

## Seasonal Diversity and Conservation Value of Birds in Hemja, Nepal

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### ABSTRACT

Seasonal variation influences the survival of birds within ecosystems, as it alters the accessibility of essential ecological resources, such as food, nesting sites, and suitable climates, which fluctuate with the changing seasons. The study was conducted in Hemja Ward No. 25, Kaski District, Nepal, and aimed to assess the diversity of bird species and their seasonal variation. A bird survey was conducted using the point-count method over 15 days each in the winter and summer seasons of 2024. 50-point count stations were placed in four different habitats. Bird species of 14 orders and 43 families were recorded. Order Passeriformes and the Muscicapidae family were found to have the highest species richness. Comparing seasonally, 57 bird species were common to both seasons, but 40 and 20 species were exclusive to the winter and summer seasons, respectively. Among the total recorded species, 102 were resident species, eight were winter visitors, and seven were summer visitors. The highest bird diversity and evenness were found during the winter season ( $H = 4.01$ ,  $E = 0.88$ ) compared to the summer season ( $H = 3.67$ ,  $E = 0.85$ ), as measured by the Shannon-Wiener Diversity Index. Among them, two globally endangered, and one critically endangered bird species were recorded. The results indicate that this small area is vital for conservation, hosting a diverse bird assemblage that includes birds of global importance.

**Key words:** Avifauna, Conservation status, Diversity, Hemja, Seasonal variation

### INTRODUCTION

Birds are among the most incredible creatures and a crucial species in the global ecosystem. They play a significant role in the environment, including pollination, seed dispersal, and pest control (Gaston 2022). Sometimes their abundance represents a healthy ecosystem, as it reflects the health and stability of the ecosystem (Prakash and Verma 2016). Birds are sensitive to changes in seasons and the quality of their habitats. Different species favour a variety of habitats, including forests, shrubs, grasslands, wetlands, agricultural areas, urban environments, and deserts. These diverse habitats offer essential benefits, including shelter, various foraging opportunities, and suitable nesting sites (Nepali et al. 2021). Nepal, a relatively small country representing just 0.1% of the Earth's landmass, is recognised as a biodiversity hotspot due to its extraordinary range of landscapes, habitats, and cultural diversity. From the towering peaks of the Himalayas, the world's highest terrestrial ecosystem, to the tropical lowlands of the Terai region, Nepal's physiographic features are remarkably diverse. This remarkable diversity of landscapes and habitats supports a wide range of flora and fauna, making

Nepal a biodiversity hotspot (Inskipp 2017, Sarkar et al. 2018). The country is divided into five distinct eco-physiological zones: Himalayan zone (>5,000 meters above sea level), High Mountain zone or Montane zone (3,000-5,000 meters above sea level), Middle Mountain zone or Piedmont zone (1,000-3,000 meters above sea level), Siwalik zone or Submontane zone (500-1,000 meters above sea level), and Terai zone (<500 meters above sea level), provides diverse elevational gradient to support the occurrence of different plants and animals in altitudinal range (Katuwal et al. 2021). Nepal experiences distinct summer and winter seasons varying from one another (Hagen 1998). This seasonal variation facilitates the establishment of diverse habitats, thereby supporting a broad spectrum of species (Sarkar et al. 2018).

There are more than 11,000 bird species in the world, each with their own unique appearance and habits. Nepal experiences a rich diversity of birds, with 902 species recorded (Anonymous 2025). This represents about 9% of all known bird species worldwide (Inskipp et al. 2017). Nepal's location on the northern edge of South Asia makes it a critical habitat for both resident and migratory bird species (Grimmett et al. 2016). Many bird species in Nepal

adjust their altitude in response to weather conditions and the availability of food (Grimmett et al. 2016, Inskipp et al. 2017). This includes summer visitors (approximately 62 species), winter visitors (approximately 150 species), and occasional visitors or vagrants (approximately 71 species), some of whom are also passage migrants that visit Nepal, primarily to wetlands throughout the Terai (Grimmett et al. 2016).

Avian abundance and distribution are significantly influenced by seasonality, which affects diversity due to variations in abiotic factors (such as temperature, precipitation, and humidity) and biotic factors (including food resources and species interactions) (Neupane et al. 2020). These conditions change with the seasons and differ across various eco-regions (Amani et al. 2018). Changes in food and cover availability have a significant impact on bird populations, influencing their breeding success and overall survival rates (Seward et al. 2013, Seress et al. 2020). The distinct seasonal patterns of rainfall and the corresponding fluctuations in food resources are critical factors affecting these populations (Seward et al. 2013, Seress et al. 2020). Additionally, the presence of migratory species, their breeding behaviours, and seasonal fluctuations in bird composition and abundance all play a role in the seasonal variations observed in bird assemblages (Seward et al. 2013).

The study of seasonal variation in avifaunal species diversity in Hemja, Kaski, Nepal, is significant for several reasons. Birds are recognised as key indicators of ecological health, and understanding their diversity can provide insights into the overall condition of the ecosystem in this region. This research contributes to the baseline data on avian diversity in the area, where such studies are less common, and can help fill a critical gap in knowledge. By assessing the seasonal dynamics of bird species, the study reveals patterns of abundance and diversity that are crucial for conservation planning. This study contributes to effective biodiversity monitoring and conservation efforts, highlighting the importance of preserving green spaces in urbanised areas for local avifauna (Baral et al. 2022).

## MATERIAL AND METHODS

### Study area

The study was conducted in Hemja, Ward No. 25, of Pokhara Municipality, Kaski District (Fig. 1). This region covers an area of 2233 km<sup>2</sup>. The altitude ranges from 840 to 1471 meters above sea level (Larsen et al. 2014). The study was conducted on an elevational gradient ranging from approximately 918 to 1176 m amsl. The study area's forest is characterised by subtropical vegetation, primarily consisting of mid-hill vegetation, with *Schima-Castanopsis* forests being the dominant type (Stainton 1973). Other tree species found are Nepalese alder (*Alnus nepalensis*), Pine (*Pinus roxburghii*), Monkey fruit (*Artocarpus lacucha*), Ant tree (*Triplaris surinamensis*), Box myrtle/Bayberry (*Myrica esculenta*), Sacred fig (*Ficus religiosa*), Nepal fig (*F. sarmentosa*), Drooping fig (*F. semicordata*), Strangling fig (*F. glaberrima*), and Common fig (*F. carica*). The area is characterised by a subtropical climate.

### Research design

The study started with a preliminary field survey conducted over three days in December 2023. The grid size of 500 x 500 m was established separately for human settlements, agricultural land, dense forest, and wetlands. For surveying birds, 10-point count stations were randomly placed at each grid station within human settlements and wetlands. In contrast, 15-point count stations were placed within agricultural lands and dense forests, with a fixed radius of 40 m (Buckland et al. 2004, Gregory et al. 2004). The sampling was conducted in the morning (0600-1100 hrs) and in the evening (1500-1700 hrs), which varied according to the season. Bird surveys were carried out in both the summer and winter seasons. Photographs were taken using a camera (Canon 80D with 50-250 mm lens) for identification and documentation, while binoculars (Nikon Action 7x50) were used for the visual count. The bird count began five minutes after arriving at the station to minimise disturbance. Sighted birds were recorded and identified using the "Birds of Nepal" field guide by Grimmett et al. (2016). Observed birds were classified into five feeding guilds, namely, carnivores, frugivores, omnivores, granivores, and

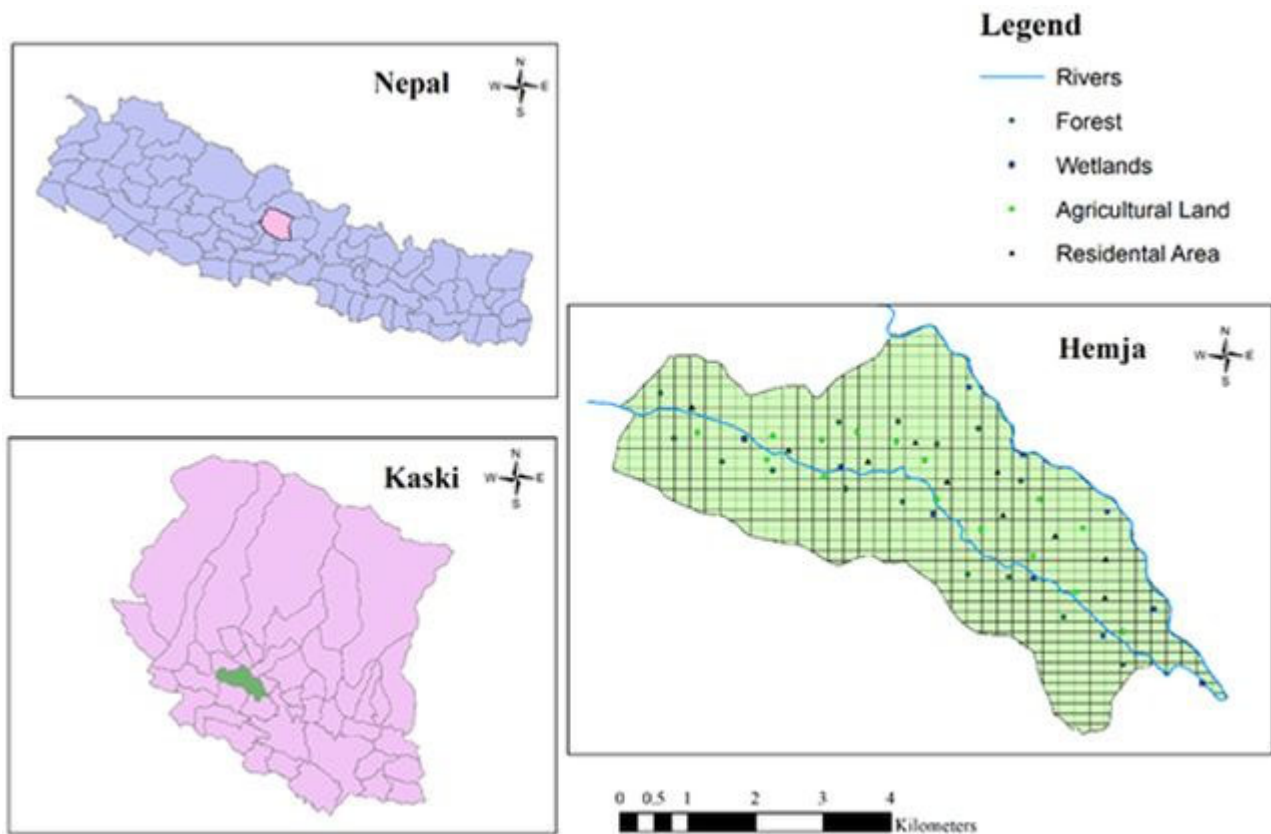


Figure 1. Study area map of Hemja

insectivores, based on the diet descriptions available by Grimmett et al. (2016). The global and national threatened status of birds was identified using the official checklist of DNPWC and BCN (Anonymous 2025).

#### Data analysis

The data obtained from the field survey were initially recorded in an Excel datasheet. The diversity of the birds in human settlements, agricultural land, dense forests, and wetlands was measured using the Shannon-Weiner Diversity Index ( $H'$ ) (Shannon and Weaver 1949). Species richness and evenness were measured through Margalef's Richness Index ( $R$ ) (Margalef 1958) and Pielou's Evenness Index ( $E$ ), respectively (Pielou 1966). The beta diversity of birds was derived using Sorensen's Similarity Index, which represents the unshared species (Sorensen 1948). Significant variation in species richness and abundance of birds in two seasons among point count stations was analysed using paired t-test in JASP software. The null hypothesis was assumed as  $H_0 =$  There is no significant variation in species richness

and abundance of birds between the two seasons (summer and winter). Further analysis of the data was conducted in Microsoft Excel.

## RESULTS

#### Species diversity and composition

A total of 2,050 individuals of 117 bird species, belonging to 14 orders and 43 families, were recorded using the point count method during the study (Annexure 1). Out of 14 orders, order Passeriformes was the most dominant in species richness (82 species, 27 families) followed by Accipitriformes (8 species, 1 family), Piciformes (4 species, 2 families), Cuculiformes (4 species from 1 family), Pelecaniformes (4 species from 1 family), Columbiformes (3 species from 1 family), Charadriiformes (2 species, 2 families), Anseriformes, Apodidae and Psittaciformes had 2 each species from 1 family. Order Coraciiformes, Falconiformes, Galliformes, and Strigiformes had 1 species each from 1 family (Fig. 2).

Among the 43 families, Muscicapidae had the highest number of bird species (17 species), followed

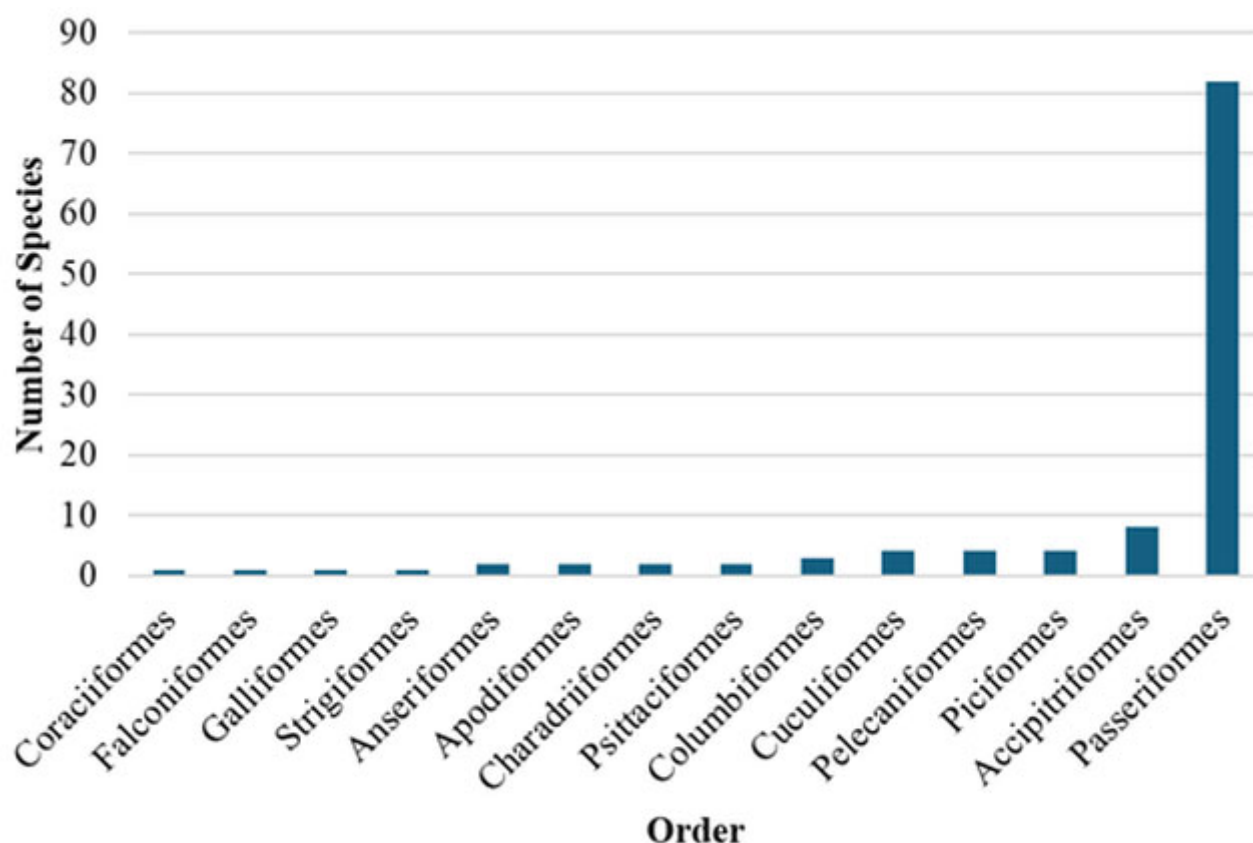


Figure 2. Species composition by Order

by Accipitridae (8 species), Phylloscopidae (7 species), and Corvidae (6 species). In contrast, Cuculidae, Dieruridae, Motacillidae, Pycnonotidae, and Ardeidae represented an equal number of species (4 species). Similarly, Columbidae, Leiothrichidae, Oriolidae, Paridae, and Sturnidae also had an equal number (3 species). Additionally, Anatidae, Apodidae, Cappphagidae, Cettiidae, Laniidae, Passeridae, Sittidae, Stenostiridae, Timaliidae, Megalaimidae, Picidae, and Psittaculidae also had an equal number (2 species). The least number of species were from the families Scolopacidae, Charadriidae, Alcedinidae, Falconidae, Phasianidae, Chloropseidae, Cisticolidae, Estrildidae, Fringillidae, Nectariniidae, Pellorneidae, Rhipiduridae, Zosteropidae, Tichodromidae, and Strigidae, each with one species (Fig. 3).

#### Seasonal difference

Shannon Wiener diversity index ( $H'$ ) for the winter season was  $H' = 4.011$ . In contrast, the summer season had the diversity index of  $H' = 3.673$ ,

indicating a more diverse bird assemblage in the winter season as compared to the summer season. Similarly, the evenness index was found to be higher in winter ( $E = 0.877$ ) than in the summer season ( $E = 0.846$ ), indicating a more even distribution of birds in the winter than in the summer. Also, 97 bird species were recorded in the winter season, belonging to 40 families and 14 orders. Similarly, 77 bird species were recorded in the summer season, belonging to 34 families and 10 orders. 57 bird species were common to both seasons, while 40 and 20 species were exclusive to the winter and summer seasons, respectively (Table 1).

#### Feeding guild

Based on feeding guild structure of birds, the study area revealed that little more than half of the total bird species were insectivores (67 species, 57%) followed by omnivores (20 species, 17%), carnivores (17 species, 15%), and frugivores (9 species, 8%). Granivores have the least species richness (4 species, 3%) (Fig. 4).

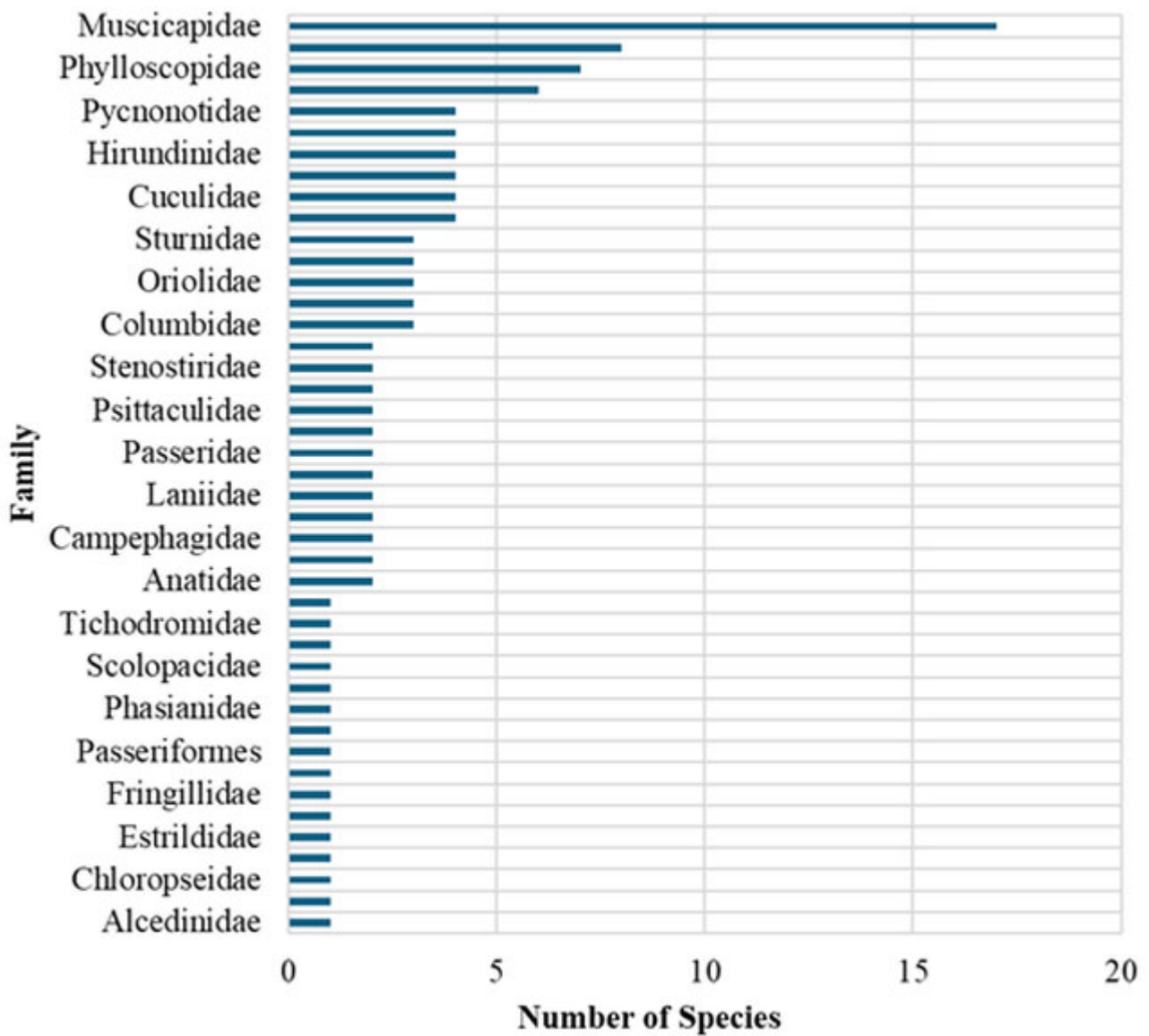


Figure 3. Species composition by Family

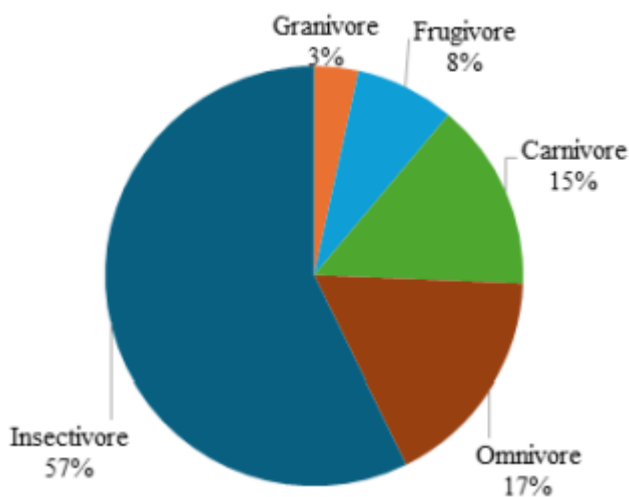


Figure 4. Feeding guilds

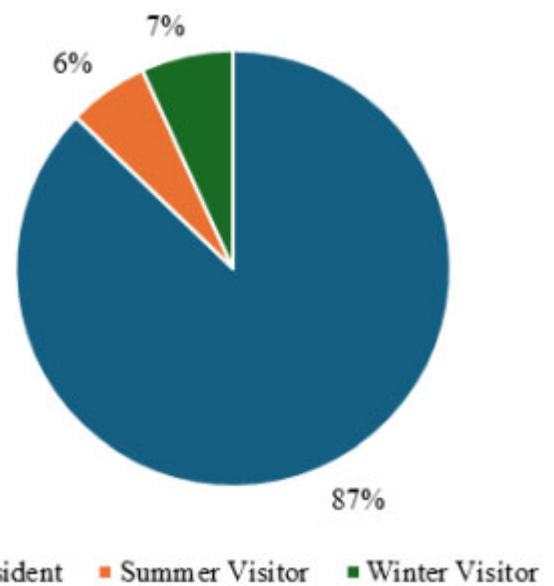


Figure 5. Migratory status of avifauna

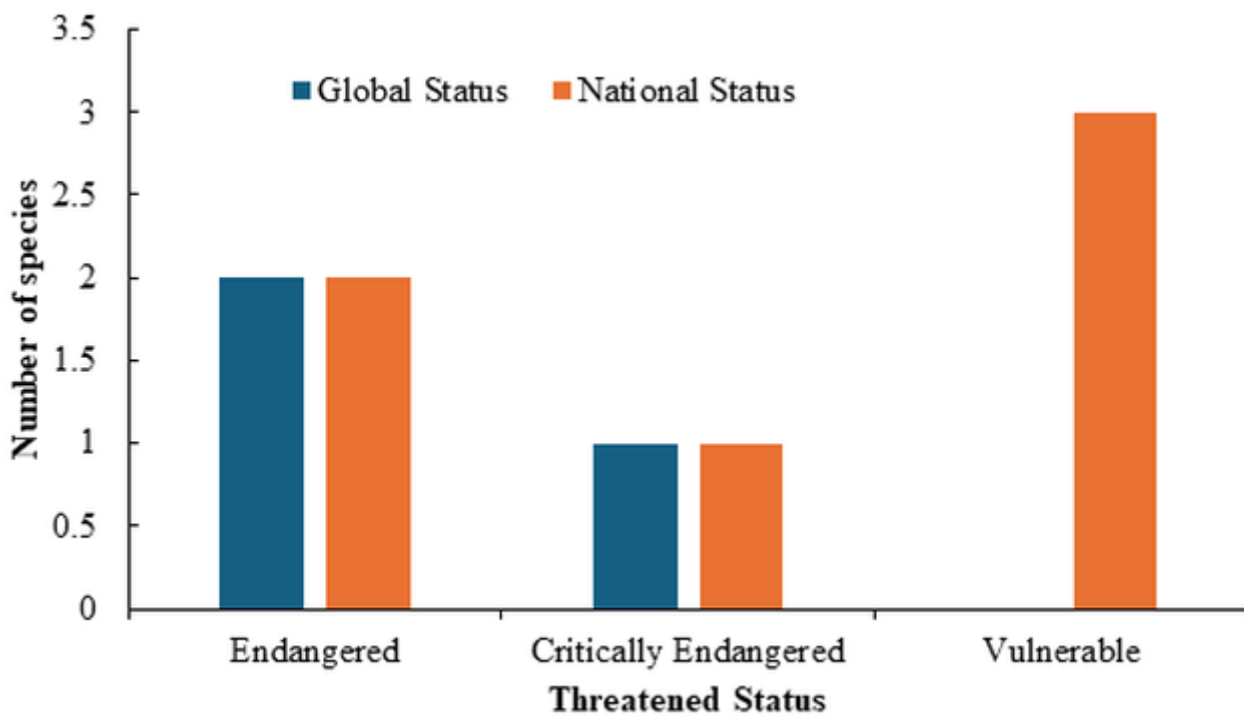


Figure 6. Threatened status of birds

#### Migration status

Most of the bird species observed in the study area across both seasons were residents (87%), which dominated the summer and winter avifaunal species. There were relatively few winter visitors (7%) and summer visitors (6%) (Fig. 5).

#### Conservation status

Of the total species recorded, one was globally Critically Endangered (CR): Red-headed Vulture (*Sarcogyps calvus*) and two were Endangered (EN): Egyptian Vulture (*Neophron percnopterus*) and Steppe Eagle (*Aquila nipalensis*) (Fig. 6). Similarly, two species were Endangered (EN): Cinereous Vulture (*Aegypius monachus*), Red-headed Vulture (*Sarcogyps calvus*), one was Critically Endangered (CR): Falcated Duck (*Mareca falcata*) and Red-headed Vulture (*Sarcogyps calvus*), and three were Vulnerable (VU) species: Hume's Bush Warbler (*Horornis brunnescens*), Egyptian Vulture (*Neophron percnopterus*) and Steppe Eagle (*Aquila nipalensis*) (Fig. 6). The results showed that most of the species were categorised as Least Concern (LC).

#### Body size

The body size distribution revealed that the highest number of bird species were from a range of 11-20 cm (46), followed by 21-30 cm (26). The smallest bird was the Chestnut-headed Tesia (*Cettia castaneocoronata*) with a size of 8 cm, and the largest was the Cinereous Vulture (*Aegypius monachus*) with an average size of 105 cm. No species were found in the range of 91-100 cm (Fig. 7).

Shannon Wiener diversity index ( $H'$ ) for the winter season was  $H' = 4.011$ . In contrast, the summer season had the diversity index of  $H' = 3.673$ , indicating a more diverse bird assemblage in the winter season as compared to the summer season. The evenness index was found to be higher in winter ( $E = 0.877$ ) than in the summer season ( $E = 0.846$ ), indicating a more even distribution of birds in the winter than in the summer. Also, 97 bird species were recorded in the winter season, belonging to 40 families and 14 orders. Similarly, 77 bird species were recorded in the summer season, belonging to 34 families and 10 orders. Fifty-seven (57) bird species were common to both seasons, while 40 and 20 species were exclusive to the winter and summer seasons, respectively (Table 1).

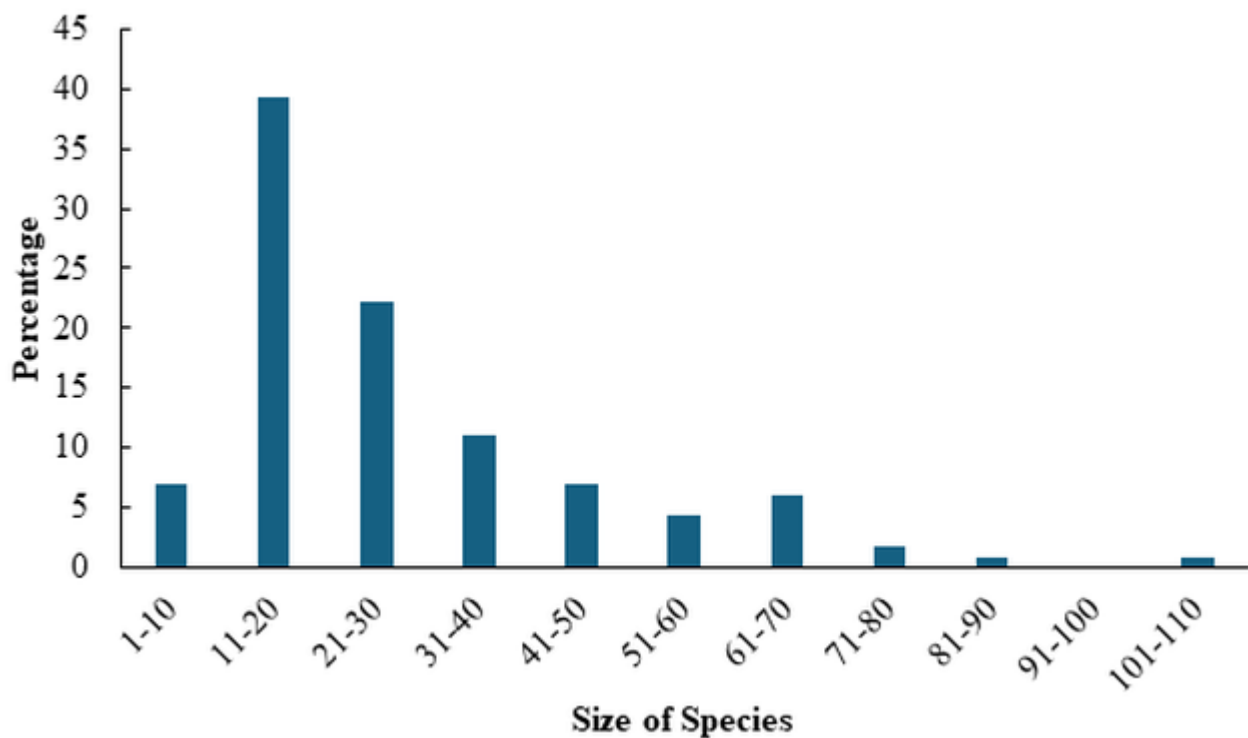


Figure 7: Body size of birds

Table 1. Species richness, diversity and evenness of the birds in two seasons

Season	Orders	Families	Species richness	Common species	No. of individuals	H'	E
Winter	14	40	97	57	1221	4.011	0.877
Summer	10	34	77		829	3.673	0.846

H' = Shannon-Wiener Diversity Index; E = Pielou's Evenness Index

The Sørensen's Similarity Index (SSI) for bird species between summer and winter seasons was found to be 65%, indicating that the bird communities were more similar in these seasons. A paired t-test was conducted to compare bird species richness and abundance between the summer and winter seasons across point-count stations. The analysis showed that species richness differed significantly between the

two seasons ( $t = 6.243$ ,  $df = 49$ ,  $p < 0.001$ ). Similarly, bird abundance also showed a significant seasonal difference ( $t = 3.619$ ,  $df = 49$ ,  $p < 0.001$ ).

## DISCUSSION

### Species composition and seasonal variation

The study of seasonal variation in avifaunal species diversity in Hemja, Kaski, Nepal, reveals significant insights into the dynamics of bird populations in this region. This research documented a total of 2050 individuals of 117 species of birds belonging to 14 orders and 43 families. The number of recorded species indicates a high level of bird diversity, accounting for approximately 13% of the total bird species documented in Nepal. In a comprehensive survey of the Kirtipur wetland in Odisha, India,

Table 2. Paired t-test table between species richness of birds and abundance of birds in two different seasons

Variable	t	df	p value
Richness	6.243	43	<0.001
Abundance	3.619	49	<0.001

researchers identified 77 bird species across 15 orders and 38 families (Pattnaik et al. 2022). The diversity index of birds in Hemja showed a highly diverse bird assemblage in the area, likely due to migration. A similar study conducted in the Banpale Forest of Kaski District documented 125 bird species across 40 families and 15 orders, with significant seasonal variations in species richness and abundance (Baral et al. 2022). The diversity of avifauna in this study is similar to other Nepalese studies. Gosai et al. 2021 reported 100 species participating in Mixed Species Flocks in Chitwan National Park, the lowland park and 108 species in Gaurishankar Conservation Area, a Himalayan national park.

The dominance of order Passeriformes observed in the study is consistent with global avifaunal trends and aligns with findings from similar studies. Katuwal et al. (2016) found that a significant proportion of bird species in the Central Himalayas belonged to the Passeriformes order. Neupane et al. (2020), Gosai and Goodale 2021 and Gosai et al 2024, who studied the avifaunal diversity in various places of Nepal also found similar results. This dominance can be attributed to the order's adaptability to diverse habitats, including human-modified landscapes (Bajagain et al. 2020), and to the availability of insect communities in the study area (Lamichane et al. 2021). Furthermore, the high abundance of species such as the Red-vented Bulbul (*Pycnonotus cafer*), Eurasian Tree Sparrow (*Passer montanus*), and House Sparrow (*Passer domesticus*) suggests their tolerance to anthropogenic disturbances and their ability to thrive in areas with human settlements.

The study highlighted the dominance of insectivorous birds as the most prevalent feeding guild in various habitats. Insectivores comprised 57% of the recorded species, followed by omnivores (16%) and carnivores (12%) across both winter and summer seasons. This pattern is likely attributed to the abundance of insects in these regions, which provides sufficient foraging opportunities for insectivorous birds. Similar findings were reported by Jha (2019) in the Phulchoki Hill forest in Nepal, where insectivorous birds were found to be the most prevalent feeding guild.

The body size distribution of avian species offers insights into the ecological niches they occupy within

an ecosystem. In Hemja, the dominance of small-bodied birds (11-20 cm) aligns with studies conducted in Gaurishankar Conservation Area and Chitwan National Park (Gosai et al. 2024, Gosai and Goodale 2021) and with global trends, where smaller species often outnumber larger ones (Jetz et al. 2012). This pattern could be attributed to several factors, including greater resource availability for smaller birds, such as insects and seeds, and their ability to exploit a broader range of microhabitats (Jha 2019). The presence of large-bodied raptors, such as the Steppe Eagle (*Aquila nipalensis*) and the Cinereous Vulture (*Aegypius monachus*), highlights the presence of trophic levels that support apex predators. However, the low species richness within the largest size class (81-110 cm) is consistent with the energy limitations of supporting large-bodied species, a pattern observed in various ecosystems (Shrestha et al. 2010). This finding underscores the importance of preserving diverse habitat structures to support a wide range of avian body sizes and ecological functions.

### Migration status

The dominance of resident species (87%) over migratory species (13%) in both seasons suggests that the study area, Hemja, offers suitable habitats and resources for year-round survival and breeding. This observation aligns with global patterns of avian diversity, where resident species typically outnumber migratory species in regions with stable environmental conditions (Jetz et al. 2012). The availability of suitable food and a safe environment is crucial for avifaunal species, as these factors directly impact their survival and reproductive success (Lakshmi 2006). Conversely, food scarcity can lead to declines in breeding success (Seress et al. 2020). However, an abundance of food enhances survival rates, increases reproductive success, supports effective digestion, aids in coping with the physiological challenges of migration, and maintains a high metabolic rate (McWilliams and Karasov 2001). Nepal lies along the Central Asian Flyway, which is why numerous bird species migrate here during the winter, rather than in the summer. As identified by Katuwal et al. (2016), winter in Nepal is characterised by a marked increase in both the diversity and abundance of avian species, due to the

arrival of migratory birds from temperate regions. This explains the significantly higher species richness and abundance recorded in winter compared to summer.

### Conservation status

The presence of globally and nationally threatened bird species in the Hemja region underscores the conservation significance of this area. The occurrence of three globally threatened species, including the Critically Endangered Red-headed Vulture (*Sarcogyps calvus*), the Endangered Cinereous Vulture (*Aegypius monachus*), and the Steppe Eagle (*Aquila nipalensis*), is particularly exciting. The presence of these threatened species in Hemja suggests that this region provides essential habitat components, such as foraging grounds and nesting sites, that are crucial for their survival. However, their presence emphasizes their vulnerability to anthropogenic pressures, as highlighted by Dangaura et al. (2020), who found a negative correlation between anthropogenic disturbance and the richness of threatened bird species in a Nepalese forest. Garnett et al. (2024) also highlighted the critical status of numerous threatened bird species in Australia, underscoring the need for ongoing conservation efforts.

Since birds are crucial to maintaining the health of ecosystems, these various bird community compositions (order, family, feeding guilds, and migratory status) can be employed as markers for ecological health (Gregory et al., 2003; Pakkala et al., 2014; Reynaud & Thioulouse, 2000).

Additionally, the presence of threatened large-bodied species, such as the Cinereous Vulture and Steppe Eagle. These migratory birds have excellent habitat in Nepal because of the country's great climatic changes across small geographic distances. To sustain the movement of migratory species in Nepal, however, conservation of their breeding grounds, passageways, and stopover locations is crucial (Lamichhane et al., 2021).

### CONCLUSIONS

This research in Hemja, Kaski, Nepal, is the first comprehensive study on bird species diversity in the area. The study showed that the area supports bird

diversity. Bird diversity and evenness were higher during the winter season than during the summer season suggesting that the area is also a refuge for winter migrants for their breeding grounds. The Passeriformes order and the Muscicapidae family were the most common. The presence of globally important species highlights the importance of Hemja area for their conservation. Additional studies on habitat use and ecological dynamics are essential for the conservation of globally threatened species.

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**Authors' contributions:** Sapkota collected and analyzed data and Gosai conceptualised and designed the research, and reviewed the manuscript. Both authors wrote and approved the manuscript.

**Conflict of interest:** Authors declare no conflict of interest.

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Annexure 1. List of bird species of Hemja and their taxonomic position, IUCN category, feeding guild category and migratory status

Scientific name/ Common name	IUCN	Feeding guild	Migratory status
Order: Accipitriformes (i) Family: Accipitridae			
<i>Ictinaetus malaiensis</i> / Black Eagle	LC	Carnivore	Resident
<i>Milvus migrans</i> / Black Kite	LC	Carnivore	Resident
<i>Aegyptius monachus</i> / Cinereous Vulture	LC	Scavenger	Winter visitor
<i>Spilornis cheela</i> / Crested Serpent Eagle	LC	Carnivore	Resident
<i>Neophron percnopterus</i> / Egyptian Vulture	EN	Scavenger	Resident
<i>Sarcogyps calvus</i> / Red-headed Vulture	CR	Scavenger	Resident
<i>Accipiter badius</i> / Shikra	LC	Carnivore	Resident
<i>Aquila nipalensis</i> / Steppe Eagle	EN	Carnivore	Winter visitor
Order: Anseriformes (i) Family: Anatidae			
<i>Mergus merganser</i> / Common Merganser	LC	Carnivore	Winter visitor
<i>Mareca falcata</i> / Falcated Duck	LC	Omnivore	Winter visitor
Order: Apodiformes (i) Family: Apodidae			
<i>Apus apus</i> / Common Swift	LC	Insectivore	Summer visitor
<i>Apus nipalensis</i> / House Swift	LC	Insectivore	Resident
Order: Charadriiformes (i) Family: Scolopacidae			
<i>Tringa ochropus</i> / Green Sandpiper	LC	Insectivore	Winter visitor
Order: Charadriiformes (ii) Family: Charadriidae			
<i>Vanellus indicus</i> / Red-wattled Lapwing	LC	Insectivore	Resident
Order: Columbiformes (i) Family: Columbidae			
<i>Columba livia</i> / Common Pigeon	LC	Granivore	Resident
<i>Streptopelia orientalis</i> / Oriental Turtle Dove	LC	Granivore	Resident
<i>Spilopelia chinensis</i> / Spotted Dove	LC	Frugivore	Resident
Order: Coraciiformes (i) Family: Alcedinidae			
<i>Halcyon smyrnensis</i> / White-throated Kingfisher	LC	Carnivore	Resident
Order: Cuculiformes (i) Family: Cuculidae			
<i>Eudynamis scolopaceus</i> / Asian Koel	LC	Frugivore	Summer visitor
<i>Cuculus canorus</i> / Common Cuckoo	LC	Omnivore	Summer visitor
<i>Hierococcyx varius</i> / Common Hawk Cuckoo	LC	Insectivore	Resident
<i>Centropus sinensis</i> / Greater Coucal	LC	Carnivore	Resident
Order: Falconiformes (i) Family: Falconidae			
<i>Falco tinnunculus</i> / Common Kestrel	LC	Carnivore	Resident
Order: Galliformes (i) Family: Phasianidae			
<i>Lophura leucomelanos</i> / Kalij Pheasant	LC	Omnivore	Resident
Order: Passeriformes (i) Family: Campephagidae			
<i>Pericrocotus ethologus</i> / Long-tailed Minivet	LC	Insectivore	Resident
<i>Pericrocotus speciosus</i> / Scarlet Minivet	LC	Insectivore	Resident
Order: Passeriformes (ii) Family: Cettiidae			
<i>Cettia castaneocoronata</i> / Chestnut-headed Tesia	LC	Insectivore	Resident
<i>Horornis brunescens</i> / Hume's Bush Warbler	LC	Insectivore	Resident
Order: Passeriformes (iii) Family: Chloropseidae			
<i>Chloropsis hardwickii</i> / Orange-bellied Leafbird	LC	Insectivore	Resident
Order: Passeriformes (iv) Family: Cisticolidae			
<i>Orthotomus sutorius</i> / Common Tailorbird	LC	Insectivore	Resident
Order: Passeriformes (v) Family: Corvidae			
<i>Cissa chinensis</i> / Common Green Magpie	LC	Insectivore	Resident
<i>Dendrocitta formosae</i> / Grey Treepie	LC	Omnivore	Resident
<i>Corvus splendens</i> / House Crow	LC	Omnivore	Resident
<i>Corvus macrorhynchos</i> / Large-billed Crow	LC	Omnivore	Resident
<i>Urocissa erythroryncha</i> / Red-billed Blue Magpie	LC	Frugivore	Resident
<i>Dendrocitta vagabunda</i> / Rufous Treepie	LC	Omnivore	Resident

Scientific name/ Common name	IUCN	Feeding guild	Migratory status
Order: Passeriformes (vi) Family: Dicuridae			
<i>Dicrurus aeneus</i> / Bronzed Drongo	LC	Insectivore	Resident
<i>Dicrurus macrocercus</i> / Black Drongo	LC	Insectivore	Resident
<i>Dicrurus leucophaeus</i> / Ashy Drongo	LC	Insectivore	Resident
<i>Dicrurus remifer</i> / Lesser Racket-tailed Drongo	LC	Insectivore	Resident
Order: Passeriformes (vii) Family: Estrildidae			
<i>Lonchura striata</i> / White-rumped Munia	LC	Insectivore	Resident
Order: Passeriformes (viii) Family: Fringillidae			
<i>Carpodacus sipahi</i> / Scarlet Finch	LC	Granivore	Resident
Order: Passeriformes (ix) Family: Hirundinidae			
<i>Hirundo rustica</i> / Barn Swallow	LC	Insectivore	Resident
<i>Delichon nipalense</i> / Nepal House Martin	LC	Insectivore	Resident
<i>Riparia paludicola</i> / Plain Martin	LC	Insectivore	Resident
<i>Cecropis daurica</i> / Red-rumped Swallow	LC	Insectivore	Resident
Order: Passeriformes (x) Family: Laniidae			
<i>Lanius tephronotus</i> / Grey-backed Shrike	LC	Carnivore	Resident
<i>Lanius Schach</i> / Long-tailed Shrike	LC	Insectivore	Resident
Order: Passeriformes (xi) Family: Leiothrichidae			
<i>Leiothrix lutea</i> / Red-billed Leiothrix	LC	Omnivore	Resident
<i>Garrulax leucolophus</i> / White-crested Laughingthrush	LC	Omnivore	Resident
<i>Pterorhinus albogularis</i> / White-throated Laughingthrush	LC	Omnivore	Resident
Order: Passeriformes (xii) Family: Motacillidae			
<i>Motacilla cinerea</i> / Grey Wagtail	LC	Insectivore	Resident
<i>Anthus rufulus</i> / Paddyfield Pipit	LC	Insectivore	Resident
<i>Motacilla alba</i> / White Wagtail	LC	Insectivore	Winter visitor
<i>Motacilla maderaspatensis</i> / White-browed Wagtail	LC	Insectivore	Resident
Order: Passeriformes (xiii) Family: Muscicapidae			
<i>Monticola rufiventris</i> / Chestnut-bellied Rock-Thrush	LC	Insectivore	Resident
<i>Myophonus caeruleus</i> / Blue Whistling Thrush	LC	Insectivore	Resident
<i>Monticola cinclorhyncha</i> / Blue-capped Rock Thrush	LC	Insectivore	Summer visitor
<i>Cyornis rubeculoides</i> / Blue-throated Blue Flycatcher	LC	Insectivore	Summer visitor
<i>Saxicola ferreus</i> / Grey Bushchat	LC	Insectivore	Resident
<i>Phoenicurus hodgsoni</i> / Hodgson's Redstart	LC	Insectivore	Winter visitor
<i>Enicurus scouleri</i> / Little Forktail	LC	Insectivore	Resident
<i>Copsychus saularis</i> / Oriental Magpie Robin	LC	Insectivore	Resident
<i>Cyornis unicolor</i> / Pale Blue Flycatcher	LC	Insectivore	Resident
<i>Saxicola caprata</i> / Pied Bushchat	LC	Insectivore	Resident
<i>Phoenicurus fuliginosus</i> / Plumbeous Water Redstart	LC	Insectivore	Resident
<i>Saxicola maurus</i> / Siberian Stonechat	LC	Insectivore	Resident
<i>Niltava macgrigoriae</i> / Small Niltava	LC	Insectivore	Resident
<i>Niltava sundara</i> / Rufous-bellied Niltava	LC	Insectivore	Resident
<i>Enicurus maculatus</i> / Spotted Forktail	LC	Insectivore	Resident
<i>Eumyias thalassinus</i> / Verditer Flycatcher	LC	Insectivore	Summer visitor
<i>Phoenicurus leucocephalus</i> / White-capped Water Redstart	LC	Insectivore	Resident
<i>Myiomela leucura</i> / White-tailed Robin	LC	Insectivore	Resident
Order: Passeriformes (xiv) Family: Nectariniidae			
<i>Aethopyga siparaja</i> / Crimson Sunbird	LC	Frugivore	Resident
Order: Passeriformes (xv) Family: Oriolidae			
<i>Oriolus xanthornus</i> / Black-hooded Oriole	LC	Frugivore	Resident
<i>Oriolus kundoo</i> / Indian Golden Oriole	LC	Omnivore	Summer visitor
<i>Oriolus traillii</i> / Maroon Oriole	LC	Insectivore	Resident
Order: Passeriformes (xvi) Family: Paridae			
<i>Parus major</i> / Great Tit	LC	Frugivore	Resident
<i>Parus monticolus</i> / Green-backed Tit	LC	Insectivore	Resident
<i>Machlolophus xanthogenys</i> / Himalayan Black-lored Tit	LC	Insectivore	Resident

Scientific name/ Common name	IUCN	Feeding guild	Migratory status
Order: Passeriformes (xvii) Family: Passeridae			
<i>Passer montanus</i> / Eurasian Tree Sparrow	LC	Insectivore	Resident
<i>Passer domesticus</i> / House Sparrow	LC	Granivore	Resident
Order: Passeriformes (xviii) Family: Pellorneidae			
<i>Alcippe nipalensis</i> / Nepal Fulvetta	LC	Insectivore	Resident
Order: Passeriformes (xix) Family: Phylloscopidae			
<i>Phylloscopus pulcher</i> / Buff-barred Warbler	LC	Insectivore	Resident
<i>Phylloscopus fuscatus</i> / Dusky Warbler	LC	Insectivore	Winter visitor
<i>Phylloscopus trochiloides</i> / Greenish Warbler	LC	Insectivore	Resident
<i>Phylloscopus xanthoschistos</i> / Grey-hooded Warbler	LC	Insectivore	Resident
<i>Phylloscopus humei</i> / Hume's Leaf Warbler	LC	Insectivore	Resident
<i>Phylloscopus fulgiventis</i> / Smoky Warbler	LC	Insectivore	Resident
<i>Seicercus whistleri</i> / Whistler's Warbler	LC	Insectivore	Resident
Order: Passeriformes (xx) Family: Pycnonotidae			
<i>Hemixos flavala</i> / Ashy Bulbul	LC	Insectivore	Resident
<i>Hypsipetes leucocephalus</i> / Black Bulbul	LC	Omnivore	Resident
<i>Pycnonotus leucogenys</i> / Himalayan Bulbul	LC	Omnivore	Resident
<i>Pycnonotus cafer</i> / Red-vented Bulbul	LC	Omnivore	Resident
Order: Passeriformes (xxi) Family: Rhipiduridae			
<i>Rhipidura albicollis</i> / White-throated Fantail	LC	Insectivore	Resident
Order: Passeriformes (xxii) Family: Sittidae			
<i>Sitta cinnamoventris</i> / Chestnut-bellied Nuthatch	LC	Insectivore	Resident
<i>Sitta frontalis</i> / Velvet-fronted Nuthatch	LC	Insectivore	Resident
Order: Passeriformes (xxiii) Family: Stenostiridae			
<i>Culicicapa ceylonensis</i> / Grey-headed Canary-Flycatcher	LC	Insectivore	Resident
<i>Chelidorhynch hypoxanthus</i> / Yellow-bellied Fantail	LC	Insectivore	Resident
Order: Passeriformes (xxiv) Family: Sturnidae			
<i>Sturnia malabarica</i> / Chestnut-tailed Starling	LC	Omnivore	Resident
<i>Acridotheres tristis</i> / Common Myna	LC	Omnivore	Resident
<i>Acridotheres fuscus</i> / Jungle Myna	LC	Omnivore	Resident
Order: Passeriformes (xxv) Family: Tichodromidae			
<i>Tichodroma muraria</i> / Wallcreeper	LC	Insectivore	Resident
Order: Passeriformes (xxvi) Family: Timaliidae			
<i>Erythrogonys erythrogonys</i> / Rusty-cheeked Scimiter Babbler	LC	Insectivore	Resident
<i>Pomatorhinus schisticeps</i> / White-browed Scimiter-Babbler	LC	Omnivore	Resident
Order: Passeriformes (xxvii) Family: Zosteropidae			
<i>Zosterops palpebrosus</i> / Indian White-eye	LC	Omnivore	Resident
Order: Pelecaniformes (i) Family: Ardeidae			
<i>Bubulcus ibis</i> / Cattle Egret	LC	Insectivore	Resident
<i>Ardeola grayii</i> / Indian Pond Heron	LC	Carnivore	Resident
<i>Ardea intermedia</i> / Intermediate Egret	LC	Carnivore	Resident
<i>Egretta garzetta</i> / Little Egret	LC	Carnivore	Resident
Order: Piciformes (i) Family: Megalaimidae			
<i>Megalaima asiatica</i> / Blue-throated Barbet	LC	Frugivore	Resident
<i>Megalaima virens</i> / Great Barbet	LC	Omnivore	Resident
Order: Piciformes (ii) Family: Picidae			
<i>Picus canus</i> / Grey-headed Woodpecker	LC	Insectivore	Resident
<i>Picus chlorolophus</i> / Lesser Yellownape	LC	Insectivore	Resident
Order: Psittaciformes (i) Family: Psittaculidae			
<i>Psittacula eupatria</i> / Alexandrine Parakeet	LC	Frugivore	Resident
<i>Psittacula krameria</i> / Rose-ringed Parakeet	LC	Frugivore	Resident
Order: Strigiformes (i) Family: Strigidae			
<i>Athene brama</i> / Spotted Owlet	LC	Carnivore	Resident