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STUDIES ON DIVERSITY AND DOMINANT ANALYSIS OF BIRDS IN PATHARIYA BLOCK, MUNGELI DISTRICT, CHHATTISGARH

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ABSTRACT

Birds are wildlife that is easily found in almost every environment . they are playing a major role as pollination, consumers of plant seed and predator of insect. Bird represent an important component of global biodiversity. Presence of birds an area is important, because it is harbours wide variety of bird variation in food availability in different seasons affected the bird diversity in the area. The purpose of this study is to calculate the diversity of birds species and identify the source of birds feed in the compound. The study was conducted by field surveys in the Patharia block divided in to five sector viz. Residential area in Pathariya, Garden area in Barcha village, Chandargarhi pond area, Agricultural area in Bagbudwa village and Tower area in Pathariya. The data were analyzed by using the bird diversity index, richness index, abundance index, dominance analysis. During the study period recorded 32 species belonging to 11 orders at all observation sites. And also,during the study period recorded 4 species of migratory birds namely *Coccyzus americanus* [Yellow billed cuckoo], *Motacilla alba* [White wagtail], this are found in bagicha of Barcha village and *Postor roseus* [Rosy starling], *Turdoides striata* [Jungle babbler] found in agricultural area of Bagbudwa village The various types vegetation as a food source, among others: guava, mango, jambu, ber and banyan tree.

KEYWORDS: Birds, Diversity, Dominant Analysis.

INTRODUCTION

Birds (Class-Aves) are a group of endothermic vertebrates, characterised by feathers, toothless beaked jaws, the laying of hard-shelled eggs, a high metabolic rate, a four-chambered heart, and a strong yet light weight skeleton. Biodiversity is defined as the variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems.[1] Bird migration is a natural miracle. migratory birds fly hundreds and thousands of km. to find the best ecological condition and habitat for feeding, breeding and rising their ones.[2]

Pathariya is a Block located in Mungeli district in Chhattisgarh. Placed in rural part of Chhattisgarh, it is one of the 3 blocks of Mungeli district. As per the government records, the block having 151 villages and number of Pathariya is 62.Place in rular part of Chhattisgarh., Geographically, the twon is located between 21.97758ºNorth latitude and 81.8457ºEast longitude at a hight of 268 meter above sae level. It is located 32km. toward west from Bilaspur district, 101 km. from state capital Raipur towards south. The agriculture and environment condition is good for research work it has all the geologiocal nature like river, pond, grassland, jungle etc. All above condition are good for avian species so it is necessary to analysis the diversity of birds in this area. This study was conducted in 5 areas of this block, the areas are named as R1, R2, R3, R4, and R5.

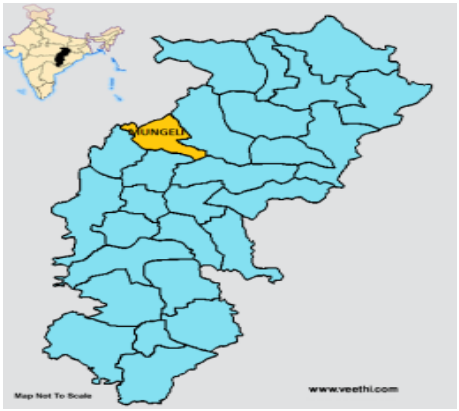

Fig.1. Map of Chhattisgarh.

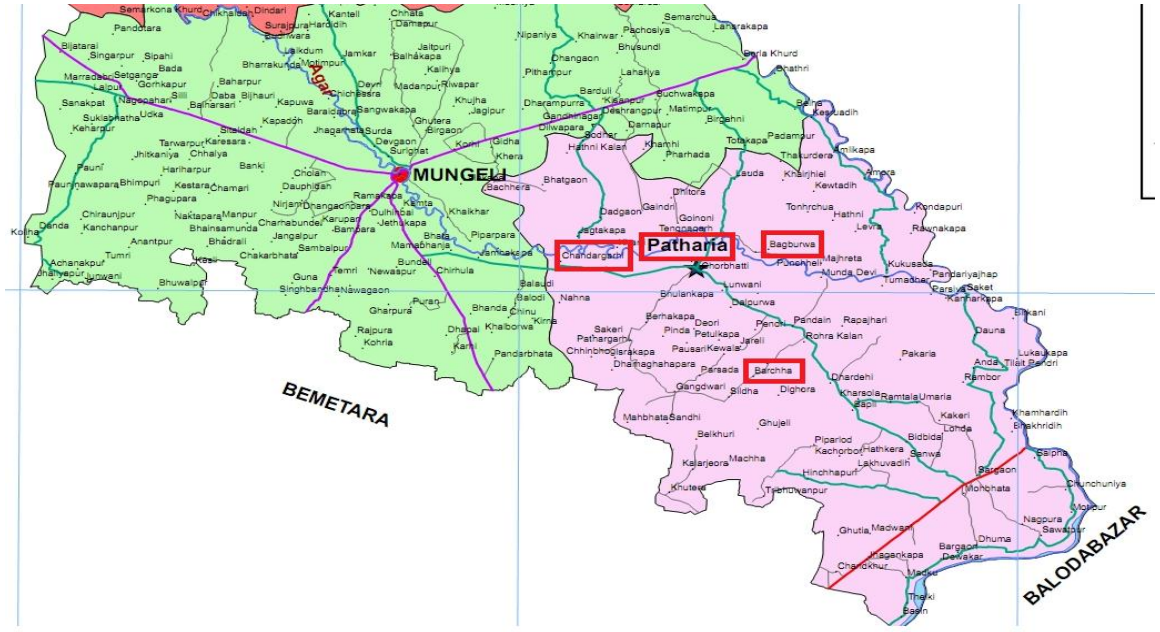

Fig.2. Map of Pathariya showing observation sites.

2. MATERIALS AND METHODS

2.1 PLACE AND TIME

The research was conducted in residential, agricultural, pond area,gardern (Bagicha), near tower areas at Pathariya block in Mungeli distt. Study time was January to March 2018[Morning: 6.00-8.00am: Evening 16.00-18.00pm good weather]. The main objectives of the study is to study the biodiversity of birds, various factors influencing the biodiversity, role of birds in agricultural, species found migratory, and sources of feeding the birds.

Equipment used is Digital SLR camera.

2.1.1 STUDY SITE

BARCHHA:-Barchha village is well known for its guava baagicha,and it is 23 km away from mungeli and 2.4km from pathariya.

CHANDARGADHI:-this village is selected for its pond area present in the village.it is 18 km away from mungeli and 8.3 km from pathariya.

BAGBUDWA:-Bagbudwa village is chosen for its agricultural area which is 27 km away from mungeli and 5.8 km from Pathariya.

PATHARIYA:- Pathariya block is selected for both the residential as well as tower area namely JIO,IDEA CELLULAR, AIRTEL and BSNL.

Table No. 1: Showing observation sites.

SR.NO	NAME	AREA COVERED
1	R1	Residential area in Pathariya
2	R2	Garden area in Barcha village
3	R3	Chandargarhi pond area
4	R4	Agricultural area in Bagbudwa village
5	R5	Tower area in Pathariya

2.1.2 Birds Data Collection Method

All bird data is taken using point count method with circular plot shape with plot diameter.[3,4] The data were collected by oberserving the birds at the study site by taking all the birds species, the number of individuals, the time of encounter,the behaviour and activity of birds and the type of food. Observations are made in the morning and Evening between 06:00-08:00am and 16:00-18:00 pm in good weather. The method of recording of bird species is direct/indirect by Recognition Field Manual.[5,6,7,8]

2.2 Analysis of Data

2.2.1Diversity Index

To determine the diversity of species Shannon-Wiener diversity index used with the formula:

H' = ∑ pi ln pi

H '= Shannon diversity index,

Pi = (ni / N); Ni = number of individual I,

N = Total number of individuals,

Ln = natural logarithm).

The index value of species diversity ranges from 1.5 to 3.5. A value of <1.5 indicates a low species diversity, then a value of 1.5 to 3.5 indicates a moderate diversity of>> 3.5 values indicates high biodiversity.

2.2.2Evenness Index

To determine the proportion of species abundance present in each type of urban forest, the Index of Eveness is used, ie the number of individuals of a species or abundance of each species in a community.

E= H'/ln S

E = fairness index (range 0 - 1),

H '= Shannon diversity index,

S = number of types; Ln = natural logarithm)

2.2.3Richness Index

To calculate species richness at each location using Margalef Index as follows:

R = (s-1/ln)

R = Margalef Index

S = Number ofs Types

N = Number of Individuals,

Ln = Natural logarithm)

2.2.4 Domain Type Domination Analysis

The dominant analysis of bird species was used to see the dominant, sub dominant and rare bird species composition in observed bird communities. The analysis used relative density parameters, the dominant bird category when relative density> 5%, sub dominant if relative density between 2% - 5% and rarely if relative density <2 %. The formula used to analyze was dominance.

Density Type (K) = The number of bird species/ Sample plot example;

Relative Density (KR) = (Density of a type/ Density of all types) x 100%.

2.2.5 Bird Spread Analysis

Spread analysis is used to view the horizontal distribution of each observation habitat by using the frequency value of the bird species found in the sample plots.

The formula used is: Frequency Type (Fj) = The number of plots found in bird species/ number of whole sample plots; Relative Frequency (FR) = (Frequency of a type/ Frequency of all types) x 100%.

2.2.6 Type of Meeting Rate Analysis

This analysis was used to calculate the level of encounter for each species of bird present in the study site, it was by dividing the total number of each bird species recorded by the total observation time multiplied by ten (10), resulting in a meeting rate of each bird species per ten hours of observation. Then the results of the calculation are categorized, whether including "rare", "not common", "often", "general" or "overflow". The division of the categories uses the table of bird type encounter rates[4] as in Table 1.

Table 2: Use of meeting level to show the scale of the abundance sequence.[4]

Abundance category(individual number per 10 hours observation	Abundance Value	Order scale
< 0	1	Rare
0,1 – 2,0	2	General not
2,1 – 10	3	Often
10,1 – 40	4	General
40,0	5	Overflow

3. RESULT AND DISCUSSION

3.1.LOCATION OBSERVATION RESIDENTIAL AREA OF PATHARIYA(R1):-From the collected data on birds species of this location, it is found that 9 species of 8 family and of 5 order were present. The often birds present was house sparrow *(Passer domestica)of* order Passeriformes. the number of individual was 22 in numbers,pigeon *(Columba livia)of* order columbiformes,12 number of individual are present as shown in table.

Table 3: Location Observation At Residential Area (R1).

S. N.	Scientific Name	Llocal Name	Class	Order	Family	No.of Individual
1	*Corvus splendens splendens*	Crow	Aves	Passeriformes	Corvidae	5
2	*Sturnia pogodarus*	Brahminy starling	Aves	Passeriformes	Sturnidae	8
3	*Acridotheres tristis*	Common myna	Aves	Passeriformes	Sturnidae	3
4	*Gallus gallus domestica*	Chicken	Aves	Galliformes	Phasianidae	9
5	*Columba livia*	Pigeon	Aves	Columbiformes	Columbidae	12
6	*Passer domestica*	House sparrow	Aves	Passeriiformes	Passeridae	22
7	*Streptolia chinensis*	Spotted necked dove	Aves	Columbiformes	Columbidae	8
8	*Centropus sinensis*	Greater coucal	Aves	Cuculiformes	Cuculidae	3
9	*Psittacula krameri*	Parrot	Aves	Psittciformes	Psittacidae	5
		TOTAL		**5**	**8**	**75**

3.2.LOCATION OBSERVATION AT GARDEN AREA OF BARCHA VILLAGE(R2)

At this location of observation found 17 species of belonging to the 12 families, 2 species of birds commonly found is *brahminy starling(sturnia pogodarus)of* Passeriformes order and *ashy crowned sparrow* (*eremopterix griseus)* of order Passeriformes. The next common bird species found is *common myna(acridotherestristis)of* order Passeriformes as recorded in table.

Table 4: Location Observation At Garden Area(R2).

S.N.	SCIENTIFIC NAME	LOCAL NAME	CLASS	ORDER	FAMILY	NO. OF INDIVIDUAL
1	*Psittacula krameri*	Parrot	Aves	Psittciformes	Psittacidae	7
2	*Dicrurus macrocercus*	Black drongo	Aves	Passeriformes	Dicruridae	6
3	*Surnia pogodarus*	Brahminy starling	Aves	Passeriformes	Sturnidae	15
4	*Acridotheres tristis*	Common myna	Aves	Passeriformes	Sturnidae	14
5	*Cucula conorus*	Cuckoo	Aves	Cuculiformes	Cuculus	8
6	*Turdoides striata*	Jungle babbler	Aves	Passeriformes	Leiothrichidae	9
7	*Lanius schach*	Long tailed shrike	Aves	Passeriformes	Laniidae	7
8	*Caracias benghalensis*	Nilkanth	Aves	Coraciiformes	Coracidae	8
9	*Eremopterix griseus*	Ashy crowned sparrow	Aves	Passerformes	Alaudidae	15
10	*Dicrurus leucophaeus*	Ashy drongo	Aves	Passeriformes	Dicruridae	5
11	*Columba livia*	Pigeon	Aves	Columbiformes	Columbidae	9
12	*Streptolia chinensis*	Spotted necked dove	Aves	Columbiformes	Columbidae	6
13	*Halcyon smyrnesis*	White breasted kingfisher	Aves	Coraciiformes	Alcedinidae	5
14	*Lole propinqua*	Grey eyed bulbul	Aves	Passeriformes	Pycnonotidae	4
15	*Postor roseus*	Rosy starling	Aves	Passeriformes	Sturnidae	10
16	*Centropus sinensis*	Greater coucal	Aves	Cuculiformes	Cuculidae	6
17	*Hierococcyx varius*	Papeeha	Aves	Cuculiformes	Cuculidae	8
		TOTAL		**5**	**12**	**142**

3.3. LOCATION OBSERVATION AT POND AREA CHANDANGARHI AREA(R3).

This location of observation found 9 species belonging to the 7 families, *Hawallian Galinule(gallinule goleata sandvicensis)* of order gruiformes were commonly found in 21 individual numbers, *Duck(Aixgalericulata)of order* Anseriformes, the number of 16 individual were found in the location as listed in table.

Table 5: Location Observation At Pond Area(R3).

S.N	SCIENTIFIC NAME	LOCAL NAME	CLASS	ORDER	FAMILY	NO. OF INDIVIDUAL
1	Grus leucogeranus	Crane	Aves	Gruiformes	Gruidae	13
2	Gallinula goleata sandvicensis	Hawallian gallinule	Aves	Gruiformes	Rallidae	21
3	Halcyon smyrnesis	White breasted kingfisher	Aves	Coraciiformes	Alcedinidae	4
4	Coturnix coturnix	Common quail	Aves	Galliformes	Phasianidae	5
5	Perdix perdix	Grey partridge	Aves	Galliformes	Phasianidae	7
6	Ardeola gragii	Indian pond heron	Aves	Pelecaniformes	Ardeidae	5
7	Amauronis phoenicurus	White breasted waterhen	Aves	Gruiformes	Rallidae	9
8	Anas platyrhynchos	Domestica Duck	Aves	Anseriformes	Antidae	16
9	Vanellus indicus	Red wattled lapwing	Aves	Charadriiformes	Charadriidae	8
		Total		**6**	**7**	**88**

3.4.LOCATION OBSERVATION AT AGRICULTURE AREA OF BAGBUDHWA VILLAGE (R4):-At this location of agriculture area found 23 species belonging to 18 families.25 individual of bird species *House sparrow(Passer domestica)* of Passeriformes order, and next most often bird species found was *Brahminy starling(Surnia pogodarus)* of order Passeriformes,22 individual were found as listed in table.

Table 6: Location Observation At Agriculture Area Of Chandargarhi Village (R4)

S.N.	SCIENTIFIC NAME	LOCAL NAME	CLASS	ORDER	FAMILY	NO.OF INDIVIDUAL
1	*Psittacula krameri*	Parrot	Aves	Psittciformes	Psittacidae	5
2	*Dicrurus macrocercus*	Black drongo	Aves	Passeriformes	Dicruridae	7
3	*Sturnia pogodarus*	Brahminy starling	Aves	Passeriformes	Sturnidae	22
4	*Acridotheres tristis*	Common myna	Aves	Passeriformes	Sturnidae	19
5	*Grus leucogeranus*	Crane	Aves	Gruiformes	Gruidae	14
6	*Coccyzus americanus*	Yellow billed Cuckoo	Aves	Cuculiformes	Cuculus	5
7	*Turdoides striata*	Jungle babbler	Aves	Passeriformes	Leiothrichidae	13
8	*Lanius schach*	Long tailed shrike	Aves	Passeriformes	Laniidae	9
9	*Caracias benghalensis*	Nilkanth	Aves	Coraciiformes	Coracidae	5
10	*Eremopterix griseus*	Ashy crowned sparrow	Aves	Passeriformes	Alaudidae	16
11	*Dicrurus leucophaeus*	Ashy drongo	Aves	Passeriformes	Dicruridae	6
12	*Clanga hastate*	Greater spotted eagle	Aves	Accipitriformes	Accipitridae	2
13	*Merops orientalis*	Green bee eater	Aves	Coraciiformes	Meropidae	9
14	*Accipiter badius*	Shikra	Aves	Accipitriformes	Accipitridae	3
15	*Passer domestica*	House sparrow	Aves	Passeriformes	Passeridae	25
16	*Streptolia chinensis*	Spotted necked dove	Aves	Columbiformes	Columbidae	8
17	*Halcyon smyrnesis*	White breasted kingfisher	Aves	Coraciiformes	Alcedinidae	6
18	*Coturnix coturnix*	Common quail	Aves	Galliformes	Phasianidae	9
19	*Perdix perdix*	Grey partridge	Aves	Galliformes	Phasianidae	7
20	*Centropus sinensis*	Greater coucal	Aves	Cuculiformes	Cuculidae	4
21	*Motacilla alba*	White wagtail	Aves	Passeriformes	Motacilla	3
22	*Vanellus indicus*	Red wattled lapwing	Aves	Charadriiformes	Charadriidae	5
23	*Postor roseus*	Rosy starling	Aves	Passeriformes	Sturnidae	12
		Total		**9**	**18**	**214**

3.5.LOCATION OBSERVATION AT TOWER AREA AT PATHARIYA (R5)

At this location of observation found 7 species belonging to 6 families,the most often found bird species were *long tailed shrike(lanius schach)* of order Passeriformes, there are 23

individual were found, another common species found were *Black drongo(Dicrurus macrocercus) of* order Passeriformes as recorded in table.

Table 7: Location Observation At Tower Area At Pathariya (R5).

S.N	SCIENTIFIC NAME[LOCAL NAME]	SITE A AIRTEL	SITE B JIO	SITE C IDEA	SITE D BSNL	Number of Individuals
1	*Dicrurus macrocercus* [Black drongo]	8	2	5	4	19
2	*Lanius schach* [Long tailed shrike]	6	3	8	6	23
3	*Caracias benghalensis* [Nilkanth]	3	1	4	3	11
4	*Dicrurus leucophaeus* [Ashy drongo]	5	2	6	5	18
5	*Merops orientalis* [Green bee eater]	4	1	5	4	14
6	*Streptolia chinensis* [Spotted necked dove]	4	1	3	5	13
7	*Halcyon smyrnesis* [White breasted kingfisher]	3	2	4	3	12
	Total	**33**	**12**	**35**	**30**	**110**

3.5.1. COMPARATIVE BIRD SPECIES AT DIFFERENT SITES

Table 8: Different bird species and their family at different sites.

S. N.	SCIENTIFIC NAME	LOCAL NAME	CLASS	ORDER	FAMILY	NO.OF INDIVIDUALS
1	*Dicrurus macrocercus*	Black drongo	Aves	Passeriformes	Dicruridae	19
2	*Lanius schach*	Long tailed shrike	Aves	Passeriformes	Laniidae	23
3	*Caracias benghalensis*	Nilkanth	Aves	Coraciiformes	Coracidae	11
4	*Dicrurus leucophaeus*	Ashy drongo	Aves	Passeriformes	Dicruridae	18
5	*Merops orientalis*	Green bee eater	Aves	Coraciiformes	Meropidae	14
6	*Streptolia chinensis*	Spotted necked dove	Aves	Columbiformes	Columbidae	13
7	*Halcyon smyrnesis*	White breasted kingfisher	Aves	Coraciiformes	Alcedinidae	12
		Total		**3**	**6**	**110**

Fig.3.Observation sites of agriculture area in Bagbudhwa village.

Fig.4.Observation sites at Baagicha in Barchha village.

Fig.5.JUNGLE BABBLER [*Turdoides striata*]

Fig.6. YELLOW BILLED CUCKOO[*Coccyzus americanus*]

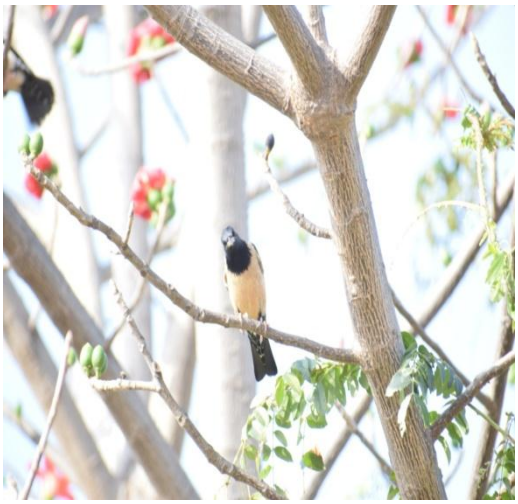

Fig 7.ROSY STARLING [*Postor roseus*]

Fig.8. WHITE WAGTAIL [*Motacilla alba*]

3.6.BIRD SPECIES AT ALL OBSERVATION SITES

At all the observation is found 32 species belonging to 24 families, the most often species found are *house sparrow(passer domestica)* of Passeriformes in 47 individual numbers, *Brahminy starling(sturnia pogodarus)* of order Passeriformes in 45 individual numbers as recorded in table.

Table 9: Bird Species At All Observation Sites.

S. N	SCIENTIFIC NAME	LOCAL NAME	CLASS	ORDER	FAMILY	NO.OF INDIVIDUAL
1	*Corvus splendens splendens*	Crow	Aves	Passeriformes	Corvidae	5
2	*Psittacula krameri*	Parrot	Aves	Psittciformes	Psdaeittaci	17
3	*Dicrurus macrocercus*	Black drongo	Aves	Passeriformes	Dicruridae	32
4	*sturnia pogodarus*	Brahminy starling	Aves	Passeriformes	Sturnidae	45
5	*Acridotheres tristis*	Common myna	Aves	Passeriformes	Sturnidae	36
6	*Grus leucogeranus*	Crane	Aves	Gruiformes	Gruidae	27
7	*Gallinula goleata sandvicensis*	Hawallian gallinule	Aves	Gruiformes	Rallidae	21
8	*Coccyzus americanus*	Yello billed Cuckoo	Aves	Cuculiformes	Cuculus	13
9	*Turdoides striata*	Jungle babbles	Aves	Passeriformes	Leiothrichidae	22
10	*Lanius schach*	Long tailed shrike	Aves	Passeriformes	Laniidae	39
11	*Caracias benghalensis*	Nilkanth	Aves	Coraciiformes	Coracidae	24
12	*Eremopterix griseus*	Ashy crowned sparrow	Aves	Passeriformes	Alaudidae	31
13	*Dicrurus leucophaeus*	Ashy drongo	Aves	Passeriformes	Dicruridae	29
14	*Gallus gallus domestica*	Chicken	Aves	Galliformes	Phasianidae	9
15	*Clanga hastata*	Greater spotted eagle	Aves	Accipitriformes	Accipitridae	2
16	*Merops orientalis*	Green bee eater	Aves	Coraciiformes	Meropidae	23
17	*Columba livia*	Pigeon	Aves	Columbiformes	Columbidae	21
18	*Accipiter badius*	Shikra	Aves	Accipitriformes	Accipitridae	3
19	*passer domestica*	House sparrow	Aves	Paseriformes	Passeridae	47
20	*Streptolia chinensis*	Spotted necked dove	Aves	Columbiformes	Columbidae	34
21	*Halcyon smyrnesis*	White breasted kingfisher	Aves	Coraciiformes	Alcedinidae	28
22	*Coturnix coturnix*	Common quail	Aves	Galliformes	Phasianidae	14
23	*Perdix perdix*	Grey partridge	Aves	Galliformes	Phasianidae	14
24	*Lole propinqua*	Grey eyed bulbul	Aves	Passeriformes	Pycnonotidae	4
25	*Centropus sinensis*	Greater coucal	Aves	Cuculiformes	Cuculidae	13
26	*Motacilla alba*	White wagtail	Aves	Passeriformes	Motacillidae	3
27	*Hierococcyx varius*	Papeeha	Aves	Cuculiformes	Cuculidae	8
28	*Ardeola gragii*	The indian pond heron	Aves	Pelecaniformes	Ardeidae	5
29	*Amauronis phoenicurus*	White breasted waterhen	Aves	Gruiformes	Rallidae	9
30	*Anas platyrhynchos*	Domestica duck	Aves	Anseriformes	Antidae	16
31	*Vanellus indicus*	Red wattled lapwing	Aves	Charadriiformes	Charadriidae	13
32	*Postor roseus*	Rosy starling	Aves	Passeriformes	Sturnidae	22
		Total		**12**	**24**	**629**

Causes of large numbers of individual are the availability of adequate food, habitat fulfilment by vegetation that allows species to live and flourish. the species of birds above are the type

of fruit eating birds, insects and grains are the main feed. In some observations, the birds were also seen eating insects, honey essence or grabbing a small flying insect.

3.7.THE DIVERSITY OF BIRDS SPECIES IN THE PATHARIA BLOCK

After analyzing the data on bird species, the highest index of bird species diversity was found on the location of agriculture area of chandargarhi village(2.939) and second highest index found in location of barcha village (2.76).The overall index of species diversity reached (11.668).The index value of species diversity at all observation sites showed moderate species diversity level(H' 1.5-3.5).in addition to the vegetation conditions that still have little influence in the fulfilment of feeding needs for bird diverse bird species implies that the existing vegetation is able to provide adequate food with different classes in producing fruit,young leaves for insect food and so on.

Trees has a component of bird habitat can serve as cover(shelter from weather and predagtor nesting and resting place).In addition to providing tree parts (leaves, flower and fruit) a trees can serve as a habitat for various other types of organism that are food available to bird such as insect.the index of the community structure of bird in each location is relatively the same .the below table is showing the observed data.

Table 10: Index of bird community structure in each location.

LOCATION	SPECIES	INDIVIDUAL	FAMILY	H+	E	R
R1 area (residential area in pathariya)	9	75	8	2.003	0.9118	1.853
R2 area (Garden in barcha villege)	17	142	12	2.76	0.9742	3.229
R3area(Pound area in bagbudwa villege)	9	88	7	2.053	0.9345	1.787
R4area(Agricultural area in chandargarhi village)	23	214	18	2.939	0.9374	4.1
R5area(birds found in tower area of pathariya	7	110	6	1.913	0.9833	1.276

The evenness index (E) is used as an indicator of the symptoms of dominance among each species within a community. if each type has same number of individual. Then the community has a maximum evenness value. from the data analysis known bird species evenness highest in observation location tower area of pathariya (0.9833) and second evenness highest in observation location garden area in barcha villege (0.9742). Richness (R) contain in the highest bird observation site bagbudua village(4.1). and second highest richness value garden area in barcha village (3.229).

Table 11: Density, Dominance and Scale of Bird Sequence In Patharia Block.

S.N	SCIENTIFIC NAME	LOCAL NAME	K	KR	Dominance	Abudance category	Abudance Value	Order Scale
1	*Corvus splendens splendens*	Crow	1.0	0.79	Rarely	1.56	2	General not
2	*Psittacula krameri*	Parrot	3.4	2.70	Sub dominance	5.31	3	Often
3	*Dicrurus macrocercus*	Black drongo	6.4	5.09	Dominance	10.00	3	Often
4	*Sturnia pogodarus*	Brahminy starling	9.0	7.15	Dominance	14.06	4	General
5	*Acridotheres tristis*	Common myna	7.2	5.72	Dominance	11.25	4	General
6	*Grus leucogeranus*	Crane	5.4	4.29	Sub Dominance	8.44	3	Often
7	*Gallinula goleata sandvicensis*	Hawallian gallinule	4.2	3.34	Sub Dominance	6.56	3	Often
8	*Coccyzus americanus*	Yello billed Cuckoo	2.6	2.07	Sub Dominance	4.06	3	Often
9	*Turdoides striata*	Jungle babbles	4.4	3.50	Sub Dominance	6.88	3	Often
10	*Lanius schach*	Long tailed shrike	7.8	6.20	Dominance	12.19	4	General
11	*Caracias benghalensis*	Nilkanth	4.8	3.82	Sub Dominance	7.50	3	Often
12	*Eremopterix griseus*	Ashy crowned sparrow	6.2	4.93	Sub Dominance	9.69	3	Often
13	*Dicrurus leucophaeus*	Ashy drongo	5.8	4.61	Sub Dominance	9.06	3	Often
14	*Gallus gallus domestica*	Chicken	1.8	1.43	Rarely	2.81	2	General not
15	*Clanga hastata*	Greater spotted eagle	0.4	0.32	Rarely	0.63	2	General not
16	*Merops orientalis*	Green bee eater	4.6	3.66	Sub Dominance	7.19	3	Often
17	*Columba livia*	Pigeon	4.2	3.34	Sub Dominance	6.56	3	Often
18	*Accipiter badius*	Shikra	0.6	0.48	Rarely	0.94	2	General not
19	*Passer domestica*	House sparrow	9.4	7.47	Dominance	14.69	4	General
20	*Streptolia chinensis*	Spotted necked dove	6.8	5.41	Dominance	10.63	4	General
21	*Halcyon smyrnesis*	White breasted kingfisher	5.6	4.45	Sub Dominance	8.75	3	Often
22	*Coturnix coturnix*	Common quail	2.8	2.23	Sub Dominance	4.38	3	Often
23	*Perdix perdix*	Grey partridge	2.8	2.23	Sub Dominance	4.38	3	Often
24	*Pycnonotus luteolus*	Common brown bulbul	0.8	0.64	Rarely	1.25	2	General not
25	*Postor roseus*	Rosy starling	2.6	2.07	Sub Dominance	4.06	3	Often
26	*Centropus sinensis*	Greater coucal	0.6	0.48	Rarely	0.94	2	General not
27	*Motacilla alba*	White wagtail	1.6	1.27	Rarely	2.50	3	Often

28	*Hierococcyx varius*	Papeeha	1.0	0.79	Rarely	1.56	2	General not
29	*Ardeola gragii*	The indian pond heron	1.8	1.43	Rarely	2.81	3	Often
30	*Amauronis phoenicurus*	White breasted waterhen	3.2	2.54	Sub Dominance	5.00	3	Often
31	*Anas platyrhynchos*	Domestica duck	2.6	2.07	Sub Dominance	4.06	3	Often
32	*Vanellus indicus*	Red wattled lapwing	4.4	3.50	Sub Dominance	6.88	3	Often

Table 12: Vegetation As A Source of Bird Feed.

S.N	SPECIES NAME	TYPE OF VEGETATION	THE PART OF BIRD EAT
1	Guava	Tree	Fruit,Insect,Flower,Honey
2	Mango	Tree	Fruit,Insect,Flower,Honey
3	Jambu	Tree	Fruit,Insect,Flower,Honey
4	Banana	Horticulture	Fruit,Insect,Flower,Honey
5	Papaya	Horticulture	Fruit,Insect,Flower,Honey
6	Grasses	Grass	Seed, insect, flower, honey
7	Jujube	Tree	Fruit,Insect, Flower,
8	Banyan tree	Tree	Fruit, Flower, Insect
9	Palash	Tree	Flower, honey, insect

Above table is showing the food and various food materials that is eaten by the bird species at all observation sites.

CONCLUSION

The result obtained from the survey that bird species diversity in all observation location are 32 species belonging to the 11 order. The diversity of bird species (H) of all observation location are R1 (2.003), R2 (2.76), R3 (2.053), R4 (2.939), R5(1.913). types of vegetation as a source of feed includes mango, guava, Jambu, Papaya, Banyan tree, Palash Banana and Jujube. Higher abundance of birds in crop lands and lower abundance in human settlement and forest habitats in our result attributes to flowering crop and diverse food resources availability in survey area. Previous survey report of diversity of migratory birds in Setganga, Mungeli and Khutaghat, Bilaspur have similar pattern for species diversity in Pathariya block in Mungeli district.[9,10]

REFERENCES

1. Ali, S. The Book of Indian birds, 1990; 3: 1-375.
2. Ali, S. and Ripley, S.D. Hand book of the birds of India and Pakistan together with Bangladesh, Nepal, Bhutan and Sri Lanka, 1987.
3. Bibby, C.J., M. Jones and S. Marsdan. Expedetion Field Techniques: Birds Surveys, Royal Geographical Society, London, 1998.
4. Bibby, CJ., ND Burgess, DA, Hill and SH. Mustoe.Birds Cences Techniques. 2nd Ed. Academic Press, Tokyo, 2000.
5. Holmes, D. And Nash, S. Birds in Sumatra and Kalimantan. Puslitbang Biologi-LIPI. Bogor, 1999.
6. Sukmantoro, W., Irham, M., Novarino, W., Hasudungan, F. Kemp, N. and Muhtar,M. Bird List Indonesian No. 2 Orinthologists Union. Bogor, 2007.
7. Mac Kinnon, J. Series of Bird and Birds Field Guide Java and Bali. Gajah Mada University Press Yogyakarta, 1991.
8. Mac Kinnon, J., Philip, K. and Balen, V. Series of Field Guide Birds of Sumatra, Borneo, Java and Bali. Puslitbang Biologi-LIPI. Bogor, 2010.
9. Jaiswal, P. and Singh, R.K Study of Biodiversity of Birds in Setganga, district Mungeli, Chhattisgarh. World J. Pharmacy & Pharmaceutical Sciences, 2017; 6(6): 1878-1881. ISSN 2278-4357.
10. Dwivedi, U. and Singh, R. K. Biodiversity of Migratory birds in Khutaghat, Ratanpur district Bilaspur (C.G.).World J. Pharmacy & Pharmaceutical Sciences, 2017; 6(7): 1148-1155. ISSN 2278-4357.