

# Avifaunal diversity and status in Kurugodu, Bellary District, Karnataka State

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## ABSTRACT

The present study was conducted to determine the status of avifaunal diversity in Kurugodu, Bellary district, an area close to mining activity location. The study showed the presence of 35 species of birds spread over 27 families and 12 orders. The study area was dominated by non-passerine birds compared to passerine birds. The birds with specialized feeding types such as granivorous, frugivorous, and nectivorous were less abundant compared to birds with omnivorous and carnivorous food habits. While majority of the birds were seen in all seasons, some orders such as Cuculiformes, Coraciiformes, and Gruiformes, and Ciconiiformes were noticed in two season combinations. The percent occurrence of resident birds was maximum compared to resident migratory and migratory birds. No migratory birds were spotted in summer season due to the scarcity of food and water, and probably a high temperature in the study area.

**Key words :** Avifauna, Bird diversity, Feeding habit, Conservation

## Introduction

Birds play an important role in maintaining the equilibrium of the environment. They are not only useful in controlling population of different insects and pests, but also play a role as scavengers and pollinating agents (Ali and Ripley, 1983). Studying the avian diversity is helpful in determining the species richness in a given area. However, compared to natural and protected ecosystem, the urban biodiversity has received very little attention from conservation biologist (Jules, 1997; Vandermeer, 1997). Since the population of birds is a very sensitive indicator of degree of population in both terrestrial and aquatic ecosystem (Gaston, 1975, Turner, 2003), determination of bird diversity status is a key to understand the impact of changing ecological conditions on fauna. Kurugodu is located in Bellary district, where the mining activities have been extensively done, particularly in Kuditini, Sandur and Hospet, which are situated within 15-60 km range

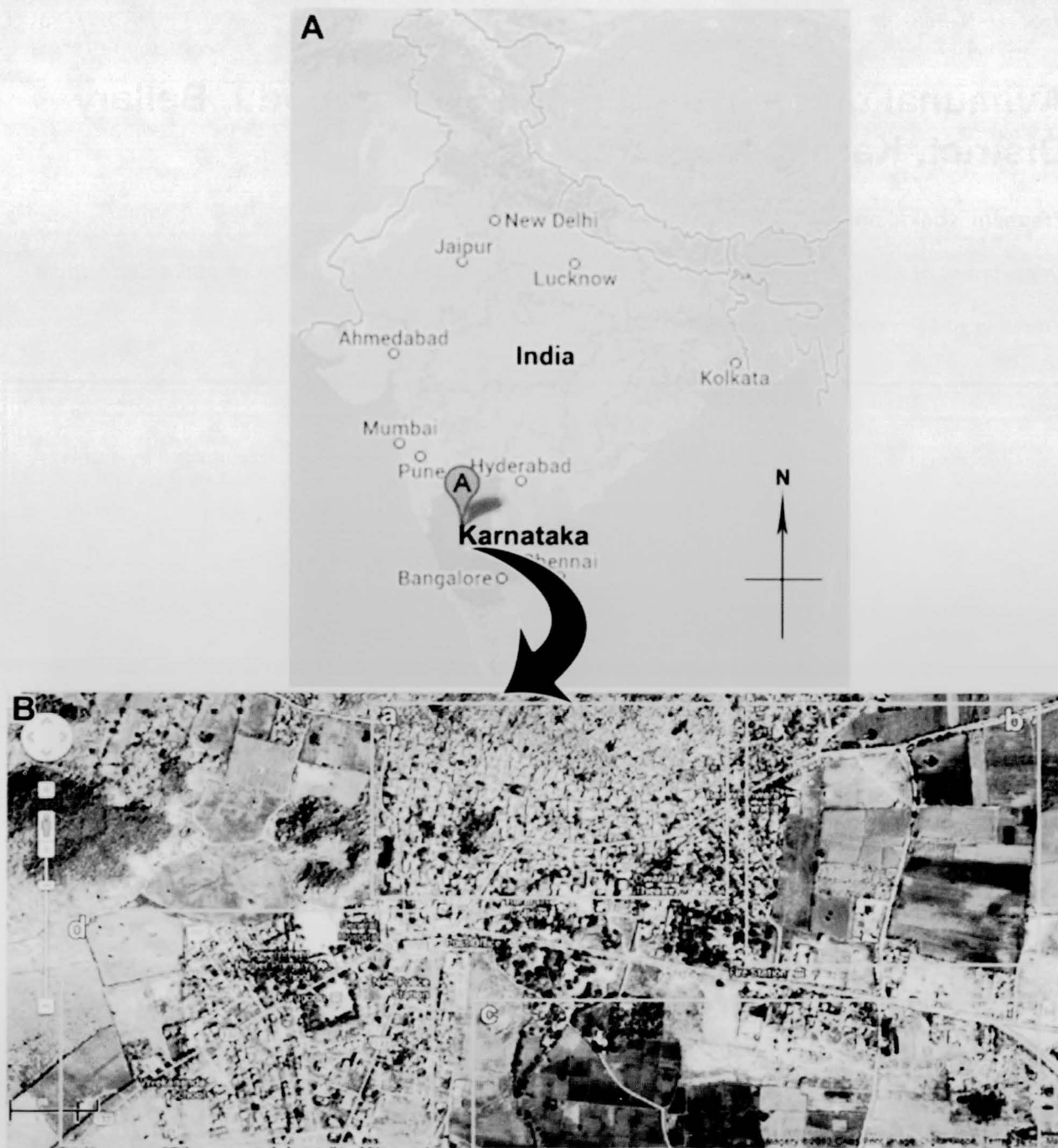
from the study area. Therefore, the present work was undertaken to determine the avifaunal diversity and status in this area.

## Materials and Methods

### Study area

Kurugodu (15.346°N, 76.836°E) is located at an elevation of 431m above the sea level. It has a humid (0.65p/ph) climate. While most of the land area is cultivated, still some natural vegetation is preserved. The landscape is mostly covered with rainfed croplands. The climate is classified as a subtropical steppe (low latitude dry) with a tropical dry forest biozone. The soil in the area is high in the lixisols. Soil is enriched with clay in lower horizon and high saturation bases. The study area covered four zones namely, Doddabasaveshwar temple premises, Genikhal and Bellary road region, Badanhatti road region and Sangameshwar and Saibaba temple

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**Fig. 1 (A and B).** Map of India showing location of Karnataka State (A) and different zones of the study area at Kurugodu (B).

- A. Doddabasaveshwar temple premises
- B. Genikhal and Bellary road region
- C. Badanhatti road region and
- D. Sangameshwar and Saibaba temple premises

premises (Fig. 1).

A regular survey was carried out 3-4 times in a month between 6.00-11.00 am and 5.00-6.00 pm for a period of one year (May 2012 to April 2013) encompassing monsoon, winter and summer seasons. These timings were chosen expediently as the study was a part of M.Sc dissertation work; however, during holidays and vacation daily observations were also done. The birds were observed using prismatic binoculars (10 x 40), and identified up to lowest possible taxonomic level with the help of field guides (Woodcock, 1980; Ali and Ripley, 1983; 1987; Chakravarthy and Tejasvi, 1992; Ali, 1997; 2002; Grimmett *et al.*, 1998). Feeding guilds were classified on the basis of direct observations and available literatures (Ali and Ripley 1987). The common names were assigned according to Manakadan and Pittie (2001). The following formula was used for calculating percentage occurrence of birds.

$$\text{Percentage occurrence} = \frac{\text{No. of species of each order/family}}{\text{Total no. of different species seen}} \times 100$$

### Results and Discussion

The study showed presence of 35 species of birds spread over 27 families and 12 orders (Table 1). The study area was dominated by non-passerines (54.29%) compared to passeriform (45.71%) birds. Most populations of non-passerine birds comprised of Ciconiiformes (11.42%), Coraciiformes (5.71%), Columbiformes (5.71%), Cuculiformes (5.71%), Charadriiformes (5.71%), Galliformes (5.71%) and Gruiformes (5.71%), whereas orders such as Falconiformes (2.85%), Psittaciformes (2.85%) and

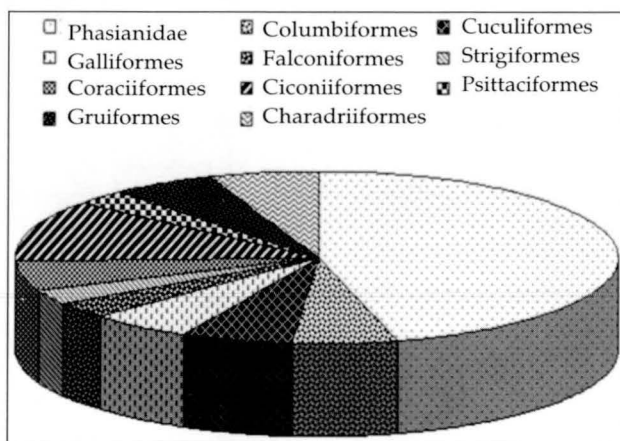


Fig. 2. Percent occurrence of birds belonging to different orders.

Strigiformes (2.85%) were infrequent (Fig. 2). Similar dominance of non-passerine birds (57%) over passeriform birds (43%) was recorded by Ahsan and Hannan (2002) in Karnaphuli River delta and adjacent areas of Chittagong, Bangladesh. In contrast, dominance of passerine birds was reported in the Arki hills region of Himachal Pradesh (Thakur *et al.*, 2010), in Tawa reservoir and its surrounding areas at Hoshangabad district of Madhyapradesh (Joshi and Shrivastav, 2012), and in Katgal region of Western Ghats, Uttara Kannada district (Bhat and Ganesh, 2014).

Maximum birds with insectivore food habit were recorded at Kuvempu University (Nazneen *et al.*, 2001) and Gulbarga University (Manjunath and Joshi, 2012) campuses of Karnataka. In the present study, the highest recorded percentage of birds was with omnivorous (34.28%) followed by carnivorous (25.71%), and insectivorous (20%) feeding types (Fig. 3). However, the birds with granivorous (8.57%), frugivorous (2.85%), insectivorous and frugivorous (2.85%) and insectivorous and nectivorous (2.85%) feeding habits were less abundant (Fig. 3). These observations suggest that the bird population

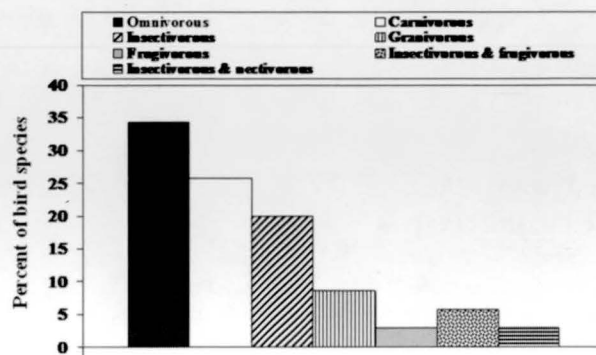


Fig. 3. Distribution of birds according to their feeding types in the study area.

in the study area mainly rely on omnivorous and carnivorous or insectivorous feeding types.

Feeding conditions and the structure of land surface are two main factors that determine the distribution of number of birds (Tryjanowski, 1995). Jayson and Sivaperuman (2005) reported dominance of birds with omnivorous feeding habit, wherein out of 66 omnivorous birds, 58 species belonged to Charadriiformes followed by five species of Passeriformes at Thrissur District, Kerala. However, in the present study, omnivorous (50%) and

**Table 1.** Checklist of birds found in Kurugodu, Bellary District, Karnataka state.

Common Name	Scientific Name	Status		
		Habitat	Feeding type	Season
<b>PASSERIFORMES</b>				
<i>Passeridae</i>				
House Sparrow	<i>Passer domesticus</i>	R	O	AS
<i>Corvidae</i>				
House Crow	<i>Corvus splendens</i>	R	O	AS
Jungle Crow	<i>Corvus macrorhynchos</i>	R,M	O	AS
Indian Treepie	<i>Dendrocitta vagabunda</i>	R,M	O	AS
<i>Sturnidae</i>				
Common Myna	<i>Acridotheres tristis</i>	R	O	AS
Brahminy starling	<i>Sturnia pagodarum</i>	R	O	AS
<i>Rhipiduridae</i>				
Fan Tail Fly Catcher	<i>Rhipidura albicollis</i>	R,M	I	AS
<i>Cisticolidae</i>				
Tailor Bird	<i>Orthotomus sutorius</i>	R	I	AS
<i>Motocillidae</i>				
Yellow wag Tail	<i>Motacilla flava</i>	R	I	AS
<i>Muscicapidae</i>				
Pied Bushchat	<i>Saxicola caprata</i>	R	I	AS
<i>Meropidae</i>				
Green Bee eater	<i>Merops orientalis</i>	R	I	AS
<i>Estrildidae</i>				
Black headed munia	<i>Lonchura malacca</i>	R	G	AS
<i>Nectariniidae</i>				
Purple sunbird	<i>Nectarinia asiatica</i>	R	I,N	AS
<i>Dicruridae</i>				
Black Drongo	<i>Dicrurus macrocercus</i>	R,M	I	AS
<i>Timaliidae</i>				
Jungle Babbler	<i>Turdoides striatus</i>	R	O	AS
<i>Pycnonotidae</i>				
Red vented Bulbul	<i>Pycnonotus cafer</i>	R,M	O	AS
<b>COLUMBIFORMES</b>				
<i>Columbidae</i>				
Blue Rock Pigeon	<i>Columba livia</i>	R	G	AS
Oriental Turtle Dove	<i>Streptopelia orientalis</i>	R,M	G	AS
<b>GALLIFORMES</b>				
<i>Phasianidae</i>				
Indian Pea Fowl	<i>Pavo cristatus</i>	R	O	AS
Red Jungle Fowl	<i>Gallus gallus</i>	R	O	AS
<b>CUCULIFORMES</b>				
<i>Cuculidae</i>				
Koel	<i>Eudynamys scolopacea</i>	R,M	F,I	R'W
Greater Coucal	<i>Centropus sinensis</i>	R	C	AS
<b>CORACIIFORMES</b>				
<i>Upupidae</i>				
Common Hoopoe	<i>Upupa epops</i>	R	I	AS
<i>Decalonidae</i>				
White breasted Kingfisher	<i>Halcyon smyrnensis</i>	M	C	R'W
<b>CICONIIFORMES</b>				
<i>Ciconiidae</i>				
White Necked Stork	<i>Ciconia episcopus</i>	M	C	R'W

Table 1. Continued ...

Common Name	Scientific Name	Status		
		Habitat	Feeding type	Season
<i>Ardeidae</i>				
Cattle Egret	<i>Bubulcus ibis</i>	R,M	C	AS
Goliath Heron	<i>Ardea goliath</i>	M	C	AS
Pond Heron	<i>Ardea grayii</i>	R,M	C	AS
<b>FALCONIFORMES</b>				
<i>Accipitridae</i>				
Shikra	<i>Accipiter badius</i>	R	C	AS
<b>GRUIFORMES</b>				
<i>Rallidae</i>				
Swamp Hen	<i>Porphyrio porphyrio</i>	R,M	O	R*W
<i>Picidae</i>				
Common Golden Backed AS	Woodpecker	<i>Dinopium javanense</i>	R	F,I
<b>PSITTACIFORMES</b>				
<i>Psittacidae</i>				
Rose ringed Parakeet	<i>Psittacula krameri</i>	R	F	AS
<b>CHARADRIIFORMES</b>				
<i>Charadriidae</i>				
Red wattled Lapwing	<i>Vanellus indicus</i>	R	C	AS
<i>Scolopacidae</i>				
Wood Sandpiper	<i>Tringa glareola</i>	R,M	C	AS
<b>STRIGIFORMES</b>				
<i>Strigidae</i>				
Jungle Owlet	<i>Glaucidium radiatum</i>	R	O	AS

## Abbreviations:

R – Resident; M – Migratory; I – Insectivore; O – Omnivore; C – Carnivore; G – Granivore; I,F – Insectivore & frugivore; F – Frugivore; I,N – Insectivore & nectivore.

AS – All seasons, R\*W – Rainy and winter.

insectivorous (43.75%) feeding habits were dominated by the passerine birds. Few non passerine birds were omnivorous (19.4%), insectivorous, frugivorous and granivorous (each 10.52%), whereas most of these had carnivorous (47.36%) food habit (Table 1). None of the passerine birds noted in the present study exhibited carnivorous and frugivorous feeding adaptations. These observations suggest an apparent diversification in feeding habits of passerine and non-passerine birds.

The percent occurrence of resident birds was maximum (60%) compared to resident migratory (31.42%) and migratory birds (8.57%; Table 1). Further analysis of the data during different seasons indicated the occurrence of majority of the birds in all seasons (91.42%). This group was dominated by Passeriforme birds (45.71%) compared to those belonging to Ciconiformes (8.57%), Columbiformes,

Galliformes and Charadriiformes (5.71% each), Falconiformes, Coraciiformes, Gruiformes and Cuculiformes (2.85% each; Table 1). Some birds such as the white breasted Kingfisher (Coraciiformes), the swamp hen (Gruiformes), the white necked stork (Ciconiformes) and the koel (Cuculiformes) were noticed during rainy and winter seasons (Table 1). These birds are known to breed during monsoon (Ali and Ripley, 1987). Therefore their migratory behaviour noted in the present study might be related to the availability of food and ecological conditions that favour successful reproduction.

In conclusion, the observations in the present study suggest a general depletion in the diversity of bird population, which could be due to the rocky hilly region, where continuous mining is practised. While these activities can cause substantial disturbance to bird diversity through noise and air pollu-

tion, shrinkage of habitat affecting the sheltering and foraging behaviour of birds due to increasing human interference also cannot be ruled out. Therefore, prohibition of mining activities followed by constructive measures such as reforestation, restoration of lakes and conservation of environment attract immediate attention to save avifauna.

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