

## **A STUDY ON THE AVIFAUNAL DIVERSITY OF CHUNCHANKATTE REGION, KRISHNARAJANAGARA TALUK, MYSURU DISTRICT, KARNATAKA, INDIA**

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### **ABSTRACT**

A field study was conducted to find out the status, occurrence and relative abundance of birds in Chunchankatte region of Krishnarajanagara Taluk, Mysuru District. During April, May, June, July, 2023 sampling was done by visual search method. Collected data from study area were subjected to estimate relative abundance of species. A total, 50 species belonging to 33 Families and 15 orders were documented in the study sites. This diverse distribution of bird species was reflected in the study of diversity indices where the Shannon-Wiener diversity index scores of orders 2.3 like other protected areas of the country. The present study location is also facing conservation challenges and more intensive studies will certainly reveal the impact of anthropogenic alteration of the habitats in and around the present study location along with the enrichment of knowledge for the avifaunal diversity.

### **Keywords:**

Avifaunal diversity; Habitat; Passeriformes; Ardeidae.

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### **INTRODUCTION**

Birds are a group of warm-blooded vertebrates with a body temperature of 38-44°C. Birds live worldwide. There are about ten thousand living species of birds. Avifaunal plays an important link of food chain in ecological unit of nature. Hence it is very important to know their diversity, migratory status, population size, distribution pattern and conservation status. Birds are widely recognized as a bio-indicator of the quality of ecosystem (Jeevan *et al.*, 2023). According to an estimate total 1228 bird species found in Indian sub-continent, out of that more than 9000 bird species of the world, over 13% of the world's bird fauna are found in India (Grimmett *et al.*, 1998). Karnataka state represents 500 plus bird species with 48 listed in threatened (Patil and Hiragond, 2013). Unfortunately global diversity of birds is decreasing due to anthropogenic activities and climate changes (Rapoport, 1993; Chen *et al.*, 2011; Sekercioglu *et al.*, 2012). ICUN Red list of endangered birds has already recognized 1226 bird species as threatened globally and India with 88 threatened bird species (Jayanta, 2015).

The bird habitats of Indian subcontinent can be roughly divided into forest scrub, wetlands, grassland, desert and agricultural land (Abdar, 2014). India has 243 species of water birds and 67 species of wetland dependent and associated birds (Kumar *et al.*, 2005). The Indian subcontinent is

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known for diverse and rich bird species whose taxonomy, distribution and their general habitat characteristics are well documented in India. Understanding the diversity and structure of bird communities is essential to delineate the importance of regional or local landscapes for avian conservation. (Rajan *et al.*, 2014). Birds are considered as excellent bio-indicators of the effects urbanization has on ecosystems since they are highly diverse and conspicuous elements of the ecosystem. Also they respond rapidly to changes in landscape configuration, composition and function (Hobson and Rempel, 2001). As a result they are used as indicators of long term environmental disturbances such as urbanization and land use change. Thus, they are useful models for studying a variety of environmental problems such as habitat loss of biodiversity (Safdar *et al.*, 2013). Biodiversity is not evenly distributed across the earth. It may be influenced by biogeography; some landscapes exhibit high richness in biological diversity whereas others show an impoverished flora and fauna. (Joshi *et al.*, 2012). The health of the forest ecosystem depends on the avian population, density and species diversity which in turn directly reflects the changes in their habitat conditions. The extent of change determines the long term conservation of biodiversity (Centerbury *et al.*, 2000). The population studies have traditionally been used to monitor large-scale, long term changes in avian population and to assess both habitat quality and the responses of birds to both natural and human caused environmental changes (Weins, 1989).

Birds are among the best monitors of environmental changes. Changes in their population, behaviour patterns and reproductive ability have most often been used to examine the long term effects of habitat fragmentation (Harisha and Hosetti, 2009). Ecologically birds are of tremendous importance because of their key roles as pollinators and agents of seed dispersal (Bibi and Ali, 2013). India has a diverse range of wetland types that harbor not only a variety of breeding resident species of birds but also attracts a number of waterfowl breeding in central and northern Asia in winters (Nimgare *et al.*, 2017). Birds are important group of aquatic food chain. They feed on vegetation, fishes and other animals of the reservoir. The birds like Kingfisher, Stork, Cormorants and herons feed on fishes, frogs, tadpoles and similar aquatic animals. Birds occupy an important position in an animal kingdom especially in relation to man. Today due to industrialization and urbanization most of the water bodies in India which gives stress on the physical, chemical and biological characteristics of water. The life of aquatic birds depends directly on physical and chemical properties of an aquatic environments. It is a duty to protect and nurture this precious gift of nature (Donar *et al.*, 2012). Birds are among nature's most beautiful animals and undoubtedly, bird habitat particularly within the lake areas seems to be strongly influenced by climatic changes and immediate human impact. Freshwater lakes one of important types of wetlands, play a vital role in the economics of their respective regions, especially with reference to agriculture, fishing, livestock maintenance and drinking water facilities of the adjacent areas (Manikannan, 2011). The abundance of avifauna indicates the healthy status of lakes owing to the availability of water, safe habitat and food sources for both adults and nestlings, and essential nesting/roosting sites in and around the lakes are important for the occurrence and abundance of aquatic bird population (Joshi, 2012).

Birds play a noteworthy function in ecosystem. Birds are an imperative component and their occurrence and distribution are an important phenomenon to understand the overall picture of a habitat. The population of birds in any kind of ecosystem shows the environmental quality of the area, pollution level, security and availability of food and habitat. Bird fauna requires a specific habitat that varies with the seasons, the disturbance and destruction of which leads to their extinction (Chauhan *et al.*, 2008). Birds, nearly everyone enjoys the beauty of their forms and coloring, the vivacity of their movement, the buoyancy of their flight and sweetness of their songs. Birds are excellent model organisms for understanding key issues in ecology, animal behaviour, evolutionary biology and conservation (Urfi, 2011).

Krishnaraja (KR) Nagar is one of the agriculturally productive Taluk of Mysuru District, known for world famous reservoirs and Cauvery river basin have created small to medium sized many aquatic habitats which are attracting a good number of resident migrants and migratory birds year around. However information on aquatic birds visiting these habitats is fragmentary. Since assessment of local landscape for conservation of avifaunal can only be understood by knowing the structure of

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bird community of that region (Kattan and Franco, 2004). So to record the birds species present in that region present study was undertaken.

### MATERIALS AND METHODS

#### Study Area

A study area is Chunchankatte region, in Krishnarajanagar Taluk, Mysuru District in Karnataka. It is located near kaveri river and geographically at 12°30'22" North latitude 76°17'40" East longitude. The average temperature in winter is around 15°C and in summer maximum temperature rises to 35°C, humidity is close to 79 % and rainfall 739mm. It is also called as paddy land of Mysuru because it is the highest producer in Mysuru district. Paddy production during kharif season has crossed 4.83 lakh tones this year with the numbers highest in the traditional paddy cultivating regions of KR Nagar. Chunchankatte is surrounded by kaveri river, which goes to Krishna Raja Sagara (KRS) dam reservoir. Kaveri flows into Chunchankatte roaring thunderously forming a 60 feet height and approximately 300 to 400 feet wide waterfalls. It is in the Western Ghats.

### METHODOLOGY

The field study was conducted in Chunchankatte region of KR Nagar Taluk, Mysuru district using point count method from April 2023 to August 2023. Observations of birds were made once a week during the most active period of the day i.e, 6.30 to 9.00am and from 4.30 to 6.00pm. The different species existed in these habitats were recorded and checklist of birds was prepared. Agricultural region and forest region birds were counted by employing visual search method. Observation carried out with the aid using Binocular (8X40X) and by capturing photography using digital camera (Nikkon.DSLR; 24.0 megapixel) as per the standard methods.

Birds diversity were recorded by using the formula  $H' = -\sum_{i=1}^R p_i \ln p_i$

Where,  $p_i$  = Proportion of individual Species

R = Total number of Species of the Community

H' = Shannon Weaver Index

### RESULTS AND DISCUSSION

According to the results, 50 different species of birds belonging to 33 families and 15 orders were documented at different sites in KR Nagar, Mysuru District (Table 1). The overall table depicting the family, order, common name, scientific name and feeding habit of birds. Order wise number of birds' species were shown (Fig. 1). Table 2 shows the Shannon-Wiener diversity index score of orders as 2.3.

Different species of birds recorded were - Purple rumped sunbird (*Leptocomazeylonica*), Jungle myna (*Acridotheres fuscus*), Common myna (*Acridotheres tristis*), Drango (*Vanellus indicus*), Indian spot-billed duck (*Anas poecilorhyncha*), White-throated kingfisher (*Halcyon smyrnensis*), Black-winged kite (*Elanus caeruleus*), Indian grey hornbill (*Ocyroceros birostris*), Great cormorant (*Phalacrocorax carbo*), Asian open bill (*Anastomus oscitans*), Greater coucal, (*Centropus sinensis*), Parakeets (*Psittacula krameri*), House crow (*Corvus splendens*), Indian cormorant (*Phalacrocorax fuscicollis*), Sparrow (*Passeridae*), Pigeon (*Columbidae*), Blue tailed bee eater (*Merops philippinus*), Spot billed duck (*Anas poecilorhyncha*), Peacock (*Pavocristatus*), Brahminy kite (*Haliastur indus*), Crested lark (*Galeridacristata*), Red vented bulbul (*Pycnonotus cafer*), Red vented bulbul (*Pycnonotus cafer*), Black winged stilt (*Himantopus*) Indian roller (*Coracias benghalensis*), Hoopoe (*Upupidae*), Shikra (*Accipiter badius*), Small kingfisher (*Alcedo atthis*), Small green bee eater (*Merops orientalis*), White throated kingfisher (*Halcyon smyrnensis*), Eurasian golden oriole (*Oriolus oriolus*), Black winged kite (*Elanus caeruleus*), White-cheeked barbet (*Egalaimaviridis*), Red naped ibis (*Pseudibid papillosa*), Oriental honey buzzard (*Pernis ptilorhynchus*), Long tailed shrike (*Lanius schach*), Cattle egret (*Bubulcus ibis*), Spotted dove (*Spilopelia chinensis*), Rock pigeon (*Columbia livia*), White rumped munia (*Lonchura striata*), Common tailbird (*Orthotomus sutorius*), Pale-billed flower pecker (*Dicaeumerythrorhynchus*), Asian Paradise flycatcher (*Terpsiphone paradise*), Yellow-wattled Lapwing (*Vanellus malabaricus*) Red jungle fowl (*Gallus gallus*).

Out of which Passeriformes emerged as a dominant order. Order Passeriformes was followed by Coraciiformes, Accipitriformes, Pelecaniformes, Shorebirds, Anseriformes, Bucerotiformes, Suliofrmes,

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Charadriiformes, Ciconiiformes, Cuculiformes, Parrots, Piciformes, Columbiformes, Galliformes. This might be due to a suitable habitat which made Passeriformes to be a dominant order. They have different foraging habits such as insectivorous, carnivorous, herbivorous, omnivorous, piscivorous, nectivorous, granivorous. Migratory and non-migratory birds were found. The diverse distribution of bird species was reflected in the study of diversity indices where the Shannon-Wiener diversity index scores of orders 2.3 like other protected areas of the country. Most of the birds were found near the lakes and wetlands. So it's important to conserve the water bodies which eventual leads to the conservation of birds. In natural populations, food availability is a key factor in population dynamics and life history evolution, because survival and fecundity are thought to increase when food becomes more abundant (Briga *et al.*, 2017). And also the temperature is very important for the survival of the birds. Increasing global warming is also a great threat to birds and also some human activities like hunting leads to the downfall in population of birds. It's the duty of mankind to provide a suitable environment for the survival of birds and help in the conservation of birds.

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**Table 1: Check List of Bird species recorded at Chunchankatte region, K.R. Nagar Taluk (2023)**

Sl No.	Family	Order	Common Name	Scientific Name	Feeding Habit
1	Accipitridae	Accipitriformes	Black-winged kite	Elanuscaeruleus	Carnivorous
2	Anatidae	Anseriformes	Indian spot-billed duck	Anaspoecilorhyncha	Insectivorous

3	Alcedinidae	Coraciiformes	White-throated kingfisher	Halcyon smyrnensis	Carnivorous
4	Ardeidae	Pelecaniformes	Pond heron	Ardeolagrayii	Carnivorous
5	Ardeidae	Pelecaniformes	Little egret	Egretta garzetta	Canivorous
6	Ardeidae	Pelecaniformes	Grey heron	Ardeasinerea	Canivorous
7	Bucerotidae	Bucerotiformes	Indian grey hornbill	Ocyrocero birostris	Carnivorous
8	Charadriidae	Shorebirds	Red-wattled lapwing	Vanellus indicus	Carnivorous
9	Ciconiidae	Ciconiiformes	Asian open bill	Anastomus oscitans	Molluscs
10	Cuculidae	Cuculiformes	Greater coucal	Centropus sinensis	Carnivorous
11	Dicruidae	Passeriformes	Drongo	Dicurus bracteatus	Insectivorous
12	Jacaniidae	Charadriiformes	Bonze-winged jacana	Metopidius indicus	Herbivorous
13	Nectarinidae	Passeriformes	Purple rumped- sunbird	Leptocomazeylonia	Nectivorous
14	Ploceidae	Passeriformes	Baya weaver	Ploceus philippinus	Granivorous
15	Phalacrocoracidae	Suliformes	Great cormorant	Phalacrocorax carbo	Piscivorous
16	Phalacrocoracidae	Suliformes	Indian cormorant	Phalacrocorax fuscicollis	Piscivorous
17	Psittaculidae	Parrots	Parakeets	Psittacula krameri	Granivorous
18	Sturnidae	Passeriformes	Jungle myna	Acridotheres fuscus	Omnivorous
19	Sturnidae	Passeriformes	Common myna	Acridotheres tristis	Omnivorous
20	Corvidae	Passeriformes	House crow	Corvus splendens	Omnivorous
21	Passeridae	Passeriformes	Sparrow	Passeridae	Herbivorous
22	Columbidae	Columbiformes	Pigeon	Columbidae	Herbivorous
23	Meropidae	Coraciiformes	Blue tailed bee eater	Merops philippinus	Insectivorous
24	Anatidae	Anseriformes	Spot billed duck	Anas poecilorhyncha	Herbivorous- Insectivorous
25	Phasianidae	Galliformes	Peacock	Pavocristatus	Herbivorous
26	Accipitridae	Accipitriformes	Brahminy kite	Haliastur indus	Carnivorous
27	Alaudidae	Passeriformes	Crested lark	Galeridacristata	Insectivorous
28	Pycnonotidae	Passeriformes	Red vented bulbul	Pycnonotus cafer	Nectivorous
29	Recurvirostridae	Shorebirds	Black winged stilt	Himantopus	Piscivorous
30	Coraciidae	Coraciiformes	Indian roller	Coracias benghalensis	Insectivorous
31	Upupidae	Bucerotiformes	Hoopoe	Upupidae	Insectivorous
32	Accipitridae	Accipitriformes	Shikra	Accipiter badius	Carnivorous
33	Alcedinidae	Coraciiformes	Small kingfisher	Alcedo atthis	Piscivorous
34	Meropidae	Coraciiformes	Small green bee eater	Merops orientalis	Insectivorous
35	Alcedinidae	Coraciiformes	White throated kingfisher	Halcyon smyrnensis	Carnivorous
36	Oriolidae	Passeriformes	Eurasian golden oriole	Oriolus oriolus	Omnivorous
37	Accipitridae	Accipitriformes	Black winged kite	Elanus caeruleus	Carnivorous
38	Megalaimidae	Piciformes	White- cheeked barbet	Megalaima viridis	Frugivores
39	Threskiornithidae	Pelecaniformes	Red naped ibis	Pseudibid papillosa	Omnivorous

40	Accipitridae	Accipitriformes	Oriental honey buzzard	Pernisptilorhynchus	Insectivorous
41	Laniidae	Passeriformes	Long tailed shrike	Laniusschach	Omnivorous
42	Ardeidae	Pelecaniformes	Cattle egret	Bubulcus ibis	Insectivorous
43	Columbidae	Columbiformes	Spotted dove	Spilopeliachinensis	Granivorous
44	Columbidae	Columbiformes	Rock pigeon	Columbia livia	Granivorous
45	Estrildidae	Passeriformes	White rumpedmunia	Lonchurastrata	Granivorous
46	Cisticolidae	Passeriformes	Common tailbird	Orthotomussutorius	Insectivorous
47	Dicaeidae	Passeriformes	Pale- billed flower pecker	Dicaeumerythrorhynchos	Nectivorous
48	Monarchidae	Passeriformes	Asian Paradise flycatcher	Terpsiphone paradise	Insectivorous
49	Charadriidae	Charadriiformes	Yellow - wattled Lapwing	Vanellusmalabaricus	Insectivorous
50	Phasianidae	Galliformes	Red junglefowl	Gallus gallus	Omnivorous

**Table 2: Order wise number of Bird species recorded at Chunchankatte region, K.R. Nagar Taluk**

SL. NO.	ORDER	NUMBER OF BIRDS SPECIES RECORDED
1	Passeriformes	10
2	Pelecaniformes	4
3	Charadriiformes	1
4	Shorebirds	2
5	Anseriformes	2
6	Coraciiformes	6
7	Accipitriformes	5
8	Bucerotiformes	2
9	Suliformes	2
10	Ciconiiformes	1
11	Cuculiformes	1
12	Parrots	1
13	Piciformes	1
14	Columbiformes	1
15	Galliformes	1
Total		40

**Shannon weaver index H'=2.359**

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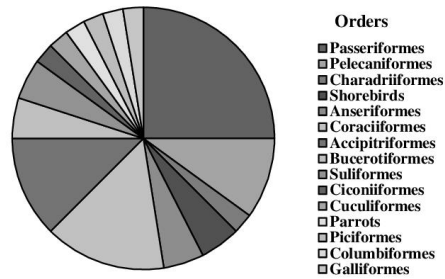


Figure 1: Order wise number of bird species recorded at Chunchankatte region, K.R. Nagar Taluk