



## A Preliminary Survey of Diversity, Distribution and Population Structure of Avian-Fauna in Bhanaj Valley and Adjoining Hill Areas; Rudrapryag District, Uttarakhand, India

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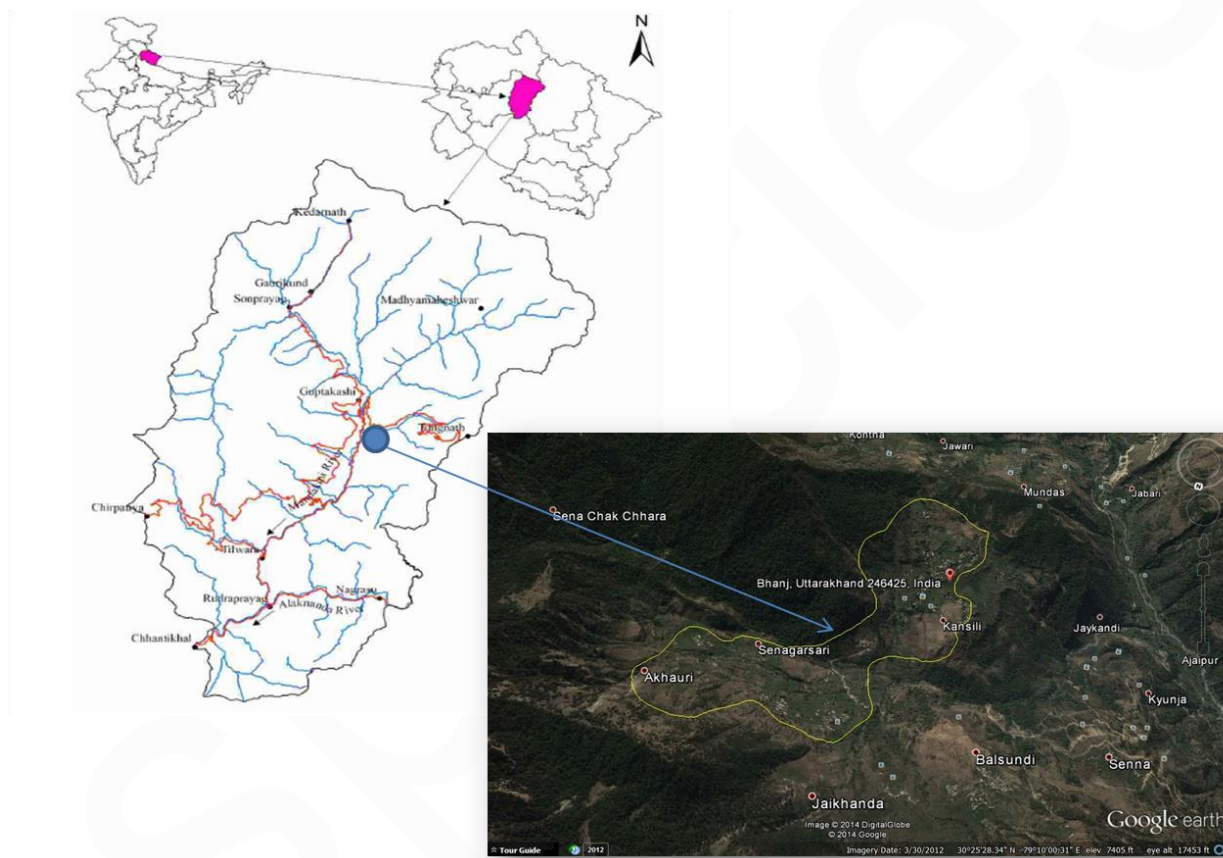
### ABSTRACT

Observations are presented on the birds of the Bhanaj valley (Rudrapryag district) and its neighboring hills (Lat. 30° 25' 14.02" N, Long, 79° 08' 25.14" E). Present study was conducted between June 2013 to June 2014, where natural habitats were found in large number and the total area comes under the rural category. In present study total 82 species were recorded in the area within 10-20 km<sup>2</sup> ranges. The total area comes under hilly region, in which is 90% covered by forest and 10% cultivated land. Near the town House sparrow number was found highest (510) while in forest side Himalayan Bulbul and Rose ringed parakeet were in abundance (300 and 280 respectively). Due to less anthropogenic activities in the studied area, natural habitat is secure, which provide good shelters for birds during the breeding season, which results in species enrichment in this region.

**Keywords:** Avian fauna, Rudrapryag, Uttarakhand, Anthropogenic.

## 1. INTRODUCTION

Bhanaj a hilly village in Rudrapryag district of Uttarakhand which comes under Garhwal Himalaya region is situated at the confluence of the river Mandakini. The total area of the scattered village (fig. 1) is about 10-20 km<sup>2</sup> (Singh *et al.* 2009, Kusumlata and Bisht 1991). Agriculture is the major source for live hood of villagers and major crops are *Eleusine coracana* (Mandua), *Echinochloa frumentaces* (Jhangora), *Lens esculenta* (Masoor), *Glycine* spp.(Kala Bhatt), *Glycine soja* (Bhatt), etc (Sharma *et al.* 2001, Raturi 2012). The vegetation pattern of studied area covers temperate forest, temperate mixed forest, subtropical forest and subtropical mixed forest (Raturi 2012). In 2004 Bisht *et al.* recorded 290 bird species belonging to 51 families and 14 orders. Among them *Passeriformes* order was recorded most crowded. Dixit *et al.* 2016 reported bird diversity of the Amrutganga Valley, Kedarnath, Uttarakhand, where they recorded 244 species including 34 species new for the area and two new species for the state. In 2003 Singh carried out bird survey in Kedarnath Musk Deer Sanctuary, Chamoli district, Uttaranchal: the upper Garhwal Himalaya, where he has recorded 79 avian species. Few of other studies were conducted in Rudrapryag district, such as Sharma and Arora in 2016 breeding season records of Pygmy Wren Babbler *Pnoepyga pusilla* from Uttarakhand. 2016. There is no previous scientific record of avian fauna in this area; it is first scientific record of species in the area. The main objective of this study was to make a scientific record of species found in the Bhanaj valley.



**Figure 1** Study area map along with Rudrapryag district (Source Google Earth)

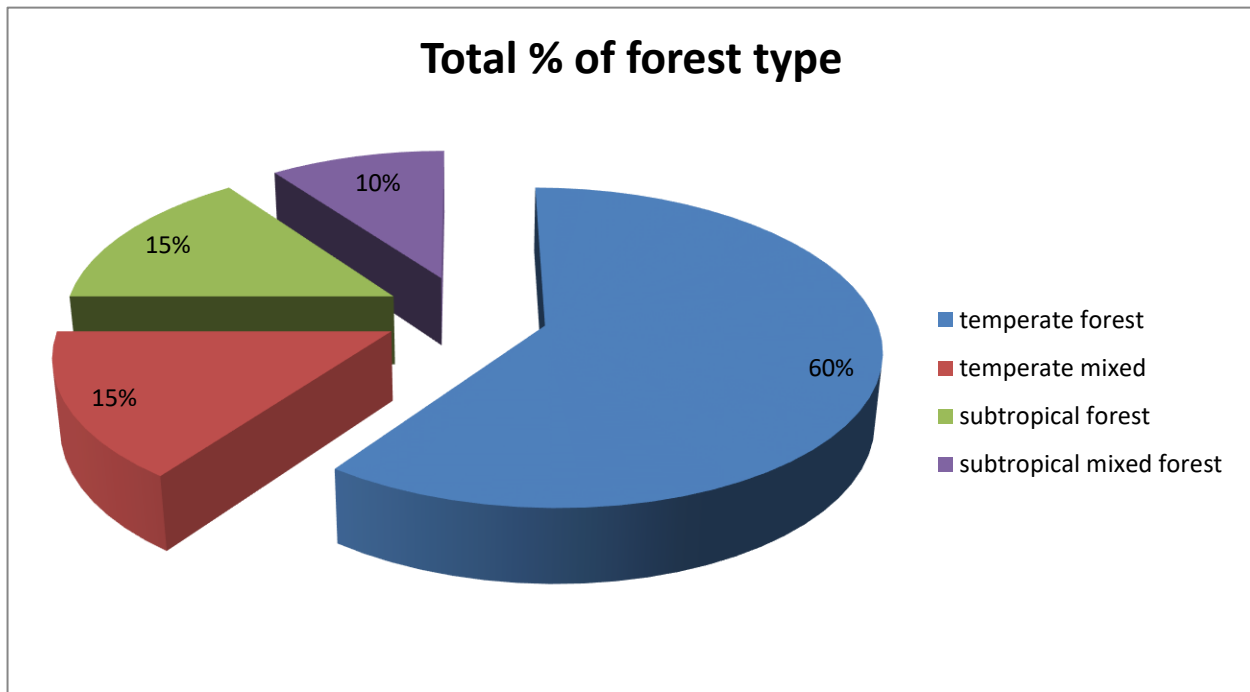
## 2. MATERIALS AND METHODS

### Study area

The area Bhanaj lies between (Latt. 30° 25' 14.02" N. Long, 79° 08' 25.14" E) Western Himalayan mountain range in the north and Shivalic range in the south. It starts from 1,700 m asl (Bhanaj, Machkandi) to 2,150 m asl (Akhori, Guar). The current study was conducted between June 2013 to June 2014 using line transect method.

### Vegetation

The area Bhanaj is 90% covered by forest, 10% of the total area is covered by agriculture land scrub. Forest is covered (Fig.2) by dominant temperate forest (*Quercus leucotrichophora* and *Rhododendron arboretum*), temperate mixed forest (*R. arboretum*, *Q. glauca*, *Q. leucotrichophora*, *Alnus nepalensis*, *Mrica esculenta*, *Cinnamomum tamala*, etc.), subtropical forest (*P. roxburghii*) and subtropical mixed forest (*L. parviflora*, *Cassia glauca*, *O. oojeinensis*, etc.) (Raturi 2012).



**Figure 2** Total forest distribution of study area

### Climate

The annual rainfall distribution of Bhanaj is between 200 - 250cm, mostly in the summer (15 June to September end) and during a winters snowfall (January) covered the hilltop area. Temperature varies with elevation and average temperature of summer and winter is 34 °C and -1 °C respectively.

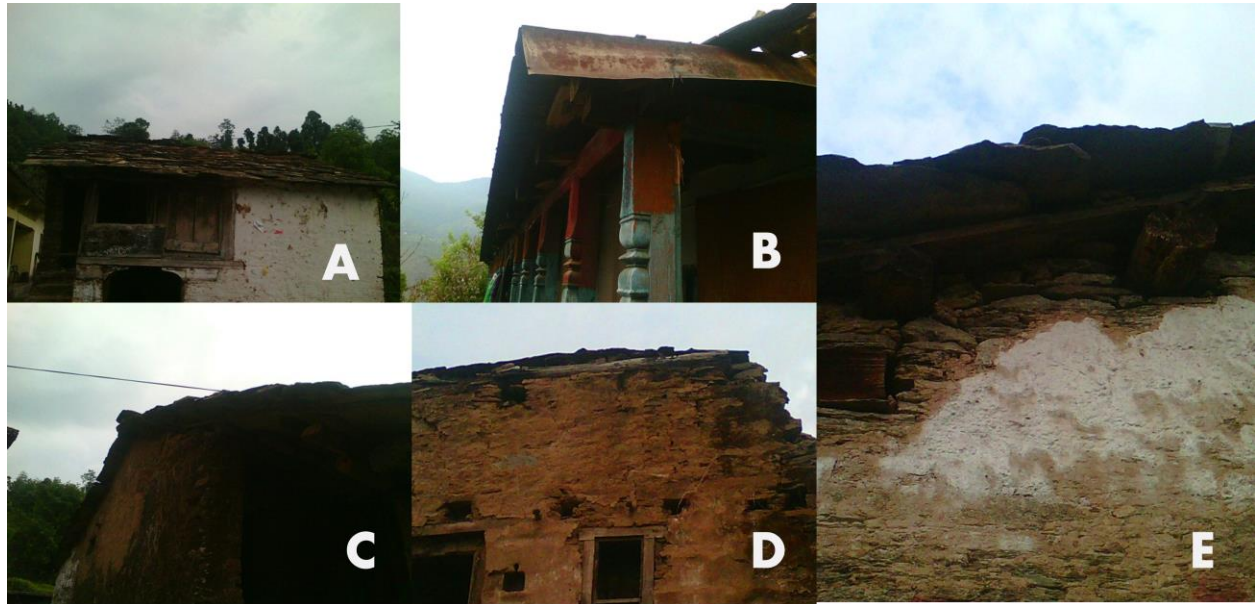
### Bird sampling and species identification

The bird survey was conducted during Jun 2013 to Jun 2014, the sampling was done between 06.00 - 11.00 hrs and 16.00 – 19.00 hrs in summer (April-September) and between 07.00-11.30 hrs and 15.00 – 16.00 hrs in winter (October - March). Sampling was avoided during harsh weather and rainy days. Species identification was made according to the description guide book given by Grimmett and Salim Ali (Grimmett, Salim and 2002).

## 3. RESULTS

The total 82 species were recorded during the study, which are least concern according to IUCN (International Union of Conservation of Natural Species). The study area comes under the rural category, therefore the ample food ability, shelter, high breeding opportunities; less predators and absence of anthropogenic activities (pollution, traffic) make this site haven for the birds. In present study domestic house sparrow was found highest in number (510) near the housing area, because the total study area was rural and there was no food scarcity and shelter problems. It has been seen that housing pattern in the studied area was of old style which was suitable for nest building by the house sparrow (fig 3). In the forest side number of Himalayan Bulbul and Rose ringed parakeet was found highest.

During the study, it has been observed that in the studied area anthropogenic activities was very less and natural habitats were available in large number, which provide good shelter for birds that result in their species enrichment along with large population size. The total area of the study site was about 10-20 km<sup>2</sup>, number of species and individual number of species is evidence of good natural habitat of birds, as well as a rich biodiversity area in the district Rudrapryag. This is primarily and first investigation report of the species status in the study area.



**Figure 3** Different housing pattern in study area

Common Name	Scientific Name	No of species
Ashy Prinia	<i>Prinia socialis</i>	20
Asian Koel	<i>Eudynamys scolopaceus</i>	12
Bar Winged Flycatcher	<i>Hemipus picatus</i>	10
Bar-Winged Flycatcher-Shrike	<i>Hemipus picatus</i>	5
Bay Backed Shrike	<i>Lanius vittatus</i>	90
Black - Rumped Flameback	<i>Dinopium benghalense</i>	9
Black Bulbul	<i>Hypsipetes leucocephalus</i>	26
Black Drongo	<i>Dicrurus macrocercus</i>	80
Black Headed Jay	<i>Garrulus lanceolatus</i>	130
Black Kite	<i>Milvus migrans</i>	45
Black Throated Tit	<i>Aegithalos concinnus</i>	20
Blue Niltava	<i>Niltava macrigrigoriae</i>	2
Blue Whistling Thrush	<i>Myophonus caeruleus</i>	80
Blue-Throated Barbet	<i>Megalaima asiatica</i>	4
Brown Fronted Woodpecker	<i>Dendrocopos auriceps</i>	60
Brown-Headed Barbet	<i>Megalaima zeylanica</i>	30
Common Hawk Cuckoo	<i>Hierococyx varius</i>	2
Common Hoopoe	<i>Upupa epops</i>	20
Common Myna	<i>Acridotheres tristis</i>	110
Common Rose Finch	<i>Carpodacus erythrinus</i>	13
Crimson Sunbird	<i>Aethopyga siparaja</i>	5

Emerald Dove	<i>Chalcophaps indica</i>	12
Eurasian Jay	<i>Garrulus glandarius</i>	17
Eurasian Tree-Creeper	<i>Certhia familiaris</i>	4
Great Tits	<i>Parus major</i>	110
Green Back Tit	<i>Parus monticolus</i>	100
Green Bee Eater	<i>Merops orientalis</i>	14
Grey Francolin	<i>Francolinus pondicerianus</i>	30
Grey Headed Woodpecker	<i>Picus canus</i>	6
Grey Hooded Warbler	<i>Phylloscopus xanthoschistos</i>	12
Grey-Headed Canary-Flycatcher	<i>Culicicapa ceylonensis</i>	30
Grey-Hooded Warbler	<i>Phylloscopus xanthoschistos</i>	130
Grey-Winged Blackbird	<i>Turdus boulboul</i>	4
Himalayan Black-Lored Tit	<i>Parus xanthogenys</i>	150
<b>Himalayan Bulbul</b>	<b><i>Aves Tennantus</i></b>	<b>300</b>
Himalayan Goldenback	<i>Dinopium shorii</i>	6
Himalayan Vulture	<i>Himalayan Vulture</i>	10
<b>House Sparrow</b>	<b><i>Passer domesticus</i></b>	<b>510</b>
Indian Cuckoo	<i>Cuculus micropterus</i>	11
Jungle Babbler	<i>Turdoides striata</i>	160
Jungle Crow	<i>Corvus macrorhynchos</i>	130
Jungle Owlet	<i>Glaucidium radiatum</i>	3
Junglefowl	<i>Gallus gallus</i>	42
Kalij Pheasant	<i>Lophura leucomelanos</i>	40
Lagre Billed Leaf Warbler	<i>Phylloscopus magni-rostris</i>	12
Lemon Rumped Warbler	<i>Phylloscopus cbloronotus</i>	14
Lesser Coucal	<i>Centropus bengalensis</i>	14
Long Tailed-Shrike	<i>Lanius schach</i>	40
Mountain Bulbul	<i>Ixos mcclllandii</i>	20
Oriental Turtle Dove	<i>Streptopelia orientalis</i>	40
Oriental white-eye	<i>Zosterops palpebrosus</i>	80
Pied Bushchat	<i>Saxicola caprata</i>	20
Pink Brown Rosefinch	<i>Carpodacus eos</i>	2
Plumbeous Water Redstart	<i>Rhyacornis fuliginosa</i>	4
Plum-Headed Parakeet	<i>Psittacula cyanocephala</i>	150
Purpul Sunbird	<i>Cinnyris asiaticus</i>	9
Red Billed Blue magpie	<i>Urocissa erythrorhyncha</i>	180
Red Rumped Swallow	<i>Cecropis daurica</i>	20
Red Vented Bulbul	<i>Pycnonotus cafer</i>	220
<b>Rose-Ringed Parakeet</b>	<b><i>Psittacula krameri</i></b>	<b>280</b>
Rufous Bellied Woodpecker	<i>Dendrocopos hyperythrus</i>	2

Rufous Sibia	<i>Heterophasia capistrata</i>	20
Rufous Treepie,	<i>Dendrocitta vagabunda</i>	20
Russet Sparrow	<i>Passer rutilans</i>	20
Scaly Brested Munia	<i>Lonchura punctulata</i>	10
Scarlet Minivet	<i>Pericrocotus flammeus</i>	3
Small Minivet	<i>Pericrocotus cinnamomeus</i>	7
Spangled Drongo	<i>Dicrurus bracteatus</i>	50
Speckled Piculet	<i>Picumnus steindachneri</i>	13
Spotted Dove	<i>Spilopelia chinensis</i>	130
Spotted Owlet	<i>Athene brama</i>	2
Spot-Winged Crested Tit	<i>Parus melanolophus</i>	3
Streaked Laughing-thrush	<i>Trochalopteron lineatum</i>	220
Stripe-Throated Yuhina	<i>Yuhina gularis</i>	12
Verditer Flycatcher	<i>Eumyias thalassinus</i>	20
White Crowned Forktail	<i>Enicurus leschenaultia</i>	2
White-Crested Laughingthrush	<i>Garrulax leucolophus</i>	70
White-Throated Fantail	<i>Rhipidura albicollis</i>	15
Wire-Tailed Swallow	<i>Hirundo smithii</i>	5
Yellow-Bellied Fantail	<i>Chelidorhynch hypoxantha</i>	30
Yellow-Billed Blue Magpie	<i>Urocissa flavirostris</i>	12
Yellow-Breasted Freenfinch	<i>Carduelis spinoides</i>	15

#### 4. DISCUSSION

As an abundance of bird fauna depend on several factors such as habitats surveyed, climate conditions, time and season of survey, nature of particular bird species. Bhanaj valley comes under the natural habitat, where huge of natural resources, high quantity of food available, less human anthropogenic activity which directly supports the number of species in the study area. Himalayan Bulbul is resident species which can be seen throughout the year, whereas Rose ringed parakeet is seasonal visitor. Blue Niltava, Common Hawk Cuckoo, Rufous Bellied Woodpecker, Spotted Owlet, White Crowned Forktail etc. species were recorded in less number.

#### 5. CONCLUSION

Results concluded that in present time species richness shows that there is no anthropogenic activity. Numbers of species can be very with seasonal and altitudinal migration. Food, shelters availability, no predators, more breeding opportunity are main factors for species richness. In future this study will helpful in estimation of species richness.

#### SUMMARY OF RESEARCH

- 1.It is first scientific study conducted in the Bhanaj Valley.
- 2.It has been observed that few of species i.e. Himalayan Bulbul, Rose ringed parakeet were recorded in high number.

#### DISCLOSURE STATEMENT

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**Conflicts of Interest:** The authors declare no conflict of interest.

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