



Socio-Cultural Impact of Avian Diversity in the Himalayan Region: A Comprehensive Study of Bird Species in Huddu Village, Chopta, and Deoriatal

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Received: 02.11.2023; Revised: 11.12.2023; Accepted: 22.12.2023

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Abstract: The study employed a random visualization method to count and describe bird species in the Huddu Village, Chopta, and Deoriatal regions of the Himalayas. The data, collected through global positioning system (GPS) recordings between March and April, revealed 48 bird species across these areas, belonging to 20 different families and varying orders. The observations included 33 bird species in the Huddu region, 10 in Chopta, and 9 in Deoriatal, each displaying different elevations and geographical coordinates. Aside from birds, the fieldwork documented various flora and fauna species. The research detailed the relative abundance, distribution, and feeding habitats of bird species through recorded tables. Notable high-abundance species in Huddu Village included the streaked laughing thrush, common myna, various drongo species, grey treepie, and yellow or red-vented bulbul. Conversely, low-abundance species like alpine chough, Asian koel, scarlet minivet, and fire-breasted flowerpecker were rare, with their occurrences graphically depicted in the results. The identification of bird species utilized diverse methods, including internet resources and field guides. The study contributes valuable insights into the avian biodiversity of the Himalayan regions, emphasizing the importance of random visualization techniques and recording detailed ecological characteristics.

Keywords: Bird biodiversity, Himalayan region, Random visualization method, Avian abundance, Taxonomic groups

Introduction

The Himalayan Mountain is the collision of India- Eurasia Continental, estimated at about 40 million years ago (In the West) has resulted in the creation of largest mountain range in the World (Monlar and Tapponer 1975, Kumar et al 2016). The Himalayan climate varies with the size, location and the elevations of the mountains that give a major influence on the monsoon and the rainfall pattern. The climatic variability resulted in colonization and evolution of diverse flora and fauna in the Himalaya. Trekking is not possible before April and May due to heavy ice fall and after the June to October due to heavy rainfall. Birds are also known as Aves and they constitute a well- defined Group of Vertebrates. Birds are referred to as reptiles, as they were originated from them. And, the link between Aves and Reptiles is known as Archaeopteryx. To study the diversity of avian fauna in certain areas of trans- Himalayas, many ornithologists have done work. Aves show high diversification in Himalayas. The avian diversity of India represented by 1340 species (Chandra *et al* 2016). Indian Himalaya comprising a total of 940 species which belongs to 401 genera from 94 families under 23 orders with their distribution in biotic provinces in the region. It was found that some 361 species are found in the biogeographic region (Chandra *et al* 2018).

Great varieties of flora as well as fauna have been recorded during the field trek. Flora with their common names that is called by the villagers; like Moru, Banj, Shyaru, thelka, uttis etc and some fauna like Agama lizard, common leopard butterfly, painted lady butterfly, common cabbage butterfly



(most abundant), pika etc are seen. In the winters, upper elevation gradient birds migrate towards the lower altitude where they are able to live. In the month of March, low varieties of birds been recorded in the huddu region but in the mid of April new species of birds have been seen in that region, for example- great barbet and blue throated barbet are not seen in the month of march but when there is increase in temperature occurs in the huddu region in the April, their species then have been check listed in the evening spot.

According to the scientists, there are 34 orders, in which 27 orders of living birds have recently become extinct and 7 orders of fossil birds (Wetmore 1960). Aves are divided into two subclasses; Archaeornithes (extinct Jurassic birds of Mesozoic age) and Neornithes (living as well as extinct). Class Neornithes divided into 4 superorders; Odontognathae (extinct), Palaeognathae (flightless terrestrial birds), Sphenisciformes (Flightless aquatic birds), Neognathae (Flight birds). Palaeognathae and Neognathae divided into orders; 7 and 22. (Storer and Usinger, 1957).

Salim Ali, the Bird man of India and many more ornithologists, have done tremendous work on various aspects of the avian diversity across the world (Fleming, 1968; Overtone, 1972; Tekke, 1972; Vernon and Martin, 1975; Parkes, 1975; Pearson, 1975; Norse and McManus, 1980; Woodcock, 1980; Fannes, 1981; Spina, 1982; Ali and Ripley, 1983; Hussain *et al.*, 1984; Brichetti and Massa, 1984; Grinnell, 1990; Sibley and Munroe, 1993; Gill, 1995; Andrews, 1996; Anderson and Baldock, 2001; Azam and Shafique, 2005; Lepage, 2008; Bibi and Ali, 2013 etc).

Great efforts made by the various Ornithologist over a period of time on various domains of birds resulted in the accumulation of huge amount of literature, related to avian diversity on the National and the International level in a chronological manner (Tsewang Motup, 2013).

Materials and Methodology

Materials required: G.P.S (Global Positioning System), Tablet, Camera, Laptop, Binoculars.

Study was conducted during March- April 2021-22. Some common birds can be identified very easily, but this is not necessary that all birds can be identified so easily. By the different techniques they can be identified:-

(i) When an unidentified bird is seen draw a sketch or write their characteristics in the diary, click the picture in the camera. For the identification of a bird, we must prefer a field guide, match the characteristics and if two or three birds are of same characteristics than see their distribution, consult from the internet or the field guide.

(ii) We can also consult to the field assistant for the identification.

(iii) Mainly there are four keys to identify the birds, i.e. size and shape of body & beak, colour pattern of their whole body, Habitat (lives in open areas, near villages, domesticated etc) and by their behaviour.

(iv) There is an another method for the identification, write their characteristics on the Google and find the similar image, at last see their distribution and colour patterns of body.

(v) We have used the field guide for the identification, i.e. Birds of the Indian Subcontinent (Ranjit *et al* 1886).

Study Area: Field works for the study of bird's diversity were primarily conducted along the different elevation gradients in the Western Himalaya. The field study sites are -

(i) Huddu Village (including Durgadhar, Bantauli, Barangali etc.)

Huddu Village (including Durgadhar, Bantauli, Barangali etc.) It is a village, i.e. present in Ukhimath, of Rudraprayag District in Uttarakhand (India). Huddu Village has terrific flora and fauna diversification with the different varieties of bird's families. During the field work, we have found huddu village as the most diversified place among these three regions (kanchula khark, huddu and



deoriatal). Huddu includes many villages around, i.e. Karndhar, saari village etc. This intensive study area with different elevation gradients are given below and on this data bases, this map has been created:

Huddu – 1769m.

N 30 ^o30'24.3"

E 079 ^o09'01.6"

Barangali: 1708m.

N 30 ^o29'58.3"

E 079 ^o08'21.9"

Bantauli: 1921m.

N 30 ^o29'56.0"

E 079 ^o08'45.7"

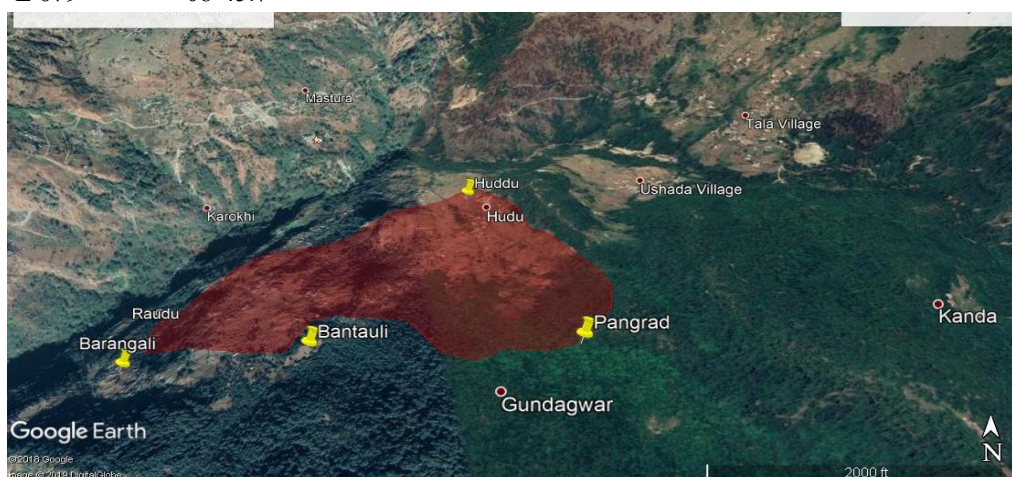


Fig 1: Intensive Study Area (Huddu Village)

(ii) Chopta

This is the beautiful area for trekking. Kedarnath W.L.S. possesses the largest area of the Western Himalaya with the High altitudes. Wildlife sanctuary includes the diverse varieties of Flora (includes different varieties of Rhododendron, pine, oak, Primula, Reinwardita etc.) and fauna includes (Bird's varieties, animals like Marten, Musk Deer, Himalayan Tahr etc).

(iii) Deoriatal

Deoriatal is a lake with a very beautiful scenario. It has 2km trek with a sandy or rocky pathway from the sari village. The trek started from Huddu village to Deoriatal (includes taala, saari in between trek of Deoriatal). From the peak of Deoriatal, peak of snowy Himalayan Mountains are clearly seen. This trek also includes the diverse number of flora and fauna.

Results and discussion

(i) **Avian study in Huddu Village**-We have seen almost 33 species of birds in Huddu Village. Total 20 different families are seen in Huddu village. Family- wise distribution of birds in Huddu Village are listed in Table 1

**Table 1: Avian diversity around Huddu village**

S. NO.	FAMILY	SCIENTIFIC NAME	COMMON NAME
1.	Pycnonotidae	<i>Pycnonotuscafer</i>	Red - vented Bulbul
		<i>Pycnonotusleucogenys</i>	White - cheeked Bulbul
2.	Leiothrichidae	<i>Trochalopteronlineatum</i>	Streaked Laughing Thrush
		<i>Chrysominlastrigula</i>	Bar - throated Minla
		<i>Heterophasiacapistrata</i>	Rufous -Sibia
3.	Sturnidae	<i>Acridotherestrictis</i>	Common Myna
4.	Passeridae	<i>Passer cinnamomeus</i>	Russet Sparrow
5.	Accipitridae	<i>Gyps himalayensis</i>	Himalayan Vulture
6.	Corvidae	<i>Garruluslanceolatus</i>	Black headed Jay
		<i>Dendrocittaformosae</i>	Grey Treepie
		<i>Dendrocittavegabunda</i>	Rufous Treepie
		<i>Pyrrhocoraxgraculus</i>	Alpine Chough
		<i>Urocissaflavirostris</i>	Yellow billed Blue Magpie
7.	Psittaculidae	<i>Psittaculahimalayana</i>	Slaty - headed Parakeet
8.	Dicuridae	<i>Dicrurusleucophaeus</i>	Ashy Drongo
		<i>Dicrurusmacrocerus</i>	Black Drongo
9.	Paridae	<i>Parusmonticolus</i>	Green - backed Tit
10.	Megalamidae	<i>Psilopogonasiaticus</i>	Blue throated Barbet
		<i>Psilopogonvirens</i>	Great Barbet
11.	Columbidae	<i>Streptopeliaorientalis</i>	Oriental turtle Dove
		<i>Spilopeliachinensis</i>	Spotted Dove
12.	Hirudinidae	<i>Cecropisdaurica</i>	Red- Rumped Swallow
13.	Picidae	<i>Dendrocoposhyperythrus</i>	Rufous bellied Woodpecker
		<i>Picuscanus</i>	Grey headed Woodpecker
14.	Dicaeidae	<i>Dicaeumignipectus</i>	Fire- breasted Flowerpecker
15.	Cuculidae	<i>Eudynamysscolopaceus</i>	Asian Koel
16.	Pnoepyidae	<i>Pnoepygaimmaculate</i>	Nepal Wren Babbler
17.	Muscicapidae	<i>Ficedulasuperciliaris</i>	Ultramarine Flycatcher
		<i>Eumyialsthalassinus</i>	Verditer Flycatcher
18.	Upupidae	<i>Upupaepops</i>	Common Hoopoe
19.	Campephagidae	<i>Pericrocotusspeciosus</i>	Scarlet Minivet
20.	Fringillidae	<i>Carpodacuserythrinus</i>	Common Rosefinch
		<i>Pyrrhulaerythrocephala</i>	Red headed Bullfinch

Family wise diversity of birds is presented in Fig 2

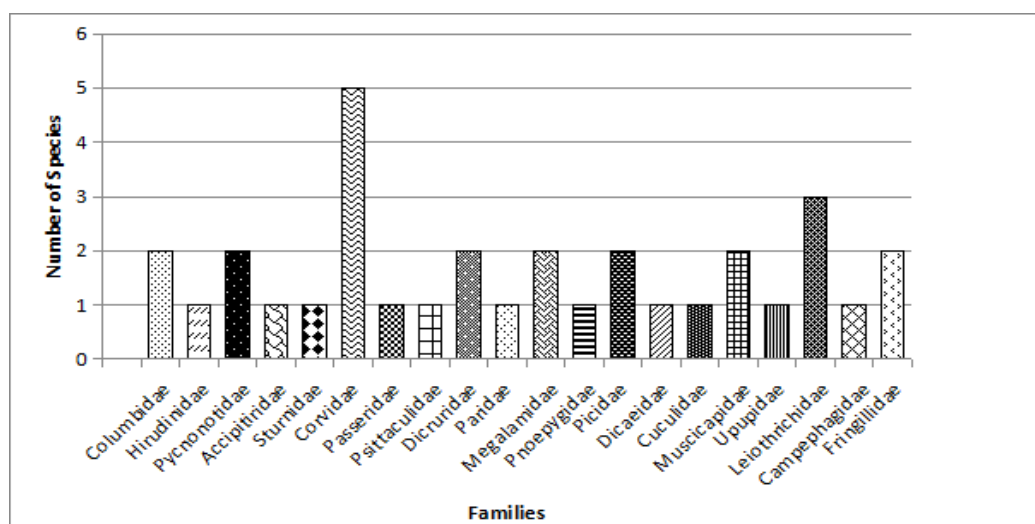


Fig 2: Family- wise distribution of bird species in Huddu Village

The relative abundance of Bird’s species: The relative abundance of bird species was estimated and presented in Fig 3 (i.e. very common, common or rarest sightings of the birds in Huddu). They are estimated on the basis of random maximum sighting of birds, No. of minimum birds sighted or birds that are seen only once or twice.

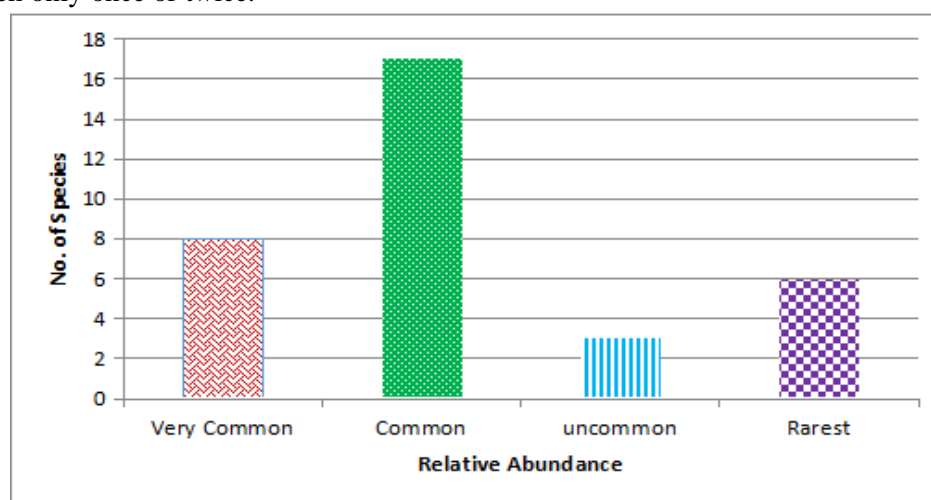


Fig 3 The relative abundance of bird species around Huddu village

(ii) Avian study around Chopta Village

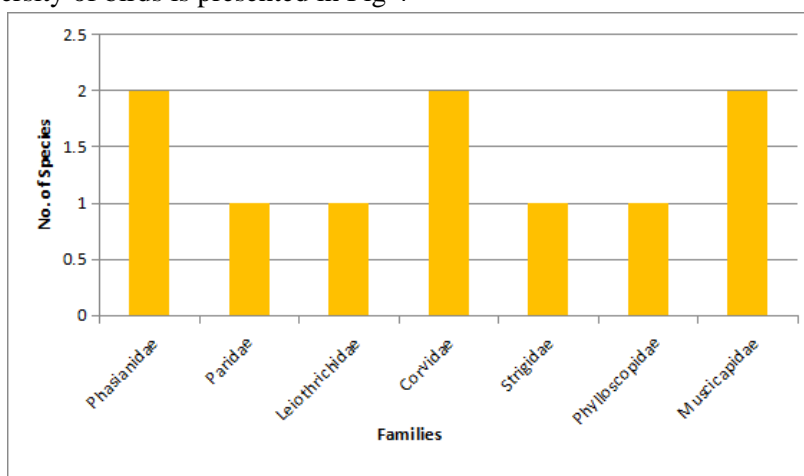
Many birds were spotted around the chopta and the Kanchula khark (including Magpie point, Monal point, Dugalbhitta, Pothibasa etc). These birds are spotted around the altitude of 1590m (reading is taken from the chopta road in G.P.S.) To 2871m (reading is taken from kanchula khark road).

Approximately 10 species of Birds are seen around the Chopta. Birds checklist is as follows that are seen around this area (Table 2):

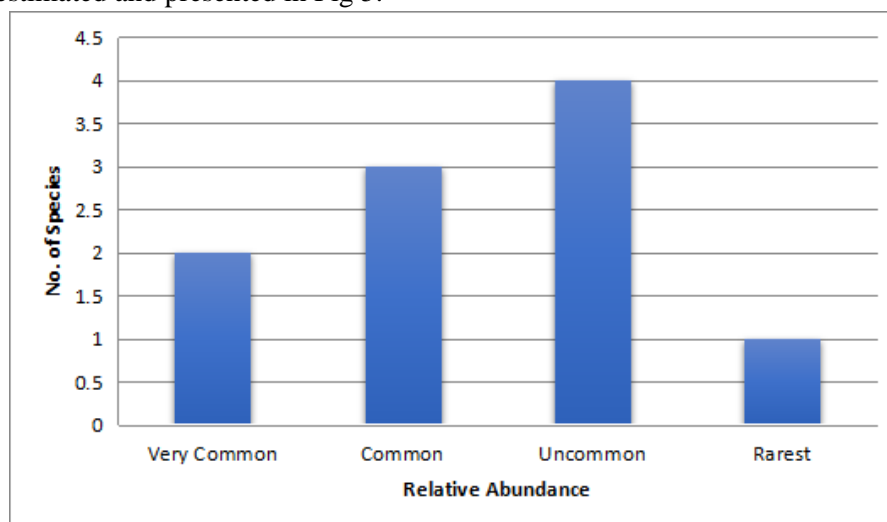
**Table 2: Avian diversity around Chopta village**

<u>S. NO.</u>	<u>FAMILY</u>	<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>
1.	Phasianidae	<i>Lophophorus impejanus</i>	Himalayan Monal
		<i>Lophura leucomelanos</i>	Kalij pheasant
2.	Leiiothrichidae	<i>Trochalopteron variegatum</i>	Variegated Laughing Thrush
3.	Paridae	<i>Periparus melanolophus</i>	Spot- Winged Tit
4.	Corvidae	<i>Corvus culminatus</i>	Jungle Crow
		<i>Uricissa flavirostris</i>	Yellow- billed Blue Magpie
5.	Strigidae	<i>Glaucidium brodiei</i>	Collared Owlet
6.	Phylloscopidae	<i>Phylloscopus maculipennis</i>	Ashy- throated Warbler
7.	Muscicapidae	<i>Phoenicurus leucocephalus</i>	White- capped Redstart
		<i>Phoenicurus frontalis</i>	Blue- fronted Redstart

Family wise diversity of birds is presented in Fig 4

**Fig 4: Family- wise distribution of bird species in Chopta**

The relative abundance of Bird's species: The relative abundance of bird species around Chopta village was estimated and presented in Fig 5.

**Fig 5** The relative abundance of bird species around Chopta village



(iii) Avian study around Deoria Tal:

There are total 9 species of birds seen in Deoriatal of same or different families or orders (Table 3)

Table 3: Avian diversity around Deoria Tal

S. NO.	FAMILY	SCIENTIFIC NAME	COMMON NAME
1.	Leiothrichidae	<i>Trochalopteron lineatum</i>	Streaked Laughing Thrush
		<i>Pterorhinus albobularis</i>	White-throated Laughing Thrush
2.	Muscicapidae	<i>Myophonus caeruleus</i>	Blue-whistling Thrush
		<i>Phoenicurus frontalis</i>	Blue-fronted Redstart
3.	Aegithalidae	<i>Aegithalos concinnus</i>	Black-throated Bushtit
4.	Accipitridae	<i>Gyps himalayensis</i>	Himalayan Vulture
5.	Phylloscopidae	<i>Phylloscopus xanthoschistos</i>	Grey-hooded Warbler
6.	Sittidae	<i>Sitta himalayensis</i>	White-tailed Nuthatch
7.	Motacillidae	<i>Motacilla cinerea</i>	Grey Wagtail

Family wise diversity of birds is presented in Fig 6.

The relative abundance of Bird's species: The relative abundance of bird species around Deoria Tal was estimated and presented in Fig 7.

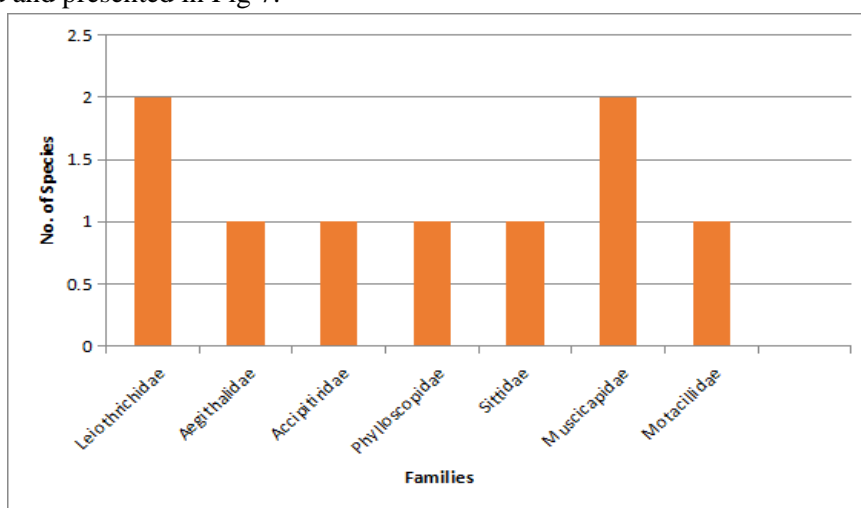


Fig 6: Family-wise distribution of bird species around Deoria Tal

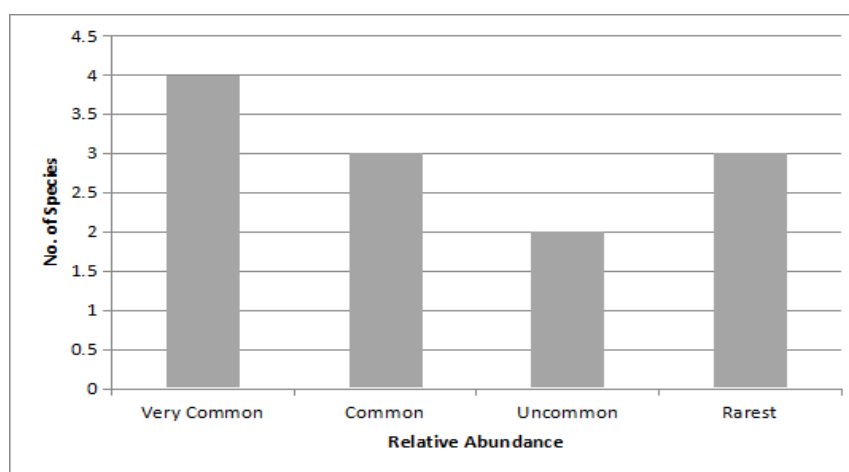


Fig 7: The relative abundance of bird species around Deoria Tal



So, as a result, we have recorded the richest diversity of birds in Huddu Village in the comparison of Deoriatal and Chopta (Kedarnath Musk Deer Wildlife Sanctuary).

Conclusion: Building upon the findings, the high diversity of avian species in Huddu Village reflects the unique ecological conditions spanning from extreme cold to moderate temperatures, corresponding to different elevation gradients. The presence of 33 bird species distributed among 20 different families showcases the rich avifauna in this region. The temperature variations significantly influence the distribution of bird species, with avifauna predominantly found at lower elevations during winters due to favorable conditions. This observation aligns with studies conducted in neighboring regions, such as the Kedarnath area, emphasizing the importance of elevation in avifauna diversity. Moreover, research in the Chenab Valley, Chamoli District, Uttaranchal, provides additional insights into the ornithological landscape, highlighting the broader ecological context of avian life in the Himalayan foothills. The socio-cultural significance of these avian inhabitants becomes apparent as certain bird species, like common myna, streaked laughing thrush, drongos, and bulbul species, are recurrently observed in the daily lives of the local community. These birds contribute to the cultural identity and daily rhythms of the villagers, becoming integral components of their environment. Conversely, the occasional sightings of rare species, such as Scarlet Minivet and Barbet, and the prevalence of Rosefinch species during rainy days, add a layer of mystery and fascination to the socio-cultural narrative. The dependence of bird sightings on specific elevation gradients further intertwines the socio-cultural experiences of the community with the geographical features of their habitat. This dynamic relationship between avian diversity and local culture underscores the need for a holistic approach in conservation efforts, recognizing the interconnectedness of ecological and socio-cultural aspects for the sustainable preservation of the Himalayan biodiversity.

Acknowledgements

I owe a tremendous debt of gratitude to my internal supervisor Dr. Shruti Saxena and External supervisor Dr. V.P. Uniyal. I would like to acknowledge my senior Ritesh kumar Gautam from wildlife Institute of India for the assistance in fieldwork and for clicking the photographs of birds.

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