

An overview study of birds in south Sikkim (India)

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Abstract

Sikkim (27°03' -28°07'N & 88°03' -88°57'E), a small state lies on the foothills of Himalayas, comprising only of 7096 sq km, having a varied climatic condition and vegetation, ranging from cold desert in the north to the lowland forest in south. The study of avian faunal diversity is an essential ecological tool, which acts as an indicator to evaluate different habitats both qualitatively and quantitatively the present day study was carried out to document the avian diversity in South District of Sikkim (Tarey Bhir and Melli Dara). A total of 51 species of birds belonging to 24 families were recorded. In terms of family richness, Corvidae dominates in the field of study areas, comprising 6 species followed by Muscicapidae with 5 species, Pycnonotidae and Turdidae with 4 species each. The present day study adds some valuable information on bird diversity in the study area.

Keywords: birds, conservation, corvida, diversity and Sikkim

Introduction

Birds are a group of warm-blooded vertebrates constituting the class Aves, characterized by feathers, toothless beaked jaws, the laying of hard-shelled eggs, a high metabolic rate, a four-chambered heart, and a strong yet lightweight skeleton. Birds live worldwide and range in size from 5 cm to 2.75 m i.e. Humming bird and Ostrich respectively. Birds and their diversity provide strong bio-indication signals (Vielliard 2000; Bhatt and Joshi 2011; Urfi 2011; Bregman *et al.* 2014) [54, 10, 53, 15] and stand as surrogates for the health of ecosystem and status of biodiversity overall (Chettri 2010; Pakkala *et al.* 2014; Pierson *et al.* 2015) [17, 41, 43]. Compared to other wildlife species, the conservation status, distribution, and population trends of Indian birds are particularly well known (Mohd. Shahnawaz Khan, Anjana Pant, 2017) [30].

Sikkim (27° 05' - 28° 09' North and 87° 59' - 88° 56' East) is one of the smallest and the least populous states in India. It covers an area of 7,096 sq. km, extending approximately 114 km from North to South and 64 km from East to West. The state of Sikkim with its unique position in the mighty Himalayas and status as a hotspot of the variety of life is like a beautiful diverse of flora and fauna (Lachungpa *et al.*, 2007) [36].

Sikkim has a rich diversity of birds, shows a total of 574 species belonging to 253 genera and 55 families under 16 avian orders (Acharya and Vijayan, 2011) [3, 4]. Along the elevation gradient, species richness follows uni-model pattern with maximum species at mid-elevation zone. Sikkim has always been difficult for wildlife research because of physical features (Acharya and Vijayan, 2010, 2011) [3, 4]. The state of Sikkim has been placed within the Eastern Himalaya Endemic Bird Area (Bird life International, 2001; Islam & Rahmani, 2004) [13, 27] which harbours 22 restricted range bird species, of which 19 are endemic to the Eastern Himalayas (Jathar & Rahmani, 2006; Stattersfield *et al.*, 1998) [28, 51].

The south district of Sikkim lies at an altitude of 400 mtr to

2000 mtr with terraced slopes interrupted by spring patched forest. The district also comprises two sanctuaries (Kitam Bird Sanctuary and Maenam Wildlife Sanctuary).

Materials and methods

Study Areas

For the study, the two different areas were selected, that are Melli Dara and Tarey Bhir.

Melli Dara

Melli Dara falls on the southern part of Sikkim. It is located on the foothills of Tarey Bhir. The areas receive rainfall i.e. 3137 mm. which is 123.5 inch per year compared to other region of the ranges in between 23.6° C/74.4° F. The area has a diversity of its own. It has huge agricultural practices and diverse kinds of crops and vegetables, etc. are grown.

It is home to varieties of species of animals, birds, etc. The animals keep wandering in and around the necessary regions in search of food and crops grown in the field. There are enough forest areas to hold varieties of bird species and different wild animals. The area has been a habitat to few animals such as Monkeys, Peafowls, wild pig. These animals are found foraging in the fields.

Tarey Bhir

Tarey Bhir lying at topmost part of Melli Dara, Paiyong, the majestic hilly terrain has its own beautiful charm. It has lots of Pine tree around the region due to which the hill top is always covered with mist. Due to arid region of Tarey Bhir has unique diversity of plants and animals. The whole terrain comprises a diverse number of plants, birds, butterflies, insects, etc. The two study areas differ slightly in elevation and vegetation which provides different habitats for birds. The vegetation and climatic composition could impact the quantity and quality of habitat for birds in terms of food, water, breeding ground etc. which can further affect diversity, abundance and distribution of birds (Aggrawal A, Tiwari G, Harsh, S. A. 1998; Abdar, M. R. 2013).

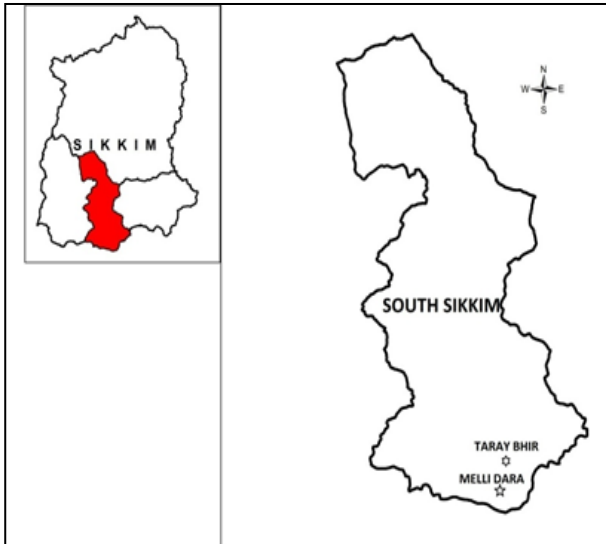


Fig 1: Map of study area (Taray Bhir and Melli Dara, South Sikkim).

Comprehensive avian surveys were conducted in the study area for one year from April 2019 to March 2020 by employing the following standard methods i.e. Point count method.

Point count method

In this method, the observer will stand in a haphazardly chosen point and record bird species seen and heard in a 50 m radius for 5 minutes. This observation is repeated in another point at least 300 m off from the first point. In addition to this, opportunistic bird sightings were made, while travelling within the study region (Emlen *et al.*, 1974; Hill *et al.*, 2015; Sutherland *et al.*, 2006; Nautiyal *et al.*, 2015). Survey and observations were made twice a day when avifauna was usually most active (05:00 am to 10 am and 03:00 pm to 06:00 pm). Birds were observed with the help of an Olympus Binocular (8X42) and photographs taken using a Nikon D5300 and D3400. Sometimes, birds were identified by listening to their calls. Identification of birds were done by using standard field guides (Ali *et al.*, 1983, Manakadan, *et al.*, 2001, Arlott *et al.*, 2014, Grimmett *et al.*, 2011) [24].

Results and Discussion

A total of 51 birds belonging to 24 families were recorded from the study areas. The most dominating family is Corvidae with 6 species followed by Muscicapidae with 5 species followed by Pycnonotidae and Terdididae with 4 species each and so on. The above findings reveal that the areas taken for study are highly diverse. The detailed checklist of the avifauna of study area is given below in table 1.

Table 1: Checklist of Avian fauna with their distribution (Status: IUCN-3.1 Least Concern).

Sl. No	Scientific Name	Common name	Family	Order	Distribution
1	<i>Accipiter virgatus</i>	Besra	Accipitridae	Passerine	The Besra species are distributed in India, Pakistan, Nepal, Central and South China, Southeast Asia, Indonesia and Philippines
2	<i>Acridotheres tristis</i>	Common Myna	Sturnidae	Passerine	Widespread resident; unrecorded in parts of North West and North East subcontinent
3	<i>Aethopyga nipalensis</i>	Green-tailed Sunbird	Nectariniidae	Passeriformes	Himalayas and North East India
4	<i>Aethopyga siparaja</i>	Crimson Sunbird	Nectariniidae	Passeriformes	Himalayas, hills of North East and Eastern India and Bangladesh; also North and North Eastern plains in winter
5	<i>Anthus hodgsoni</i>	Olive Backed Pipit	Motacillidae	Passeriformes	Breeds in Himalayas; widespread in winter, except North West and South East.
6	<i>Chrysocolaptes lucidus</i>	Greater goldenback	Picidae	Piciformes	Himalayas, hills of India and Bangladesh
7	<i>Cissa chinensis</i>	Common Green Magpie	Corvidae	Passeriformes	Himalayas, North East India and Bangladesh
8	<i>Columba livia</i>	Rock Pigeon	Columbidae	Columbiformes	Widespread resident; unrecorded in parts of NW and NE subcontinent
9	<i>Copsychus saularis</i>	Oriental Magpie Robin	Muscicapidae	Passeriformes	Widespread resident; unrecorded in most of the northwest
10	<i>Corvus corax</i>	Common Raven/ Northern Raven	Corvidae	Passerine	High himalayas
11	<i>Corvus culminatus</i>	Indian Jungle Crow	Corvidae	Passerine	Base of Himalayas to Sri Lanka, absent from North West
12	<i>Corvus macrorhynchos</i>	Large Billed Crow	Corvidae	Passerine	Mountains of North Baluchistan and Himalayas from North Pakistan East to Arunachal
13	<i>Corvus splendens</i>	House Crow	Corvidae	Passerine	Widespread resident
14	<i>Delichon nipalense</i>	Nepal House Martin	Hirundinidae	Passerine	Himalayas
15	<i>Dendrocitta formosae</i>	Grey Treepie	Corvidae	Passeriformes	Himalayas, North East India, Eastern Ghats and Bangladesh
16	<i>Dicrurus hottentottus</i>	Spangled Drongo/ Hair-crested Drongo	Dicruridae	Passeriformes	Himalayan foothills, North East India, Bangladesh and Eastern and Western Ghats
17	<i>Dicrurus leucophaeus</i>	Ashy Drongo	Dicruridae	Passeriformes	Breeds in Himalayas and North East Indian hills; winters in plains in peninsula and Sri Lanka
18	<i>Dicrurus macrocerus</i>	Black Drongo	Dicruridae	Passerine	Widespread resident
19	<i>Eudynamis scolopaceus</i>	Asian Koel	Cuculidae	Passerine	Widespread
20	<i>Garrulax striatus</i>	Striated Laughing Thrush	Turdidae	Passeriformes	Himalayas and North East India
21	<i>Halcyon smyrnensis</i>	White throated kingfisher	Alcedinidae	Coraciiformes	Widespread resident
22	<i>Hemipus picatus</i>	Bar Winged Flycatcher Shrike	Vangidae	Passerine	Himalayas, hills of India, Bangladesh and Sri Lanka
23	<i>Hypsipetes leucocephalus</i>	Black Bulbul	Pycnonotidae	Passeriformes	Himalayas and North East India

24	<i>Lanius schach</i>	Long Tailed Shrike	Laniidae	Passeriformes	Widespread resident
25	<i>Lanius tephronotus</i>	Grey Backed Shrike	Laniidae	Passerine	Breeds in Himalayas; winters in Himalayas and on adjacent plains in North and North East India and in Bangladesh
26	<i>Malacias capistratus</i>	Rufous Sibia	Leiothrichidae	Passerine	Himalayas
27	<i>Megalaima asiatica</i>	Blue Throated Barbet	Ramphastidae	Piciformes	Himalayas, North East India and Bangladesh
28	<i>Megalaima virens</i>	Great Barbet	Ramphastidae	Piciformes	Himalayas, North East India and Bangladesh
29	<i>Monticola cinclorhynchus</i>	Blue-capped Rock Thrush	Turdidae	Passeriformes	Summer visitor to Himalayas; winters mainly in Western Ghats
30	<i>Myophonus caeruleus</i>	Blue Whistling Thrush	Turdidae	Passeriformes	North Baluchistan, Himalayas and North East India
31	<i>Niltava sundara</i>	Rufous-bellied Niltava	Muscicapidae	Passeriformes	Himalayas and North East India
32	<i>Orthotomus sutorius</i>	Common Tailor Bird	Cisticolidae	Passerine	Widespread resident. Only tailorbird throughout most of range
33	<i>Parus monticolus</i>	Green-backed tit	Paridae	Passeriformes	Himalayas and North East Indian hills
34	<i>Passer domesticus</i>	House Sparrow	Passeridae	Passerine	Widespread resident, except in parts of North East and North West subcontinent
35	<i>Passer rutilans</i>	Russet Sparrow	Passeridae	Passeriformes	Himalayas and North East Indian hills
36	<i>Pavo cristatus</i>	Indian Peafowl	Phasianidae	Galliformes	India, South East Pakistan, Nepal, Bangladesh and Bhutan
37	<i>Pericrocotus (flammeus) speciosus</i>	Scarlet Minivet	Campephagidae	Passeriformes	Himalayas, hills of Central and Eastern India, Eastern Ghats of North Andhra, Andamans and Bangladesh
38	<i>Phoenicurus frontalis</i>	Blue-fronted Redstart	Muscicapidae	Passeriformes	Breeds in Himalayas; winters in Himalayan foothills, North East India and Bangladesh
39	<i>Phylloscopus xanthoschistos</i>	Grey Hooded Warbler	Muscicapidae	Passerine	Himalayas and North East Indian hills
40	<i>Picus canus</i>	Grey headed woodpecker	Picidae	Passeriformes	Himalayas, North East and East India, and Bangladesh
41	<i>Picus flavinucha</i>	Greater Yellownappe	Picidae	Piciformes	Himalayas, North East and East India and Bangladesh
42	<i>Pycnonotus cafer</i>	Red Vented Bulbul	Pycnonotidae	Passeriformes	Widespread resident
43	<i>Pycnonotus leucogenys</i>	Himalayan Bulbul	Pycnonotidae	Passeriformes	North Pakistan hills and Himalayas
44	<i>Pycnonotus(melanicterus) flaviventris</i>	Black Crested Bulbul	Pycnonotidae	Passerine	Himalayas, North East India and Bangladesh
45	<i>Rhopodytes tristis</i>	Green Billed Malkoha	Cuculidae	Cuculiformes	Himalayas, North East and East India and Bangladesh
46	<i>Saxicola ferreus</i>	Grey Bushchat	Muscicapidae	Passeriformes	Breeds in Himalayas and North East Indian hills, winters south to North Indian plains.
47	<i>Stigmatopelia chinensis</i>	Spotted Dove	Columbidae	Columbiformes	Widespread resident; unrecorded in most of northwest and North Himalayas.
48	<i>Streptopelia orientalis</i>	Oriental Turtle Dove	Columbidae	Columbiformes	Himalayas, North East India and Bangladesh south to Central peninsular India and Sri Lanka.
49	<i>Tephrodornis virgatus</i>	Large Wood Shrike	Vangidae	Passerine	
50	<i>Turdus boulboul</i>	Grey Winged Blackbird	Turdidae	Passeriformes	Resident in Himalayas and winters South to North East India
51	<i>Zosterops palpebrosus</i>	Oriental White Eye	Zosteropidae	Passeriformes	Widespread resident; unrecorded in parts of the northwest.

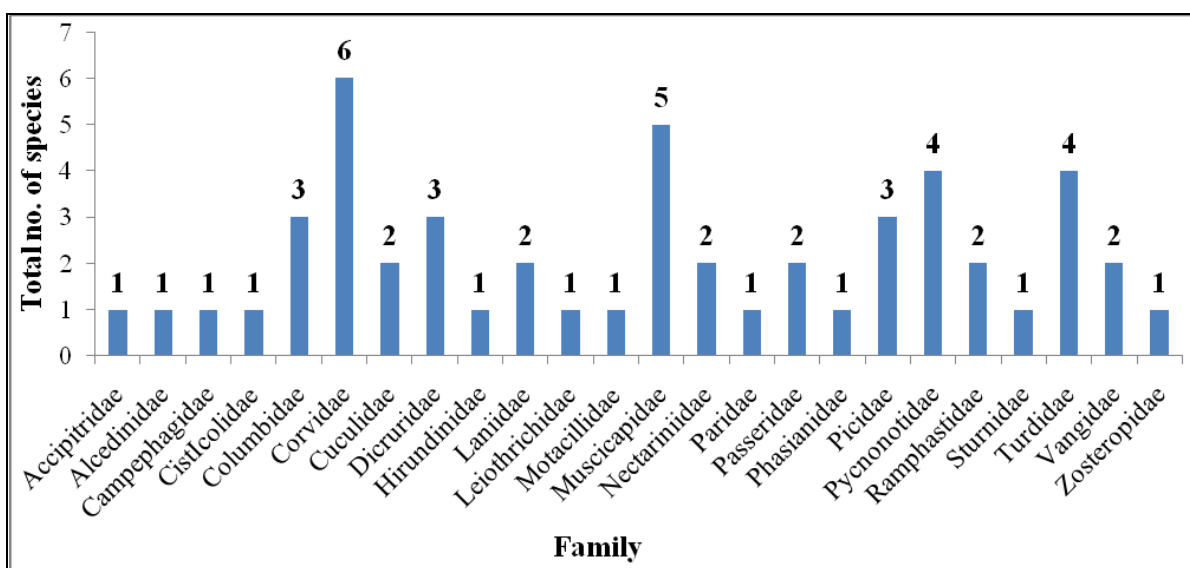


Fig 2: Number of Species in various Families

The most commonly observed species during survey are *Copsychus saularis*, *Megalaima virens*, *Zosterops palpebrosus*, *Lanius schach*, *Acridotheres tristis* and

bulbuls. The least abundant species includes *Hemipus picatus*, *Aethopyga siparaja*, *Aethopyga nipalensis* (Table-2 & Fig.-2).

Conclusion

Total of 51 species of birds were observed from the study area and the study also revealed that, the diversity of birds in Tarey Bhir is slightly low as compared to Melli Dara, because the vegetation of Tarey Bhir is slightly arid due to high wind flow over the area. Another reason might be the scarcity of food and foraging area which plays a vital role in the diversity of avian fauna. This finding provides small information about how diverse these areas are. Out of 78 threatened birds of Indian Sub-continent, 17 (1 Endangered,

3 Critically Endangered and 13 Vulnerable) occur in Sikkim (IUCN 2009). Similarly, 10 Near Threatened species of birds are also reported from Sikkim (Acharya and Vijayan 2010, 2011) ^[3, 4]. But no threatened bird species were recorded during the span of one year from the study area. The present work provides small information for future studies in this area and also this study will help to make decisions for conservation and management of avian fauna in this region.

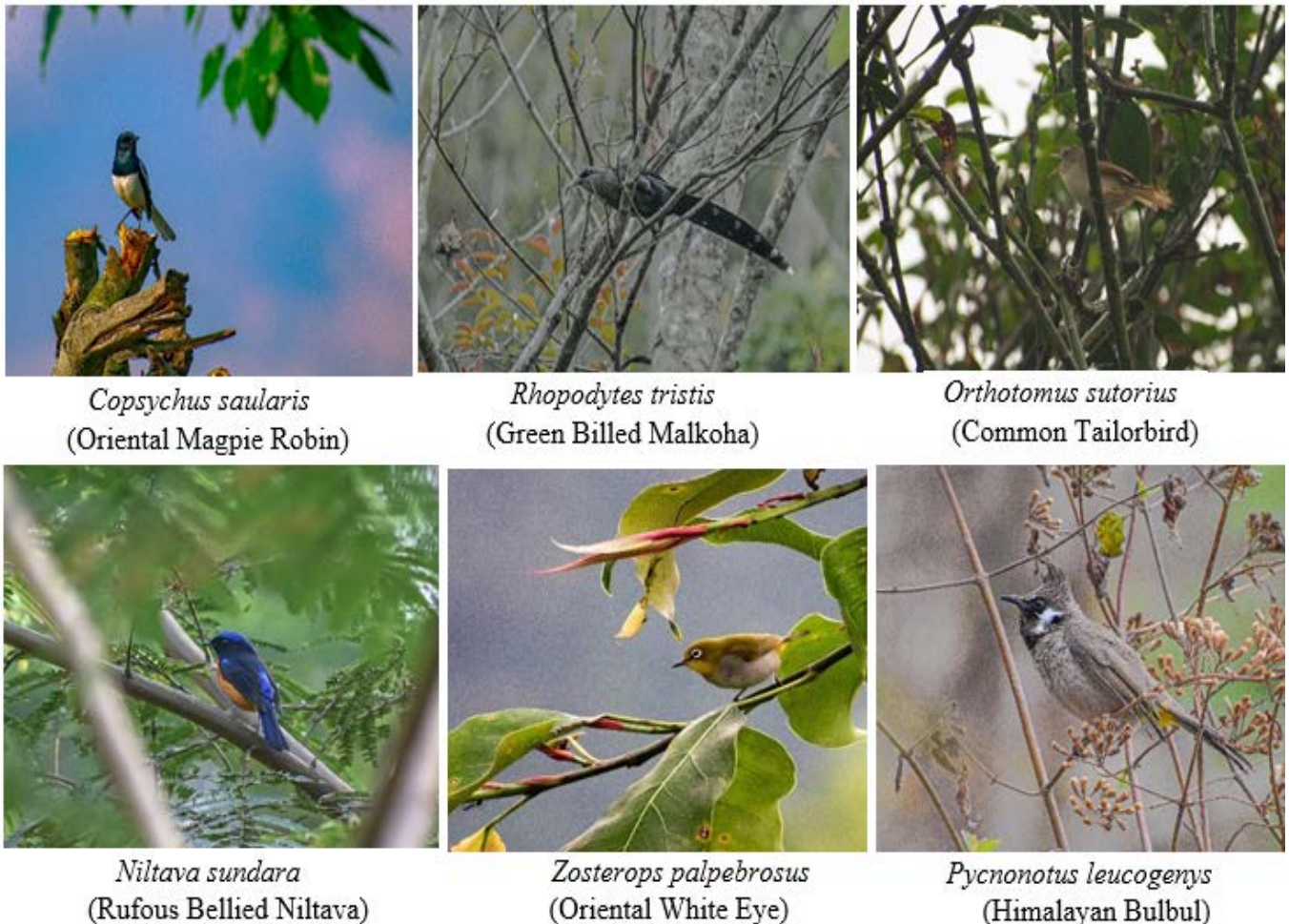


Fig 3: Photographs of some bird species from study area

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