

AVIFAUNAL DIVERSITY OF POWER GRID TRANSMISSION LINE AFFECTED AREA OF CHHAL RANGE, DHARAMJAIGARH FOREST DIVISION CHHATTISGARH, INDIA

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Abstract - The Chhal Range is most deciduous forest located at the Dharamjaigarh Forest Division, under Raigarh District, Chhattisgarh state. The diversity of avifauna was studied in Power Grid line transmission line tower in Chhal Range, Dharamjaigarh Forest Division, from 2018-19. The study of birds diversity was carried out at 12 line transect to determine of three different seasons including rainy, winter and summer in Power grid transmission line study area and its surrounding areas by adopting the line transect methodology. Including rainy, winter and summer. Out of which 05 line transect where surveyed in rainy and 05 line transect survey in winter and the rest 05 transect surveyed in the summer season on study the existing birds population with its habitat; and existing flora and birds were registered. The total 39 bird species belonging to 07 orders were listed. The result indicates that the value of bird diversity throughout the three seasons of the year 2018-19 were high at these rainy ($S=45\%$), In winter season the species richness ($S=25.5\%$) and in summer season the species richness ($S=35.5\%$) during the winter season in comparison to summer and rainy seasons. It shows that the habitats, that are required for avian fauna are almost equally available at all five study stations.

Key Words: Avian diversity, Line transect, Populous, Diversity, Avifauna.

1.INTRODUCTION

Birds are one of the most populous life forms on the planet, and its diversity leads to a richness of life and beauty. Apart from this, birds have always fascinated mankind with their intrinsically beautiful plumage, melodious songs and artistic behaviour, Shrestha [1]. The Indian subcontinent is very rich in biodiversity. According to an estimate total 1300 bird species found in Indian subcontinent, out of the more than 9000 bird species of the world, over 13% of the world's bird fauna are

found in India (Grimmett, et. all 1998, Zoological Survey of India). It is suggested that the avifauna is important for the good health of the ecosystem as these birds play various roles as scavenger, pollinators and predators of insect pests. (Padmavati, et. all 2010, Bhattacharjee, P.C. and Hazarika, B.C. 1985). Besides this, birds are valuable for many aspects i.e. sensitive indicator of pollution and also play great role in pest control. Avian species richness and diversity along with the densities of some common bird species in relation to habitat features on farmland were studied by Mark (Mark, F. H. 2007). The study about the status and diversity of birds of power grid transmission line -2 study area and its surrounding area are less study, so this study has been undertaken to observe avian diversity of study area and its surrounding areas at Powergrid study area Chhal Range. Chhal Range is a comes under Dharamjaigarh forest division in Raigarh district in the state of Chhattisgarh, India. It is located at $23.09^{\circ}N$ $83.54^{\circ}E$. It has an average elevation of 300 meters.



Figure 1. It shows the location of Chhal
(Source -www.googleearth.com).

2. MATERIALS & METHODS

Major surveys for the estimation and counting of avifauna were conducted between the month of July 2018 to March 2019 by using a transect line approach (Bibby et al., 1992). For extensive survey of whole power grid area as to assess the status of avifauna and to identify the habitats

pattern used by the birds. For each line transect, three observers had walked along the path, and independently recorded the number of species and individual birds in the study area with the aid of binoculars. If possible, photographs had also taken to aid in the identification process. Total 12 line transect were taken. During the field surveys, we made a line transect of 1.20 km (mostly used a path / trail followed by the villagers to enter in the forest) in which distance sampling were taken in every 300 m in the transect to estimate the population of avifauna, its habit, habitat and nesting pattern including the floral diversity of the proposed mining area). A circular sample plot of 10 m radius had been taken in each transect at an interval of 300 m i.e. total 5 sample plots made in one transect in which vegetation composition (grass, herb, shrub and regeneration) and all tree species data had been taken including height and girth (using meter tape) along with the counting of avifauna. Instead of transect line, birds were also recorded between two transect line and considered only in checklist. Perch heights of individuals have also recorded to find out the utilization of vertical dimension by birds. Perch height class of all the birds has recorded in case of all direct sightings. All the birds were identified using the standard field guides (Grimmet et al., 2013).

RESULTS AND DISCUSSION

The total of 39 species of birds belonging to 07 orders and 26 families were recorded from Power Grid study area of Auranara Chhal Forest Range and its surrounding areas (Table No. 01). This is the record in Power Grid study area avian fauna of Chhal Range which shows quite good avian diversity in this area. Some varieties of birds visit in the winter season for breeding and most of them permanently reside in this habitat due to presence of ample amount of avian food in and around study area. Most of the avian species are resident (R) and Least

concern (LC) and one species Alexandrine Parakeet is Near threatened (NT) in IUCN status least. Family wise analysis showed that family Psittaculidae (4 species) dominated the avian fauna followed by Liothrichidae and Sturnidae (3species each), Cisticolidae, Estrildidae, Columbidae and Picidae (2 species each), Dicruridae, Pycnonotidae, Nectariniini, Cuculidae, Oriolidae, Megalaimidae, Phylloscopidae, Passeridae, Pittidae, Campephagidae, Alcedinidae, Acrocephalidae, Ploceidae, Zosteropidae, Corvini, Meropidae Laniidae and Coraciidae (1species each) were poorly represented in the area (Table 1). Order wise analysis showed that dominated Order Passeriformes = 56% out of 08 Order followed by Psittaciformes =25%, Coraciiformes =7%, Piciformes = 5%, Columbiformes = 4%, Cuculiformes = 3% and minimum Accipitriformes = 1% were poorly represented in the Study area (Figure 2). Out of 26 family Avifauna belonging to families Psittaculidae constitute 24.8% of the total bird species. Meropidae, Cisticolidae and Nectariniini families are 5% and Passeridae and Pittidae family constitute 0.20% each of the total bird species (Figure 03).

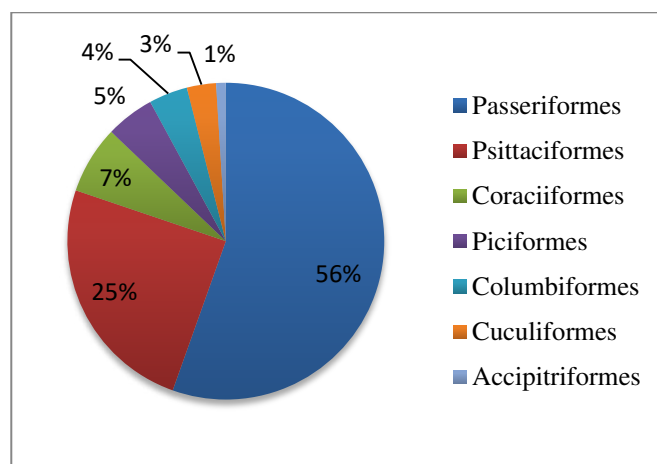


Figure 2. It shows percentages (%) of Species in different Orders of avifauna

Table 1. It shows Orders, Families, Zoological Names, Common Names and habitat of the birds. Here resident R = resident, LC = least concern and NT = near threatened.

S. N.	Order	Family	Zoological Name	Avifauna Species	Habitat	IUCN Status	I st Rainy Season	II nd Winter Season	III rd Summer Season	Total avifauna
1.	Accipitriformes	Laniidae	<i>Accipiter badius</i>	Brown shikra	R	LC	1	1	1	3
2.	Columbiformes	Columbidae	<i>Spilopelia senegalensis</i>	Laughing dove	R	LC	-	6	7	13
3.			<i>Spilopelia chinensis</i>	Spotted dove	R	LC	-	2	4	6
4.	Coraciiformes	Meropidae	<i>Merops orientalis</i>	Green Bee Eater	R	LC	13	5	7	25

5.		Coraciidae	<i>Coracias benghalensis</i>	Indian roller	R	LC	2	4	3	9
6.		Alcedinidae	<i>Halcyon smyrnensis</i>	White throated kingfisher	R	LC	1	1	2	4
7.	Cuculiformes	Cuculidae	<i>Centropus sinensis</i>	Greater caucal	R	LC	3	7	6	16
8.		Cisticolidae	<i>Prinia socialis</i>	Ashy Prinia	R	LC	4	5	7	16
9.			<i>Prinia inornata</i>	Plain prinia	R	LC	2	2	4	8
10.		Sturnidae	<i>Acridotheres tristis</i>	Common myna	R	LC	-	2	2	4
11.			<i>Acridotheres ginginianus</i>	Bank myna	R	LC	1	-	-	1
12.			<i>Acridotheres fuscus</i>	Jungle myna	R	LC	2	-	-	2
13.		Ploceidae	<i>Ploceus philippinus</i>	Baya Weaver	R	LC	5	-	-	5
14.		Dicruridae	<i>Dicrurus macrocercus</i>	Black drongo	R	LC	14	9	10	33
15.		Oriolidae	<i>Oriolus xanthornus</i>	Black headed oriole	R	LC	2	7	6	15
16.		Acrocephalidae	<i>Acrocephalus dumetorum</i>	Blythreed warbler	R	LC	1	2	2	5
17.			<i>Argya caudate</i>	Common babbler	R	LC	11	4	6	21
18.		Lieothrichidae	<i>Oriolus oriolus</i>	Golden oriole	R	LC	14	2	2	18
19.			<i>Argya striata</i>	Jungle babbler	R	LC	22	2	4	28
20.	Passeriformes	Phylloscopidae	<i>Phylloscopus trochiloides</i>	Greenish warbler	R	LC	2	-	-	2
21.		Passeridae	<i>Passer domesticus</i>	House sparrow	R	LC	1	-	-	1
22.		Pittidae	<i>Pitta brachyura</i>	Indian pitta	R	LC	1	-	-	1
23.		Estrildidae	<i>Euodice malabarica</i>	Indian silvarbill	R	LC	21	6	10	37
24.			<i>Lonchura striata</i>	White rumped munia	R	LC	1	-	-	1
25.		Muscicapidae	<i>Saxicoloides fulicatus</i>	Indian robin	R	LC	2	4	5	11
26.			<i>Copsychus saularis</i>	Oriental magpie robin	R	LC	2	3	3	8
27.			<i>Dicaeum agile</i>	Thick billed flower pecker	R	LC	4	-	-	4
28.		Zosteropidae	<i>Zosterops palpebrosus</i>	Oriental white eye	R	LC	5	-	-	5
29.		Nectariniini	<i>Cinnyris asiaticus</i>	Purple sunbird	R	LC	8	9	7	24
30.		Pycnonotidae	<i>Pycnonotus cafer</i>	Red vented bulbul	R	LC	8	11	13	32
31.		Corvini	<i>Dendrocitta vagabunda</i>	Rufus magpie	R	LC	5	1	1	7
32.		Campephagidae	<i>Ptericrocotus cinnamomeus</i>	Small minivet	R	LC	4	4	-	8
33.	Piciformes	Megalaimidae	<i>Psilopogon haemacephalus</i>	Copper smith barbet	R	LC	3	-	-	3
34.		Picidae	<i>Dryocopus martius</i>	Black woodpecker	R	LC	5	7	8	20

35.		<i>Dinopium benghalense</i>	Lesser flamback	R	LC	2	-	-	2
36.		<i>Psittacula eupatria</i>	Alexandrine Parakeet	R	NT	15	7	9	31
37.	Psittaciformes	<i>Psittacula cyanocephala</i>	Plum headed parakeet	R	LC	13	5	7	25
38.		<i>Psittacula krameri</i>	Rose ringed parakeet	R	LC	27	13	11	51
39.		<i>Loriculus vernalis</i>	Vernal hanging parakeet	R	LC	16	4	4	24
						243	135	151	529

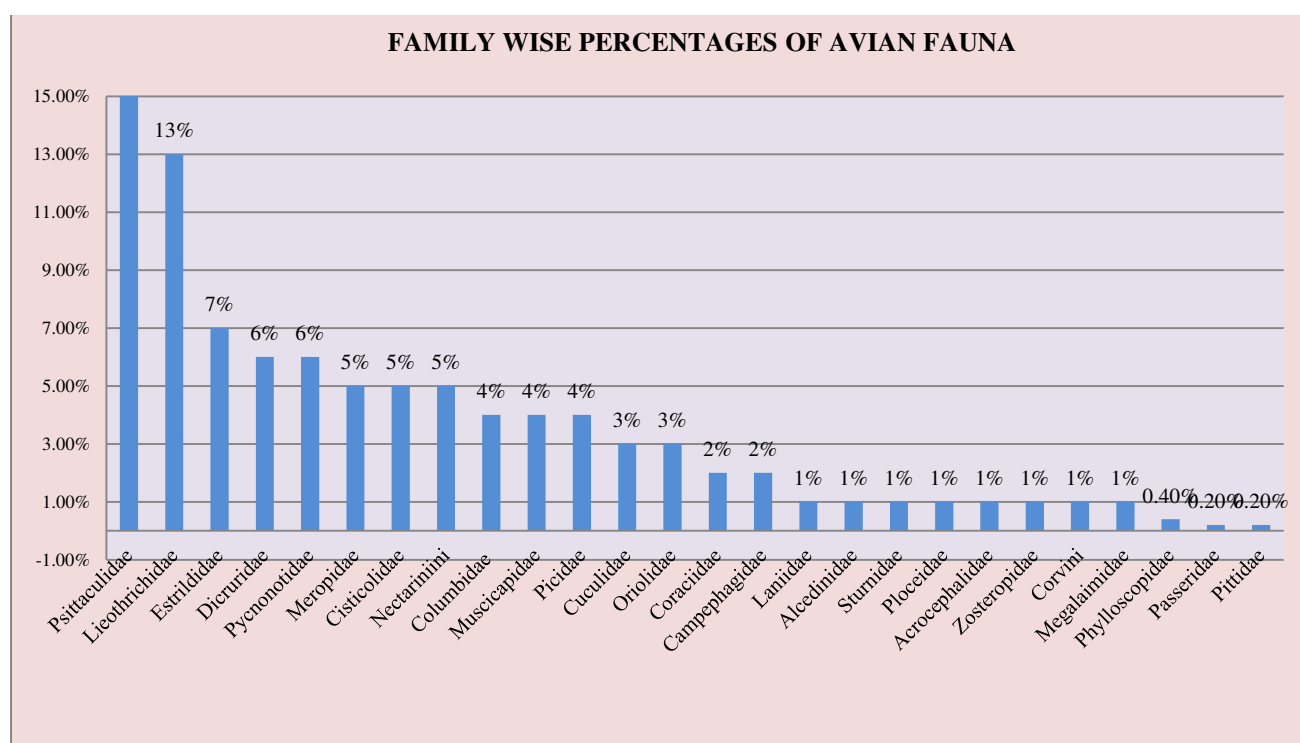


Figure 3. It shows the family wise percentages of avian fauna.

3. CONCLUSIONS

This study includes avian diversity of Transmission Line affected area of Chhal Forest range of Dharamjaigarh Forest Division comes under Raigarh district during different seasons of the year 2018- 19. It had been observed that the avian diversity during Rainy season was more in comparison to Summer and Winter seasons. Whereas, the diversity of birds in the forest area of Chhal Range, Auranara forest compartment no. 491P, 517P was more during all three seasons as compared to the study. Apart from this, no much significant were noticed overall all study area. This suggest that the habitat i.e. availability of food, water, climatic conditions and surrounding vegetation of Study are equally favorable for avian fauna.

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