

Original Research

Diversity of Wetland dependent birds around the Bhadra Reservoir Project (BRP) area, Karnataka

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ABSTRACT:

The study of bird species inhabiting certain wetlands around Bhadra Reservoir Project (BRP), Shivamogga, Karnataka was carried out from February 2008 to January 2010. The total of 68 species of wetland birds belonging to nineteen families and six orders. Of these, Anatidae (15%) and Ardidae (13%) have more than nine species. The diversity may be attributed the moderate volume of water storage, availability of food and assured protection to these birds. Additionally we recorded seven types of migratory birds visiting these ponds. Those include White-necked Stork, Shoveler, Pintail, Grey Plover, Curlew, Ringtailed-fishing Eagle and Black-winged Stilt. All these wetlands are important places for foraging activity of wetland birds. In order to protect these wetland birds, the wetlands should be conserved by controlling encroachment, pollution and other anthropogenic activities.

Keywords:

Wetland birds, diversity, wetlands, Bhadra Reservoir Project .

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INTRODUCTION

Wetlands are the treasures of avifaunal species richness and these are the important ecological significance areas, which serves as a major link between the natural resources and agricultural practices. Wetlands of lentic group form a favorable habitat to various groups of animals especially waterfowl, that need food, water for drinking, wallowing and abode. Wetlands are known to be most productive and diverse ecosystems on the earth. Water birds are perhaps the most visible manifestation of faunal diversity but many other groups also inhabit these wetlands. Wetlands are fragile ecosystems, which are fast deteriorating and shrinking due to man made activities. India has 65,000 wetlands covering an area of 4.5 million hectares (Anon, 1990). The diversity of water birds obviously indicate the quality and healthy condition of the ecosystem in the country. Concerning the realm of this study, some other works have been carried out by Dayananda (2009); Nanda *et al.*, (2010); Rajpar and Zakaria (2010); Mohsen *et al.*, (2011). The aim of this study is to assess the diversity of wetland birds in and around Bhadra Reservoir Project area.

MATERIALS AND METHODS

The checklist of wetland birds around the BRP area was made by sighting the birds with 8 x 50 binoculars. The field guides (Ali, 1996; Sonobe and Usui, 1993; Inskipp and Inskipp, 1991; Fleming *et al.*, 2000; Kazmierczak and Perlo, 2000; Grimmett *et al.*, 2001) were used for bird identification. The wetland bird census was conducted in morning hours from 06:00 AM to 10:00 AM and evening 04:00 PM to 06:00 PM by walking. Study of wetland birds around the BRP area was carried out from February 2008 to January 2010, every month at regular interval by direct counting method (Colin *et al.*, 1993; William, 1997). The residential status and abundance criteria was calculated using presence and absence scoring method and then

percentage of birds occurrence was calculated to determine the status. The modified score classes used on the basis of total bird recorded during study period i.e., 1-5%= rare (R), 6-10%=Uncommon (UC), 11-13%= common (C) and >14% = Verycommon (VC) as accomplished by Mc Kinnon and Philips (1993).

RESULTS AND DISCUSSION

A total of 68 species of birds were found associated with the Bhadra Reservoir. Of which 40 species are resident, 21 residents with local migratory and seven are migratory. Some of the migratory birds recorded includes White-necked Stork, Shoveler, Pintail, Grey Plover, Curlew, Ringtailed-fishing Eagle and Black-winged Stilt. These are winter migrants used the wetlands for foraging, resting and other activities till favorable condition of their native and some residential wetland birds such as the herons, egrets, ibises and storks used the trees and shrubs as roosting site. These species were found during the study period on the ground feeding of fishes, amphibians and crutaceans. The report suggested that the wetlands are important places for foraging of wetland birds. This observation got support from earlier publications which reported that, habitat has long been used as a predictor of bird species abundance and variety of birds has developed different preferences for habitat (Huston, 1994; Lameed, 2011). During study 68 bird species belonging to 19 families and six orders were found on the wetland (Table-1). The status based upon percent occurrence of bird species representing different families with respect to total bird species presently recorded was Anatidae (14.71) > Ardeidae (13.24) > Charadriidae (10.29) > Alcedinidae (7.35) = Motacillidae (7.35) > Rallidae (5.88) = Jacanidae (5.88) = Threskiornithidae (5.88) > Accipitridae (4.41) > Phalacrocoracidae (2.94) = Ciconiidae (2.94) = Scolopacidae (2.94) = Laridae (2.94) = Alaudidae (2.94) = Corvidae (2.94) = Ploceidae (2.94) > Podicipedidae (1.47) = Recurvirostridae (1.47) =

Table 1. Wetland bird diversity around the Bhadra Reservoir Project Area

Sl. No	Order	Family	Common Name	Scientific Name	RS	AS	FH	
	Podicipediformes	Podicipedidae	Little Grebe	<i>Tachybaptus ruficollis</i>	R	C	P	
	Pelecaniformes	Phalacrocoracidae	Little Cormorant	<i>Phalacrocorax niger</i>	RM	VC	P	
	Ciconiiformes	Ardeidae	Oriental Darter	<i>Anhinga melanogaster</i>	RM	UC	P	
			Grey Heron	<i>Ardea cinerea</i>	RM	C	P	
			Purple Heron	<i>Ardea purpurea</i>	RM	C	P	
			Pond Heron	<i>Ardeola grayii</i>	R	VC	P	
			Night Heron	<i>Nycticorax nycticorax</i>	R	UC	P	
			Cattle Egret	<i>Bubulcus ibis</i>	R	VC	P	
			Large Egret	<i>Casmerodius albus</i>	RM	VC	P	
			Median Egret	<i>Mesophoyex intermedia</i>	R	VC	P	
			Little Egret	<i>Egretta garzetta</i>	R	VC	P	
			Chestnut Bittern	<i>Ixobrychus cinnamomeus</i>	RM	UC	P	
			Threskiornithidae	Black-headed Ibis	<i>Threskiornis melanocephalus</i>	R	VC	P
			Black Ibis	<i>Pseudibis papillosa</i>	RM	C	P	
			Eurasian Spoonbill	<i>Platalea leucorodia</i>	RM	R	P	
			Glossy Ibis	<i>Plegadis falcinellus</i>	RM	C	P	
			Ciconiidae	White-necked Stork	<i>Ciconia nigra</i>	M	R	P
				Open-bill Stork	<i>Anastomus oscitans</i>	R	UC	P
		Anseriformes	Anatidae	Lesser-whistling Teal	<i>Dendrocygna javanica</i>	R	C	O
				Common Teal	<i>Anas crecca</i>	RM	C	O
				Spot-billed Duck	<i>Anas poecilorhyncha</i>	RM	VC	O
			Garganey	<i>Anas querquedula</i>	R	UC	O	
			Nakta or Comb Duck	<i>Sarkidiornis melanotos</i>	R	UC	O	
			Shoveler	<i>Anas clypeata</i>	M	R	O	
			Cotton Teal	<i>Nettapus coromandelianus</i>	R	VC	O	
			Mallard	<i>Anas platyrhynchos</i>	RM	UC	O	
			Pintail	<i>Anas acuta</i>	M	R	O	
			Brahminy Duck	<i>Tadorna ferruginea</i>	RM	UC	O	
		Accipitridae	Common Pariah Kite	<i>Milvus migrans</i>	R	VC	C	
			Brahminy Kite	<i>Haliastur indus</i>	R	VC	C	
			Ring tailed fishing Eagle	<i>Haliaeetus leucoryphus</i>	M	R	C	
	Gruiformes	Rallidae	White-breasted Water hen	<i>Amaurornis phoenicurus</i>	R	VC	IG	
			Indian Moorhen	<i>Gallinula chloropus</i>	R	VC	O	
			Purple Moorhen	<i>Porphyrio porphyrio</i>	R	VC	O	
			Common Coot	<i>Fulica atra</i>	R	VC	O	

Charadriiformes	Jacanidae	Bronze-winged Jacana	<i>Metopidius indicus</i>	R	VC	I/G
			<i>Hydrophasianus chirurgus</i>	RM	VC	I/G
		Pheasant-tailed Jacana				
		Brown Crake	<i>Amaurornis akool</i>	R	C	I
		Water Cock or Kora	<i>Gallixrex cinerea</i>	LM	C	I
	Charadriidae	Red-wattled Lapwing	<i>Vanellus indicus</i>	R	VC	I
		Yellow-wattled Lapwing	<i>Vanellus malabaricus</i>	R	VC	I
		Little-ringed Plover	<i>Charadrius dubius</i>	RM	C	I
		Grey Plover	<i>Pluvialis squatarola</i>	M	R	I
		Curlew	<i>Numenius arquata</i>	M	R	I
		Common Sandpiper	<i>Actitis hypoleucos</i>	RM	VC	I
		Marsh Sandpiper	<i>Tringa stagnatilis</i>	R	C	I
	Recurvirostridae	Black-winged Stilt	<i>Himantopus himantopus</i>	M	R	I
	Scolopacidae	Painted Snipe	<i>Rostratula benghalensis</i>	R	C	I
		Common Snipe	<i>Gallinago gallinago</i>	RM	C	I
	Laridae	Indian River Tern	<i>Sterna aurantia</i>	R	C	P
		Common Tern	<i>Sterna hirundo</i>	RM	C	P
	Alcedinidae	Lesser-pied Kingfisher	<i>Ceryle rudis</i>	R	C	P
		Small-blue Kingfisher	<i>Alcedo atthis</i>	R	C	P
		Blue-eared Kingfisher	<i>Alcedo meninting</i>	R	C	P
		White-breasted Kingfisher	<i>Halcyon smyrnensis</i>	R	VC	P
	Alaudidae	Stork-billed Kingfisher	<i>Pelargopsis capensis</i>	R	C	P
		Crested Lark	<i>Galerida cristata</i>	R	C	I
		Black-bellied Finchlark	<i>Eremopterix griseus</i>	R	UC	I
	Sturnidae	Indian Myna	<i>Acridotheres tristis</i>	R	VC	I
	Corvidae	House Crow	<i>Corvus splendens</i>	R	VC	O
		Jungle Crow	<i>Corvus macrorhynchos</i>	R	VC	O
	Motacillidae	Large pied Wagtail	<i>Motacilla maderaspatensis</i>	R	C	I
		White Wagtail	<i>Motacilla alba</i>	RM	VC	I
		Yellow Wagtail	<i>Motacilla flava</i>	R	C	I
		Yellow-headed Wagtail	<i>Motacilla citreola</i>	RM	C	I
	Ploceidae	Paddy Field Pipit	<i>Anthus novaeseelandiae</i>	R	VC	I
		Baya weaver bird	<i>Ploceus philippinus</i>	R	VC	I
		Black breasted weaver bird	<i>Ploceus benghalensis</i>	R	VC	I

Common and Scientific names are as followed by Manakadan and Pittie, 2001.

RS – Residential Status of the birds: **R** – Resident, **M** –Migratory, **RM** –Resident with migratory. **AS** – Abundance Status of the birds: **R** – Rare, **UC** – Uncommon, **C** – Common, **VC** – Verycommon. **FH** – Food habit of the birds: **I** – Insectivore; **P**- Piscivore; **O**-Omnivore; **I/G** –Insectivore with Grainivore.

Sturnidae (1.47) (Fig. 1). The Anatidae and Ardeidae had more than nine species, this can be considered as good indicators of the health of these wetlands.

The diversity may be attributed the moderate volume of water storage, availability of food sources (fish, crustaceans, invertebrates, aquatic plants and plankters), shelter and assured protection to these birds.

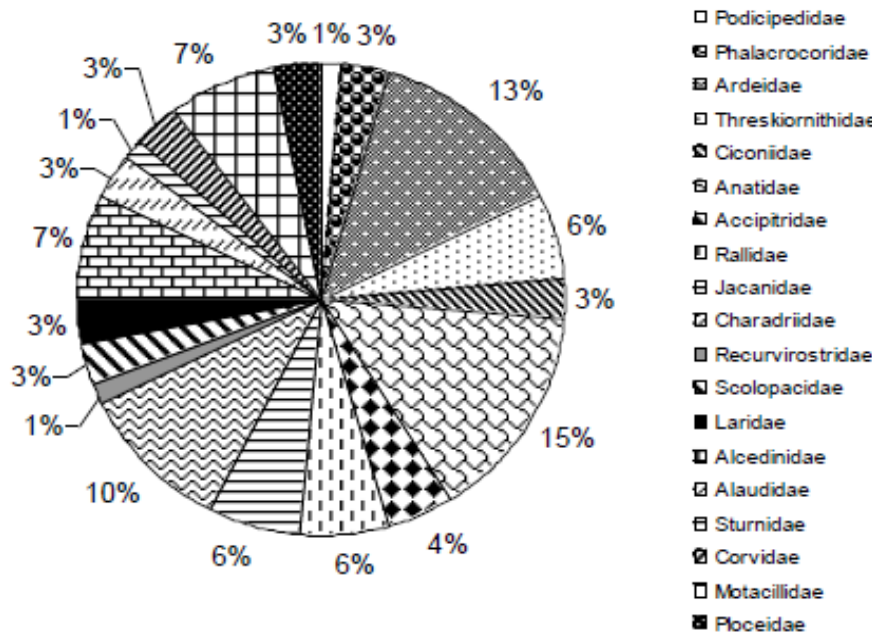


Fig. 1. Percent composition of avian families represented by species richness of waterbirds around BRP area

The family Anatidae dominated the list with ten species, which was represented 14.71% of the total number of wetland birds present in the study area. Ardeidae was represented by nine species with a relative abundance of 13.24%. Charadriidae was represented by seven species. Motacillidae and Alcedinidae were represented by five species. Threskiornithidae, Rallidae, Jacaniidae were represented by four species. Accipitridae was represented by three species and Phalacrocoracidae, Ciconiidae, Scolopacidae, Laridae, Alaudidae, Corvidae and Ploceidae were represented by two species each whereas Podicipedidae, Recurvirostridae and Sturnidae had single species each. Among the birds recorded in this study, about 36.76 % (25 species) are both piscivores and insectivores and 22.06 % (15 species) are omnivores and 4.41 % (3 species) are carnivores respectively (Fig. 1).

In the present study, the analysis on the status shows that twenty five species are common, twenty eight species very common, nine species uncommon and eight species rare. The abundance of birds may be influenced by availability food for birds in the form of plants, vertebrates and invertebrates, some of them feed in wetland soil, water column and dry landscape in and

around the wetlands. The present work is in conformity with the earlier work of Dayananda (2008) carried out in Ramanakere of Davanagere district. Similarly, this results were in agreement with the earlier works of Rajashekara and Venkatesha (2011); Lameed, 2011; Bhatnagar *et al.*, (2008) who also reported the varying diversity of birds in different lakes due to different habitat conditions for roosting, nesting, feeding and availability of food sources.

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