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Preliminary Survey of Bird Fauna in Karwi Tehsil, District Chitrakoot, U.P., India

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Abstract: ***Present study discussed the present diversity of avian fauna in Karwi Tehsil, District Chitrakoot, U.P., and India from July 2016 to June 2017. A total of 103 bird species belonging to 18 orders were reported from study area. The highest numbers of birds were recorded from order Passeriformes, about 46 species. It was also noted that the well suited climatic conditions and vegetation availability was the main factor to restore this order abundantly. During the study period the migratory birds like Painted stork, Eurasian spoonbill, Black headed ibis were found in large number during late summer.***

Keywords: equator, avian, avifauna, diversity

1. Introduction

Birds are often brightly colored, highly vocal at certain times of the year and relatively easy to see. They are also very popular, with the result that high quality field guides are available in most part of the world and there are many professionals and amateurs with a high level of identification skills. Because of the popularity, they are undoubtedly the most frequently surveyed of all taxonomic groups. Our planet has a variety of creatures including micro organism like virus, bacteria and macro organism viz , plants & animal which constitute the biodiversity. Avifaunal diversity is one of the most important biotic components for any type of ecosystem.

Birds are found from pole to equator almost everywhere in the world and exhibit great diversity by their habitat and geographical conditions. Avian fauna acts as a bio indicator. (Bilgrami, 1996; Centrrbury *et al.*, 2000; Mistry, 2008 and Slabbekoorn & Ripmeester, 2008) that assesses different habitats qualitatively as well as quantitatively. Birdlife recorded worldwide over 10,000 different species of birds. Rapoport, 1993; Chen *et al.*, 2011 and Sekercioglu., 2012 documented that worldwide decline of avian fauna is due to anthropogenic activities and climatic changes. According to Roy *et al.*, 2012 bird population has declined only because of change in land use pattern. Huges *et al*., 1997 have reported around sixteen million birds being destroyed annually. India stands at 7'th position with 88 threatened bird species over the world. Our purpose for this brief study is to explore the avifaunal diversity of a particular area.

Birds are the key species in an agricultural ecosystem for maintaining the ecological balance. Their positive and negative role in agriculture production was very well illustrated (Ali, 1949 and 1971). Agriculture provides a concentrated and highly predictable source of food for birds. This food in general is of 3 kinds: (1) grains, seeds and fruits, (2) green vegetation of the crop plants and grasses, and (3) insects, other arthropods, rodents, etc., found in soil, crops and other plants.

Chitrakoot area is situated in northern most part of India. This area is known for its scenic beauty and its magnificent biodiversity. Now a day's avifaunal diversity has been decreasing due to the destruction of natural habitats and human disturbance. Thus, many species of birds may be forced to inhabit in the urban areas and constrain them to breed there.

Birds are highly diverse and conspicuous biota of the ecosystem. They act as potential bio-indicators and ideal models for predicting environmental changes. Owing to habitat destruction for progressive urbanization and unscientific management of natural resources, much of our native birds are facing threat.

Birds are the best-known class of vertebrate animals, occur worldwide in nearly all habitats, and provide many ecosystem services. The Indian subcontinent with highly varied climatic conditions, diverse habitat and long stretch of vegetation attracts and supports diverse avifauna including a large number of endemic species round the year. Out of more than 9,000 birds of the world, the Indian subcontinent harbors about 1,300 species, or over 13%of the world's birds. Avian species assemblages are potent indicators of ecosystem health and functioning. Thus, exploration of the diversity of bird communities has become an important tool in biodiversity conservation and for identifying conservation actions in areas of high human pressure.

Ecologically, birds are of tremendous importance to the human society. Birds act as a good medium for dispersing seeds, pollinating plants, biological control and they are important to continue the ecological cycle. Birds occupy almost all habitat types and diversity of birds often serves as a good indicator of overall diversity of a given area. Birds are also known to be responsive to any kind of changes to their ambient conditions hence can be used as bio indicator. Different anthropogenic activities and change in climate can cause severe loss of avifaunal diversity. Moreover, progressive urbanization often leads to biotic homogenization whereby a few widespread and successful species replace a diverse avifauna. Therefore, assessment of the avifaunal diversity is essential to delineate the importance of local landscapes for avian conservation and creating a scientific database for proper management of the

ecosystem to ensure better conservation, both of the habitat as well as the avian diversity.

2. Materials and Methods

Study Area

Chitrakoot is a holy place of Hindus in India. Its situated on the bank of holy river Mandakini and surrounded by lush green hills of Vindhyachal range. Study site situated in the southern part of Chitrakoot district [U.P.]. Study area covered by Forest region, terrestrial region, aquatic region, wetland region. Naturally occurring birds species and populations were studied at locations (fig.1) (1) Sankar bajar (2) Pahari road (3) Ganesh baag (4) Khoh (5) Dhus maida (6) Bedipulia (7) Shivrampur (8) Ranipur bhatt (9) Khutaha (10) Baglai (11) Bharatkoop (12) Chitra road (13) Ramghat (14) Hanuman dhara.

Figure 1: Map showing the study area (Karwi Tehsil area)

Table 1: G.P.S. location of different sites of Karwi Tehsil area

S.N.	PLACES	G.P.S. LOCATION
1	Bedipuliya	Lat N 25°12'16·125" Lon E 080°50'00·000"
2	Shivrampur	Lat N 25°12'53·238" Lon E 080°46'01·743"
3	Dhus maidan	Lat N 25°12'45·884" Lon E 080°54'28·762"
4	Shankar bajar	Lat N 25°13'23·925" Lon E 080°55'11·279"
5	Khoh	Lat N 25°12'41·407" Lon E 080°57'30·833"
6	Ganesh baag	Lat N 25°11'38·936" Lon E 080°55'05·209"
7	Hanumaan dhara	Lat N 25°10'28·069" Lon E 80°54'36·678"
8	Raanipur bhatt	Lat N 25°11'51·880" Lon E 080°52'18·162"
9	Bharatkoop	Lat N 25°12'51·941" Lon E 080°48'41·457"
10	Raamghat	Lat N 25°10'53·110" Lon E 080°52'08·632"
11	Baglai	Lat N 25°15'24·863" Lon E 080°49'20·651"
12	Pahadi road	Lat N 25°14'47·936" Lon E 080°56'02·723"
13	Chitra road	Lat N 25°11'01·116" Lon E 080°52'18·162"
14	Khutha	Lat N 25°13'01·018" Lon E 080°51'36·002"

Periods

The duration of this study period was from July 2016 to June 2017.

Study Design

Sampling site was allocated in Tehsil Karwi, District Chitrakoot, and U.P. India. Bird census was made from 4:30 to 9:30 am in 17 consecutive days per month. Bird species were viewed by naked eyes or binocular and documented immediately after viewing.

Equipments

There are some equipment we used in this survey.
(1) Nikon digital camera, **(2)** Binocular, **(3)** GPS application, **(4)** Map, **(5)** Notebook, pen

Species Identification

Species identification was made according to "The Book of Indian Birds by Salim Ali" and according to birds list of DFO of Chitrakoot district.

Data Analysis

Documented bird species and their population from sampling sites for each month were assembled and made a list representing the species found in particular habitats.

Listing method

Listing methods are applicable to a wide range of species and habitat, but most widely used in tropical habitats. They

are suitable for rapid assessments of poorly known areas. They can be used in population monitoring.

Lists of birds recorded from particular geographical area. Common species would occur on many lists, rare species on only a few. Thus the frequency of occurrence of species on lists, termed the 'reporting rate' by Harrison *et al*. (1997), was a crude measure of relative abundance.

Bart & Klosiewski (1989) compared the frequency of occurrence of birds at 50 counting stations (equivalent to 50 lists) with estimates of abundance from point counts at the same stations. Trends in species' populations were similar from the 2 methods, though those obtained from lists were about 40% lower when several individuals of a species were counted at stations. Hewish & Loyn (1989) found that producing species lists for 2-ha plots during 20 min periods appealed to observes because they felt that they were able to record all species present within the time period. The more lists that are produced, the more precise the reporting rates will be, so a reasonable number of lists, perhaps 15 or more, is required.

McKinnon lists (McKinnon & Phillips1993) were a specific form of listing that records species on fixed-length lists rather than within fixed periods. To produce a McKinnon list, walk slowly around the study area listing the first n species encountered, where n could be, for example, 10, 15 or 20. List the names of all new species encountered and when n had been listed, start a new list and continue surveying until, again, n species had been encountered. Repeat this process until a reasonable number (>15) of list had been produced.

Counting Roosts

Pithon and Dytham (1999) used teams of volunteers to census ring-necked parakeets *Psittacula krameri* using simultaneous counts at all known roosts. Roosts could be counted only once located. However, since many roost sites were traditional they were often well known. Unknown roost sites could be located by following the flight paths of flocks of birds as dusk, or high tide, approaches. Some coastal species, however, could roost on agricultural land up to 1 km inland.

3. Results

Overall 103 species (Table.2) of birds were identified and their population was calculated during the present study. In present study rich diversity of birds was observed in this area. Within 1 year survey a total of 103 birds species were recorded from different study sites. The highest numbers of the order Passeriformes were recorded. Furthermore, over results has documented that order *Galliformes, Coraciiformes, Pelecaniformes, Gruiformes, Charadriiformes, Ciconiiformes, Suliformes, Podicipediformes, Anseriformes, Columbiformes, Psittaciformes, Bucerotiformes, Piciformes, Cuculiformes, Accipitriformes, Apodiformes and Strigiformes* (Table.2). Most dominant birds were House sparrow, Red vented bulbul, little swift, Indian robin, Jungle babbler, Indian grey hornbill, Common myna, Rock pigeon and House crow. During the study period the migratory birds like Painted stork, Eurasian spoonbill, Black headed ibis were found enlarge number during late summer. Order Passeriformes is the dominating group with 46 bird species. GPS location of study site of Karwi Tehsil area described in table no.1.

Table 2: Classification of birds species found in Karwi Tehsil area

S.N.	*Common Name*	*Scientific Name*	*Order*	*Family*
1.	Oriental white- eye	*Zosterops palpebrosus*	Passeriformes	Zosteropidae
2.	House sparrow	*Passer domesticus*	Passeriformes	Passeridae
3.	Western Yellow wagtail	*Motacilla flava*	Passeriformes	Motacillidae
4.	Grey wagtail	*Motacilla cinerea*	Passeriformes	Motacillidae
5.	Common myna	*Acridotheres tristis*	Passeriformes	Sturnidae
6.	Bank myna	*Acridotheres ginginias*	Passeriformes	Sturnidae
7.	Large grey babbler	*Turdoides malcolmi*	Passeriformes	Leiothrichidae
8.	Jungle babbler	*Turdoides striata*	Passeriformes	Leiothrichidae
9.	Commen babbler	*Turdoides caudata*	Passeriformes	Leiothrichidae
10.	Common iora	*Aegithina tiphia*	Passeriformes	Aegithinidae
11.	Rufous treepie	*Dendrocitta vagabunda*	Passeriformes	Corvidae
12.	Brahminy starling	*Sturnia pagodarum*	Passeriformes	Sturnidae
13.	House crow	*Corvus splendens*	Passeriformes	Corvidae
14.	Jungle crow	*Corvus macrorhynchos*	Passeriformes	Corvidae
15.	Indian silverbill	*Euodice malabarica*	Passeriformes	Estrildidae
16.	Brown shrike	*Lanius cristatus*	Passeriformes	Laniidae
17.	Indian robin	*Saxicoloides fulicata*	Passeriformes	Muscicapidae
18.	Ashy prinia	*Prinia socialis*	Passeriformes	Cisticolidae
19.	Purple sunbird	*Nectarniia asiatica*	Passeriformes	Nectariniidae
20.	Asian pied starling	*Sturuns contra*	Passeriformes	Sturnidae
21.	Oriental magpie-robin	*Copsychus saularis*	Passeriformes	Mucicapidae
22.	Red-vented bulbul	*Pycnonotus cafer*	Passeriformes	Pycnonotidae
23.	Pied bushchat	*Saxicola caprata*	Passeriformes	Muscicapidae
24.	Bluethroat	*Luscinia svecica*	Passeriformes	Muscicapidae
25.	Rufous tailed wheatear	*Oenanthe chrysopygia*	Passeriformes	Muscicapidae
26.	Plain prinia	*Prinia inornata*	Passeriformes	Cisticolidae
27.	Black drongo	*Dicrurus macrocercus*	Passeriformes	Dicruidae
28.	White bellied drongo	*Dicrurus caerulescens*	Passeriformes	Dicruridae

29	Grey bush chat	*Saxicola ferreus*	Passeriformes	Muscicapidae
30	Scaly-breasted munia	*Lonchura punctulata*	Passeriformes	Estrildidae
31.	Ashy-crowned sparrow-lark	*Eremopterix griseus*	Passeriformes	Alaudidae
32.	Eastern yellow wagtail	*Motacilla tschutschensis*	Passeriformes	Motacillidae
33.	Olive backed Sunbird	*Cinnyris jugularis*	Passeriformes	Nectariniidae
34.	White-browed wagtail	*Motacilla maderaspatensis*	Passeriformes	Motacillidae
35.	Common tailor bird	*Orthotomus sutorius*	Passeriformes	Cisticolidae
36.	Tawny pipit	*Anthus campestris*	Passeriformes	Motacillidae
37.	Sykes's lark	*Galerida deva*	Passeriformes	Alaudidae
38.	Red munia	*Amandava amandava*	Passeriformes	Estrildidae
39.	White-capped redstart	*Phoenicurus leucocephalus*	Passeriformes	Muscicapidae
40.	Buff-bellied pipit	*Anthus rubescens*	Passeriformes	Motacillidae
41.	Yellow-eyed babbler	*Chrysomma sinense*	Passeriformes	Sylviidae
42.	White wagtail	*Motacilla alba*	Passeriformes	Motacillidae
43.	Barn swallow	*Hirundo rustica*	Passeriformes	Hirundinidae
44.	Baya weaver	*Ploceus philippinus*	Passeriformes	Ploceidae
45.	Rusty tailed flycatcher	*Ficedula ruficauda*	Passeriformes	Muscicapidae
46.	Grey francolin	*Francolinus pondicerianus*	Galliformes	Phasianidae
47.	Peacock	*Pavo cristatus*	Galliformes	Phasianidae
48.	Indian roller	*Coracias benghalensis*	Coraciiformes	Coraciidae
49.	Green bee-eater	*Merops orientalis*	Coraciiformes	Meropidae
50.	Blue-tailed bee-eater	*Merops philippinus*	Coraciiformes	Meropidae
51.	Common kingfisher	*Alcedo atthis*	Coraciiformes	Alcedinidae
52.	White-throated kingfisher	*Halcyon smyrnensis*	Coraciiformes	Alcedinidae
53.	Black-headed ibis	*Threskiornis melanocephalus*	Pelecaniformes	Threskiornithidae
54.	Red-naped ibis	*Pseudibis papillosa*	Pelecaniformes	Threskiornithidae
55.	Purple heron	*Ardea purpurea*	Pelecaniformes	Ardeidae
56.	Great egret	*Ardea alba*	Pelecaniformes	Ardeidae
57.	White-breasted waterhen	*Amaurornis phoenicurus*	Gruiformes	Rallidae
58.	Common moorhen	*Gallinula chloropus*	Gruiformes	Rallidae
59.	Sarus crane	*Antigone antigone*	Gruiformes	Gruidae
60.	Red-wattled lapwing	*Vanellus indicus*	Charadriiformes	Charadriidae
61.	Cattle egret	*Bubulcus ibis*	Pelecaniformes	Ardeidae
62.	Little egret	*Egretta garzetta*	Pelecaniformes	Ardeidae
63.	Painted stork	*Mycteria leucocephala*	Ciconiiformes	Ciconiidae
64.	Indian pond heron	*Ardeola grayii*	Pelecaniformes	Ardeidae
65.	White necked stork	*Ciconia episcopus*	Ciconiiformes	Ciconiidae
66.	Asian openbill stork	*Anastomus oscitans*	Ciconiiformes	Ciconiidae
67.	Eurasian spoonbill	*Platalea leucorodia*	Pelecaniformes	Threskiornithidae
68.	Indian cormorant	*Phalacrocorax fuscicollis*	Suliformes	Phalacrocoracidae
69.	Wood sandpiper	*Tringa glareola*	Charadriiformes	Scolopacidae
70.	Common sandpiper	*Actitis hypoleucos*	Charadriiformes	Scolopacidae
71.	Common redshank	*Tringa totanus*	Charadriiformes	Scolopacidae
72.	Black-winged stilt	*Himantopus himantopus*	Charadriiformes	Recurvirostridae
73.	Bronze-winged jacana	*Metopidius indicus*	Charadriiformes	Jacanidae
74.	Greater painted-snipe	*Rostratula benghalensis*	Charadriiformes	Rostratulidae
75.	Little grebe	*Tachybaptus ruficollis*	Podicipediformes	Podicipedidae
76.	Lesser whistling duck	*Dendrocygna javanica*	Anseriformes	Anatidae
77.	Domestic goose	*Anser anser domesticus*	Anseriformes	Anatidae
78.	Rock pigeon	*Columba livia*	Columbiformes	Columbidae
79.	Red collared dove	*Streptopelia tranquebarica*	Columbiformes	Columbidae
80.	Yellow-footed green pigeon	*Treron phoenicoptera*	Columbiformes	Columbidae
81.	Laughing dove	*Spilopelia senegalensis*	Columbiformes	Columbidae
82.	Eurasian collared dove	*Streptopelia decaocto*	Columbiformes	Columbidae
83.	Spotted dove	*Spilopelia chinensis*	Columbiformes	Columbidae
84.	Rose-ringed parakeet	*Psittacula krameri*	Psittaciformes	Psittaculidae
85.	Plum-headed parakeet	*Psittacula cyanocephala*	Psittaciformes	Psittaculidae
86.	Hoopoe	*Upupa epops*	Bucerotiformes	Upupidae
87.	Indian grey hornbill	*Ocyceros birostris*	Bucerotiformes	Bucerotidae
88.	Black-rumped flameback	*Dinopium benghalense*	Piciformes	Picidae
89.	Coppersmith barbet	*Psilopogon haemacephala*	Piciformes	Megalaimidae
90.	Asian koel	*Eudynamys scolopaceus*	Cuculiformes	Cuculidae
91.	Greater coucal	*Centropus sinensis*	Cuculiformes	Cuculidae
92.	Shikra	*Accipiter badius*	Accipitriformes	Accipitridae
93.	Egyptian vulture	*Neophron percnopterus*	Accipitriformes	Accipitridae
94.	Black kite	*Milvus migrans*	Accipitriformes	Accipitridae
95.	Common hawk-cuckoo	*Hierococcyx varius*	Cuculiformes	Cuculidae

96.	Little swift	*Apus affinis*	Apodiformes	Apodidae
97.	Spotted owlet	*Athene brama*	Strigiformes	Strigidae
98.	Black Shumen hen	*Gallus gallus domesticus*	Galliformes	Phasianidae
99.	Solid white (chicken plumage)	*Gallus gallus domesticus*	Galliformes	Phasianidae
100.	Red jungle fowl	*Gallus gallus*	Galliformes	Phasianidae
101	Pied kingfisher	*Ceryle rudis*	Coraciiformes	Alcedinidae
102	Buff orpington	*Gallus gallus domesticus*	Galliformes	Phasianidae
103	Indian chat	*Oenanthe fusca*	Passeriformes	Muscicapidae

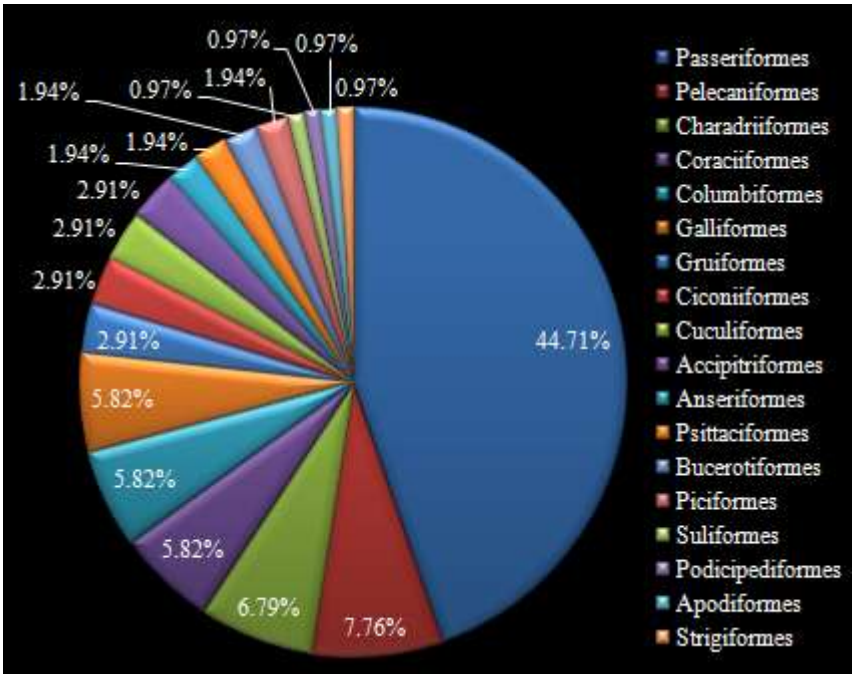

Figure 2: Percentage composition of birds in different orders of avifauna

4. Discussion

The Karwi Tehsil area recorded the large number of bird species among the different habitats, since it has the varying ground cover. The bird species belong to (18) different Orders and Order- Passeriformes recorded the large number of species (46), because of the well suited climatic conditions and vegetation availability for them. The birds are in urge to move to other areas, as summer proceeds. The present study indicates that there was more richness and diversity in the undisturbed habitat rather than the human altered habitats. In order to conserve the bird diversity and to keep the ecology in good condition in Karwi Tehsil, the problems should be brought to the eyes of management to take immediate action. More understanding and documentation of the area is needed.

Rare birds like Indian grey hornbill (*Ocyceros birostris*), yellow footed green pigeon (*Treron phoenicopterus*), and black headed ibis (*Threskiornis melanocephalus*), that visited the study site in particular season shows the richness of the habitats in the study area. The considerable numbers of trees in fallow study area accommodate the large number of bird's population. Thus shows planting trees in dry lands area can increase the bird diversity. This study strongly supported limited use of pesticides and chemical fertilizers as they do not pose danger to various types of bird species that visited the site in large numbers.

At present our natural ecosystem are destroyed by anthropogenic activities like cutting forests, destruction of natural water bodies and also industrialization of area that produce pollution. All these activities are a threat for the local environment conditions that finally affects the avifaunal diversity qualitatively as well as quantitatively (Bilgrami, 1995).

In conservation of biodiversity, green-spaces of urban area have an important role to play. (Zerbe *et al*., 2003, Alvey, 2006, Mason, 2006, Khera *et al*., 2009). According to Loss *et al.*, (2009) it is estimated that by the year 2050, the majority of the global population will live in urban areas. Such rapid urbanization will come with a great threat for avian fauna. In maintaining ecosystem, birds play an important role that support biodiversity. In this concern, researchers are trying to work on their protection and conservation. For further investigation, a plan with objectives like population abundance, reproductive behavior, nesting mechanism, nesting site selection, feeding behavior, etc, to gain additional knowledge on avifaunal diversity of present study area.

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