A Preliminary Survey of Aquatic Avifauna of Fresh Water Bodies of GOGI, Shahapur Taluk, Yadgir

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ABSTRACT

The present study deals with aquatic avifauna of two freshwater bodies of Gogi village, (Local name-Kelaginakere and Melinakere), Shahapur Taluk, Yadgir district, Karnataka. The study area earlier was known for mining of Uranium (U235). Study was undertaken for a period of one year and monthly collections were made from February 2014 to March 2015. Point transect technique method were used for the survey purpose. A total of 39 species of birds belonging to 08 orders and 15 families were recorded. The Species consisting 18 residents, 21 winter migrants were identified. Among the birds recorded in this study area, 15 species were insectivorus, 3 omnivorus, 20 piscivorous, 1 carnivorus, and 2 grainivorus respectively.

Keywords: Avifauna, Gogi Reservoir, Shahpur, Yadgir

I. INTRODUCTION

Nearly everyone enjoys birds, the beauty of their forms and coloring, the vivacity of their movement, the buoyancy of their flight and sweetness of their songs (Prasanna 2012).Birds are often common denizens of the ecosystems and they have been considered as an indicator species of inhabited areas (Blair, 1999). Population of birds is a sensitive indicator of pollution in both terrestrial and aquatic ecosystem (Gaston, 1975; Hardy *et al*, 1987). Wetlands are the most productive and biologically diverse in the world but very fragile ecosystems (Gibbs, 1993).

Wetlands and waterbirds are inseparable elements and support a rich array of waterbird communities (Grimmett and Inskipp, 2007). Waterbirds are an 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 (Custer and Osborne 1977).

The various reservoirs, shallow ponds and numerous tanks support wetland biodiversity and add to the country's wetland wealth. It is estimated that freshwater wetlands alone support 10 percent of the known range of biodiversity in India (Deepa and Ramachandra 1999).

Aquatic birds rely on aquatic plants to meet a large variety of needs during their life cycles. Some birds nest directly in aquatic plants, whereas others use plants as nesting material, foraging platforms, for resting, and for refuge from predators. Aquatic plants are eaten by some bird species; in addition, some plants support attached invertebrates that are used as a food source by some aquatic birds (Mark V. Hoyer 2013).

Since no data pertaining to aquatic avifauna of the two water bodies (Uranium mining area of Gogi) is available it was decided to prepare checklist of birds along with their approximate populations, challenges before them and study probable steps for conservation.

STUDY AREA

The study region located in Yadgir and Gulbarga Districts in North Karnataka, spreads over a 30 km radius from the centre point Gogi (2826 km2). The area is located 17.33°N 76.83°E with an average elevation of the 455m (1492 ft.) above sea level (Fig. 1). The area is endowed Deccan Plateau and is mostly covered by dry deciduous vegetation. Adjacent to Gogi, particularly in Shahapur and Surpur Taluks, some parts are covered with hillocks with barren and stony surroundings while other villages are covered with sparse natural vegetation. According the map-soil orders of Karnataka State, the soil system of the study area is mainly composed of entisols, vertisols and inceptisols.

Climatically, the study region is a very hot and arid with low rainfall and high temperatures and experiences mainly 3 seasons – the summer from late February to mid-June, followed by the south- west monsoon from the late June to late September, and dry winter until mid- January. The study region is a drought prone area with an average rainfall of less than 650 mm spread over 46 rainy days in a year. The weather is very hot during summer with day temperatures hovering between 26°C in winter and 42°C in summer (Ravikiran.K *et al.,* 2015).
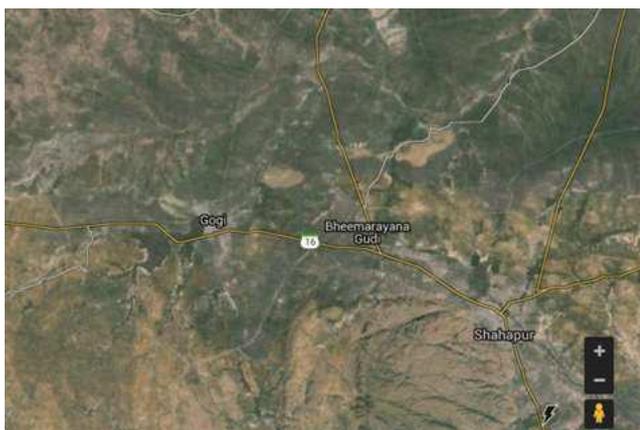
Figure 1: Study Area

II. METHODS AND MATERIAL

Systematic list of the birds of this reservoir is lacking. Hence the present study documented the avian fauna of this reservoir from mainly direct observation and local informer interaction about counting status of resident and migratory birds from post February 2014 to March 2015.

The study area was surveyed for recording of avifauna by applying line transect method, (Sale and Berkmuller 1988), and point transect method (Verner 1985). The other most important aspect kept in consideration was to make the observations during the peak activity of birds. Since the peak activity in most birds lasts for 1 or 2 hours after sunrise or before sunset, so monitoring of transects was done either in early morning or late evening hours as used by Thakur [Thakur, M.L. 2008).

Photography was done by making use of Sony DH-7 (8.1 mp with x15 optical zoom lenses) camera. For identification and field diagnosis of birds, colored plates of (Ali and Ripley 1968-74) were used. The following formula was used for determining percentage of occurrence of Families (Basavarajappa, 2006).

$$\text{Percentage Occurrence} = \frac{\text{No.of speies of each family}}{\text{Total no.different species seen}} \times 100$$

III. RESULTS AND DISCUSSION

Aquatic avifauna in fresh water bodies is good. The study reveals the occurrence of 39 species of birds belonging to 08 orders of 15- families (Table 2). (Table 1 a) details the relative percentage of total bird species belonging to different families. Most of the families represented by one or two species (relative percentage of species 0-2, 10 families; 2-4, 2 families; 4-6, 2 families and above 6 in one family), while the maximum relative percentage is from Ardeidae respectively). In the present study, 18 resident 21 winter migrants were recorded. Based on the food/foraging, from the present data it is apparent that the avifauna of these regions is dominated by insectivorous (15 species), followed by piscivorous, carnivorus, grainivorous, and omnivorous birds (20, 1, 2, and 3 species with respectively (figure 3). Most of the family contained 0-2 species. Maximum percent occurrence was found in the Families: Ardeidae (17.94), than Rallidae (12.85), Ciconiidae(5.12) and Podicipedidae (2.56), respectively (Table-1 b).
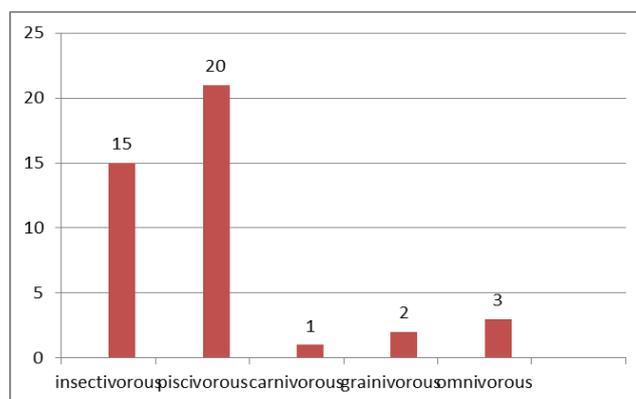
Figure 2: Distribution of Birds According to Their Feeding in the Study Area

Table-1a: Relative percentage of number of species in various families of birds in the study area

Relative Percentage of Species			
0-2	2-4	4-6	6 and above
Podicipididae Phalacrocoracidae Ciconidae Threskiornithidae Anatide Accipitridae Rostratulidae Laridae Apodidae Dacelonidae	Charadriidae Scolopacidae	Rallidae Passeridae	Ardidae

Table 1b : Percentage of Species Occurrence in Avifauna Represented In Families

Sl.No	Families	Percent Occurrence
1	Podicipididae	2.56
2	Phalacrocoracidae	2.56
3	Ardidae	17.94
4	Ciconidae	5.12
5	Threskiornithidae	5.12
6	Anatide	5.12
7	Accipitridae	2.56
8	Rallidae	12.85
9	Charadriidae	10.25
10	Rostratulidae	2.56
11	Scolopacidae	10.25
12	Laridae	2.56
13	Apodidae	5.12
14	Dacelonidae	2.56
15	Passeridae	12.85

Table 2: List of Birds with Their Status and Food Habitat in the Study Area

SCIENTIFIC NAME	COMMON NAME	S	F
Podicipedidae			
Tachybaptus ruficoliis	Little Grebe	R	P
Phalacrocoracidae			
Phalacrocorax niger	Little Cormorant	WM	P
Ardeidae			
Ardea purpurea	Purple Heron	WM	P
Ardea cinerea	Grey Heron	WM	P
Nycticorax nycticorax	Night Heron	R	P
Ardeola grayii	Pond heron	R	P
Bubulcus ibis	Cattle Egret	WM	P
Egreta intermedia	Median or Small Egret	WM	P

Egretta garzeeta	Little egret	R	P
Ciconiidae			
Ciconia episcopus	White-necked stork	WM	P
Mycteria leucocephala	Painted stork	WM	P
Threskiomithidae			
Threskiornis aethiopica	White Ibis	R	P
Pseudibis papillosa	Black ibis	R	P
Anatidae			
Anas poecilohyncha	Spotbill	WM	P
Anas acuta	Pintail	WM	P
Accipitridae			
Milvus migrans	Common Pariah Kite	R	C
Rallidae			
Amaurornis akool	Brown crake	R	I,G
Amaurornis phoenicurus	Water Hen	R	I, G
Porphyrio porphyrio	Purple Moorhen	R	O
Gallinulica chloropus	Common Moorhen	R	O
Fulica atra	Coot	R	O
Charadriidae			
Himantopus himantopus	Black-winged stilt	R	I
Vanellus indicus	Red-wattled lapwing	R	I
Vanellus malabaricus	Yellow-wattled lapwing	R	I
Pluvialis squatarola	Grey plover	WM	I
Rostratulidae			
Rostratula bengalensis	Painted Snipe	R	G, I
Scolopacidae			
Tringa nebularia	Green shank	WM	I
Tringa glareola	Spotted sandpiper	WM	I
Calidris temminckii	Temmminck's Stint	WM	I
Calidris alba	Sanderling	WM	I
Laridae			
Stema hirundo	Common Tern	WM	P
Apodidae **Cerylidae**			
Ceryle rudis	Pied kingfisher	R	P
Alcedinidae			
Alcedo atthis	Blue-Eared kingfisher	WM	P
Dacelonidae			
Halcyon smyrnensis	White-Breasted kingfisher	R	P
Passeridae			
Motacilla flava	Yellow Wagtail	WM	I
Motacilla citreola	Yellowheaded Wagtail	WM	I
Motacilla cinerea	Grey Wagtail	WM	I
Motacilla alba	White Wagtail	WM	I
Motacilla maderaspatensis	Large Pied Wagtail	WM	I

IV. CONCLUSION

From the above results it could be conclude that the abundance of avifauna indicates the healthy status of freshwater bodies owing the availability of water, safe habitat and food sources for both adults and nestlings and essential nesting/roosting sites in and around the water bodies are important for the occurrence and abundance of aquatic bird populations.

The preservation of reservoir is crucial for the survival of both resident and migratory birds because they provide the birds with specialized microhabitats and different kinds of food sources. The area should be protected by fencing. The areas of regular fishery should be fixed. The aquatic weeds must be controlled. Human exploitation should be stopped. Boating should also be avoided. Planting of trees to attract roosting of birds should be encouraged and inlet of domestic sewage should be strictly prohibited. Further, local participation in conserving local habitats need to be encouraged through the mass awareness programs as well as creating ownership opportunities for local resident through governance, administrative setup and NGOs

The aim of the study is to provide baseline information as available today with respect to the impact of to future developmental activities on water bodies (biodiversity) in the Uranium mining area of India.

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