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AQUATIC AVIFAUNA OF BONAL RESERVOIR, SURPUR TALUK, YADGIR DISTRICT, KARNATAKA

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ABSTRACT

Abundance of avifauna indicates the healthy status of reservoir. Observations were made on the occurrence, abundance, richness of avifauna in Bonal reservoir, Surpur taluk, Yadgir district. Point transect technique method were used for the survey purpose. A total of 40 species of birds belonging to 08 orders and 16 families were recorded. The Species consisting 18 residents, 22 winter migrants were identified. Among the birds recorded in this study area, 15 species were insectivorus, 3omnivorus, 21 piscivorous, 1carnivorus, and 2grainivorus respectively.

KEYWORDS: Avifauna, Bonal Reservoir, Surpur, Yadgir

INTRODUCTION

Birds have always fascinated humankind and the reasons are quite obvious. Among all the higher forms of life called the vertebrates or back boned animals, birds are certainly the most beautiful, most melodious, most admired and most studied. Of the total of 1200 birds species found in India, about 900 are resident and rest about 300 are migratory, most of them coming from Central Asia and Eastern Europe during the winter period (Savitree 2014).

Birds are found throughout the world, at approximately all altitudes and in nearly every climate. 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).

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).

Water birds 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 lakes and wetlands in any city serve as a balancing reservoir for sustaining native flora and fauna (Grimmett and Inskipp, 2007; Surana et al., 2007). Now-a-days,

avifaunal diversity has been decreasing due to the destruction of natural habitats and human disturbances.

Since no data pertaining to aquatic fauna of the Bonal reservoir is available it was decided to prepare checklist of birds along with their approximate populations, challenges before them and study probable steps conservation.

STUDY AREA

Surpur (108 km distance from Gulbarga) with a latitude of 16.52 (16° 31' 0 N) and a longitude of 76.75 (76° 45' 0 E). The Bonal reservoir is the largest bird sanctuary in Karnataka after Rangantittu bird sanctuary near Mysore. The reservoir is situated about 108kms south of Gulbarga and covers area of 40.96 Sq. miles. The reservoir was built in 17th century by Surpur King Raja Pam Naik, and later Captain Meadows Taylor a Captain in British rule increased the capacity of tank from 4ft to 12ft depth. The Bonal reservoir is established primarily on Bonal Village. The reservoir was under the control of irrigation department, Government of Karnataka, Gulbarga Division till 1998. It is now an ornithologist's paradise (Manjunath and Bhaskar Joshi 2012).

MATERIALS AND METHODS

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 January 2010 to February 2011.

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 fielddiagnosis 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).

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

RESULTS AND DISCUSSIONS

Aquatic avifauna in Bonal reservoir is good. The study reveals the occurrence of 40 species of birds belonging to 08 orders of 16- 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, 11 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 22 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 (21, 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 (17.5), than Rallidae (12.5), Ciconiidae(5.0) and Podicipedidae (2.5), respectively (Table-1 b).

CONCLUSIONS

From the above results it could be conclude that the abundance of avifauna indicates the healthy status of reservoir owing the availability of water, safe habitat and food sources for both adults and nestlings and essential nesting/roosting sites in and around the reservoir 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 reservoir 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

Table1 A. 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 Pandinidae Rostratulidae Laridae Apodidae Dacelonidae	Charadriidae Scolopacidae	Rallidae Passeridae	Ardidae

Table 1b: Percentage of Species Occurrence Inavifauna Represented in Families

Sl.No	Families	Percent Occurrence
1	Podicipididae	2.5
2	Phalacrocoracidae	2.5
3	Ardidae	17.5
4	Ciconidae	5.0
5	Threskiornithidae	5.0
6	Anatide	5.0
7	Accipitridae	2.5
8	Pandinidae	2.5
9	Rallidae	12.5
10	Charadriidae	10.0
11	Rostratulidae	2.5
12	Scolopacidae	10.0
13	Laridae	2.5
14	Apodidae	5.0
15	Dacelonidae	2.5
16	Passeridae	12.5

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
Pandion haliaetus	Osprey	WM	P
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			

Table 2: Contd.,			
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

Figure-1 Study area

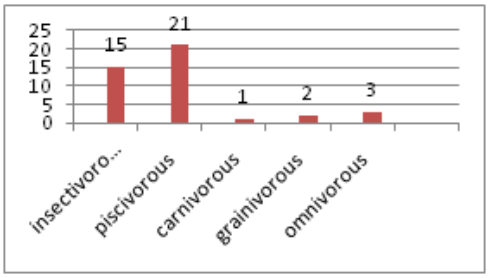

Figure 2: Distribution of Birds According to their Feeding in the Study Area

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