name[2]	Scientific Name[3]	Status[4]	Frequency[5]
Order: Podicipediformes **Family: Podicipididae**				
1.	Little Grebe	*Tachybaptus ruficollis* (Pallas)	LM	Common
Order: Pelecaniformes **Family: Phalacrocoracidae**				
2.	Little Cormorant	*Phalacrocorax niger* (Vieillot)	RM	Common
3.	Indian Shag	*Phalacrocorax fuscicollis* (Stephens)	RM	Rare
Family: Anhingidae				
4.	Darter	*Anhinga melanogaster* (Pennant**)**	R	Common
Order:Ciconiiformes **Family: Ardeidae**				
5.	Little Egret	*Egretta garzetta* (Linnaeus)	R	Common
6.	Gery Heron	*Ardea cinerea* (Linnaeus)	R	Rare
7.	Purple Heron	*Ardea purpurea* (Linnaeus)	R	Rare
8.	Black-crowned Night Heron	*Nycticorax nycticorax* (Linnaeus)	R	Rare
9.	Median Egret	*Mesophoyx intermedia* (Wagler)	R	Common
10.	**Cattle Egret**	*Bubulcus ibis* (Linnaeus)	R	Common
11	**Indian Pond Heron**	*Ardeola grayii* (Sykes)	R	Common

Family: Ciconiidae				
12.	White-necked Stork	*Ciconia episcopus* (Boddaert)	R	Rare
Family: Threskiornithidae				
13	Oriental White Ibis	*Threskiornis melanocephalus* (Latham)	R	Common
14.	Black Ibis	*Pseudibis papillosa* (Temminck)	R	Common
15.	Glossy Ibis	*Plegadis falcinellus* (Linnaeus)	RM	Rare
Order: Anseriformes **Family: Anatidae**				
16.	Lesser Whistling Duck	*Dendrocygna javanica* (Horsfield)	LM	Abundant
17	Bar-headed Goose**	*Anser indicus* (Latham)	WM	Rare
18	Brahminy Shelduck**	*Tadorna ferruginea* (Pallas)	WM	Occasional
19	Spot Billed Duck	*Anas poecilorhyncha* (J.R, Forester)	R	Common
20	Cotton Teal	*Nettapus coromandelianus* (Gmelin)	R	Common
21	Marbled Teal**	*Marmaronetta angustirostris* (Ménétriès)	WM	Rare
22	Gadwall**	*Anas strepera* (Linnaeus)	WM	Occasional
23	Eurasian Wigeon**	*Anas Penelope* (Linnaeus)	WM	Occasional
24	Northern Shoveler**	*Anas clypeata* (Linnaeus)	WM	Common
25	Northern pintail**	*Anas acuta* (Linnaeus)	WM	Common
26	Garganey **	*Anas querquedula* (Linnaeus)	WM	Abundant
27	Common Pochard**	*Aythya ferina* (Linnaeus)	WM	Abundant
Order: Gruiformes **Family: Rallidae**				
28	White- breasted Waterhen	*Amaurornis phoenicurus* (Pennant)	R	Common
29	Common Moorhen	*Gallinule chloropus* (Linnaeus)	R	Common
30	Purple Moorhen	*Porphyrio porphyrio* (Linnaeus)	R	Abundant
31	Common Coot**	*Fulica atra* (Linnaeus)	WM	Abundant
Order: Charadriiformes **Family: Jacanidae**				
32	Pheasant-tailed Jacana	*Hydrophasianus chirurgus* (Scopoli)	R	Abundant
33	Bronze-winged Jacana	*Metopidius indicus* (Latham)	R	Abundant

Family: Rostratulidae				
34	Greater Painted Snipe	*Rostratula benghalensis* (Linnaeus)	R	Occasional
Family: Charadriidae				
35	Little Ringed Plover**	*Charadrius dubius* (Scopoli)	WM	Common
36	Yellow- Wattled Lapwing	*Vanellus malabaricus* (Boddaert)	R	Common
37	Red- Wattled Lapwing	*Vanellus indicus* (Boddaert)	R	Common
Family: Scolopacidae				
38	Black- tailed Godwit	*Limosa limosa* (Linnaeus)	R	Common
39	Spotted Redshank**	*Tringa erythropus* (Pallas)	WM	Rare
40	Common Redshank**	*Tringa totanus* (Linnaeus)	WM	Rare
41	Marsh Sandpiper**	*Tringa stagnatilis* (Linnaeus)	WM	Common
42	Common Greenshank**	*Tringa nebularia* (Gunner)	WM	Rare
43	Green Sandpiper **	*Tringa ochropus* (Linnaeus)	WM	Rare
44	Common Sandpiper**	*Tringa hypoleucos* (Linnaeus)	WM	Common
45	Little Stint**	*Calidris minuta* (Leisler)	WM	Common
Family: Recurvirostridae				
46	Black- winged Stilt	*Himantopus himantopus* (Linnaeus)	R	Common
Family: Larodae				
47	River Tern	*Sterna aurantia* (J.E. Gray)	LM	Common
Order: Coraciiformes **Family: Alcedinidae**				
48	Small Blue Kingfisher	*Alcedo atthis* (Linnaeus)	R	Common
49	Lesser Pied Kinfisher	*Ceryle rudis* (Linnaeus)	R	Common
50	White- breasted Kingfisher	*Halcyon smyrnensis* (Linnaeus)	R	Common
Order: Passeriformes **Family: Motacillidae**				
51	Yellow Wagtail**	*Motacilla flava* (Linnaeus)	WM	Rare
52	Grey Wagtail	*Motacilla cinerea*(Tunstall)	WM	Common
53	Large Pied Wagtail	*Motacilla maderaspatensis* (Gmelin)	R	Common

Status of the birds observed: Resident (R), Winter Migratory (WM), Local (resident) Migaratory (LM) ; ** Birds with migratory population.

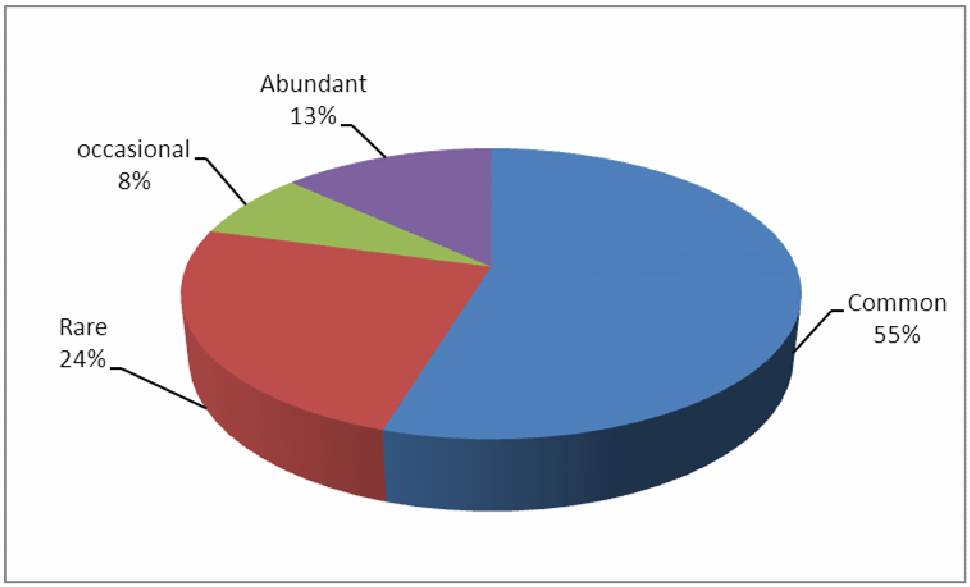

Fig. 1: Frequency of occurrence of birds of Kundavada lake, Davanagere

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