

## AVIAN FAUNA OF KSCSTE-MALABAR BOTANICAL GARDEN AND INSTITUTE FOR PLANT SCIENCES, KOZHIKODE DISTRICT, KERALA, INDIA

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**Abstract:** A detailed analysis of the avifauna of KSCSTE-Malabar Botanical Garden and Institute for Plant Sciences (KSCSTE-MBGIPS), Kozhikode, Kerala is presented in this paper. This institute is in the urban area of Kozhikode city with a span of 44 acres of protected area for biological diversity. This avifaunal study was conducted from January 2019 to December 2022. The current work documented 111 bird species belonging to 44 families and 18 orders. The avifauna includes three Western Ghat endemic species the Grey-fronted green pigeon, Malabar Barbet, White-cheeked Barbet, and four Globally threatened species, the Asian Woolly-necked Stork, Black-headed Ibis, Oriental Darter, and Painted Stork. In the survey, 15 species were in Schedule I, 94 species in Schedule II of the Wildlife Protection Act (WPA) 2022, one species in Appendix I, five species in Appendix II, and one species that are listed in Appendix III of the Convention on International Trading Endangered Species of Flora and Fauna (CITES). These data are satisfied under the updated status of Birdlife International Data Zone. Passeriformes is the predominant order among the avian group, and the family Ardeidae is the most relatively abundant.

**Key words:** Avian Fauna, Feeding Guild, KSCSTE-MBGIPS, Relative Abundance, Threatened Species, Vulnerable Species

## Introduction

A key threat to biodiversity is the processes connected to urbanization, which is one of the main sources of landscape change (Wilcox & Murphy, 1985). The biotic and abiotic variables connected to the available species pool in the area may influence the makeup of the flora and fauna found in urban areas (Bohning-Gaese, 1997). Bird community structures may be impacted by surrounding habitat features, and periurban landscapes have been connected to increased bird diversity in urban areas (Harris & Hone 1989). Urban bird diversity can be influenced by various factors such as habitat availability, food resources, and human activities. Cities can provide a new habitat for birds, such as parks, green roofs, and gardens (Beatley T. The bird-friendly city: Creating safe urban habitats. Island Press; 2020 Nov 5). These areas can provide food and shelter for various bird species. As an important part of biodiversity, birds are an important indicator group of urban ecosystem health. Urban bird diversity is an important aspect of urban ecology and can provide valuable insights into the health of urban ecosystems. Efforts to protect and enhance urban bird habitats can help to promote biodiversity and improve the quality of life for both humans and wildlife in cities (James et al., 2019).

Kerala is a state in southern India known for its rich biodiversity including a wide variety of bird species. The state is home to over 500 species of birds including both resident and migratory species (Praveen, 2015). Kerala's diverse habitats including forests, wetlands, and coastal areas provide a range of habitats for different bird species. A significant component of the natural environment that serves a purpose is the diversity of birds. According to location, habitat type, climate, altitude, and anthropogenic activities, the characteristics of bird community structure vary. The plant community greatly influences the distribution, quantity, and variety of birds since it is the plant community that dictates the physical structure of the environment of most habitats. Kerala Agricultural University (KAU) main campus is a huge area with dense vegetation having 172 species in 60 families and 17 orders (Manohar et al., 2017). Similarly, botanical gardens are fantastic resources for teaching people about flora and bird life. Even though they are well known for their significance to plant science and their crucial role in protecting plant diversity, it must be noted that plant communities do not exist without fauna because the two are simply inseparable and their interdependences go beyond what the naked eye can see. Hence the study conducted at Malabar Botanical Garden, Kozhikode district, checklist, and related information is appended hereto.

## Materials and Methods

**Study Area:** The present study was conducted at KSCSTE- Malabar Botanical Garden and Institute for Plant Sciences, Kozhikode, Kerala, India. The area lies between 11°23'39.41"N and 75°8'29.048"E and the altitude varies from 26.53 – 98.64 meters from the sea level. It is gifted as a naturalized botanical garden. The study area receives both the southwest and northeast monsoons, with most of the rainfall coming from the southwest monsoons from June to September. The institute has a total area of 44 acres of which 15 acres are marshy land and the remaining area is part of a hilly terrain providing diverse habitats for varieties habitats including a botanical garden, wetland region, plain area, hilly terrain composed of coconut and palm plantations, and orchards of mango, rambutan, orange, jackfruit, mangosteen, etc. The canopy structure also alters concerning elevation. In this paper, we present our observations of birds since 2019. The garden is lush green with more than 30 conservatories and has office, research, and godown blocks, surrounded by trees, the majority of which are endemic wild trees, shrubs, herbs, and grasses that provide a variety of food for birds (Figure 01).



MBGIPS campus. The bird species whose breeding has been positively recorded from the campus are indicated as Br<sup>+</sup>. Feeding guilds of recorded avian fauna are also mentioned in this study. The following formula was used to determine the percent of occurrence of families or relative diversity of families (Datta, 2016).

Relative diversity = No. of Species of each family / Total no of different species seen \* 100.

As a part of this investigation, we also recorded the type of host plants associated with avian fauna in the KSCSTE-MBGIPS.

## Results

A total of 111 species of birds belonging to 18 orders and 44 families have been reported from the KSCSTE-MBGIPS (Table 01). Details such as scientific name, common name, order, family, IUCN status, WPA, CITES, abundance, and the habitual and breeding status of the recorded birds are tabulated (Table 02). The taxonomy used is as per Ali and Ripley (1987), while the nomenclature is based on Inskipp et al. (1996). The common name suggested by Inskipp et al. (1996) is also included. According to the current survey, the MBGIPS campus accounts for 22.6% of species, 50% of families, and 81.81% of orders of birds of Kerala. Out of which 84.94% of species are residential and 50% of birds have been recognized in KSCSTE-MBGIPS as breeding sites. Most of the species belong to the order Passeriformes of 36% (Graph 01) and the family Ardeidae of 9% (Graph 02). Among the various feeding guilds insectivorous were found highly dominant with 33 species (30 percent) in this classification. Major insectivores recorded are Greater Racket-tailed Drongo, Bronze Drongo, Asian Brown Flycatcher, Brown-breasted Flycatcher, Indian Paradise Flycatcher, Asian Green Bee-eater, Blue-tailed Bee-eater, Black-rumped Flame back, etc. The group that allocates piscivores, insectivores with 10 species of 9 percent, and some of them are Cattle Egret, Black-headed Ibis, Asian Woolly-necked Stork, Intermediate Egret, White-throated Kingfisher, etc., the group predator includes Shikra, Peregrine Falcon, Booted Eagle, Brahminy Kite, etc., piscivore includes Common Kingfisher, Oriental Darter, Indian Cormorant, etc. and omnivore includes House Crow, Large-billed Crow, Greater Coucal, Common Myna, etc. follows seven species (6 percent). Some of the birds showed multiple types of feeding guilds are also depicted in Graph 03.

According to the relative abundance, the family Ardeidae dominates with 10% of the population including Intermediate Egret, Indian Pond Heron, Purple Heron, Cattle Egret, etc. followed by Accipitridae (8.9%) including Black Kite, Brahminy Kite, booted eagle, Crested Goshawk, etc. and Picidae (4.76%) including Lesser Yellow-nape Woodpecker, Brown-capped Pigmy woodpecker, Rufous Woodpecker, Black-rumped Flame back, etc. were showed. Graph 04 represents the relative abundance of the population.

## Significant observations during the study period

Some of the birds are observed particularly in specific months or years concerning the season.

- i. **Asian Woolly-necked Stork (*Ciconia episcopus*):** The bird was recorded in the wetland area from February to April in the consecutive years of 2020, 2021, and 2022 (summer).
- ii. **Black-headed Ibis (*Threskiornis melanocephalus*):** It is recorded at the start of February and extended until September. It was laboriously seen in June. This kind of frequency of occurrence continues in 2020, 2021, and 2022.
- iii. **Painted Stork (*Mycteria leucocephala*)** was observed on 15 September 2021, from the study area's wetland region.
- iv. **Oriental Darter (*Anhinga melanogaster*):** The bird was observed in November 2019 and April 2020, 2021. It is consecutively recorded at the main pond of KSCSTE-MBGIPS.
- v. **Amur Falcon (*Falco amurensis*):** It was recorded on December 2022.

- vi. **Booted Eagle (*Hieraaetus pennatus*):** The bird was observed in all months except July and November 2022.
- vii. **Brown Fish Owl (*Ketupa zeylonensis*)** was observed in October, November, and December 2020 and 2022. Presence of main pond, wetland habitats, streams, etc. are attracted this species to this area.
- viii. **Indian Spotted Eagle (*Clanga hastata*):** It was observed in March, December 2022 (both summer and winter).
- ix. **Oriental Honey Buzzard (*Pernis ptilorhynchus*):** The bird was observed from January 2020, 2021, 2022, February, November, and December 2019 to 2022.
- x. **Peregrine Falcon (*Falco peregrinus*):** It was observed in December 2022.
- xi. **Shikra (*Accipiter badius*):** It was seen in all months throughout the year except January and October and is mostly predominant in June.

### Major Tree Species Observed as Breeding and Food Sources

Trees such as *Syzygium cumini* (Linn) Skeels, *Ficus benghalensis* L, *Mangifera indica* L., etc. produced fruits that were preferred food for some birds such as *Psittacula krameri* (Rose-ringed Parakeet), *Megalaima viridis* (White-cheeked Barbet), *Oriolus kundoo* (Indian Golden Oriole) and other frugivorous birds. The plants such as *Calliandra haematocephala* L. (Calliandra) provide nectar for nectarivorous.

The study showed that terrestrial habitat had high species richness compared to marshy land. Birds such as, *Stigmatopelia chinensis* (Spotted Dove), *Hierococcyx varius* (Common Hawk Cuckoo), *Glaucidium radiatum* (Jungle Owlet), *Aegithina tiphia* (Common Iora), *Oriolus (oriolus) kundoo* (Indian Golden Oriole), *Oriolus chinensis* (Black-naped Oriole), *Oriolus xanthornus* (Black-hooded Oriole), *Hypothymis azurea* (Black-naped Monarch), *Orthotomus sutorius* (Common Tailorbird), *Zoothera citrina* (Orange-headed Thrush), *Muscicapa muttui* (Brown-breasted Flycatcher) and *Muscicapa dauurica* (Asian Brown Flycatcher) were found only in terrestrial habitat. The following trees are host plants for various caterpillars of butterflies and moths, this also attracts the insectivorous birds too. Asian Paradise Flycatcher, Asian Brown Flycatcher, Orange Minivet, etc. are some of the dependent bird species. Most of the Picidae members show intensive affinity towards softwood tree species such as *Ailanthus malabarica*, *Caryota urens*, *Cocus nucifera*, *Areca catechu*, *Bombax ceiba*, etc. The major tree species that maintain a rich diversity of birds were mentioned (Table 02).

### Discussion and Conclusion

Avian diversity plays a crucial role in maintaining ecosystems and supporting biodiversity. Each species is unique in its appearance, habitat, and location. Some occur in larger numbers and some in smaller numbers. The number of different bird species varies from place to place. Among all wildlife, birds are one of the most common wildlife in urban areas such as neighbourhood's and cities, where many bird populations have declined as a result of landscape changes due to urban expansion. The study found that the diversity of birds was morphologically diverse and showed unique behavioural characteristics. It is necessary to preserve biodiversity as it improves the environment. Ali (1969) and Neelakantan et al. (1993) reported a total of 475 species in 65 families and 19 orders from Kerala. Most recently 453 species were recorded by Sashikumar et al., 2011 and 500 species in 22 orders in 88 families by Praveen (2015). The adjacent areas of KSCSTE- Malabar Botanical Garden and Institute for Plant Sciences are urbanized within a short span and residential areas, and commercial and industrial developmental activities are frequently progressing. Due to the effect of these activities, surrounding natural bird populations are shifted to the KSCSTE-MBGIPS and its premises. The highest species richness could be due to the presence of mosaic habitats. From the study, it has been found that the botanical garden is a vulnerable land harbouring plenty of

residents and few migratory birds such as Asian Woolly-necked Stork, Black-naped oriole, Grey-headed swamphen, Black-headed ibis, Lesser Whistling Duck, etc.

**Table 02: Major Tree Species Associated with Avian Fauna**

#	Scientific Name	Vernacular Name
1	<i>Syzygium caryophyllatum</i> (L.) Alston	Njaara
2	<i>Carallia brachiata</i> (Lour.) Merr.	Vankana
3	<i>Morinda citrifolia</i> L.	Nonni
4	<i>Morinda pubescens</i> Sm.	Manjappaavatta
5	<i>Mimusops elengi</i> L.	Elengi
6	<i>Dillenia pentagyna</i> Roxb.	Kudappunna
7	<i>Caryota urens</i> L.	Chundappana
8	<i>Calliandra haematocephala</i> Hassk	Calliandra
9	<i>Melaleuca leucadendra</i> (L.) L.	Kaipoothi maram
10	<i>Callistemon citrinus</i> (Curtis) Skeels	Bottle brush
11	<i>Garcinia × mangostana</i> L.	Mangostein
12	<i>Vateria indica</i> L.	Vellapyine
13	<i>Ficus benghalensis</i> L.	Peraal
14	<i>Schefflera actinophylla</i> (Endl.) Harms	Neeraalichedi
15	<i>Hopea ponga</i> (Dennst.) Mabb	Irumbakam
16	<i>Syzygium cumini</i> (L.) Skeels	Njaval
17	<i>Macaranga peltata</i> (Roxb.) Müll.Arg.	Upoothi
18	<i>Cassia fistula</i> L.	Konna
19	<i>Saraca asoca</i> (Roxb.) Willd.	Asokam
20	<i>Elaeocarpus serratus</i> L.	Rudraksham
21	<i>Mangifera indica</i> L.	Manga or Mango
22	<i>Santalum album</i> L.	Chandhanam or Sandal
23	<i>Kigelia africana</i> (Lam.) Benth.	Sivakundalam
24	<i>Brownea grandiceps</i> Jacq.	Venezuela rose
25	<i>Magnolia champaca</i> (L.) Baill. ex Pierre	Chempakam
26	<i>Bambusa tuldooides</i> Munro	Mula
27	<i>Ficus lyrata</i> Warb.	Fiddle fig
28	<i>Acacia catechu</i> (L.f.) Wild.	Karingaali
29	<i>Acacia mangium</i> Wild.	Maanjyam
30	<i>Artocarpus heterophyllus</i> Lam.	Plaav
31	<i>Artocarpus hirsutus</i> Lam.	Ayani
32	<i>Butea monosperma</i> (Larn.) Taub	Plaash
33	<i>Ficus racemosa</i> L.	Aththi
34	<i>Ficus religiosa</i> L.	Arayaal
35	<i>Cocos nucifera</i> L.	Thengu
36	<i>Hydnocarpus pentandrus</i> (Buch.-Ham.) Oken	Marotti
37	<i>Areca catechu</i> L.	Adaykka
38	<i>Areca catechu</i> -dwarf hybrid	Dwarf Arecanut
39	<i>Mesua ferrea</i> L.	Naagapoo maram
40	<i>Strychnos nux-vomica</i> L.	Kaanjiram
41	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Thaanni
42	<i>Terminalia chebula</i> Retz.	Kadukka
43	<i>Ailanthus malabarica</i> DC.	Matti
44	<i>Gliricidia sepium</i> (Jacq.) Walp.	Sheemakkonna
45	<i>Lagerstroemia speciosa</i> (L.) Pers.	Manimaruth
46	<i>Phyllanthus emblica</i> L.	Nelli
47	<i>Morinda tinctoria</i> Roxb.	Soapum kaya
48	<i>Polyalthia longifolia</i> (Sonn.) Thwaites	Aranamaram
49	<i>Olea dioica</i> Roxb.	Edana
50	<i>Diospyros ebenum</i> J.Koenig ex Retz.	Karimaram
51	<i>Bombax ceiba</i> L.	Ilavu
52	<i>Erythrina variegata</i> L.	Mullu murukk

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**Figure 02: Few Photographs of Some Documented Bird Species**



*Ashy Drongo*



*Ashy Prinia*



*Asian Brown Flycatcher*



*Asian Green Bee-eater*



*Asian Koel*



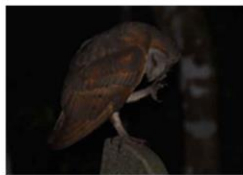
*Asian Openbill Stork*



*Asian Woolly-necked Stork*



*Banded-bay Cuckoo*



*Barn Owl*



*Black Drongo*



*Black Kite*



*Black-naped Oriole*



*Black-headed Ibis*



*Black-hooded Oriole*



*Black-naped Monarch*



*Black-rumped Flameback*



*Blue-tailed Bee-eater*



*Booted Eagle*



*Brahminy Kite*



*Brahminy starling*



*Bronzed Drongo*



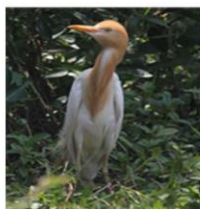
*Brown-breasted Flycatcher*



*Brown-capped Pigmy Woodpecker*



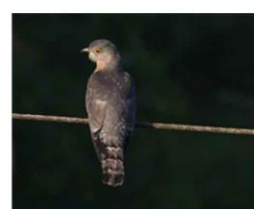
*Brown Shrike*



*Cattle Egret*



*Chestnut-tailed Starling*



*Common Hawk Cuckoo*





*Common Kingfisher*



*Common Myna*



*Common Tailorbird*



*Coppersmith Barbet*



*Crested Hawk Eagle*



*Golden-fronted Leafbird*



*Greater Coucal*



*Greater Racket-tailed Drongo*



*Grey-fronted Green Pigeon*



*Grey-headed Swaphen*



*Grey-bellied cuckoo*



*Grey-capped Emerald Dove*



*House Crow*



*House Sparrow*



*Indian Black Bird*



*Indian Golden Oriole*



*Indian Grey Hornbill*



*Indian Paradise Flycatcher*



*Indian Pond-heron*



*Indian Roller*



*Jerdon's Leafbird*



*Jungle Babbler*



*Jungle Owlet*



*Large-billed Crow*



*Lesser Whistling Duck*



*Lesser Yellow-nape Woodpecker*



*Little Cormorant*



*Little Swift*



*Loten's Sunbird*



*Orange Minivet*



*Orange-headed Thrush*



*Oriental Darter*



*Oriental Honey Buzzard*



*Oriental Magpie Robin*



*Painted Stork*



*Pale-billed Flowerpecker*



*Peafowl*



*Peregrine Falcon*



*Plain Prinia*



*Purple Heron*



*Purple-rumped Sunbird*



*Red Spur Fowl*



*Red-vented Bulbul*



*Red-wattled Lapwing*



*Red-whiskered Bulbul*



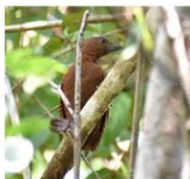
*Rock Pigeon*



*Rose-ringed Parakeet*



*Rufous Treepie*



*Rufous Woodpecker*



*Shikra*



*Spotted Dove*



*Stork-billed Kingfisher*



*White-breasted Waterhen*



*White-cheeked Barbet*



*White-rumped Munia*



*White-throated Kingfisher*

**Table 01: Checklist of bird species in Malabar Botanical Garden and Institute for Plant Sciences, Kozhikode**  
**NB: WPAA, 2022 – The Wildlife (Protection) Amendment Act, 2022; A - Abundant; C - Common; U - Uncommon; O - Occasional; R - Resident; M – Migrant**

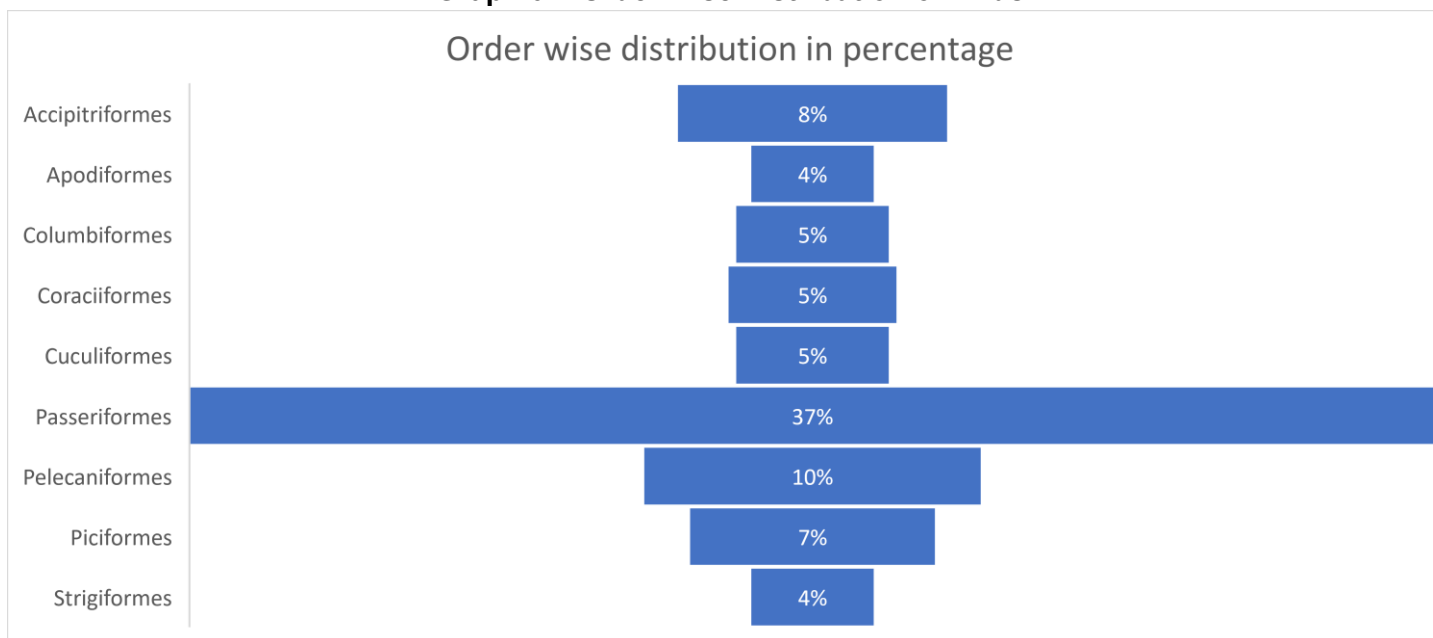
#	Scientific Name	Authority	Common Name	Order	Family	IUCN Status	WPAA, 2022	CITES Appendix	Abundance	Status
1	<i>Falco amurensis</i>	Radde, 1863	Amur Falcon	Falconiformes	Falconidae	LC	Sch. I	III	O	M
2	<i>Dicrurus leucophaeus</i>	Vieillot, 1817	Ashy Drongo	Passeriformes	Dicruridae	LC	Sch. II		C	R, Br <sup>+</sup>
3	<i>Prinia socialis</i>	Sykes, 1832	Ashy Prinia	Passeriformes	Cisticolidae	LC	Sch. II		O	M
4	<i>Muscicapa dauurica</i>	Pallas, 1811	Asian Brown Flycatcher	Passeriformes	Muscicapidae	LC	Sch. II		U	M
5	<i>Merops orientalis</i>	Latham, 1801	Asian Green Bee-Eater	Coraciiformes	Meropidae	LC	Sch. II		A	R, Br <sup>+</sup>
6	<i>Eudynamis scolopaceus</i>	(Linnaeus, 1758)	Asian Koel	Cuculiformes	Cuculidae	LC	Sch. II		C	M, Br <sup>+</sup>
7	<i>Anastomus oscitans</i>	(Boddaert, 1783)	Asian Openbill Stork	Ciconiiformes	Ciconiidae	LC	Sch. II		C	R
8	<i>Cypsiurus balasiensis</i>	(Gray, JE, 1829)	Asian Palm Swift	Apodiformes	Apodidae	LC	Sch. II		C	R
9	<i>Ciconia episcopus</i>	(Boddaert, 1783)	Asian Woolly-necked Stork	Ciconiiformes	Ciconiidae	NT	Sch. II		O	M
10	<i>Cacomantis sonneratii</i>	(Latham, 1790)	Banded Bay Cuckoo	Cuculiformes	Cuculidae	LC	Sch. II		C	R, Br <sup>+</sup>
11	<i>Tyto alba</i>	(Scopoli, 1769)	Barn Owl	Strigiformes	Tytonidae	LC	Sch. I	II	C	R, Br <sup>+</sup>
12	<i>Ixobrychus flavicollis</i>	(Latham, 1790)	Black Bittern	Pelecaniformes	Ardeidae	LC	Sch. II		U	R
13	<i>Nycticorax nycticorax</i>	(Linnaeus, 1758)	Black-crowned Night Heron	Pelecaniformes	Ardeidae	LC	Sch. II		U	R
14	<i>Dicrurus macrocercus</i>	Vieillot, 1817	Black Drongo	Passeriformes	Dicruridae	LC	Sch. II		C	R, Br <sup>+</sup>
15	<i>Milvus migrans</i>	(Boddaert, 1783)	Black Kite	Accipitriformes	Accipitridae	LC	Sch. II		U	R
16	<i>Oriolus chinensis</i>	Linnaeus, 1766	Black Naped Oriole	Passeriformes	Oriolidae	LC	Sch. II		O	M
17	<i>Threskiornis melanocephalus</i>	(Latham, 1790)	Black-headed Ibis	Pelecaniformes	Threskiornithidae	NT	Sch. II		O	M
18	<i>Oriolus xanthornus</i>	(Linnaeus, 1758)	Black-hooded Oriole	Passeriformes	Oriolidae	LC	Sch. II		A	R, Br <sup>+</sup>
19	<i>Hypothymis azurea</i>	(Boddaert, 1783)	Black-naped Monarch	Passeriformes	Monarchidae	LC	Sch. II		C	R, Br <sup>+</sup>
20	<i>Dinopium benghalense</i>	(Linnaeus, 1758)	Black-rumped Flameback	Piciformes	Picidae	LC	Sch. II		C	R, Br <sup>+</sup>
21	<i>Merops philippinus</i>	Linnaeus, 1767	Blue-tailed Bee-eater	Coraciiformes	Meropidae	LC	Sch. II		A	R, Br <sup>+</sup>
22	<i>Anthus godlewskii</i>	(Taczanowski, 1876)	Blyth Pipit	Passeriformes	Motacillidae	LC	Sch. II		O	R
23	<i>Apus leuconyx</i>	(Blyth, 1845)	Blyth's swilefts	Apodiformes	Apodidae		Sch. II		O	R
24	<i>Hieraaetus pennatus</i>	(Gmelin, JF, 1788)	Booted Eagle	Accipitriformes	Accipitridae	LC	Sch. I		C	M
25	<i>Haliastur indus</i>	(Boddaert, 1783)	Brahminy Kite	Accipitriformes	Accipitridae	LC	Sch. I		A	R
26	<i>Sturnia pagodarum</i>	(Gmelin, JF, 1789)	Brahminy Starling	Passeriformes	Sturnidae	LC	Sch. II		O	M
27	<i>Dicrurus aeneus</i>	Vieillot, 1817	Bronzed Drongo	Passeriformes	Dicruridae	LC	Sch. II		O	R
28	<i>Muscicapa muttui</i>	(Layard, EL, 1854)	Brown Breasted Flycatcher	Passeriformes	Muscicapidae	LC	Sch. II		O	R, Br <sup>+</sup>
29	<i>Yungipicus nanus</i>	(Vigors, 1832)	Brown Capped Pigmy Woodpecker	Piciformes	Picidae		Sch. II		O	R

30	<i>Ketupa zeylonensis</i>	(Gmelin, JF, 1788)	Brown Fish Owl	Strigiformes	Strigidae	LC	Sch. I	II	O	R
31	<i>Lanius cristatus</i>	Linnaeus, 1758	Brown Shrike	Passeriformes	Laniidae	LC	Sch. II		O	R
32	<i>Bubulcus ibis</i>	(Linnaeus, 1758)	Cattle Egret	Pelecaniformes	Ardeidae	LC	Sch. II		C	R, Br+
33	<i>Sturnia malabarica</i>	(Gmelin, JF, 1789)	Chestnut-tailed Starling	Passeriformes	Sturnidae	LC	Sch. II		C	R, Br+
34	<i>Dinopium javanense</i>	(Ljungh, 1797)	Common flameback	Piciformes	Picidae	LC	Sch. II		A	R, Br+
35	<i>Hierococcyx varius</i>	(Vahl, 1797)	Common Hawk Cuckoo	Cuculiformes	Cuculidae	LC	Sch. II		C	R, Br+
36	<i>Aegithina tiphia</i>	(Linnaeus, 1758)	Common lora	Passeriformes	Aegithinidae	LC	Sch. II		O	R
37	<i>Alcedo atthis</i>	(Linnaeus, 1758)	Common Kingfisher	Coraciiformes	Alcedinidae	LC	Sch. II		C	R, Br+
38	<i>Acridotheres tristis</i>	(Linnaeus, 1766)	Common Myna	Passeriformes	Sturnidae	LC	Sch. II		A	R, Br+
39	<i>Orthotomus sutorius</i>	(Pennant, 1769)	Common Tailorbird	Passeriformes	Cisticolidae	LC	Sch. II		C	R, Br+
40	<i>Psilopogon haemacephalus</i>	(Statius Muller, 1776)	Coppersmith Barbet	Piciformes	Megalaimidae	LC	Sch. II		O	R
41	<i>Accipiter trivirgatus</i>	(Temminck, 1824)	Crested Goshawk	Accipitriformes	Accipitridae	LC	Sch. I		O	R
42	<i>Nisaetus cirrhatus</i>	(Gmelin, JF, 1788)	Crested Hawk Eagle	Accipitriformes	Accipitridae	LC	Sch. I		C	R, Br+
43	<i>Spilornis cheela</i>	(Latham, 1790)	Crested Serpent Eagle	Accipitriformes	Accipitridae	LC	Sch. I		C	R, Br+
44	<i>Chloropsis aurifrons</i>	(Temminck, 1829)	Golden Fronted Leafbird	Passeriformes	Chloropseidae	LC	Sch. II		A	R, Br+
45	<i>Casmerodius albus</i>	(Linnaeus, 1758)	Great Egret	Pelecaniformes	Ardeidae	LC	Sch. II		C	R
46	<i>Centropus sinensis</i>	(Stephens, 1815)	Greater Coucal	Cuculiformes	Cuculidae	LC	Sch. II		C	R, Br+
47	<i>Dicrurus paradiseus</i>	(Linnaeus, 1766)	Greater Racket-tailed Drongo	Passeriformes	Dicruridae	LC	Sch. II		C	R, Br+
48	<i>Phylloscopus nitidus</i>	Blyth, 1843	Green Warbler	Passeriformes	Phylloscopidae	LC	Sch. II		O	R
49	<i>Cacomantis passerinus</i>	(Vahl, 1797)	Grey-bellied cuckoo	Cuculiformes	Cuculidae	LC	Sch. II		O	R, Br+
50	<i>Chalcophaps indica</i>	(Linnaeus, 1758)	Grey-Capped Emerald Dove	Columbiformes	Columbidae	LC	Sch. II		C	R, Br+
51	<i>Treron affinis</i>	(Jerdon, 1840)	Grey Fronted Green Pigeon	Columbiformes	Columbidae	LC	Sch. II		O	R, Br+
52	<i>Porphyrio porphyrio</i>	(Linnaeus, 1758)	Grey Headed Swaphen	Gruiformes	Rallidae	LC	Sch. II		O	M
53	<i>Ardea cinerea</i>	Linnaeus, 1758	Grey Heron	Pelecaniformes	Ardeidae	LC	Sch. II		C	R, Br+
54	<i>Corvus splendens</i>	Vieillot, 1817	House Crow	Passeriformes	Corvidae	LC			A	R, Br+
55	<i>Passer domesticus</i>	(Linnaeus, 1758)	House Sparrow	Passeriformes	Passeridae	LC	Sch. II		U	R
56	<i>Turdus simillimus</i>	Jerdon, 1839	Indian Black Bird	Passeriformes	Turdidae	LC	Sch. II		U	R
57	<i>Phalacrocorax fuscicollis</i>	Stephens, 1826	Indian Cormorant	Suliformes	Phalacrocoracidae	LC	Sch. II		O	R
58	<i>Oriolus kundoo</i>	Sykes, 1832	Indian Golden Oriole	Passeriformes	Oriolidae	LC	Sch. II		C	R, Br+
59	<i>Ocyroceros birostris</i>	(Scopoli, 1786)	Indian Grey Hornbill	Bucerotiformes	Bucerotidae	LC	Sch. II		U	R
60	<i>Terpsiphone paradisi</i>	(Linnaeus, 1758)	Indian Paradise Flycatcher	Passeriformes	Monarchidae	LC	Sch. II		O	M, Br+
61	<i>Pitta brachyura</i>	(Linnaeus, 1766)	Indian Pitta	Passeriformes	Pittidae	LC	Sch. II		O	M
62	<i>Ardeola grayii</i>	(Sykes, 1832)	Indian Pond-Heron	Pelecaniformes	Ardeidae	LC	Sch. II		A	R, Br+
63	<i>Coracias benghalensis</i>	(Linnaeus, 1758)	Indian Roller	Coraciiformes	Coraciidae	LC	Sch. II		O	R
64	<i>Clanga hastata</i>	(Lesson, RP, 1831)	Indian spotted eagle	Accipitriformes	Accipitridae	VU	Sch. I		C	R
65	<i>Aerodramus unicolor</i>	(Jerdon, 1840)	Indian Swiftlet	Apodiformes	Apodidae	LC	Sch. I		O	R

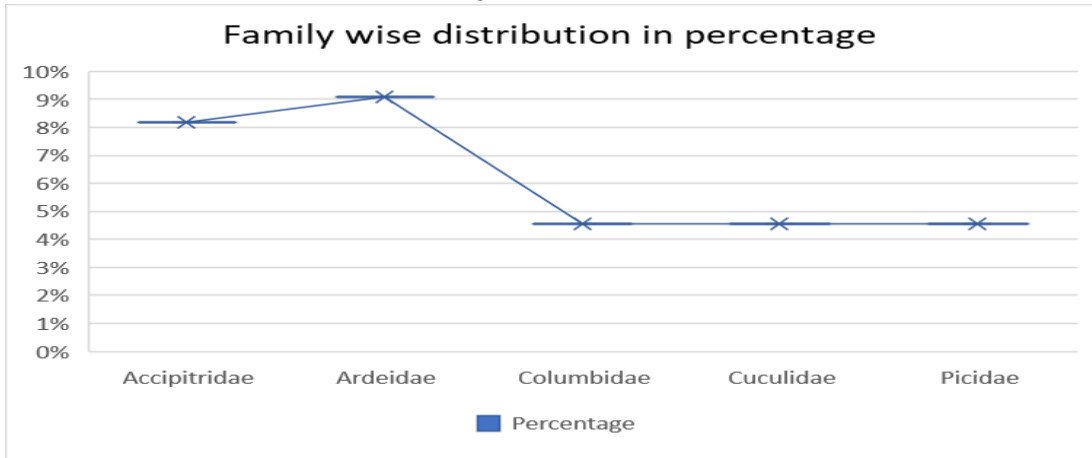
66	<i>Ardea intermedia</i>	Wagler, 1829	Intermediate Egret	Pelecaniformes	Ardeidae	LC	Sch. II		C	R
67	<i>Chloropsis jerdoni</i>	(Blyth, 1844)	Jerdon's Leafbird	Passeriformes	Chloropseidae	LC	Sch. II		A	R, Br <sup>+</sup>
68	<i>Argya striata</i>	(Dumont, 1823)	Jungle Babbler	Passeriformes	Leiothrichidae	LC	Sch. II		C	R, Br <sup>+</sup>
69	<i>Glaucidium radiatum</i>	(Tickell, 1833)	Jungle Owlet	Strigiformes	Strigidae	LC	Sch. II	II	U	R
70	<i>Corvus macrorhynchos</i>	Wagler, 1827	Large-billed Crow	Passeriformes	Corvidae	LC	Sch. II		C	R, Br <sup>+</sup>
71	<i>Dendrocygna javanica</i>	Horsfield, 1821	Lesser Whitstling Duck	Anseriformes	Anatidae	LC	Sch. II		O	M
72	<i>Picus chlorolophus</i>	Vieillot, 1818	Lesser Yellow-nape Woodpecker	Piciformes	Picidae	LC	Sch. II		U	R, Br <sup>+</sup>
73	<i>Microcarbo niger</i>	(Vieillot, 1817)	Little Cormorant	Suliformes	Phalacrocoracidae	LC	Sch. II		C	R, Br <sup>+</sup>
74	<i>Egretta garzetta</i>	(Linnaeus, 1766)	Little Egret	Pelecaniformes	Ardeidae	LC	Sch. II		O	R
75	<i>Apus affinis</i>	(Gray, JE, 1830)	Little Swift	Apodiformes	Apodidae	LC	Sch. II		O	R
76	<i>Cinnyris lotenius</i>	(Linnaeus, 1766)	Loten's Sunbird	Passeriformes	Nectariniidae	LC	Sch. II		O	R
77	<i>Psilopogon malabaricus</i>	(Blyth, 1847)	Malabar barbet	Piciformes	Megalaimidae	LC	Sch. II		U	R
78	<i>Strix ocellata</i>	(Lesson, RP, 1839)	Mottled wood owl	Strigiformes	Strigidae	LC	Sch. I	II	O	R
79	<i>Pericrocotus flammeus</i>	(Forster, JR, 1781)	Orange Minivet	Passeriformes	Campephagidae	LC	Sch. II		C	R, Br <sup>+</sup>
80	<i>Geokichla citrina</i>	(Latham, 1790)	Orange-headed Thrush	Passeriformes	Turdidae	LC	Sch. II		C	R, Br <sup>+</sup>
81	<i>Anhinga melanogaster</i>	Pennant, 1769	Oriental Darter	Suliformes	Anhingidae	NT	Sch. II		O	R
82	<i>Pernis ptilorhynchus</i>	(Temminck, 1821)	Oriental Honey Buzzard	Accipitriformes	Accipitridae	LC	Sch. II		O	R
83	<i>Copsychus saularis</i>	(Linnaeus, 1758)	Oriental Magpie Robin	Passeriformes	Muscicapidae	LC	Sch. II		C	R, Br <sup>+</sup>
84	<i>Mycteria leucocephala</i>	(Pennant, 1769)	Painted Stork	Ciconiiformes	Ciconiidae	NT	Sch. II		U	M
85	<i>Dicaeum erythrorhynchos</i>	(Latham, 1790)	Pale Billed Flowerpecker	Passeriformes	Dicaeidae	LC	Sch. II		C	R, Br <sup>+</sup>
86	<i>Pavo cristatus</i>	Linnaeus, 1758	Peafowl	Galliformes	Phasianidae	LC	Sch. I	III	O	M
87	<i>Prinia inornata</i>	Sykes, 1832	Plain Prinia	Passeriformes	Cisticolidae	LC	Sch. II		C	R, Br <sup>+</sup>
88	<i>Falco peregrinus</i>	Tunstall, 1771	Peregrine Falcon	Falconiformes	Falconidae	LC	Sch. I	I	U	M
89	<i>Ardea purpurea</i>	Linnaeus, 1766	Purple Heron	Pelecaniformes	Ardeidae	LC	Sch. II		C	R
90	<i>Cinnyris asiaticus</i>	(Latham, 1790)	Purple Sunbird	Passeriformes	Nectariniidae	LC	Sch. II		C	R, Br <sup>+</sup>
91	<i>Leptocoma zeylonica</i>	(Linnaeus, 1766)	Purple-rumped Sunbird	Passeriformes	Nectariniidae	LC	Sch. II		C	R, Br <sup>+</sup>
92	<i>Galloperdix spadicea</i>	(Gmelin, JF, 1789)	Red Spur Fowl	Galliformes	Phasianidae	LC	Sch. II		C	R, Br <sup>+</sup>
93	<i>Pycnonotus cafer</i>	(Linnaeus, 1766)	Red Vented Bulbul	Passeriformes	Pycnonotidae	LC	Sch. II		C	R, Br <sup>+</sup>
94	<i>Vanellus indicus</i>	(Boddaert, 1783)	Red Wattled Lapwing	Charadriiformes	Charadriidae	LC	Sch. II		C	M
95	<i>Pycnonotus jocosus</i>	(Linnaeus, 1758)	Red Whiskered Bulbul	Passeriformes	Pycnonotidae	LC	Sch. II		A	R, Br <sup>+</sup>
96	<i>Columba livia</i>	Gmelin, JF, 1789	Rock Pigeon	Columbiformes	Columbidae	LC			O	R, Br <sup>+</sup>
97	<i>Psittacula krameri</i>	(Scopoli, 1769)	Rose Ringed Parakeet	Psittaciformes	Psittaculidae	LC	Sch. II	II	C	R, Br <sup>+</sup>
98	<i>Dendrocitta vagabunda</i>	(Latham, 1790)	Rufous Treepie	Passeriformes	Corvidae	LC	Sch. II		C	R, Br <sup>+</sup>
99	<i>Micropternus brachyurus</i>	(Vieillot, 1818)	Rufous Woodpecker	Piciformes	Picidae	LC	Sch. II		O	R
100	<i>Accipiter badius</i>	(Gmelin, JF, 1788)	Shikra	Accipitriformes	Accipitridae	LC	Sch. I		C	R, Br <sup>+</sup>
101	<i>Pericrocotus cinnamomeus</i>	(Linnaeus, 1766)	Small Minivet	Passeriformes	Campephagidae	LC	Sch. I		C	R

102	<i>Streptopelia chinensis</i>	(Scopoli, 1786)	Spotted Dove	Columbiformes	Columbidae	LC	Sch. II		C	R, Br <sup>+</sup>
103	<i>Pelargopsis capensis</i>	(Linnaeus, 1766)	Stork Billed Kingfisher	Coraciiformes	Alcedinidae	LC	Sch. II		O	R
104	<i>Loriculus vernalis</i>	(Sparrman, 1787)	Vernal Hanging Parrot	Psittaciiformes	Psittaculidae	LC	Sch. II		O	R
105	<i>Amauornis phoenicurus</i>	(Pennant, 1769)	White-breasted Waterhen	Gruiformes	Rallidae	LC	Sch. II		C	R, Br <sup>+</sup>
106	<i>Psilopogon viridis</i>	(Boddaert, 1783)	White-cheeked Barbet	Piciformes	Megalaimidae	LC	Sch. II		C	R, Br <sup>+</sup>
107	<i>Lonchura striata</i>	(Linnaeus, 1766)	White-rumped Munia	Passeriformes	Estrildidae	LC	Sch. II		O	R
108	<i>Halcyon smyrnensis</i>	(Linnaeus, 1758)	White-throated Kingfisher	Coraciiformes	Alcedinidae	LC	Sch. II		C	R, Br <sup>+</sup>
109	<i>Ixobrychus sinensis</i>	(Gmelin, JF, 1789)	Yellow bittern	Pelecaniformes	Ardeidae	LC	Sch. II		U	R
110	<i>Treron phoenicopterus</i>	(Latham, 1790)	Yellow Footed Green Pigeon	Columbiformes	Columbidae	LC	Sch. II		O	R, Br <sup>+</sup>
111	<i>Vanellus malabaricus</i>	(Boddaert, 1783)	Yellow Wattled Lapwing	Charadriiformes	Charadriidae	LC	Sch. II		O	M

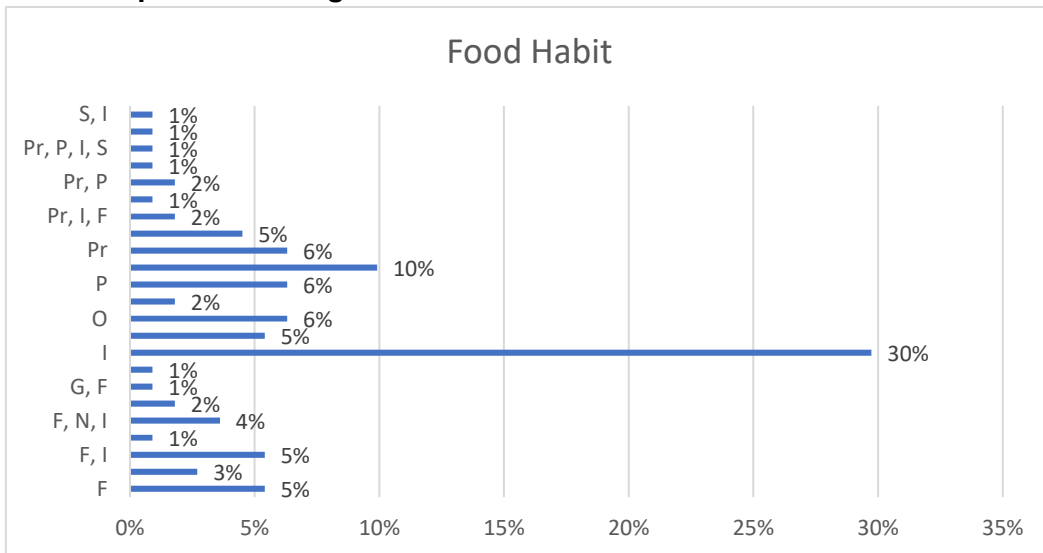
**Graph 01: Order-wise Distribution of Birds**



**Graph 02: Family-wise Distribution of Birds**



**Graph 03: Feeding Guild Structure of Birds of KSCSTE-MBGIPS**



NB: F – Frugivore; G – Granivore; I – Insectivore; N – Nectarivore; O – Omnivore; S – Scavenger; P – Piscivore; Pr – Predator

**Graph 04: Relative Abundance**

