

Diversity and Status of Avifauna of Jasrota Wildlife Sanctuary, Kathua (J&K State)

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ABSTRACT

The present communication deals with the diversity, resident/migrant status, abundance and habitat used by the avifauna within the Jasrota Wildlife Sanctuary, dist. Kathua, J&K State. This study was carried out in 3 available habitats i.e (i) Aquatic (Aq) (ii) Scrub (S) (iii) Mixed deciduous forest (MF). Avifaunal survey was conducted from Jan. 2003 to April 2004 using line transect method. During the course of study, a total of 67 bird species belonging to 12 orders under 31 families were recorded. The local status and habitat preference of each enlisted species was also worked out.

Keywords: Diversity, avifauna, scrub, deciduous, ornithology

INTRODUCTION

Avifauna is an important biological resource and a component of natural ecosystem. The environmental quality of a region depends upon the diversity of different faunal elements in that area. The Indian region with varied habitat harbors an incredibly rich bird life. Over 1200 of the world's 8,650 species of birds are found in this region (Grewal, 1995). Grimmet *et al.* (1998) documented 1300 species of birds in Indian Subcontinent. According to Agarwal (2000), there are about 372 species of mammals, 1228 species of birds, 446 species of reptiles, 204 species of amphibians, 2546 species of fishes and a large number of invertebrates in India. As far as the whole world is concerned, mammals are represented by 4231 species, birds 12450 species, reptiles 6300 species, amphibians 4184 species

and fishes 23000 species (Hosetti 2002). So birds represent the most adapted group among land vertebrates.

Ornithological studies in India dates back to Jerdon's (1862-64) pioneering investigations, and since then various studies have been made. Species richness varies from region to region (Recher 1969, Pearson 1975 and Karr 1976) as well as within a region, as abiotic and biotic factors vary from habitat to habitat. Several studies have identified the factors responsible for variations in avifauna in different habitat outside India (Anderson, 1970, Beedy, 1981) and within India (Beehler *et al.*, 1987, Daniels, 1989, Johnsingh *et al.*, 1987, Katti, 1989 and Rai, 1991). These studies also form an effective tool for monitoring a forest ecosystem.

The studies on birds have been conducted from time to time in India and Jammu and Kashmir State also. The earlier work done in Jammu and Kashmir State is represented by Ward (1906-1907), Dewar (1923), Osmaston (1927), Alexander (1950), Bates and Lowther (1952), Koul (1968), Ali and Ripley (1983) Katti (1989), Price and Jamdar (1990), Bacha (1992), Zargar and Naquash (1993), Pandit (1996), Choudhary (2002), Sharma (2003) and Ahmed (2004). Save for Ward (op.cit), Choudhary (op.cit), Sharma (op.cit) and Ahmed (op.cit), the work is confined to Kashmir region only and does not include the Jammu region especially the dist. Kathua. So there is an imperative need to work out the avian

diversity of this area. To make a beginning in this direction, Jasrota Wildlife Sanctuary in District Kathua has been chosen to carry out the status survey.

The present study encompasses the diversity, status, habitat preference and abundance of different bird species in the Jasrota Wildlife Sanctuary, dist. Kathua, J&K State.

STUDY AREA

The study area, Jasrota Wildlife Sanctuary is situated on right bank of Ujh river in district Kathua, J&K State between 32°-27' and 32° 31' N latitudes and 75° 22' and 75°-26' E longitudes at an elevation of 356m to 520m above msl with an area of 10.04 sq kms. The climatic conditions in study area are generally dry sub-humid with summer season from April to mid July and maximum summer temperature varies from 36°42°C. Winter season spreads over from Nov. to Feb. Spring season is from mid Feb. to mid April. The average cumulative rainfall is 100cm.

Habitats

The three different habitats surveyed are :

(1) Aquatic habitat (Aq) It is in the form of temporary ponds, artificial waterholes and run off water. There is no permanent water body in the sanctuary. The ponds contain water only during the rainy season and remain dry for most of the period. The vegetation is represented by *Parthenium hysterophorus*, *Calotropis procera* etc.

(2) Scrub habitat (S) It includes the shrubs namely, *Adhatoda vasica*, *Lantana camara*, *Parthenium hysterophorus*, *Calotropis procera* etc.

(3) Mixed deciduous forest habitat (MF) The forest habitat is represented by broad leaved associates namely *Lannea coromandelica*,

Dendrocalamus strictus, *Acacia catechu*, *A. arabica*, *Dalbergia sissoo*, *Bombax ceiba*, *Ficus religiosa*, *Zizyphus jujuba* etc. along with shrubs like *Adhatoda vasica*, *Lantana camara*, *Parthenium hysterophorus*, *Calotropis procera* etc.

Fauna

In addition to birds, other faunal elements include Spotted deer, Barking deer, Rhesus monkey, Indian Jackal, Rufous Tailed Hare, Wild boar, Indian Crested Porcupine. Common Grey Mongoose etc. among mammals and snakes like Indian Cobra, Russell's Viper, Saw Scaled Viper, Rat Snake, Indian Rock Python and lizards like Indian Monitor Lizard, Garden Lizard etc. among reptiles.

MATERIAL AND METHODS

The study area was surveyed for recording avifaunal diversity by applying Line Transect method (Sale & Berkmueller 1988). Census was carried out twice in a month starting from Jan. 2003 to April 2004. During the census a distance of 4 km was covered with a fixed duration of 120 minutes, thus covering 2km/hour and this speed was maintained throughout the census. In order to maintain uniformity, all surveys were conducted from 6.30 to 10.30 am in the morning and 4.30 pm to 6.30 pm in evening during summer and 7.30 am to 11.30 am in morning and 3.30 to 5.30 pm in evening during winter.

Birds were identified upto the species level and details like the number of birds and habitat occupied by them were recorded. Identification of birds was done with the help of field guides and reference books Ali (1941), Ali and Ripley (1983) and Grimmet *et al.* (1998).

Binoculars (Bushnell 7x50 USA made)

were used to record the observations from distance to avoid any disturbance to birds. Care was taken that the sun was always behind the observer so that the plumage patterns of birds could be distinguished. Abundance data terminology & methods is after Khan 2002. Resident / Migrant status to the birds was assigned on their availability around the year / during particular season respectively. The degree of similarity of two habitats (where bird species are concerned), was investigated using Jaccard's measure of estimating beta diversity:

$$C_i = j/(a+b-j)$$

Where

j = the number of species found at both sites.

a = the number of species in habitat A.

b = the number of species in habitat B (Magurran 1988)

OBSERVATIONS AND DISCUSSION

A systematic list of 67 bird species belonging to 12 orders and 31 families along with their status vis-à-vis resident / migratory, habitat preference and abundance has been presented in tabular form (Table 1). The list shows that out of total bird species recorded, 53 species are resident and 14 species are migratory. Migratory species were further categorized as passage migrants, winter migrants and summer migrants. Of the 14 species of migrants, 1 species Verditer flycatcher recorded during the month of March, 2003 is passage migrant, 4 summer migrants observed during the summer months from April to July and 9 winter migrants reported during the winter months from November to February.

The study reveals that 31 (46.26%) bird species were specifically restricted to mixed forest habitat, 8 (11.94%) species to scrub habitat,

1 (1.63%) species to aquatic habitat and 27 (40.29%) species occupied more than one habitat. Out of the species which used more than one habitat, single species White Breasted Water hen was recorded from all the three habitats i.e. MF, S and Aq, 4 species occupied Aq and MF and 22 species were reported using both S and MF habitats. The number of avian species encountered in mixed deciduous forest habitat (MF) is more than that in other two habitats available in the sanctuary indicating thereby that the mixed deciduous forest (MF) is best suitable habitat for the birds in the study area. This may be serving as a roosting, feeding and nesting site. Table 2 shows the values of Jaccard's measure for different habitats. The higher values of Jaccard's index indicate greater similarity between bird communities in two habitats. The Jaccard's index for Aq & MF, Aq & S and S & MF comes to be 0.086, 0.027 and 0.328 respectively which shows that there is more similarity in bird species between S & MF habitat pair than other pairs (Table 2).

Of the total bird species reported, 27 were found common, 15 species were frequent, 15 were occasional and 10 species were found to be rare according to the terminology followed by Khan (2002). Among the commons are included the birds namely, Common Myna, Red Vented Bulbul, White Cheeked Bulbul, Little Brown Dove, Spotted Dove, Ring Dove, House Crow, Jungle Babbler, Magpie Robin, Black Drongo, Small Green Bee-eater, etc.

The study area despite its small size appears to support an extremely rich and diverse bird community. Of the total birds (i.e. 1300 spp.) recorded by Grimmet *et al.* 1998 from Indian subcontinent, avifauna of Jasrota Wildlife Sanctuary represents 5.2%. The observed bird diversity in relatively small study area (10.04 sq kms) underlies the importance of this area for biodiversity conservation.

Table 1. Avifaunal inventory of Jasrota Wildlife Sanctuary with habitat, status and abundance.

S.No.	Name	Habitat	Status	Abundance
Class : AVES				
Order : CICONIFORMES				
Family : ARDEIDAE				
1.	Indian Pond Heron	Aq	Rst	C
<i>Ardeola grayii grayii</i> Skyes				
2.	Cattle Egret	Aq/MF	Rst	C
<i>Bubulcus ibis coromandus</i> Boddaert				
Order : FALCONIFORMES				
Family : ACCIPITRIDAE				
3.	Pariah Kite	MF	Rst	C
<i>Milvus migrans govinda</i> Skyes				
4.	Indian Shikra	MF	Rst	F
<i>Accipiter badius dussumieri</i> Temminck				
Order : GALLIFORMES				
Family : PHASIANIDAE				
5.	Indian Peafowl	S	Rst	R
<i>Pavo cristatus</i>				
6.	Indian Red Jungle Fowl	S	Rst	R
<i>Gallus gallus murghi</i> Robinson & Kloss				
7.	Grey Partridge	S	Rst	O
<i>Fringilla monticola</i>				
8.	Black Partridge	S	Rst	R
<i>Fringilla monticola</i>				
9.	Jungle Bush Quail	S	Rst	R
<i>Pardicula asiatica</i>				
Order : GRUIFORMES				
Family : RALLIDAE				
10.	Indian White Breasted Waterhen	Aq/S/MF	Rst	O
<i>Amaurornis phoenicurus phoenicurus</i> (Pennant)				
Order : CHARADRIIFORMES				
Family : CHARADRIIDAE				
11.	Red Wattled Lapwing	Aq/ MF	Rst	C
<i>Vanellus indicus indicus</i> (Boddaert)				
Order : COLUMBIFORMES				
Family : COLUMBIDAE				
12.	Indian Blue Rock Pigeon	S/MF	Rst	C
<i>Columba livia intermedia</i> Strickland				
13.	Indian Ring Dove	S/MF	Rst	C
<i>Streptopelia decaocto decaocto</i> (Frivaldszky)				
14.	Indian Spotted Dove	S/MF	Rst	C
<i>S. chinensis suratensis</i>				
15.	Little Brown Dove	S/MF	Rst	C
<i>S. senegalensis cambayensis</i> Gmelin				

Table 1 Contd.

16.	Indian Red Turtle Dove <i>S. tranquebarica tranquebarica</i> (Hermann)	S/MF	Rst	R
	Order : PSITTACIFORMES Family : PSITTACIDAE			
17.	Large Indian Parakeet <i>Psittacula eupatria nipalensis</i> (Hodgson)	MF	Rst	F
18.	Rose Ringed Parakeet <i>P. krameri manillensis</i> Bechstein	MF	Rst	C
19.	Blossom Headed Parakeet <i>P. cyanocephala</i> (Forester)	MF	WM	O
	Order : CUCULIFORMES Family : CUCULIDAE			
20.	Indian Koel <i>Eudynamys scolopacea scolopacea</i> (Linnaeus)	MF	Rst	C
21.	Pied Crested Cuckoo <i>Clamator jacobinus</i>	MF	SM	F
	Family : CENTROPODIDAE			
22.	Crow Pheasant <i>Centropus sinensis</i>	S/MF	Rst	R
	Order : STRIGIFORMES Family : STRIGIDAE Subfamily : STRIGINAE			
23.	Northen Spotted Owlet <i>Athene brama indica</i> Franklin	MF	Rst	O
	Order : CORACIFORMES Family : ALCEDINIDAE			
24.	White Breasted KingfiSer <i>Halcyon smyrnensis smyrnesis</i> (Linnaeus)	Aq/ MF	Rst	C
	Family : MEROPIDAE			
25.	Indian Small Green Bee-eater <i>Merops orientails orientalis</i> Latham	MF	Rst	C
26.	Blue tailed Bee-eater <i>M.phillipinus</i>	MF	Rst	O
	Family : CORACIIDAE			
27.	Blue Jay <i>Caracias bengalensis</i>	MF	Rst	O
	Family: UPUPIIDAE			
28.	Europen Hoopoe <i>Upupa epops</i> Linnaeus	MF	Rst	C
	Family: BUCEROTIDAE			

29.	Common Grey Hornbill <i>Tockus</i> (= <i>Ocyrceros</i>) <i>birostris</i> (Scopoli)	MF	Rst	O
	Order : PICIFORMES Family : CAPITONIDAE			
30.	Large Green Barbet <i>Megalaima zeylanica zeylanica</i> (Gmelin)	MF	Rst	C
31.	Copper Smith <i>M. haemacephaia indica</i> (Latham)	MF	Rst	C
	Family : PICIDAE Subfamily : PICINAE			
32.	Lesser Golden- backed Woodpecker <i>Dinopium benghalense benghalense</i> (Linnaeus)	MF	Rst	O
33.	Maharatta Woodpecker <i>Picoides Maharattensis maharattensis</i> (Latham)	MF	SM	R
	Order : PASSERIFORMES Family : LANIDAE			
34.	Rufous- backed Srike <i>Lanius scahach erythronotus</i> (Vigors)	MF	Rst	F
	Family : ORIOLIDAE			
35.	Indian Golden Oriole <i>Oriolus oriolus kundoo</i> (Skyes)	MF	SM	O
	Family : DICRURIDAE			
36.	Black Drongo <i>Dicrurus adsimilis</i> (= <i>macrocerus</i>) <i>albirictus</i> (Hodgson)	MF	Rst	C
	Family : STURNIDAE			
37.	Indian Myna	S/MF	Rst	C
	<i>Acridotheres tristis tristis</i> (Linnaeus)			
38.	Bank Myna	S/MF	Rst	C
	<i>A. ginginnianus</i> (Latham)			
39.	Brahminy Myna	S/MF	Rst	C
	<i>Sturnus pagodarum</i> (Gmelin)			
40.	Indian Pied Myna <i>Sturnus contra contra</i> Linnaeus	S/MF	Rst	F
41.	Starling <i>S. vulgaris indicus</i> Blyth	S/MF	WM	O
	Family : CORVIDAE			
42.	House Crow <i>Corvus splendens splendens</i> Vieillot	MF	Rst	C
43.	Jungle Crow <i>C. macrorhynchus culminatus</i> Skyes	MF	Rst	F
44.	Northeneastern Tree Pie <i>Dendrocitta vagabunda</i> (Blyth)	MF	Rst	F

45.	Himalayan Whistling Thrush <i>Myiophonus caeruleus</i>	S/MF	WM	F
	Family: CAMPEHAGIDAE			
46.	Small Minivet <i>Pericrocotus cinnamomeus</i>	MF	WM	O
47.	Scarlet Minivet <i>P. flammeus</i>	MF	WM	R
	Family: PYCNONOTIDAE			
48.	Red Vented Bulbul <i>Pycnonotus cafer cafer</i> (Linnacus)	S/MF	Rst	C
49.	White - Cheeked Bulbul <i>P. leucogenys leucogenys</i> (Gray)	S/MF	Rst	C
	Family : MUSCICAPIDAE			
	Subfamily : TIMALIINAE			
50.	Jungle Babbler <i>Turdoides striatus somervillei</i> (Skyes)	S/MF	Rst	C
51.	Common Babbler <i>Turdoides caudatus caudatus</i>	S/MF	Rst	C
	Subfamily : MONARECHINAE			
52.	Paradise Flycatcher <i>Terpsiphone paradisi paradisi</i> (Linnaeus)	MF	SM	R
53.	Verditer Flycatcher <i>Muscicapa (= Eumyias) thalassina thalassina</i> Swainson	MF	PM	R
54.	Indian Tailor Bird <i>Orthotomus sutorius guzuratus</i> (Latham)	S/MF	Rst	F
	Subfamily : TURDINAE			
55.	Indian Magpie Robin <i>Copsychus saularis saularis</i> (linnaeus)	S/MF	Rst	C
56.	Kasmir Black Redstart <i>Phoenicurus ochruros. pheonicuroides</i> (Moore)	S/MF	WM	O
57.	Pied Bush Chat <i>Saxicola caprata bicolor</i> (Skyes)	S	Rst	O
58.	Indian Robin <i>Saxicoloides fulicata cambaiensis</i> (Latham)	S	Rst	F
	Family : PARIDAE			
	Subfamily : PARINAE			
59.	Indian White Wagtail <i>Motacilla alba dukhunesis</i> Skyes	Aq/MF	WM	F
	Family : NECTARINIIDAE			
60.	Purple Sunbird <i>Nectarinia asiatica asiatica</i> (Latham)	MF	Rst	C
61.	Yellow- backed Sunbird <i>Aethopyga siparaja seheriae</i> (Tickell)	MF	WM	F
	Family : ZOSTEROPIDAE			

62.	Indian White Eye <i>Zosterops palpebrosa palpebrosa</i> (Temminck) Family : PLOCEIDAE Subfamily : PASSERINAE	MF	Rst	F
63.	Indian House Sparrow <i>Passer domesticus indicus</i> (Jardine& Selby)	S/MF	Rst	C
64.	Spotted Munia <i>Lonchura Punctulata</i>	S	Rst	O
65.	Baya Weaver bird <i>Ploceus phillipinus</i> Family : PARIDAE	S/MF	Rst	F
66.	Grey Tit <i>Parus major</i> Family : CERTHIDAE	S/MF	WM	F
67.	Bar Tailed Tree creeper <i>Certhia himalayana</i>	MF	Rst	O

SM- Summer Migrant

WM Winter Migrant

PM- Passage Migrant

Rst- Resident

For recording the abundance of avifauna during the survey of study area based on study records, the terminology of worker¹¹ was followed.

C Common : means it can invariably be seen in that habitat where it occurs with the provision of course the season is also appropriate.

F Frequent : means that even visiting appropriate habitat, it will not be seen or heard invariably, perhaps only in one visit out of three.

O Occasional : means seen or heard only in one visit out of six.

R Rare : means even less likelihood of occurrence

Table. 2 Beta diversity measurements

Habitat	Aq	S	MF
Total number of bird species	6	31	58
Habitat pair	Aq & MF	Aq & S	S & MF
	5	1	22
Jaccard's measure	0.086	0.027	0.328

To conclude it can be said that sanctuary has potential as habitat for avian species. The need is to enlist the data and manage the habitat in consideration with various requirements of fauna. Our understanding of avifaunal diversity is till insufficient to guarantee proper conservation and only continued scientific research can throw light on the improved methods for managing it.

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