Bird Diversity In Polluted And Unpolluted Area Of District Bareilly.

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ABSTRACT

Avifaunal Diversity is one of the most important ecological indicators to evaluate the status of habitats. Birds are the crucial animal group of an ecosystem which maintains a trophic level. Therefore, detail study on avifauna and their ecology is important to protect them. They are one of the biological control tools to control pests in gardens, on farms, and other places. They encourage pollination of plants. Birds are also good seed dispersal. The study is performed in four areas of Bareilly city during October 2016. Bareilly covers the 123.46 km^2 area and provides breeding grounds to multiple populations of flora and fauna. Surveys were carried out and observations were made along line transects with the aid of binoculars and camera. Habitat wise classification reveals that many of birds were dependent on aquatic habitat and some depend on the terrestrial habitat, which shows that the Bareilly is an important abode of many birds. Food preference of birds showed that maximum species were insectivorous. Frequently disturbed areas like streets, highways etc., were not so rich in avifauna. Birds observed during night hours or nocturnal birds needed a critical eye to detect, and the usually included owl, crane, night hawk, night heron etc. Vultures were observed rarely near butcher shops of Azamnagar near Kumar theatre. Distribution of birds were found frequent and good near natural habitats

INRODUCTION

Diversity of avifauna is one of the most important ecological indicators to evaluate the status of habitats. The human-bird association is since ancient times and is an intimate one. In Indian culture there are a number of birds that are worshiped with religious sentiments and people are emotionally involved in their conservation. Birds are crucial part of an ecosystem and contribute to maintain a trophic level. Activities of birds are considered as indicator of superiority of ecosystem and they also form the incurable links in many food chains, hence they imitate changes originating in several different ecosystem components (Custer and Osborne 1977). The detail study on avifauna and their ecology is important to protect them. They are one of the biological pest management tools to control pests in gardens, on farms, and other places. They encourage in the pollination of plants. Birds are also good seed dispersal. The avian inhabitants of Bareilly city comprise residential as well as non-residential migratory species. The birds immigrate across Himalayas from Tibet, China, Europe and Siberia during winters. Some of the major migratory birds during the season are Greyleg goose, Pintail, Cotton teal, Red-crested Pochard, Gadwall, Shoveler. Some major local migratory and residential birds are Spot-bill duck, Sarus crane, Painted stork, Peacock, Black ibis, Whistling teal, Open-bill stork, White-necked stork, Pheasant-tailed jacana, Bronze winged jacana, Purple moorhen, Lapwing, Tern, Vulture, Pigeon, King crow, Indian roller and Bee eater. The study of Avifaunal biodiversity would be useful for further initiatives in studying the status of birds and its conservation.

OBJECTIVE

Avifauna not only shows the natural wealth but also the aesthetic richness of an area. Birds play an important role in natural bird as some of them play role of a predator bird while some play role of a connecting link. They help in seeds, pollination, controlling insects population etc. Their droppings also are food or many life forms. This projects is made to collect data about distribution and abundance of birds in an area so to discover not only the distribution of birds in different areas but richness of their diversity also. Such project work helps to explain how human settlement effect flora fauna of an area and how other elements of nature react to this affected flora

and fauna. This project aims to collect data about distribution of birds in Bareilly city and their abundance too, which also explain that what kind of birds are adapted to this geographical location. This project work explain which bird is most commonly present in selected area. Birds indicate the natural health of an area, as more the distribution of birds in area, more it will be naturally rich.

METHODOLOGY

The project work is carried out in Bareilly city (Uttar Pradesh) at four selected area to estimate the distribution and abundance of common birds. The proper visit for regular period of time is required to collect data. The area for study, material, method for this project is as follows:

AREA FOR STUDY

To get the most promising results the data is collected from five different area of city, having different status of natural richness. For observation approximately half an hectare area is chosen. The area which are selected for study of this project work are:

IVARI, Izzatnagar, Bareilly, Uttar Pradesh

Residential area of Philibhit by pass road – Panchsheel nagar and Faiq enqulave

Chawki chauraha, Bareilly, UP

Factory side area of Parsakheda (Polluted area)

These areas have different type of natural wealth in comparison to each other like IVARI area has good number of trees, thus good in natural habitat. Residential area of Panchsheel nagar & Faiq enqulave near Philibhit by pass road has sufficient number of trees and greenery, but due to constant construction of residences has affected natural wealth in a great extent. Area of Chawki chaura is a wide and busy crossway of city. The area of Parsakheda is known for its industrial settlement, many industries and factories are running in this region. These all different locations show habitat of interest for birds over city.

MATERIAL REQUIRED

To conduct the study with proper functioning some material are required beforehand are as follows:

Binocular 10x50 X, for close observation of birds and camera for photography. Book of Indian Birds by Salim Ali and Birds of the Indian Subcontinent by Grimmett, Local map of an area so as to get some idea about location and as field guide, A notepad and a pen is must required to pen down the data collected on the spot, for drawing a rough sketch for any bird if required and for preparing check list. A hand watch is also required so to input the time at which data is collected and for time management as well.

METHOD

Avifauna at five different locations of Bareilly city was recorded during October 2016. Sampling was carried out for one week to record variation in avifaunal diversity. Regular field trips were made throughout this period. Visits were carried out for every day in a week. Two different methods were adapted to study avifaunal diversity, the first method was **Line transect method** and, second method was **Point count method**. Following these methods only project work is completed.

1.   **Line transect method:** In this method large areas are divided into small transect or sections of hundred meters or more. Detecting and identifying bird while walking on these transect required ornithological skill. Birds were counted once a day only under this method, while walking at a slow and uniform pace to complete each transect takes time to collect data.

2.   **Point count method:** If we stand at one place, it is possible to count all the birds seen and heard. As it is simplest, such a method was repeated over several places for three to four times a day so as to record bird species present in the area.

Survey work were carried out during suitable time –

Morning: 6:00 am for 20 - 30 minutes cause birds are very active during morning hours, and at 9:00 am for 20 - 30 minutes,

Evening: 4:00 pm for 20 - 30 minutes as birds are again very active during these evening hours.

Night: 8:00pm for 20 - 30 minutes, so to observe nocturnal birds. Observing birds at night needs sharp and critical eye so that to detect them in dark spaces.

Observations were made along line transects with the aid of 10x50 binoculars and camera. The birds were recorded according to their common name, food and feeding habit, and variety of habitat or their nesting place. Birds were monitored using "Line Transect" and "Point Count Methods" in a pre-defined area. A line transect

of 1-100 meter was prepared and the birds were monitored on both the sides of transect. The birds were identified using standard field guide books of Ali & Ripley, 1995, Grimmett et al., 1998, Salim Ali, 2002.

To observe birds grasses, bushes, branches of trees are observed sharply in addition to man made structures like electric poles, telephone poles, for perching birds. Some birds uses camouflage to fool their enemies, so it needs critical eye to observe them. At least 3 hours gap is maintained between two observations. Internet also used for Scientific name of some birds.

DATA COLLECTED

The birds observed are mentioned with their common name. Study conducted at all four different locations of city gave the data of abundance and distribution of common birds in those locations, which is tabularized according to the location as follows:

Table 1. IVARI Izzatnagar Bareilly, UP

S. No.	COMMON NAME	SCIENTIFIC NAME	NUMBER	STATUS
1.	Sunbird	*Leptocoma zeylonica*	3	NA
2.	Rose ringed Parrot	*Psittacula krameri*	2	LC
3.	Greater Coucal	*Centropus sinesis*	1	LC
4.	Green bee eater	*Merops orientalis*	1	NA
5.	Indian Roller	*Coracias benghalensis*	2	NA
6.	Asian Koel	*Eudynamys scolopaceus*	2	LC
7.	White throated kingfisher	*Halcyon smyrnensis*	3	LC
8.	Laughing dove	*Spilopelia senegalensis*	8	LC
9.	Red Vented bulbul	*Pycnonotus cafer*	5	LC
10.	Babbler	*Turdoider striata*	12	LC
11.	Black Kite	*Milvus migran*	1	LC
12.	Indian Myna	*Acridotheres tristis*	6	LC
13.	Common Tailor bird	*Orthotomus sutorius*	3	LC
14.	Indian Owl	*Bubo bengalensis*	1	LC
15.	Woodpecker	*NA*	1	LC
16.	Indian Peacock	*Pavo cristatus*	2	LC
17.	Robin	*Copsychus fulicatus*	4	LC
18.	Great Egret	*Adrea alba*	3	LC
19.	Cattle Egret	*Bubulcus ibis*	2	LC

20.	Crow	*Corvus splenden*	2	LC
21.	Rock Dove	*Columba livia*	6	LC
22.	Eagle	*Calnga hastata*	1	VU
23.	Indian Grey hornbill	*Ocyceros birostris*	1	LC
24.	Indian Pond Heron	*Ardeola grayii*	4	LC
25.	Common Hoopoe	*Upupa epops*	1	LC

ABBREVIATIONS: LC- Least Concern, VU- Vulnerable, NA- Not Available

Table 2. RESIDENTIAL AREA: Panchsheel nagar & Faiq Enqulave

S. No.	COMMON NAME	SCIENTIFIC NAME	NUMBER	STATUS
1.	Greater Coucal	*Centropus sinesis*	1	LC
2.	Green bee eater	*Merops orientalis*	1	NA
3.	Asian Koel	*Eudynamys scolopaceus*	1	LC
4.	White throated kingfisher	*Halcyon smyrnensis*	1	LC
5.	Laughing dove	*Spilopelia senegalensis*	10	LC
6.	Red Vented bulbul	*Pycnonotus cafer*	4	LC
7.	Babbler	*Turdoider striata*	9	LC
8.	Indian Myna	*Acridotheres tristis*	5	LC
9.	Indian Owl	*Bubo bengalensis*	1	LC
10.	Robin	*Copsychus fulicatus*	4	LC
11.	Great Egret	*Adrea alba*	2	LC
12.	Cattle Egret	*Bubulcus ibis*	2	LC
13.	Crow	*Corvus splenden*	1	LC
14.	Rock Dove	*Columba livia*	8	LC
15.	Eagle	*Calnga hastata*	1	VU
16.	Indian Pond Heron	*Ardeola grayii*	2	LC
17.	Common Hoopoe	*Upupa epops*	1	LC

ABBREVIATIONS: LC- Least Concern, VU- Vulnerable, NA- Not Available

Table 3. CHAWKI CHAURAHA, BAREILLY

S. No.	COMMON NAME	SCIENTIFIC NAME	NUMBER	STATUS
1.	Laughing dove	*Spilopelia senegalensis*	4	LC
2.	Red Vented bulbul	*Pycnonotus cafer*	2	LC
3.	Babbler	*Turdoider striata*	6	LC
4.	Indian Myna	*Acridotheres tristis*	6	LC
5.	Crow	*Corvus splenden*	2	LC
6.	Rock Dove	*Columba livia*	5	LC
7.	Eagle	*Calnga hastata*	1	VU

ABBREVIATIONS: LC- Least Concern, VU- Vulnerable

Table 4. FACTORY SIDE AREA OF PASAKHEDA

S. No.	COMMON NAME	SCIENTIFIC NAME	NUMBER	STATUS
1.	Laughing dove	*Spilopelia senegalensis*	4	LC
2.	Babbler	*Turdoider striata*	6	LC
3.	Indian Myna	*Acridotheres tristis*	2	LC
4.	Crow	*Corvus splenden*	1	LC
5.	Rock Dove	*Columba livia*	2	LC

ABBREVIATIONS: LC- Least Concern

RESULT AND ANALYSIS OF COLLECTED DATA

Analysis of data after conducting study reveals that there was a good and healthy distribution of birds in green area which having less human settlement and disturbance like IVARI, izzatnagar Bareilly whereas location of Panchsheel nagar & Faiq enqulave near Pilibhit road were quite average in distribution of birds. Area of Chawki chauraha and Parsakheda were poor in avifauna diversity.

The birds which were most common were:

Babbler,

Rock Dove,

Indian Myna,

Laughing Dove,

Robin,

Red Vented bulbul.

This data proved how avifauna react toward human interference, settlement, and activities. Highly polluted area near factory was poor in avifauna.

CONCLUSION

These studies suggest that it is important to examine the composition of the community and the distribution of individual birds as well as overall measures of the avian community such as species richness. Different groups of birds appear to be affected in different ways, and this has distinct conservation implications. Birds appear to fall into three broad groups: urban avoiders, suburban adaptable, and urban exploiters. The birds distribution to an area signifies the richness of natural habitat. Higher the distribution of birds in an area more healthy that area will be in natural wealth. Biota of an area knits a web which is deeply interlock every thread of nature
It was found in study that the distribution and abundance of avifauna in Bareilly city is good but not equally distributed and balanced. Areas which are disturbed due to human activities and settlement were not the choice of birds for habitat. So its important to bring hands together for goodwill of these birds.

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