Preliminary Checklist of Birds in Algarah-Pedong Region, Kalimpong District, West Bengal, India

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***Abstract*—Birds fulfill vital ecological roles, including pest control, pollination, seed dispersal, and nutrient cycling, while also serving as key indicators of ecosystem health. Given the growing global emphasis on biodiversity conservation and landscape-level ecosystem restoration, comprehensive inventories are critical for effective management planning to maintain ecological stability and functionality. This study establishes a baseline database of avifaunal diversity across the region spanning from Algarah to Pedong and adjacent areas in the Kalimpong-I Block of Kalimpong District of West Bengal, India. A total of 72 bird species from 6 orders and 28 families were documented in the study area. Muscicapidae exhibited the highest familial richness with 23 species, followed by Leiothrichidae (9 species). The order Passeriformes was the most dominant, representing 63 species. Two species the Mountain Hawk-Eagle (Near Threatened) and the Great Hornbill (Vulnerable) were recorded, as per the IUCN Red List. Additionally, the Pied Shrike-Babbler, a Java-endemic species, was also documented during the field survey. This study contributes valuable insights into the avian diversity of the region, enhancing the existing knowledge base.**

***Index Terms*—Avian fauna, Relative diversity index, Residential Status, habitats, species abundance.**

I. INTRODUCTION

The biodiversity of a region reflects the availability, distribution, and utilization of natural resources by both living organisms and their abiotic environment. The presence and arrangement of biological resources in an area fundamentally determine its biodiversity (Kumar and Sahu, 2020). In an increasingly urbanized world with a rapidly growing human population, conserving biodiversity has become a critical challenge. Global environmental conventions have recognized urban biodiversity conservation as one of the most effective strategies for preserving ecosystems (Khera et al, 2009). The diversity and richness of native avian species depend on the level of urbanization and the extent of green spaces within a city. Meanwhile, non-native species can adapt to urban and suburban environments, particularly when habitats are heavily altered (Panda et al, 2021). The geographical context and the overall availability of surrounding adequate natural habitat may also influence how important urban green spaces are for bird conservation (Hedblom and Söderstorm, 2010). In order to maintain the species diversity of plants and animals, avifaunal diversity is essential. Birds are an essential part of biodiversity and are extremely important from an ecological, aesthetic, and economic standpoint (Uma et al, 2025). Birds are employed as bioindicator species for several reasons: their ecology is well understood, and the relationship between bird communities and habitat has been clearly established. Additionally, they span multiple trophic levels within ecological pyramids, and their data can be collected with relative ease, making them ideal for bioindicator use (Zhang and Ma, 2011). Regrettably, human activities and the escalating impacts of climate change are the primary drivers behind the global decline in avian diversity (Routh and Sharma, 2025). Over the past few decades, the rise in artificial light at night has reached levels that pollute the environment, posing a serious risk to biodiversity (Morelli et al, 2021). The documented effects of artificial light at night (ALAN) on bird species include disruptions to natural daily, seasonal, and lunar light-dark cycles. These changes impair navigation abilities reliant on celestial cues, alter circadian rhythms, and induce behavioral shifts, as well as interfere with migration patterns in numerous species (Adams et al, 2019; Dominoni,

2015). Scientists widely agree that despite the varied effects of urbanization on biodiversity, the consequences are mostly adverse (Aronson et al, 2014; Escobar-Ibáñez et al., 2020). Biodiversity assessment and conservation, including landscape-scale ecosystem restoration, have recently become global priorities. These efforts are essential for effective management strategies that maintain ecosystem stability and ecological integrity (Mahanta et al, 2022). The relentless destruction of natural habitats is driving species toward extinction at an alarming rate. If current trends continue, the Himalayas could lose 90% of their forests by 2100, devastating countless ecosystems (Bhutia et al. 2020). With over 11,000 recognized species, birds thrive in virtually every terrestrial ecosystem on Earth (Bird Life International 2025). India's avian diversity comprises 1,358 species, classified into 489 genera, 113 families, and 26 orders (Maitreyi, 2024; Praveen et al. 2021).

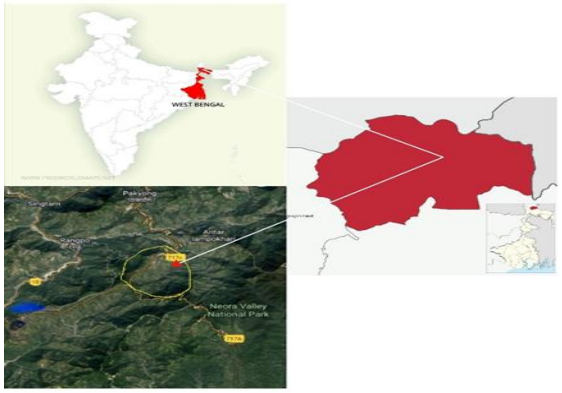


Figure.1 Map illustrating the study area's location within the Algarah-Pedong region of Kalimpong, West Bengal.

The Kalimpong district is in the eastern Himalayas, spanning longitudinal coordinates 88°22'49"E to 88°52'35"E and latitudinal coordinates 26°52'27"N to 27°11'37"N. The region exhibits significant topographical variation, with elevations ranging from 64 to 3,187 meters and slope gradients varying between 0° and 78.10° (Ghosh and Lepcha, 2024). The Eastern Himalayan Region (EHR), covering the Darjeeling-Kalimpong hills of West Bengal, India, forms a critical biodiversity hotspot that harbors many of India's rarest bird species (Sharma et al, 2025). The Indian Himalayas are universally acknowledged for their high ecological value and rich biodiversity (Bhattacharya and Sathyakumar 2007). Being an integral part of the Kangchenjunga Biosphere Reserve in Himalayas, Neora Valley National Park (NVNP) is adjacent areas of Kalimpong Forest Division are ecologically important area and already been enlisted in the short-listed world heritage site due to its rich Himalayan Biodiversity (Dey et al, 2017). Neora Valley National Park (NVNP) serves as a crucial ecological corridor in the Eastern Himalayas. Its interconnected habitats enable wildlife movement across northern Bengal's protected areas, highlighting its essential role in regional biodiversity conservation (Chettri et al, 2007; Wangchuk, 2007). Although small in area (1,053.60 km²), Kalimpong's extensive forest ecosystems provide habitat for about 550 bird species, making it an important biodiversity hotspot (Kalimpong.gov.in).

II. MATERIALS AND METHODS

Study area:

Kalimpong is situated in the Eastern Himalayan ranges, comprising Kalimpong town and three community development blocks: Kalimpong I, Kalimpong II, and Garubathan. The region is bordered by the Sikkim Himalaya to the north, the Bhutan Himalaya to the east, and the Nepal Himalaya to the west (Saha, 2024). The fieldwork was conducted across three villages - Shantuk Khasmal, Sakiyong Khasmal, and Pedong Khasmal - within the Kalimpong-II Community Development Block. The study area covered approximately 56 km, encompassing highways, village roads, the towns of Algarah and Pedong, and forested terrain, with elevations ranging from 1,800 to 1,200 meters above sea level (Fig, 1). These areas have grown increasingly popular among both local and visiting birdwatchers due to their rich ecosystems and remarkable faunal diversity. The study region supports diverse vegetation types, including pristine forest areas that offer ideal habitats for numerous wild bird species. Changes in vegetation composition may significantly alter avian habitat suitability by affecting three critical resources: food availability, water access, and protective cover. These habitat modifications can consequently influence bird community dynamics, including species diversity, population abundance, and spatial distribution patterns (Ramchandra, 2013).

Instrument used:

Bird observations were conducted using a Carson 10×50 binocular (50mm objective lens, 10x

magnification). For photographic documentation, we employed a Nikon D500 DSLR camera with two lenses: a Nikon AF-S 200-500mm f/5.6E ED VR telephoto lens for long-range shots and a Nikon 50mm prime lens for closer subjects. To assist with species identification, we occasionally utilized auditory cues through playback of recorded bird calls. All field surveys were conducted with a GPS device (Garmin eTrex 30) to accurately geotag observation points, document evidence, and verify species distributions. For particularly shy and elusive species, we supplemented our observations with call playback techniques using professional-grade audio equipment (Sony ICD-PX470). This methodology proved especially valuable for detecting cryptic species that were otherwise difficult to observe visually. For avian species identification, we consulted three authoritative field guides: Birds of the Indian Subcontinent (Grimmett, Inskipp & Inskipp 2013), The Book of Indian Birds (Ali 2002) and A Pictorial Field Guide to Birds of India (Grewal, Singh & Devasar 2016). In addition to the field guidebook, the identification of avian species was carried out by means of the systematic observation of several diagnostic characteristics. The field researchers recorded the following: Behavioral observations (such as locomotion patterns, foraging behavior, etc.); Auditory evidence (such as species-specific vocalizations and call patterns); and Morphological features (such as body size, shape, and distinctive plumage patterns). All observations were recorded in accordance with standardized protocols to guarantee data consistency across survey periods.

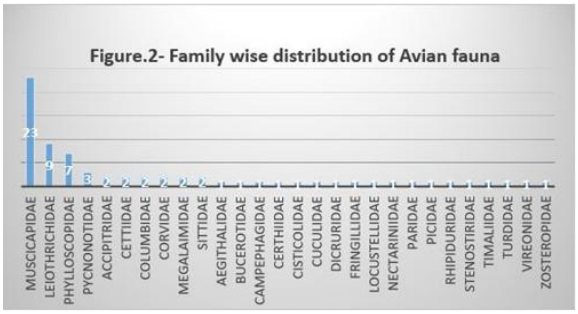
Survey technique:

Table:2 The RDi (Relative diversity) of different families of bird in the research area.

SN	FAMILY NAME	NO OF SPECIES	RDi	SN	FAMILY NAME	NO OF SPECIES	RDi
1	Muscicapidae	23	31.9	15	Cisticolidae	1	1.4
2	Leiothrichidae	9	12.5	16	Cuculidae	1	1.4
3	Phylloscopidae	7	9.7	17	Dicruridae	1	1.4
4	Pycnonotidae	3	4.2	18	Fringillidae	1	1.4
5	Accipitridae	2	2.8	19	Locustellidae	1	1.4
6	Cettiidae	2	2.8	20	Nectariniidae	1	1.4
7	Columbidae	2	2.8	21	Paridae	1	1.4
8	Corvidae	2	2.8	22	Picidae	1	1.4
9	Megalaimidae	2	2.8	23	Rhipiduridae	1	1.4
10	Sittidae	2	2.8	24	Stenostiridae	1	1.4
11	Aegithalidae	1	1.4	25	Timaliidae	1	1.4
12	Bucerotidae	1	1.4	26	Turdidae	1	1.4
13	Campephagidae	1	1.4	27	Vireonidae	1	1.4
14	Certhiidae	1	1.4	28	Zosteropidae	1	1.4

Avian species data were systematically collected for three months from march-2025 to May 2025 by following standardized point count methodology, employing fixed-radius circular plots with timed observation periods (Bibby, 2000). In this method, the observer selects a random point and records all bird species seen or heard within a 50-meter radius over a 5-minute period. This process is then repeated at another location at least 300 meters away from the initial point. Additionally, opportunistic bird sightings were documented during travel within the study area (Sutherland et al., 2006; Nautiyal et al., 2015). Surveys were conducted regularly three days per week over a three-month period, during early morning (5:30–10:00 AM) and evening (4:00–6:00 PM) hours. Bird sightings were significantly fewer during daytime.

Data analysis:



The taxonomic orders and families of the birds that were observed during data collection were used to classify them. They were further divided into the following groups according to their preferred habitats: Resident (R): A species that lives there permanently, Seasonal visits are considered migratory (M). Wide Range (WR): Species that use both residential and woodland regions, while Forest Dweller (F): Species that only live in forest settings. The following sighting frequency scale was used to quantify species abundance: Very Common (VC): at least eight observations, Common (C): six to seven, Uncommon (UC): four to five, Rare (R): two to three, and Occasional Visitor (OV): one. Based on their main eating behaviors, we divided the observed bird species into six different trophic groups: Species classified as insectivorous (IN) mostly consume insects and other arthropods, Carnivorous (CA) birds are predators that primarily consume vertebrates. Omnivorous (OM) species are those that consume a variety of foods, such as both plants and animals. Birds classified as fugivorous (FU) mostly consume fruits, nectarivores (NE) favor nectar as their main food source, and Birds that specialize in eating seeds are known as

granivorous (GR) birds (Table, 1). The relative diversity of each bird family (RDi) was calculated using the following formula:

RDi = (Number of species in a family / Total number of bird species) × 100

III. RESULT AND DISCUSSION

A total of 72 bird species, belonging to 28 families and 6 orders, were recorded across the study sites. Among these, Passeriformes was the most dominant order, comprising 63 species, followed by Piciformes (3 species), Accipitriformes (2 species), and Columbiformes (2 species). The orders Bucerotiformes, and Cuculiformes had the lowest representation, with only one species each. Among the recorded species in the study area, the Pied Shrike-Babbler (Pteruthius flaviscapis) an endemic bird to Java, Indonesia—was also observed at our study site.

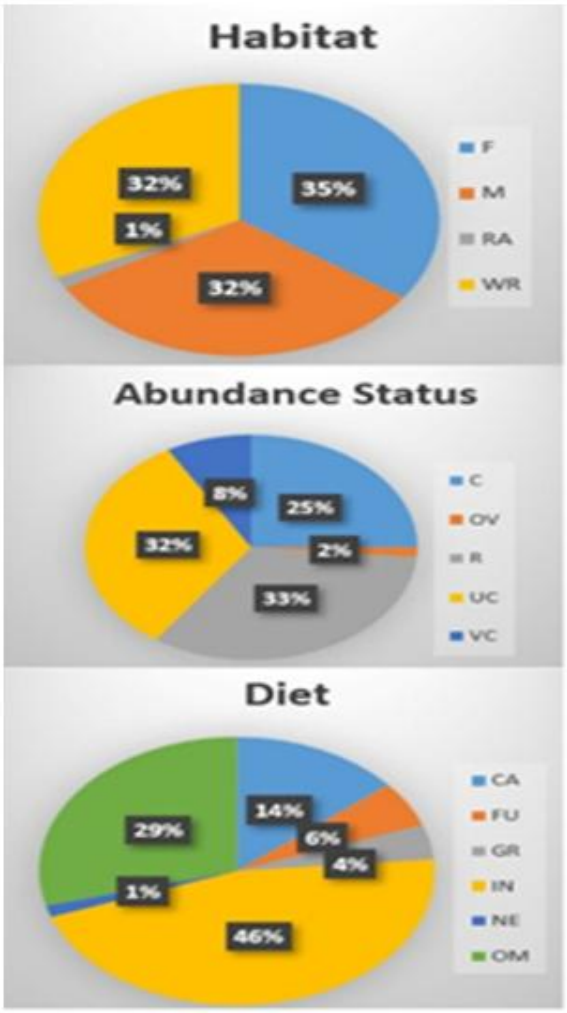


Figure 3. Avian fauna status based on: 1) Habitat, 2) Abundance Status, 3) Diet

According to the IUCN Red List (2017), many recorded species (70) were classified as Least Concern (LC). However, one species the Mountain Hawk Eagle (Nisaetus nipalensis) was listed as Near Threatened (NT). Additionally, the Great Hornbill (Buceros bicornis), a Vulnerable species (V), was also documented during the study period.

Based on food preferences, the recorded 72 avian species (Fig, 3) were classified as follows: 45.8% (33 species) insectivores, 29.2% (21 species) omnivores, 13.9% (10 species) carnivores, 5.6% (4 species) carnivores, 4.2% (3 species) granivores, and 1.4% (1 species) nectarivores.

The 72 bird species that were recorded showed different preferences for habitats based on their classification as residential status:

Forest Dwellers (F): Because of their reliance on intact woodland ecosystems, 25 species (34.7%) were only found in forest settings.

Wide-Range (WR) & Migratory (M): 23 species (31.9%) were generalists and seasonal migrants that were suited to both wooded and man-made environments.

Resident (R): Just one species (1.3%) was classified as a permanent resident (Fig, 3), indicating that the study area has limited year-round occupancy by birds that are strictly non-migratory. While pointing out the comparatively small percentage of purely residential birds, this distribution emphasizes the region's biological function as a transitional zone that supports both specialized forest species and roaming generalists.

Table:1 Checklist and diversity of birds in Algarah-Pedong Region of Kalimpong District of West Bengal, India

SN	Common Name	Scientific Name	Order	Family	diet	IUCN Status	Habitat	Abundance status
1	Shikra	Accipiter badius	Accipitriformes	Accipitridae	CA	LC	WR	R
2	Mountain Hawk Eagle	Nisaetus nipalensis	Accipitriformes	Accipitridae	CA	NT	M	R
3	black throated bushtit	Aegithalos concinnus	Passeriformes	Aegithalidae	IN	LC	F	R
4	great Hornbill	Buceros bicornis	Bucerotiformes	Bucerotidae	FU	V	F	R
5	Scarlet Minivet	Pericrocotus speciosus	Passeriformes	Campephagidae	IN	LC	WR	C
6	Sikkim Tree creeper	Certhia discolor	Passeriformes	Certhiidae	IN	LC	F	R
7	Black faced Warbler	Abroscopus schisticeps	Passeriformes	Cettiidae	IN	LC	F	C
8	Broad billed warbler	Tickellia hodgsoni	Passeriformes	Cettiidae	IN	LC	F	UC
9	Common Tailor Bird	Orthotomus sutorius	Passeriformes	Cisticolidae	IN	LC	WR	VC
10	Spotted Dove	Spilopelia chinensis	Columbiformes	Columbidae	GR	LC	WR	C
11	Oriental Turtle Dove	Streptopelia orientalis	Columbiformes	Columbidae	GR	LC	M	UC
12	Grey Treepie	Dendrocitta formosae	Passeriformes	Corvidae	OM	LC	WR	C
13	House crow	Corvus splendens	Passeriformes	Corvidae	CA	LC	WR	VC
14	Common Cuckoo	Cuculus canorus	Cuculiformes	Cuculidae	IN	LC	M	R
15	Bronz Drongo	Dicrurus aeneus	Passeriformes	Dicruridae	CA	LC	M	UC
16	Common Rosefinch	Carpodacus erythrinus	Passeriformes	Fringillidae	GR	LC	M	R
17	Rufous sibia	Heterophasia capistrata	Passeriformes	Leiothrichidae	OM	LC	F	C
18	Silver eared Mesia	Leiothrix argentauris	Passeriformes	Leiothrichidae	IN	LC	F	R
19	Chestnut crwoned Laughingthrush	Trochalopteron erythrocephalum	Passeriformes	Leiothrichidae	OM	LC	F	UC
20	Blue winged Minla	Actinodura cyanouroptera	Passeriformes	Leiothrichidae	IN	LC	F	UC
21	Red faced Liocichla	Liocichla phoenicea	Passeriformes	Leiothrichidae	OM	LC	F	R
22	Himalayan Cutia	Cutia nipalensis	Passeriformes	Leiothrichidae	CA	LC	F	R
23	Red Billed Leiothrix	Leiothrix lutea	Passeriformes	Leiothrichidae	OM	LC	WR	UC
24	Red Tailed Minla	Minla ignotincta	Passeriformes	Leiothrichidae	IN	LC	F	C
25	Rusty fronted Barwing	Actinodura egertoni	Passeriformes	Leiothrichidae	OM	LC	F	UC
26	Brown Bush Warbler	Locustella luteoventris	Passeriformes	Locustellidae	IN	LC	WR	C

27	Blue throated Barbet	Megalaima asiatica	Piciformes	Megalaimidae	OM	LC	WR	C
28	Great Barbet	Psilopogon virens	Piciformes	Megalaimidae	OM	LC	WR	VC
29	Blue throated blue Flycatcher	Cyornis rubeculoides	Passeriformes	Muscicapidae	IN	LC	M	UC
30	Rufous belleid Niltava	Niltava sundara	Passeriformes	Muscicapidae	IN	LC	F	UC
31	Grey Bushchat	Saxicola ferreus	Passeriformes	Muscicapidae	OM	LC	WR	R
32	Siberian Rubythroat	Calliope calliope	Passeriformes	Muscicapidae	NE	LC	M	R
33	Verditer Flycatcher	Eumyias thalassinus	Passeriformes	Muscicapidae	OM	LC	M	C
34	Rufous bresated Bush Robin	Tarsiger hyperythrus	Passeriformes	Muscicapidae	IN	LC	M	R
35	little pied flycatcher	Ficedula westermanni	Passeriformes	Muscicapidae	IN	LC	F	R
36	Small Niltava	Niltava macgrigoriae	Passeriformes	Muscicapidae	OM	LC	F	UC
37	Taiga Flycatcher	Ficedula albicilla	Passeriformes	Muscicapidae	IN	LC	F	C
38	Himalayan Bluetail	Tarsiger rufilatus	Passeriformes	Muscicapidae	IN	LC	M	UC
39	White tailed Robin	Myiomela leucura	Passeriformes	Muscicapidae	IN	LC	M	UC
40	Oriental Magpie Robin	Copsychus saularis	Passeriformes	Muscicapidae	CA	LC	WR	C
41	Hodgson's Redstart	Phoenicurus hodgsoni	Passeriformes	Muscicapidae	IN	LC	M	R
42	Grey Bushchat	Saxicola ferreus	Passeriformes	Muscicapidae	CA	LC	WR	C
43	White capped Redstart	Phoenicurus leucocephalus	Passeriformes	Muscicapidae	CA	LC	M	UC
44	Plumbous water Redstart	Phoenicurus fuliginosus	Passeriformes	Muscicapidae	IN	LC	WR	C
45	Asian Brown Flycatcher	Muscicapa latirostris	Passeriformes	Muscicapidae	IN	LC	M	UC
46	Slaty backed Forktail	Enicurus schistaceus	Passeriformes	Muscicapidae	CA	LC	WR	C
47	Pied Bushchat	Saxicola caprata	Passeriformes	Muscicapidae	IN	LC	WR	C
48	Sibreian Stonechat	Saxicola maurus	Passeriformes	Muscicapidae	IN	LC	M	UC
49	Large Niltava	Niltava grandis	Passeriformes	Muscicapidae	CA	LC	M	UC
50	Blue capped Rock Thrush	Monticola cinclorhyncha	Passeriformes	Muscicapidae	OM	LC	M	R
51	Blue Whistling Thrush	Myophonus caeruleus	Passeriformes	Muscicapidae	OM	LC	RA	VC
52	Black throated Sunbird	Aethopyga saturata	Passeriformes	Nectariniidae	OM	LC	WR	R
53	Green backed tit	Parus monticolus	Passeriformes	Paridae	OM	LC	F	C
54	White Tailed Warbler	Phylloscopus davisoni	Passeriformes	Phylloscopidae	IN	LC	F	R
55	Yellow browed Warbler	Phylloscopus inornatus	Passeriformes	Phylloscopidae	IN	LC	M	UC

56	Tickel's Leaf Warbler	Phylloscopus affinis	Passeriformes	Phylloscopidae	IN	LC	M	R
57	Common Chiffchaff	Phylloscopus collybita	Passeriformes	Phylloscopidae	IN	LC	M	OV
58	Yellow vented Warbler	Phylloscopus cantator	Passeriformes	Phylloscopidae	IN	LC	F	C
59	Hume's Leaf Warbler	Phylloscopus humei	Passeriformes	Phylloscopidae	IN	LC	M	R
60	Dusky Warbler	Phylloscopus fuscatus	Passeriformes	Phylloscopidae	IN	LC	F	R
61	Greater Yellownape	Chrysophlegma flavinucha	Piciformes	Picidae	OM	LC	F	UC
62	Red Vented Bulbul	Pycnonotus cafer	Passeriformes	Pycnonotidae	FU	LC	WR	VC
63	Himalayan Bulbul	Pycnonotus leucogenys	Passeriformes	Pycnonotidae	FU	LC	WR	VC
64	Black Bulbul	Hypsipetes leucocephalus	Passeriformes	Pycnonotidae	FU	LC	WR	C
65	White-throated fantail	Rhipidura albicollis	Passeriformes	Rhipiduridae	IN	LC	WR	UC
66	chestnut-bellied nuthatch	Sitta cinnamoventris	Passeriformes	Sittidae	OM	LC	WR	UC
67	White tailed Nutchthutch	Sitta himalayensis	Passeriformes	Sittidae	OM	LC	F	R
68	Grey Headed Canary Flycatcher	Culicicapa ceylonensis	Passeriformes	Stenostiridae	IN	LC	M	UC
69	Rufous capped Babbler	Stachyridopsis ruficeps	Passeriformes	Timaliidae	OM	LC	F	R
70	Grey winged blackbird	Turdus boulboul	Passeriformes	Turdidae	IN	LC	F	UC
71	Pied Shrike Babbler	Pteruthius flaviscapis	Passeriformes	Vireonidae	OM	LC	M	R
72	Whiskered yuhina	Yuhina flavicollis	Passeriformes	Zosteropidae	OM	LC	WR	UC

The RDi analysis of avian diversity showed that Muscicapidae was the dominant family, comprising 31.9% (23 species), followed by Leiothrichidae at 12.5% (9 species) and Phylloscopidae at 9.7% (7 species). Pycnonotidae accounted for 4.2% (3 species), while Accipitridae, Cettiidae, Columbidae, Corvidae, Megalaimidae, and Sittidae each represented 2.8% (2 species). The least abundant families Aegithalidae, Bucerotidae, Campephagidae, Certhiidae, Cisticolidae, Cuculidae, Dicruridae, Fringillidae, Locustellidae, Nectariniidae, Paridae, Picidae, Rhipiduridae, Stenostiridae, Timaliidae, Turdidae, Vireonidae, and Zosteropidae each had only 1.4% (1 species). (Table, 2).

Figure 4 Some of the avian species found in the Algarah-Pedong area are displayed in the figure. 1. Himalayan cutia, 2. Pied shrike-babbler, 3. Silver-eared mesia, 4. Chestnut-crowned laughingthrush, 5. Black-faced warbler and 6. Red-billed leiothrix

This study presents the first scientific documentation of the avifaunal population in the area of interest, revealing a relatively healthy biodiversity. The baseline data on bird diversity and abundance trends generated from this research can serve as a valuable reference for future ecological assessments and comparative studies. Regular monitoring of avifauna offers an effective means to track ecosystem health and may provide early warnings of environmental degradation. Given its ecological significance, this area holds considerable potential for in-depth avian research. Further studies on habitat use, population dynamics, nesting and breeding behavior, foraging ecology, as well as threat assessments and conservation strategies, could help address existing knowledge gaps regarding the region's bird communities.

IV. CONCLUSION

The study suggests that the rich avian diversity in the research area can be attributed to its geographical location and diverse habitat composition. The region appears to provide a wide range of habitats suitable for both resident and migratory bird species. Preserving the structural and compositional diversity of these habitats is essential for maintaining ecological balance and avian biodiversity. Short-term biodiversity assessments using species checklists remain a widely adopted and effective tool for informing long-term conservation strategies. While this study focused on select forest patches, a more extensive survey could reveal additional species and their distribution patterns across different habitats. Furthermore, the impacts of climatic variability and anthropogenic activities on bird diversity in northern West Bengal warrant deeper investigation. To ensure the long-term sustainability of avian populations, integrated management programs and sustainable development initiatives should be implemented by local and state authorities. This study establishes the first comprehensive baseline dataset on the bird population in the study area, serving as a critical reference for future research and conservation efforts.

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