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Ruchika ShahiSchool of Environment &
Natural Resources, Doon
University, Dehradun,
Uttarakhand, India**Khima Nand Balodi**School of Environment &
Natural Resources, Doon
University, Dehradun,
Uttarakhand, India**Suneet Naithani**School of Environment &
Natural Resources, Doon
University, Dehradun,
Uttarakhand, India

Birds of Kasserguppe village in the western region of Bannerghatta National Park: A checklist

Ruchika Shahi, Khima Nand Balodi and Suneet Naithani

Abstract

Avian communities play an important role in human society and have great economic and ecological significance. Their diversity and abundance act as biological indicator of any ecosystem health and process. The present study was conducted in a village with its different habitat types adjoining to the western margin of Bannerghatta National Park, Karnataka. Data was collected through direct observation in the field and identification was done through standard field guides. A total of 54 species belonging to 32 families were recorded during the survey with maximum number of species belonging to Estrilididae (5 species) and followed by family Accipitridae (4 species). The result would be helpful to understand the habitat functioning in the area and, management and conservation planning in near future.

Keywords: Avifauna, Bannerghatta National Park, Habitat, Karnataka, Kasserguppe

Introduction

The avian communities are of great economic importance in human society, as they play an important role in controlling the population of insects and pests and also help in seed dispersal [1]. Birds are key indicators for assessing the status of ecosystem quality [2, 3] and their assemblage structure is affected by changes in habitat either due to natural or anthropogenic disturbances [4-6]. The change in vegetation composition has an impact on birds in terms of their food, water and cover and its extent which consequently affect the diversity, abundance and distribution of birds [3, 7]. Avian species shows a direct response to different vegetation structure [8], and their diversity increases with quality of vegetation composition. Moreover, avian communities structure also affects the vegetation structure as large numbers of tree species are dependent on the seed dispersal services provided by frugivorous [9, 10].

Over the years avifaunal diversity has been decreasing as a result of continuous destruction of natural habitats, and to understand this trend and protecting avifauna detailed studies on their ecology are important [11]. Karnataka provides more than 35% of the bird species found in India [12] and is a highly bio-diverse region in the country. It consists several habitat types ranging from agricultural land to dense forests where a variety of birds can be spotted. Among these bird rich areas, Bannerghatta National Park (BNP) has significance in their conservation including conservation of other wildlife species. The BNP is located in the Eastern Ghats and characterized by scrub and deciduous vegetation with human settlement and agricultural landscape in the vicinity. Due to this unique landscape and vegetation characteristics, it serves as favorable habitat to of many bird species found in the state [13]. The present study was conducted to explore avian diversity in an adjoining area of BNP, with aims to understand the species composition.

Methods and Materials

Study Area

Bannerghatta National Park is located between 12° 34' to 12° 51' N latitudes and 77°31' to 77°38'E longitudes. Its total geographical area extend over 256km² in the northern most tip of the Eastern Ghats landscape of Karnataka [14]. The park comprises with unique mosaic of habitats that include the Tropical thorn forest, Dry deciduous and patches of moist deciduous vegetation [15]. Moreover, this habitat diversity is also characterized by agricultural lands and human settlements surrounded by scrub vegetation [14]. The BNP is considered world's largest remaining scrub forest for elephants among its range countries [16]. The landscape is highly undulating terrain with an altitude range from 700 m to 1035 m above sea level. The mean temperature varies from 12 °C to 38 °C and mean annual rainfall is recorded about 1065 mm [17].

Correspondence

Ruchika ShahiSchool of Environment &
Natural Resources, Doon
University, Dehradun,
Uttarakhand, India

The present study was conducted in the Kasserguppe village which lies on the north-western boundary of the BNP.

Methodology

The study was conducted in different habitat types (table 1) from July 2017 to August 2017 in Kasserguppe village and data was collected through direct observation during 7:00-9:30 AM in the morning and 5:00-6:30 PM in the evening. The observations were also made with help of 8×42 Nikon binoculars and photographs were taken for some species during the survey and identification was carried out with the help of a standard field guide [18]. Birds call was also considered to confirm the species presence in the area.

Results and Discussion

A total of 54 species belonging to 32 families were recorded during the study period. Maximum number of species were recorded in family Estrildidae (n=5) followed by family Accipitridae (n=4). Three species in each were recorded belonging to Columbidae, Corvidae and Muscipidae while two species in each were recorded in nine families (table 2). The remaining 18 families were represented by a single species in each in the village. All species are listed as Least Concern (LC) category in the IUCN Red list of species [19], while most of these are listed in Schedule IV of Indian Wildlife Protection Act, 1972 (20) except some raptor species. Among the recorded birds one species (white-throated kingfisher) was riverine specialist and one water bird (white-breasted water hen), while the area has no large water bodies in the surrounding except a very few small ponds. Four species of raptors namely *Milvus migrans*, *Accipiter badius*, *Elanus caeruleus* and *Haliastur indus* were also recorded which show rich prey density in the area. The present checklist can be considered a good record over a short time period, however, house sparrow was not recorded in the village, even suitable nesting sites were observed during the surveys.

In earlier studies the Karnataka state supported a total 531 species of bird species with 16 endemic species of the Western Ghats and 27 species in various threatened categories

of the IUCN [12]. It shows the importance of the area in supporting various bird species in its diverse habitat types. A study conducted in the adjoining areas of the BNP during the summer 2016 and has recorded 79 species belonging to 45 families [13]. The present study recorded around 68% of previous record during the monsoon season with approximately 51.96% of similar species. However, the previous study has recorded 23 riverine and water bird species while the present study recorded only 4 species namely white-throated kingfisher, cattle egret, Little cormorant and white-breasted water hen in the area. There are no larger water bodies in and around the village and as a result of which less number of riverine species were recorded.

The vegetation structure and its surrounding habitat types always have a great influence on avian diversity and community structure [2, 3, 6, 7, 9, 10], which was also understood through the present study. We clearly observed the influence of Bannerghatta National Park, on the avian diversity in Kasserguppe village, as the area is situated in its close proximity. However, continuous change in land use pattern and habitat disturbances in the region have been observed at a rapid rate over the years.

Conclusion

The surrounding areas of the BNP support a variety of avifaunal species which is due to a great influence of diverse habitat types in and around the park. However, to better understand the influence on diversity and distribution of avian fauna in this region, further studies needed to be conducted for a longer period across various seasons. A detailed investigation on bird assemblage would be important for management and conservation action to be initiated in the region.

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Table 1: Different habitat types in the study area

Name of Habitat	Habitat characteristic
Mixed fruit orchard (MFO)	Consists of different fruit species such as <i>Musa acuminata</i> , <i>Ribesuva crispera</i> , <i>Psidium guajava</i> , <i>Artocarpus heterophyllus</i> and <i>Syzygium cumini</i> etc. and a small built up house. Outer layer composed with <i>Eucalyptus spp.</i> , <i>Tectona grandis</i> and <i>Azadirachta indica</i> .
Plantation area (PA)	Consists of species like <i>Magnifera indica</i> , <i>Artocarpus heterophyllus</i> and <i>Cocos nucifera</i> with dominant <i>Tectona grandis</i> and <i>Grevillea robusta</i> .
Water bodies (WB)	Small water bodies with aquatic plants species like <i>Cyperus papyrus</i> and <i>Ipomea carnea</i> .
Open scrub area (OSA)	The area consist of various shrubs species with <i>Pongamia pinnata</i> and close to forest area.
Human managed area (HMA)	This was dominated with human settlement, agricultural fields, water storage tank and plant species like <i>Bambusa spp.</i> , <i>Grevillea robusta</i> , <i>Artocarpus heterophyllus</i> and <i>Annona reticulate</i> .

Table 2: Checklist of avifauna recorded during the study in Kasserguppe village

Family	Species	Common name	IUCN Status	IWPA 1972
Alcedinidae	<i>Halcyon smyrnensis</i>	White throated kingfisher	LC	Schedule IV
Ardeidae	<i>Bubulcus ibis</i>	Cattle egret	LC	Schedule IV
Accipitridae	<i>Milvus migrans</i>	Black kite	LC	Schedule I
	<i>Accipiter badius</i>	Shikra	LC	Schedule I
	<i>Elanus caeruleus</i>	Black-winged Kite	LC	Schedule IV
	<i>Haliastur indus</i>	Brahminy kite	LC	Schedule I
Apodidae	<i>Cypsiurus balasiensis</i>	Asian palm swift	LC	Schedule IV
Chloropseidae	<i>Chloropsis jerdoni</i>	Jerdon's leaf bird	LC	Schedule IV
Columbidae	<i>Stigmatopelia chinensis</i>	Spotted dove	LC	Schedule IV
	<i>stigmatopelia senegalensis</i>	Laughing dove	LC	Schedule IV
	<i>Columba livia</i>	Common pigeon	LC	Schedule IV

Corvidae	<i>Corvus splendens</i>	House crow	LC	Schedule IV
	<i>Corvus culminatus</i>	Jungle crow	LC	Schedule IV
	<i>Dendrocitta vagabunda</i>	Rufous treepie	LC	Schedule IV
Cuculidae	<i>Eudynamys scolopaceus</i>	Asian koel	LC	Schedule IV
	<i>Centeropus (sinensis) parroti</i>	Southern coucal	LC	Schedule IV
Cisticolidae	<i>Orthotomus sutorius</i>	Common tailorbird	LC	Schedule IV
	<i>Prinia socialis</i>	Ashy prinia	LC	Schedule IV
Campephagidae	<i>Pericocotus cinnamomeus</i>	Small minivet	LC	Schedule IV
Dicruridae	<i>Dicrurus caerulescens</i>	White bellied drongo	LC	Schedule IV
	<i>Dicrurus macrocercus</i>	Black drongo	LC	Schedule IV
Estrildidae	<i>Lonchura striata</i>	White rumped munia	LC	Schedule IV
	<i>Lonchura punctulata</i>	Scaly breasted munia	LC	Schedule IV
	<i>Amandava amandava</i>	Red avadavat	LC	Schedule IV
	<i>Lonchura malacca</i>	Black headed munia	LC	Schedule IV
	<i>Euodice malabarica</i>	India silverbill	LC	Schedule IV
Laniidae	<i>Lanius vittatus</i>	Bay-backed shrike	LC	Schedule IV
Meropidae	<i>Merops orientalis</i>	Green bee-eater	LC	Schedule IV
Muscicapidae	<i>Cyornis rubeculoides</i>	Tickell's blue flycatcher	LC	Schedule IV
	<i>Copsychus saularis</i>	Oriental magpie robin	LC	Schedule IV
	<i>Saxicoloides fulicatus</i>	Indian robin	LC	Schedule IV
Nectariniidae	<i>Leptocoma zeylonica</i>	Purple-rumped sunbird	LC	Schedule IV
	<i>Cinnyris asiaticus</i>	Purple sunbird	LC	Schedule IV
Paridae	<i>Parus major</i>	Cinereous tit	LC	Schedule IV
Psittacidae	<i>Psittacula krameri</i>	Rose ringed parakeet	LC	Schedule IV
Pycnontidae	<i>Pycnonotus jocosus</i>	Red whiskered bulbul	LC	Schedule IV
	<i>Pycnonotus cafer</i>	Red vented bulbul	LC	Schedule IV
Phasianidae	<i>Pavo cristatus</i>	Indian peafowl	LC	Schedule IV
	<i>Gallus sonneratii</i>	Grey jungle fowl	LC	Schedule IV
Phalacrocoracidae	<i>Phalacrocorax niger</i>	Little cormorant	LC	Schedule IV
Ploceidae	<i>Ploceus philippinus</i>	Baya weaver	LC	Schedule IV
Picidae	<i>Dinopium benghalense</i>	Lesser Goldenback	LC	Schedule IV
Rallidae	<i>Amaurornis phoenicurus</i>	White-breasted waterhen	LC	Schedule IV

Table 2: Checklist of avifauna recorded during the study in Kasserguppe village

Rhipiduridae	<i>Rhipidura aureola</i>	White browed fantail	LC	Schedule IV
	<i>Terpsiphone paradisi</i>	Asian paradise flycatcher	LC	Schedule IV
Ramphastidae	<i>Megalaima haemacephala</i>	Coppersmith barbet	LC	Schedule IV
	<i>Megalaima virdis</i>	White cheeked barbet	LC	Schedule IV
Sturnidae	<i>Acridotheres tristis</i>	Common myna	LC	Schedule IV
Strigidae	<i>Athene brama</i>	Spotted owlet	LC	Schedule IV
Timaliidae	<i>Turdoides caudata</i>	Common babbler	LC	Schedule IV
	<i>Turdoides striata</i>	Jungle babbler	LC	Schedule IV
Turdidae	<i>Monticola solitarius</i>	Blue rock-thrush	LC	Schedule IV
Upupidae	<i>Upupa epops</i>	Common hoopoe	LC	Schedule IV
Zosteropidae	<i>Zosterops palpebrosus</i>	Oriental white eye	LC	Schedule IV

LC= Least Concern

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