International Journal of Engineering, Science and Mathematics
Vol. 5 Issue 1, March 2016,
ISSN: 2320-0294 Impact Factor: 6.765
Journal Homepage: http://www.ijesm.co.in, Email: ijesmj@gmail.com
Double-Blind Peer Reviewed Refereed Open Access International Journal - Included in the International Serial Directories Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gage as well as in Cabell's Directories of Publishing Opportunities, U.S.A

STUDY OF AVIAN DIVERSITY IN KANGER VALLEY NATIONAL PARK AT BASTAR REGION OF CHHATTISGARH STATE

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Abstract

The diversity and structure of bird communities is essential to delineate the importance of regional or local landscapes for avian conservation. Birds are very sensitive to environmental changes and are used as a Bio-indicator. The study was carried out during 2016 to explore the diversity and status of Avifauna in the Kanger Valley National Park, Bastar in Chhattisgarh, India. A total of 27 species of birds belonging to 17 families were recorded. Birds, the most fascinating creatures of nature have always been a subject of research since times immemorial. Now a day's birds are being studied based on field observations concerning wider domain of avian natural history including, amongst others, diversity, habitat, distribution on local, regional and continental basin etc. Also birds have been studied focusing attention on breeding, feeding, mating, courtship dance, clutch size, territorial behaviour, camouflaging etc. Its proper management will not only improve the situation for its resident species, but will also attract more migratory and vagrant species in the future.

Keywords:

Kanger Valley National Park;
Biodiversity;
Bastar; Avifauna;

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1. Introduction

In more ways than one, India is a unique land. For in no other single country or area of comparable size can you find such extremes of physical condition and natural diversity. From the nearly rainless desert to the rainiest place on earth, from hot salt flats to snow-clad peaks, with a vast area of ocean shores, mangroves, and great river system and their plain and large lakes and daunting mountain ranges, India has nearly every type of climate and terrain. India's biological diversity is also unparalleled. On a land area of just 2 percent of the earth's surface, it supports over 5 percent of the world's life forms. The country's wildlife comprises over 75,000 animal species **Avian** which include 300species of mammals, and 1,200 of birds. In addition there are over 15,000 species of flowering plants. This diversity is most beautifully exemplified by Indian birds. About 8,650 bird species, representing 27 living orders and 155 families, have been described in the world so far. Of this total, India has over 1,200 species from 20 orders and 17 families. That makes it one sixth of the world's total avian diversity on a land mass only one fiftieth of the earth.

India lies at the trijunction of three important biogeography provinces of the earth-Ethiopian (African), Palaearcti (European and north Asian), and Oriental. As a result its bird life has elements from all the three, besides many forms which are uniquely Indian. The characteristic bird families of this region include pheasants, leaf birds, pitas, and flower peckers. Some bird families which occur throughout the tropics include pelicans, ibises, trogons, barbets, parrots, and cuckoos. Birds of prey, owls, crows, and shorebirds have a worldwide distribution. Many of Indian's most characteristics birds are in families which occur only in the old world tropics. These include Hornbills, Sunbirds, Bulbuls, Babblers, and Cuckoo-shrikes, while the Leaf birds or Fruit sucker are confined to the oriental region. Some families are particularly richly represented in India. These include forest species such as Woodpecker, Pigeons, Owls, Cuckoos, Pheasants, Drongos, Crows, Minivets, Babblers, Flycatchers, and Warblers. Since India presents within itself such a variety of habitat and physiographic condition, it has been further sub-divided into faunal sub regions to facilitate the study of the distribution of animal life in the region. Several classifications are currently in use, some of which identify as many as 10 main biogeography zones in India, with 25 provinces of understanding the

gross distribution of birds on the India mainland, the following simple classification should suffice.

Chhattisgarh is India's 26th state, which was carved out of Madhya Pradesh on 1st November 2000. Due to its location in central India, the state is surrounded by utter Pradesh and Bihar bind the state in north, in the east it is bound by Orissa, in the south by Andhra Pradesh and in the west by Madhya Pradesh and Maharashtra with 12% share of India's forest. the climate of Chhattisgarh is tropical it is hot and humid because of its proximity to the tropic of cancer and its dependence on the monsoon season is form late June to October. Chhattisgarh is the heart of India, is endowed with a rich cultural heritage and attractive natural diversity the state is full of ancient monuments, rare wildlife exquisitely carved temples, Buddhist sites palaces, waterfalls, caves, rock paintings and hill plateaus, major tourist centre in the state are Bhoramdev, Champaranya, Chitrakot, Tirathgarh, Kutumsar cave, Dudhadharimut, Indrāvati national park, Kanger Valley National park Jagdalpur Bastar, Danteshwari temple and many more. The state is rich in forest and mineral resources.

In India, the hhattisgarh state is rich in forest and mineral resources, having three national park and eleven wildlife sanctuaries and one biosphere reserve are a major attraction. It has several virgin attractions in protected areas such as Kanger Valley National park, Barnawapara, Sitanadi, Udyanti, and Achankmar Sanctuaries. The endangered wild **B**uffalo (*Bubalis bubalis*) and the even more endangered Hill Myna (*Graculls religioses peninsularis*) are the state animal & bird respectively.

Bastar plateau is one of the well surveyed areas of Chhattisgarh in terms of faunal documentation. Presently, the plateau area includes 7 districts Bastar, Bijapur, Dantewada, Kanker, Kondagaon, Naraynpur and Sukma. The region is considered to be one of the richest zones of Chhattisgarh; so far the floral and faunal diversity is concerned. Unfortunately, till date no consolidated and updated account on the avifauna for this particular zone is available with us. A major part of the Bastar regions of Chhattisgarh was known as Dandkaranya in ancient times. Other parts were known as Dakshina Koshal in medieval period the region, which falls south of the Vindhyas came to be known as Gondwana earliest human settlement were establish in this region much before they come into existence in any other part of

the country historians and anthropologists are trying to establish the exact date for the earliest human settlement in this region.

Kanger Valley National Park is a beautiful place, located in the Bastar district (Near Jagdalpur) of state Chhattisgarh. The Kanger Valley National park is also known as Kanger Ghati National Park. It was declared as a National park in the year of 1982. Total area of the park is about 200 Km^2. The park is located on the banks of Kholaba River at a distance of about 38 km from Jagdalpur. The National Park is situated on the valley of river Kanger. The park derives its name from the Kanger River, which flows throughout its length. The Park is famous for its biodiversity with picturesque landscape, magnificent waterfalls, and underground limestone caves. Besides wildlife and plants, there are many tourist attractions inside the park such as the Kutamsar Caves, Kailash Caves, Dandak caves and Tiratgarh Waterfalls. Kanger Dhara and Bhaimsa Dhara (a Crocodile Park) are the two beautiful and exotic picnic resorts in the Park. The Park also has a sizable tribal population and can be an ideal destination for wildlife enthusiasts, nature lovers, researchers, anthropologists and for anyone who wants to discover the very best of Chhattisgarh wildlife and unique tribes of the region.

Hence, the present investigation work was carried out at Kanger Valley National Park Range entitled-"Study of Avian diversity at Kanger Valley National Park" was under taken.

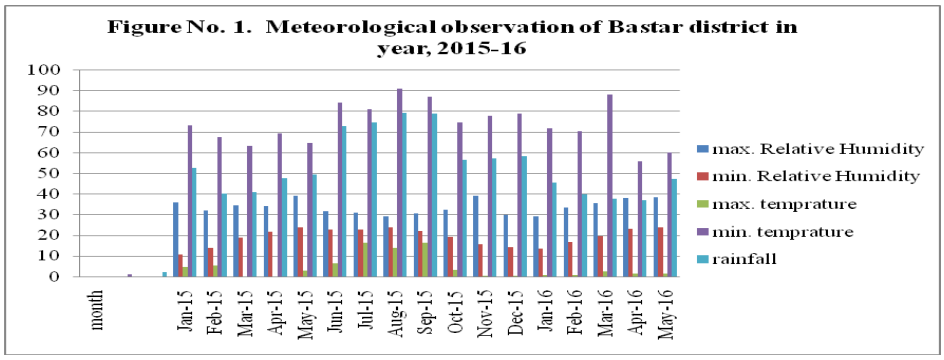
2. Research Method

The study was conducted in Kanger Valley National Park at Bastar district of Chhattisgarh, Month of March to June during the year 2016. The study deals with the avian diversity in Kanger Valley National Park of Bastar region in Chhattisgarh. Chhattisgarh state has been divided into tree agro-climatic zones *viz;* central Chhattisgarh plains, southern Bastar plateau and northern hills of Sarguja. The study site falls under the southern Bastar plateau agro-climatic zone of state. Kanger Valley National Park located near Kholab River, Bastar district of Chhattisgarh state in India. It is established on 22 July 1982 and situated 38 km away from southeast of Jagdalpur, headquarter of Bastar district, on Jagdalpur-Bhadrachalam, National highway number 221, is one of such floristically rich protected area. It lies between 18**º**45' to 18^{o}56'30 N latitude and 81^{o}51'30 to 82^{o}10'

longitude and covers an area of 200 km^2. The entire of the park has been divided into two ranges *viz.*, Kotumsar and Koleng with consists of 77 compartments in full and 13 partial compartments, thus making total 90 compartments and all are reserved forest compartment.

The Valley is in fact one of the last pockets of almost virgin forests still left in the peninsular region. To protract this unique ecosystem; it has been proposed as Biosphere reserve under the man & biosphere (MAB) programmed of UNESCO. The valley is nearly 34 km long with average width of about 6 km. the terrain is mostly hilly. The park consists fauna of Tiger, Panther, Wildcat, Chital (spotted deer), Sāmbhar, Barking deer, Wild pig, Jackal, Langur, Rhesus Macaque, Sloth bear, Flying squirrel, Python, Hyena, Rabbit, Crocodile, Otter and Civet. Around the park fauna includes birds of prey, scavenging birds, water birds, Pheasants etc. this natural forest is one of the favorable habitats for our state bird Hill Myna reason behind it, Kanger Valley National Park declared as natural habitat of state birds. The reptiles includes, lizards and the insects include butterflies, moths dragonflies, grasshoppers etc. other important thinks it is provide the butterflies' habitat. Due to the favorable habitat condition inside the park government established butterfly zone in which diversity of butterfly was found more. Above these two points gives special attraction of park. Bastar is famous for its natural beauty and undue tribal culture from the times immemorial over the world map.

The climate of Bastar region is hot and humid and the climate of whole year can be divided into four seasons i.e. summer, rainy, spring and winter season. The mean annual maximum temperature is30.5^{o}c the temperature in the month of December is 27.5^{o}c and in month of May is 24^{o}c the mean maximum temperature gradually increases, after December, which is maximum in the up to the summer extends from the march to mid June in this period the mean daily temperature ranges from a minimum 32.3^{o}c temperature have been recorded.



(Source: Jagdalpur meteorological station)

Flora and fauna of Kanger Valley National Park: Major types of forest in Bastar district are Sal forest, Teak forest, mixed forest and bamboo forest. The Bastar forest is one of the rarest forest area of the country, where Sal, Teak and miscellaneous forest naturally occur over extensive areas. Bastar is the only area in India where hard wood and bamboo occur together in large quantities. Sal forest occurs on sandy loam and lateritic soil. The major portion of the Sal forest lies on the plateau. In the hilly region, Sal is confined to narrow valleys and on lower slopes. The Sal forest also occurs intermingled with mixed forest in large grassy banks. The moist peninsular high levels Sal forests are the richest single forest in the plateau of Jagdalpur.

The Kanger Valley National park is a home for different species of plants, trees, birds, and wild animals. The Kanger Valley National park is covered with different species of trees and medicinal plants. Botanical survey of India and other research organizations found 553 floral species out of which 12 species are new to Chhattisgarh and 43 species belong to Chhattisgarh. The floral diversity of the park is considered as in situ gene bank of medicinal plants, grasses, climbers, wild sugarcane, bamboo plants, canes, ferns, epiphytes, Sal, Teak, Bamboo and their rich association along with the species of Sal and Teak trees. This National park is a home to Tigers, Leopards, Mouse deer, Wild cat, Chital, Sambar, Barking deer, Jackals, Langurs, Sloth bear, Wild boar, striped hyena, Rabbits, Cobra, Crocodiles, and Snakes. The Avian fauna at the park includes Hill Myna, Spotted owlet, Red jungle fowls, Racket-tailed drongos, and Peacock, Parrot, Steppe eagles, Phakta, Bhura teeter, Tree pie, and Heron. The fauna that have been recorded in the National park include 49 species of mammals, 144 species of birds, 16 species of

amphibians, 37 species of reptiles, 56 species of Pisces, 91 species of butterflies, 26 species of moths and 113 species of spiders.

Method of Bird observation

1. **Bird watching habitat:** Birds occur on land, sea and fresh water, and it's virtually every habitat, from the lowest deserts to the highest mountains. Our knowledge of bird species can tell us a great deal about the state of the world and wider biodiversity are driven by fundamental biogeography factor, with tropical countries supporting the highest species richness.
2. **Survey & Study site:** The present study was carried out in and around the Kanger Valley National park Jagdalpur, Bastar district, Chhattisgarh. The climate of Bastar (Kanger Valley Forest) is generally moist deciduous forest with temperature rising up to 41 ^{o}C to 43 ^{o}C during May and dropping 10 ^{o}C to 25 ^{o}C in December. A survey for observation and counting of the bird were carried out near study area in the day time depending on the condition by using binocular and camera.
3. **Study period:** The activity of birds are usually more during the morning and evening have, hence the selected time for taking reading was 6:30am to 9:00am and 5:00pm to 6:30pm. For identification and conformation of the species of birds, key features and information suggested by a field guide "Birds of the India subcontinent" is used.

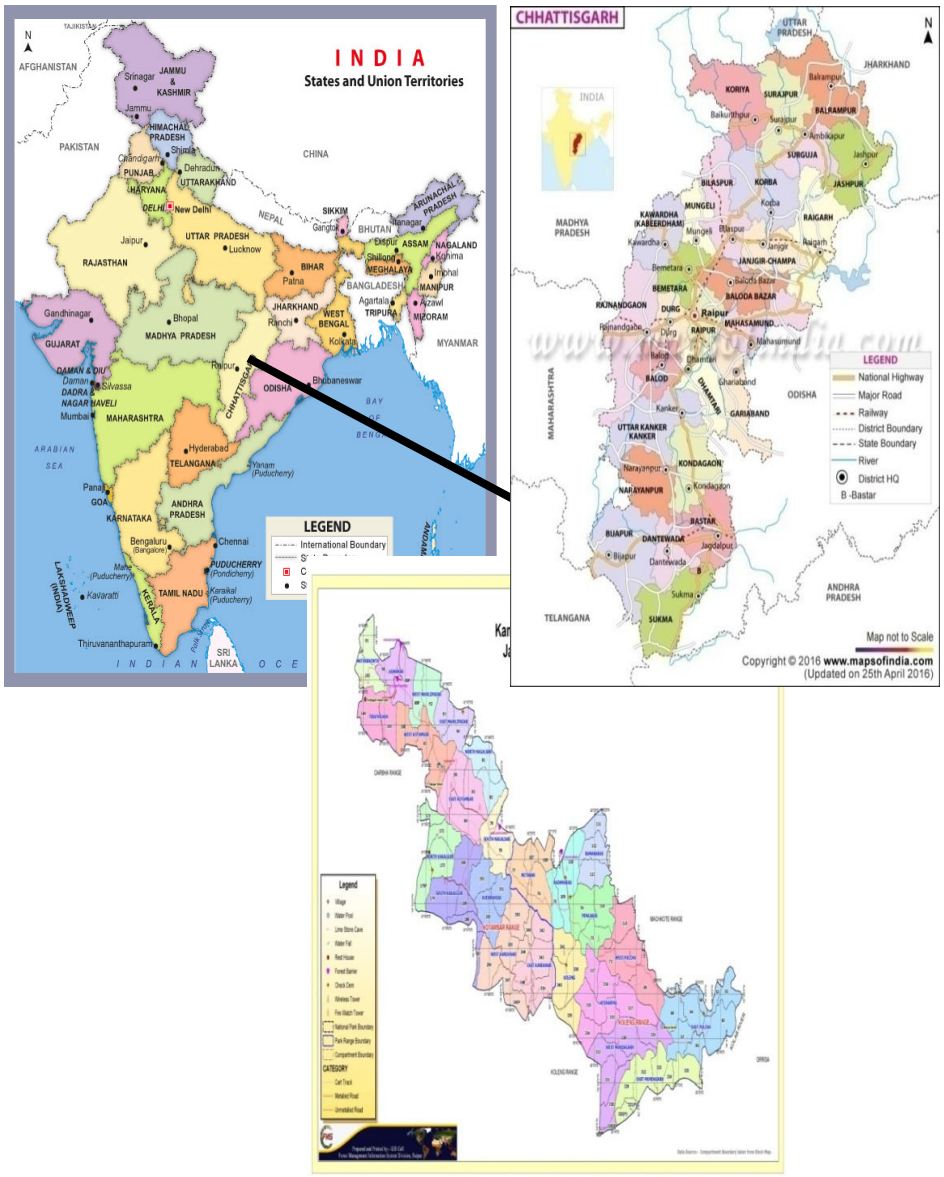


Figure 1. ***Study area map- Kanger Valley National Park, Bastar, Chhattisgarh***

3. Results and Analysis

The information on identification and observation on the diversity of avifauna found in and around Kanger Valley National Park, Bastar are tabulated, analyzed and discussed in this chapter recorded during the study period of month march to June 2016 survey. The avifauna belong to different species were found in the study are along with their botanical name, common/ local name, family, habit and place of availability etc. Birds are very intelligent creatures, understand it from the way

as skill in the building nests, travelling 1000 s of mile during migration without deviating from their courses, the dexterity displayed in food capture, the courtship and mating rituals of some and their power of producing sweet and melodicious songs and another noticed behavior is territorial behavior.

The study of bird is called ornithology or Ornithology is the branch of zoology that concerns the study of birds. Sálim Moizuddin Abdul Ali was an Indian ornithologist and naturalist and sometimes referred to as the Birdman of India. Birds are all around us, from right inside our homes to the most bleak and inhospitable snow-bound peaks and scorching deserts. In fact, you can see birds in habitat where even mammals, despite all their ingenuity and evolutionary superiority, cannot survive. In this sense, birds are the only truly ubiquitous large animals.

Table No. 2. Bird diversity recoreded during study at Kanker Valley National Park

S N	Common Name	Scientific Name	Family	Identification
1	Hill Myna	*Gracula religiosa*	*Sturnidae*	yellow wattles, large orange or yellow bill and rest glossy black
2	Jack spine	*Lymnocryptes minimus*	*Scolopacidae*	Divided eyebrow, scapular stripes, lacks crown stripe
3	Pond Myna	*Ardeola grayii*	*Ardeidea*	Earthy brown at rest. White wings, till and rump flashing prominently in flight.
4	Pied Myna	*Sturnus contra*	*Sturnidae*	Black and white myna with orange orbital skin and deep orange and yellow bill.
5	Indian Myna	*Acridotheres tristis*	*Sturnidae*	Black head, bare yellow skin round eyes, dark brown with white wing patch, yellow bill.
6	Indian Peafowl	*Pavo cristatus*	*Phasianidae*	Long train of ocellated feathers-male, white patch along eye.
7	Red Jungle-fowl	*Gallus gallus*	*Phasianidae*	Rufous head, neck, black dark belly and tail, with spot with tail.
8	House Crow	*Corvus splendens*	*Corvidae*	Grey neck, otherwise black.
9	Jungle Crow	*Corvus macrorhynchos*	*Corvidae*	Large bill and overall glossy black plumage

S N	Common Name	Scientific Name	Family	Identification
10	Great Caucal	*Centropus sinesis*	*Cuculidae*	Chestnut wings, red iris; brownish black throat, breast & belly.
11	Racket-Tailed Drongo	*Dicrurus paradiseus*	*Dicruridae*	Long tail with rackets and crest, black plumage.
12	Black Drongo	*Dicrurus macrocercus*	*Dicruridae*	Glossy black bird with forked tail.
13	Spotted Owlet	*Athene brarna*	*Strigidae*	White sports on head, yellow iris.
14	Rock Pigeon	*Columba livia*	*Columbidae*	Grey with two bands, terminal dark tail band.
15	House Sparrow	*Pesser domesticus*	*Passcridae*	Grey crown, black throat and upper breast-male, chestnut on back
16	Rose-Ringed Parakeet	*Psittacula krameri*	*Psittaculidae*	Black and rose collar-male, wings green with red shoulder patch
17	Cattle Egret	*Bubulcus ibis*	*Ardaidae*	Large yellow beak & legs, orange heas when breeding.
18	Little Egret	*Egretta garzetta*	*Ardaidae*	Black bill, black legs with yellow toes, crest in breeding season.
19	Red-Vented Bulbul	*Pycnonotus jocosus*	*Pycnonotidae*	Black head, red vent, slaty-brown above.
20	Red-whiskered Bulbul	*Pycnonotus cafer*	*Pycnonotidae*	Black head, red vent, scaly brown above, crimson whisker.
21	Oriental Turtle Dove	*Streotopelia orientalis*	*Columbidae*	Large reddish brown dove, bars on vinaceous neck, scaly wings
22	White- Rumped Shama	*Copsychus malabaricus*	*Musciapidae*	White rump, rufous belly, black tail, upper parts black.
23	Indian Cuckoo	*Cuculus micropterus*	*Cuculidae*	Grey head, brown back, dark tail band.
24	Yellow-Wattled Lapwing	*Vanellus malabaricus*	*Charadridae*	Yellow wattle, bleck cap.
25	Rofous Treepie	*Dendrocitta vagabunda*	*Corvidae*	Dark grey hood, rufous bsck, pied wings, long tail.
26	Short-toed Eagle	*Circaetus gallicus*	*Accipitridae*	Dark breast, barred below, sub-terminal tail band.
27	Commn Hoopoe	*Leiopicus mahrattensis*	*Picidae*	Irregular black and white spots on back, scarlet crimson on

S N	Common Name	Scientific Name	Family	Identification
				abdomen and vent, yellow with crimson flame

The study was carried out during the month of March to June, 2016 to explore the diversity and status of avifauna in Kanger Valley National Park of Bastar district in Chhattisgarh, India. During the observation total of 27 species of birds belonging to 17 families were recorded. The bird which found in the same geographical area but devided by a physical barrior that bird known as bird diversity. Forest around Kanger Valley National Park is inhabited by the endangered Hill Myna, the state bird of Chhattisgarh. The bird which were observed in this region during the study periods were Hill Myna, Jack spine, Indian Pond heron, Pied Myna, Indian Myna, Indian peafowl, Red jungle fowl, House crow, Jungle crow, Great caucal, Racket tailed drongo, Black drongo, Spotted owlet, Rock pigeon, House sparrow, Rose-ringed parakeet, Cattle egret, Little egret, Red-vented bulbul, Red-whiskered bulbul, Oriental turtle dove, White rumped shama, Indian cuckoo, Yellow-wattled lapuing, Rofous tree-pie, Short-toed eagle etc. (Bhadja *et al;* 2013), suggest that the freshwater reservoirs sites are more suitable habitat than the other. Preferences for nesting sites were significantly higher on the indigenous trees in both study sites, meaning that vegetation is important factor affecting the diversity of avifauna.

One of the main reasons for high avian diversity in India is the presence of diverse habitats, from the arid cold desert of Ladakh and Sikkim to the steamy, tangled jungles of the Sunderbans to the wet, moist forests of the Western Ghats and Arunachal Pradesh. Rodgers *et al*; (2002) of the Wildlife Institute of India have divided India into ten major biogeographical zones: Trans-Himalayas, Himalayas, Desert, Semi-Arid, Western Ghats, Deccan Peninsula, Gangetic Plains, Northeast, Islands and Coasts. This is not a strictly biogeographical classification as it was done for the sake of identifying new protected areas that are under-represented in the protected area system of India. As we have followed Rodgers and Panwar's classification for describing the vegetation cover of India, the same classification is used for describing the avifauna of India. Bastar plateau is rich and unique in its faunal composition sharing the characteristics of both northern and southern part of the country. Out of four sub-species of Hill Myna (*Gracula religiosa peninsularis*)

found in India, one sub-species, , is seen in the Bastar plateau region of Chhattisgarh. The distribution of is restricted to a very small patch in south-eastern India inhabiting north-east of the Deccan, particularly in Odisha and south-eastern part of Chhattisgarh (Bastar plateau) and northern Andhra Pradesh (Ali & Ripley, 1968-74). The sub-species commonly known as Bastar Hill Myna and is the state bird of Chhattisgarh. The species diversity and status of each bird species in different habitat were different as the habitat and vegetation cover is also different. This may be due to large variety of plants which provide shelter as well as food and safety for birds. The present work shows the abundance of avian species in Kanker Valley national Park at Bastar district which is very good indicator from ecological point of view. There are no serious threats to birds since absence of industrialization in this region but increased uses of pesticides in higher concentration in agricultural field and hunting of birds by villagers may create future danger to birds.

4. Conclusion

This study revealed that a number of valuable avifauna is found in and around Kanger Valley National park. Some of the avifauna is declining day by day to poaching, loss of habitat and conservation of forest area and agriculture land. Some species are facing threat due to various reasons. The avifauna is depending on the forest and agriculture land for food, nesting, breeding etc. Much type of bird species is present in the forest, which is helpful to balance the ecosystems. This avifauna study would help in bird conservation at Bastar region of Chhattisgarh state.

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