

# EXPLORING THE BIRDS OF RAJPORA PULWAMA, JAMMU AND KASHMIR, INDIA.

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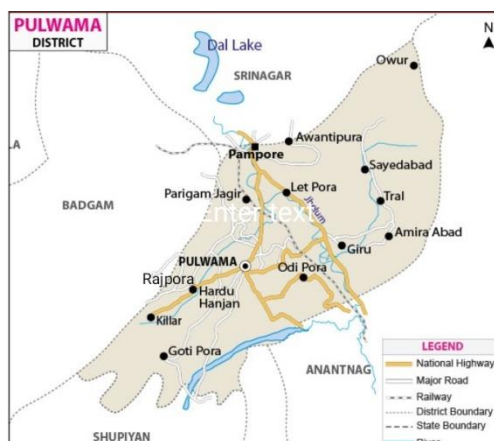
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**Abstract:** The present investigation has been carried out to explore the diversity of birds in Rajpora district Pulwama Jammu and Kashmir from January to April 2019. The data collected and analyzed reveals that a total of 276 birds representing 30 species belonging to 19 families and 07 orders were recorded. Family Muscicapidae had the highest number of species (05). Among the recorded bird species 29 species are least concern, while 01 species belongs to Endangered category as per the IUCN Red list of threatened species. The number of abundant species was found to be 05 namely Common Myna, Himalayan Bulbul, Jungle crow, Rock pigeon and Eurasian jackdaw while as 05 species namely Common sandpiper, Long tailed shrike, Western yellow wagtail, Eurasian hawk sparrow and Black throated thrush had the least count or rarely found. The bird community structure observed at all sites of Rajpora Pulwama was estimated to be 4.09 H' (Shannon diversity) and Evenness 1.20 as per Shannon Weiner Diversity Index.

**Index terms:** Rajpora, Pulwama, Birds, Endangered, Shannon-wiener index, Diversity

## 1.INTRODUCTION

Birds are classified as members of the class Aves, subphylum Vertebrata, of Animalia kingdom. They are generally characterized as being small vertebrates with feathers, scaly legs and no teeth. They possess well developed lungs, a four chambered heart and maintain a constant body temperature of about 38 °C-44 °C. Birds reproduce by laying relatively large and hard shelled eggs. Amongst all other factors, the bird is a very important factor to maintain the nature's balance. Birds are an integral part of the living system of this earth. Their importance is not less in any way than of plants and animals (Reena and Abhijit, 2005). Birds are so important that, almost all birds feed on insects and worms, thus helps in keeping down the number of pests without changing ecological balance. Threat status, breeding, vulnerability and the proportion of the total population of each species that occur at the site, are the factors determining the importance of a site. In this era of rapid industrialization and development, it is imperative to have an updated knowledge of the diversity and status of birds (Yardi, 2011). Ecosystem functioning is determined to a large extent by diversity and the community structure that result from richness and evenness of diversity (Yardi, 2011). Indian subcontinent represents 2094 forms belonging to 1200 species of avifauna (Ali and Ripley, 1983). This abundance and diversity of avifauna clearly indicate the high ecological diversity of the country. A basic problem of field ecology is to determine the abundance Indian subcontinent represents 2094 forms belonging to 1200 species of avifauna (Ali and Ripley, 1983). This abundance and diversity of avifauna clearly indicate the high ecological diversity of the country. A basic problem of field ecology is to determine the abundance Indian subcontinent represents 2094 forms belonging to 1200 species of avifauna (Ali and Ripley, 1983). This abundance and diversity of avifauna clearly indicate the high ecological diversity of the country and distribution of organisms with relation to the environment. The aim of this work is to obtain some observations on the bird diversity in Rajpora at Pulwama district, Jammu and Kashmir.



Source: Googlemaps.com

## II .MATERIALS AND METHODS

### Study Area

The present study on ‘‘Exploring the birds of Rajpora Pulwama Jammu and Kashmir’’ was conducted in the tehsil of Rajpora District Pulwama Jammu and Kashmir. It is located in the Himalayan biogeographical zone and placed in rural part of Kashmir divisions. As per the government records the Tehsil is having 43 villages. Geographically it is located between 33.82° N-latitude and 74.85° E- longitude at the elevation of 5353 feet above the sea level. It is located 7 km towards West from Pulwama district and 40 km from the state capital Srinagar towards South. The study area has diversified habitat in the form of rivers, green fields, apple-orchards, and forests, so area is good visiting/nesting place for aves. For the study and observation three sites namely Argicheck (site A), Rajpora (site B) and Abhama (site C.) were selected on the basis of different complex biodiversity

### Point count method:

A method in which a trained observer records all the birds seen and heard from a point count station for a fixed period of time..

### Equipments:

- Latest Digital Camera
- ‘‘The book of Indian Birds’’ by Salim Ali for identification.

### Data Analysis:

#### Calculation of diversity:

To determine the diversity of species use Shannon-Wiener diversity index with formula:

$$H' = -\sum p_i \ln p_i$$

$H'$  = Shannon diversity index

$p_i = (n_i/N)$  where  $n_i$  = no. of individual  $I$ ,  $N$  = total no. of individuals.

$\ln$  = natural logarithm

The index value of species diversity ranges from 1.5 to 3.5.

A value of <1.5 indicates a low species diversity where as value between 1.5 to 3.5 indicates a moderate density.

#### Calculation of evenness:

For calculating the evenness of species the Pielous evenness index ( $e$ ) was used

$$e = H' / \ln S$$

$H'$  = Shannon Weiner diversity index

$S$  = total no. of species in the sample

#### Calculation of species richness:

Margalefs index was used as a simple measure of species richness

$$\text{Margalefs index} = (S - 1) / \ln N$$

S = total no. of species

N = total no. of individuals in a sample

**III.RESULTS**

Table 1. Status of Avian Fauna found in Rajpora Pulwama, Jammu &amp; Kashmir

S.No	Scientific Name	Common Name	Local Name	Local Status	IUCN Status
<b>Order: Passeriformes</b>					
<b>Family: Muscicapidae</b>					
01	<i>Saxicola Ferreus</i>	Grey Bushchat	Dofa Tiriv	C R	L C
02	<i>Rhyacornis Fuliginosus</i>	Plumbeous Redstart	Kol Tiriv	C R	L C
03	<i>Enicurus Maculatus</i>	Spotted Forktail	Shahkol Lot	N R	L C
04	<i>Chaimarrornis Leucocephalus</i>	White Capped Redstart	Chets Tal	C R	L C
05	<i>Muoponus Caeruleus</i>	Blue Whistling Thrush	Hazaar Dastaan	C R	L C
<b>Family: Corvidae</b>					
06	<i>Corvus Macrorhynchus</i>	Jungle Crow	Wan Kav	C R	L C
07	<i>Coloeus Monedula</i>	Western Jackdaw	Kavin	C R	L C
08	<i>Urocissa Flavirostris</i>	Yellow-Billed Blue Magpie	Lot Raz	C R	L C
<b>Family: Motacillidae</b>					
09	<i>Motacilla Alba</i>	White Wagtail	Doeb Bai	C R	L C
10	<i>Motacilla Flava</i>	Western Yellow Wagtail	Khak Doeb Bai	C R	L C
<b>Family: Sturnidae</b>					
11	<i>Acridotheres Tristis</i>	Common Myna	Her	C R	L C
12	<i>Sturnus Vulgaris</i>	Common Starling	Tsini Hangur	C S	L C
<b>Family: Paridae</b>					
13	Parus Major	Great Tit	Rang Tser	C R	L C
<b>Family: Turdidae</b>					
14	Turdus Ruficollis	Black Throated Thrush		N W	L C
<b>Family: Leiotherichidae</b>					
15	<i>Trochalopteron Lineatum</i>	Streaked Laughing Thrush	Sheen Pipin	C R	L C
<b>Family: Emberizidae</b>					
16	<i>Emberiza Cia</i>	Rock Bunting	Wan Tser	C R	L C
<b>Family: Laniidae</b>					
17	<i>Lanius Schach</i>	Long Tailed Shrike	Her Waatij	C R	L C
<b>Family: Campephagidae</b>					
18	<i>Pericrocotus Ethologus</i>	Long Tailed Minivet		N R	L C
<b>Family: Passeridae</b>					
19	<i>Passer Domesticus</i>	House Sparrow	Kantur Or Tser	C R	L C
<b>Family: Pycnonotidae</b>					
20	<i>Pycnonotus Leucogenys</i>	Himalayan Bulbul	Bilbichur	C R	L C
<b>Order: Piciformes</b>					
<b>Family: Picidae</b>					
21	<i>Picus Squamatus</i>	Scaly Bellied Woodpecker	Koel Makotz	C R	L C
22	<i>Dendrocopos Himalayensis</i>	Himalayan Woodpecker	Hor Koel	C R	L C
<b>Family: Megalaimidae</b>					
23	Psilopogon Virens	Great Barbet		N S	L C
<b>Order: Columbiformes</b>					
<b>Family: Columidae</b>					
24	<i>Streptopelia Orientalis</i>	Oriental Turtle Dove	Wan Kukil	C S	L C
25	<i>Columba Livia</i>	Rock Pigeon	Kotur	C R	L C
<b>Order: Accipitriformes</b>					

<b>Family: Accipitridae</b>					
26	<i>Accipiter Nisus</i>	Eurasian Hawk Sparrow	Tseri Suh	N R	L C
27	<i>Aquila Nipalensis</i>	Steppe Eagle	Ghaant	N P	E N
<b>Order: Pelecaniformes</b>					
<b>Family: Ardeidae</b>					
28	<i>Ardea Cinerea</i>	Grey Heron	Breg	N R	L C
<b>Order: Charadiiformes</b>					
<b>Family: Scolopacidae</b>					
29	<i>Actitis Hypoleucos</i>	Common Sandpiper	Tont Kon	N P	L C
<b>Order: Buccrotiformes</b>					
<b>Family: Upupidae</b>					
30	<i>Upupa Epops</i>	Common Hoopoe	Hudhud	C S	L C

**Local Status Chart:**

R = Resident, C = Common, N = Not Common, S = Summer Visitor, W = Winter Visitor, P = Passage Migrant

**IUCN Status:**

E N = Endangered, L C = Least Concern, V U = Vulnerable, N T = Near Threatened

Table 2: Sitewise bird species and their diversity observed in Rajpora Pulwama ( J&amp;K).

S.No.	Scientific Name	Site A (Argicheck)	Site B (Rajpora)	Site C (Abhama)	Total
1	<i>Acridotheres tristis</i>	12	08	10	30
2	<i>Pycnonotus leucogenys</i>	12	08	06	26
3	<i>Corvus macrorhynchos</i>	08	06	12	26
4	<i>Columba livia</i>	08	03	12	23
5	<i>Coloeus monedula</i>	06	04	10	20
6	<i>Passer domesticus</i>	08	07	06	14
7	<i>Saxicola ferreus</i>	08	04	00	12
8	<i>Myophonus caeruleus</i>	06	02	04	12
9	<i>Sturnus vulgaris</i>	08	00	02	10
10	<i>Streptopelia orientalis</i>	06	02	02	10
11	<i>Urocissa flavirostris</i>	04	00	04	08
12	<i>Upupa epops</i>	02	00	04	06
13	<i>Ardea cinerea</i>	02	04	00	06
14	<i>Dendrocopos himalayensis</i>	04	02	00	06
15	<i>Emberiza cia</i>	02	00	04	06
16	<i>Trochaloxyron lineatum</i>	02	04	00	06
17	<i>Phoenicurus leucocephalus</i>	02	04	00	06
18	<i>Psilopogon Virens</i>	04	00	02	06
19	<i>Motacilla alba</i>	04	02	00	06
20	<i>Parus major</i>	02	00	04	06



21	<i>Aquila nipalensis</i>	02	01	02	05
22	<i>Pericrocotus ethologus</i>	02	00	02	04
23	<i>Rhyacornis fuliginosa</i>	02	02	0	04
24	<i>Picus squamatus</i>	02	00	02	04
25	<i>Enicurus maculatus</i>	02	00	00	02
26	<i>Actitis hypoleucos</i>	01	00	00	01
27	<i>Lanius schach</i>	01	00	00	01
28	<i>Motacilla flava</i>	01	00	00	01
29	<i>Accipiter nisus</i>	01	00	00	01
30	<i>Turdus ruficollis</i>	01	00	00	01
	<b>Total</b>	<b>125</b>	<b>63</b>	<b>88</b>	<b>276</b>



Steppe Eagle



Common Sandpiper



Common Myna

Table 3: Site wise observed index of Avian Community structure in Rajpora Pulwama (J &amp; K)

S.No.	Location	Species No.	Individual No.	H' (Shannon)	E (Evenness)	R (Richness)
01	Site A ( Argicheck)	30	125	3.114	0.915	6.00
02	Site B ( Rajpora)	16	63	2.596	0.936	3.62
03	Site C (Abhama)	17	88	2.409	0.850	3.57

Table 4: Index of Avian Community Structure of Rajpora Pulwama (J &amp; K)

Total No. of Individuals	Total No. of Species	H' (Shannon)	E (Evenness)	R (Richness)
276	30	4.09	1.20	5.16

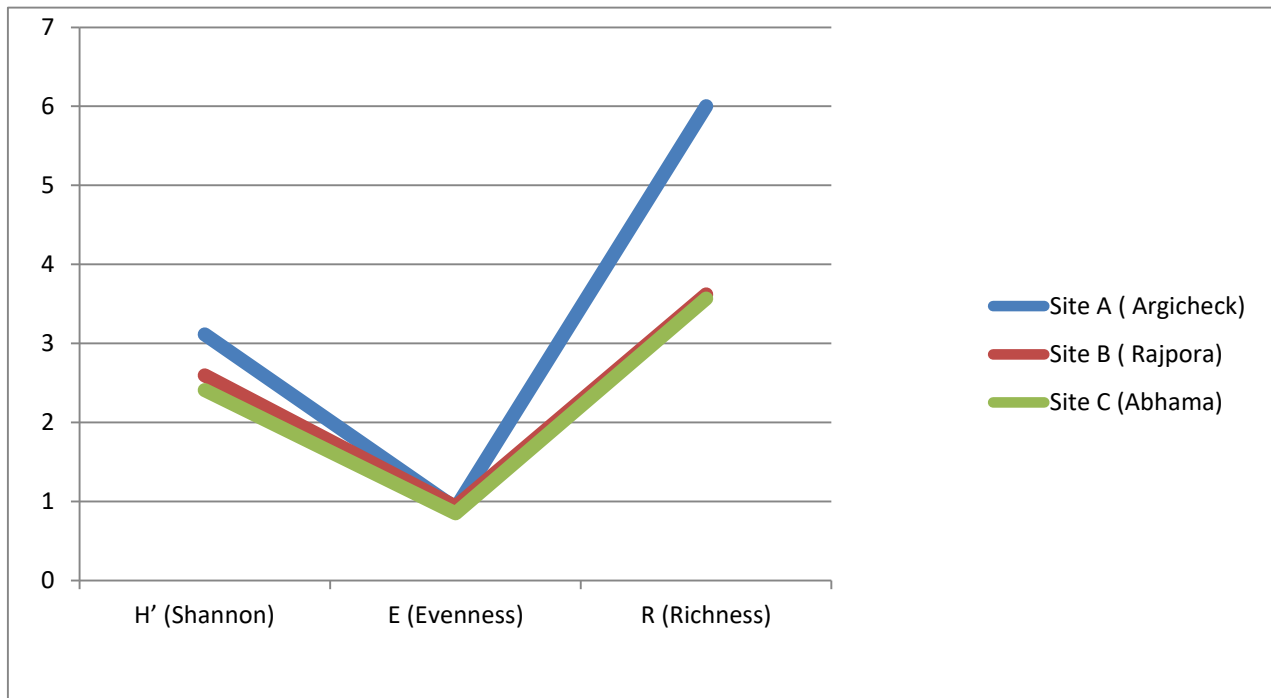


Fig 1. Comparison of bird community structure at different sites of the study area.

Table 5: Index of Avian Fauna with highest and Least count found in Rajpora Pulwama (J & K)

S.No.	Scientific Name	Number of Individuals	Relative Abundance/ Density
<b>Highest Count</b>			
01	<i>Acridotheres tristis</i>	30	10.86
02	<i>Pycnonotus leucogenys</i>	26	9.42
03	<i>Corvus macrorynchos</i>	26	9.42
04	<i>Columba livia</i>	23	8.33
05	<i>Coloeus monedula</i>	20	7.24
<b>Least Count</b>			
06	<i>Actitis hypoleucos</i>	1	0.36
07	<i>Lanius schach</i>	01	0.36
08	<i>Motacilla flava</i>	01	0.36
09	<i>Accipiter nisus</i>	01	0.36
10	<i>Turdus ruficollis</i>	01	0.36

The results reveal that a large number of birds both resident and seasonal migrant was found in the study area. A total of 276 birds representing 30 species belonging to 19 families and 07 orders were recorded. Family Muscicapidae had the highest number of species (05) followed by Corvidae (03). The other families; Motacillidae, Sturnidae, Picidae, Columidae and Accipitridae had( 02) Species each and Paridae, Turdidae, Leiothrichidae, Emberizidae, Laniidae, Campehagidae, Passeridae, Pycnonotidae, Piciformes, Megalaimidae, Ardeidae, Scolopacidae, Bucrotiformes had( 01) species each. The migratory

status of birds reveals that 23 species were residents, 04 species summer visitors, 02 species passage migrants and 01 species winter visitor. Among the recorded bird species 29 species were found to be least concern while as 01 species belongs to endangered category as per IUCN Red list of Threatened species (Table 1). Out of total observed species 05 species were found to be abundant and 05 species were assessed as least or rarely found. The bird diversity as per Shannon Weiner index was calculated to be 4.09. Evenness and Richness was also calculated as 1.20 and 5.16 respectively.

### CONCLUSION AND SUGGESTIONS

From the results, it can be concluded that the study area possesses a diverse group of bird species which may be due to abundant forest cover, apple orchards, agricultural fields and various water bodies flowing in the area providing suitable favorable conditions for better survival of these bird species. Moreover the fluctuation in bird diversity at different sites may be due to different factors such as variation in topography, habitat fragmentation and anthropogenic disturbances. Further the area provides future opportunities for more research to be performed in area in order to explore more avian diversity.

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