



ANIMAL, VETERINARY AND FISHERY SCIENCE AVIFAUNAL DIVERSITY AFFECTED BY URBANIZATION AND POLLUTION IN SARAN DISTRICT

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Abstract: Birds are natural bio-indicator of the richness of biodiversity of any area. But due to extensive progression of urbanization, use of chemicals for fulfilling food demands of rapidly increasing population there is a rapid decline of natural habitat of birds which has critically damaged the nesting and feeding grounds of birds. Besides it, increasing number of game hunting and commercial exploitation of the birds are also affecting the avian diversity. Urban habitats are totally different from nonurban or “natural” habitat. Anthropogenic activities transform natural green areas into anthropogenic structure are major causes of habitat destruction. Birds are forced to either accept or avoid the new conditions to survive in the city’s housing. New urbanized condition has changed avian diversity dramatically, which losses local biodiversity. Urban housing is a major threat to biodiversity. Urbanization and deforestation destroy the natural habitat. These are along with pollution are major threat to birds. Many birds were seen with some sort of plastic or wrapper in their beak. This leads to death of birds and ultimate result in birds decline.

Saran district (Bihar) reflects a moderately healthy biodiversity due to Ganga River basin. Nearly 158 species of birds both resident and migratory belonging to 53 families were recorded. But this area is also affected by urbanization and pollution that are finally affecting the bird diversity in this area. So, to save this beautiful creature we should aware.

Keywords: Urbanization, transformation, Anthropogenic, Dramatically

I. INTRODUCTION

World population increases exponentially day by day and this increasing population imposes a heavy burden upon the whole globe. Also demand of basic necessities (food, shelter and clothing) increases by increasing population, which changes the green belt of forest area into deforested area or anthropogenic structures and in this transformation responsible for habitat fragmentation and it finally changes the bird count in any area. The no. of birds' species is decreased due to fragmentation of habitat (Claude Gascon et al.,1999). Different human activities along with agriculture and urbanization have significantly altered habitats of many species of plants and animals at different landscapes (Dorp and Opdam 1987, Gascon et al.1999). Diversity and other attributes of bird communities have negatively affected by human transformation of habitat (Lawton et al.1998, Gascon et al.1999, Stouffer and Bierregaard 1995, Schulze et al.2004). In recent decades conservation of global biodiversity has become the issue of prime concern (Turner et al., 1990; Ehrlich and Wilson, 1991). Conservation around the globe is battling with conversation challenges under the ever-accelerating threats of anthropogenic disturbances to biodiversity.

III. MATERIAL AND METHODS

3.1 Site Selection:

The Saran district covers 2641 km sq. geographical area which is highly biodiverse area due to Ganga River basin and its tributaries. That's why I select Saran district for my survey. Fig:1 Saran Map

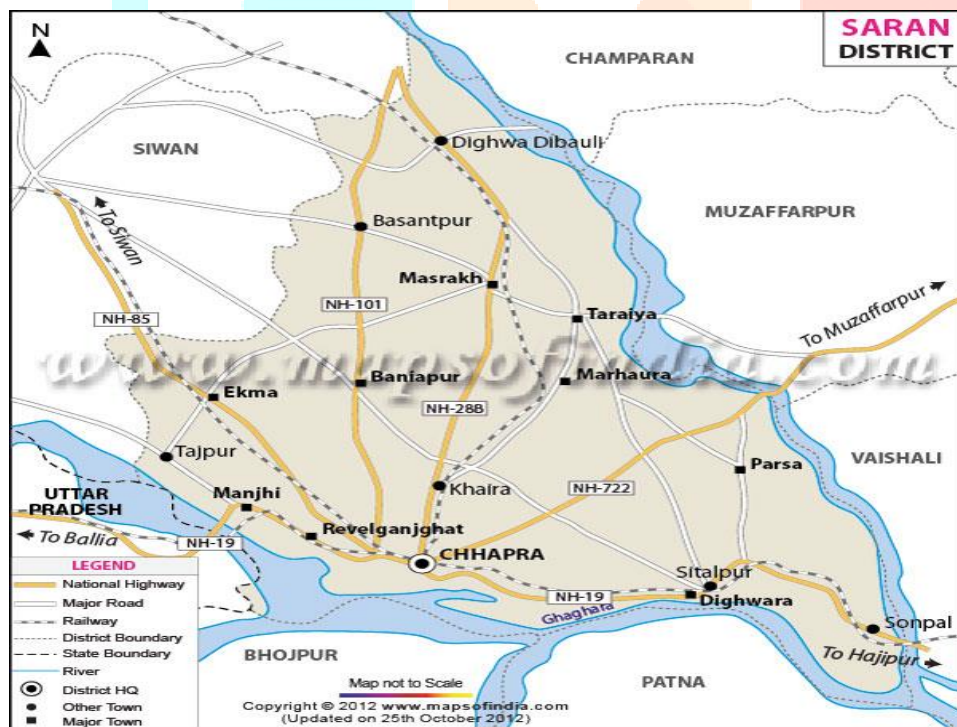


Fig: 1 Saran Map

Source: Google

Study period: Dec 2019 to Aug 2022

Instrument used:

The instrument used for photography of birds is DSLR-D5600 having 24.2 megapixel and upper-entry level and also APS-C sensor.

Counting of Birds:

We counted birds with the help of count technique (Bibby et al.1992). Point counts method are the most widely used quantitative method.

Bird Watching Technique:

Birds are highly energetic animals. Its movement is drastically fast. So, identifying a bird is challenging. In each observation stationary and flying stages were noted. Observations was confirmed with the help of Avibase-Bird Checklists of the world Saran (Chapra) 2020.

IV. RESULTS AND DISCUSSION

All together 158 species of birds both resident and migratory belonging to 53 families were recorded. Birds are natural indicator of species richness of any given area. Some commonly found resident birds in Saran district are listed in table.1. This creature is very dynamic and generally seen 78% involved in feeding, 15% involved in loafing and 7% involved in breeding activities (Table.2, and Fig.2) during my study period and according to the finding of Abdar Mohan Ramchandra (2013), 68% involved in feeding, 27% involved in breeding and 5% involved in loafing.

The present survey which recorded 158 species show a moderately healthy birds' diversity in my current study locations. The diversity of birds and its richness in Saran district is affected by Ganga River basin, Ghaghara River, Gandak River and Daha River. Forest cover area and green belt area in many places of this district also influences species richness of birds in Saran district. Due to such suitable environment many migratory birds come in this region. Some migratory birds of this region are listed in the table.3. Initially this district was famous for wide forest expanses. Fig 3. show a green belt area (near Siwan SKG Sugar Mill, Bihar). Any green belt area or forest cover area serves as ultimate habitat for avian diversity. But this area is also affected by many human disturbances either for agriculture or for human settlement. Many forests cover area in Saran District changed into deforested area. Fig.4 show an example, green belt area changed into anthropogenic structure (near Siwan SKG Sugar Mill, Bihar) which affect the bird count in this region. Few years ago, this was green belt area having healthy species richness of birds but in present time it is changed into almost deforested area. Biological components of a forest almost removed by anthropogenic activities in Saran district. Both biotic and abiotic environment altered by urbanization and this is the major challenges to native species (Christopher B. Hensley et.al.,2019). List of some birds that are decreasing due to human disturbances are given in the table.4. Cellular phone tower is also an example of urbanization which mainly decreased the bird count of House Sparrow (*Passer domesticus*) in my study area. Pollutant and heavy metals in the aquatic environment also affect the birds count because heavy metals are responsible for thinning of shell and premature breakage of egg during hatching which finally affect species richness of birds.

Table.1. Some Commonly Found Resident Bird in Saran District

No.	Common name	Scientific name
1	House Sparrow	<i>Passer domesticus</i>
2	House Crow	<i>Corvus splendens</i>
3	Common Myna	<i>Acridotheres tristis</i>
4	Bank Myna	<i>Acridotheres ginginianus</i>
5	Koel	<i>Eudynamys</i>
6	Spotted Owlet	<i>Athene brama</i>
7	Plum Headed Parakeet	<i>Psittacula cyanocephala</i>
8	Black Winged Kite	<i>Elanus caeruleus</i>
9	Little Egret	<i>Egretta garzetta</i>
10	Great Egret	<i>Ardea alba</i>
11	Purple Heron	<i>Ardea purpurea</i>
12	Grey Heron	<i>Ardea cinerea</i>
13	Hoopoe	<i>Upupidae</i>
14	Green Bee Eater	<i>Merops orientalis</i>
15	Scaly Breasted Munia	<i>Lonchura punctulate</i>
16	Tri coloured Munia	<i>Lonchura malacca</i>
17	White Throated Kingfisher	<i>Halcyon smyrnensis</i>
18	Pied Kingfisher	<i>Ceryle rudis</i>
19	Black Redstart	<i>Phoenicurus ochruros</i>
20	Grey Francolin	<i>Francolinus pondicerianus</i>
21	Sand Lark	<i>Calandrella raytal</i>
22	Oriental Skylark	<i>Alauda gulgula</i>
23	Pied Bushlark	<i>Mirafra erythroptera</i>
24	Crested Lark	<i>Galerida cristata</i>
25	White Browed Wagtail	<i>Motacilla maderaspatensis</i>
26	Graceful Prinia	<i>Prinia gracilis</i>
27	Verditer Flycatcher	<i>Eumyias thalassinus</i>

Table: 2. Activities of bird species of Saran District in my survey

S.No.	Activities of Bird Species	Frequency in Percentage (%)
1.	Feeding	78%
2.	Breeding	7%
3.	Loafing	15%

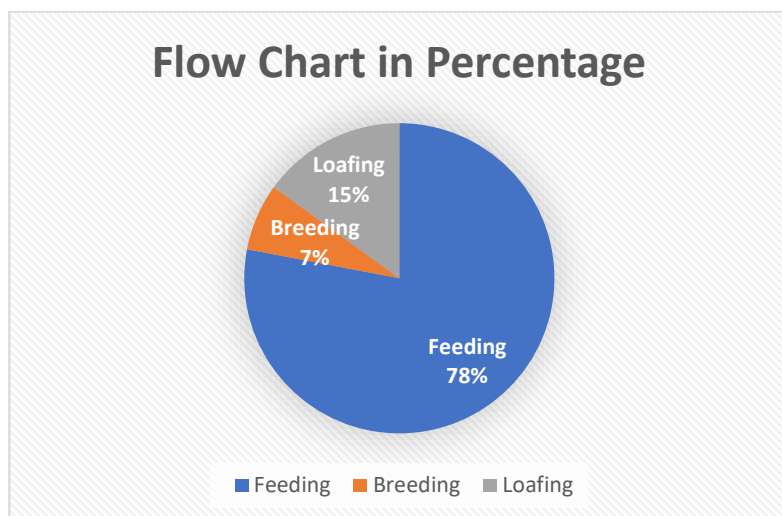


Fig: 2. Activities of birds in Saran District

Table.3. List of some migratory birds in Saran District

Name of Birds	Scientific Name
Asian Cuckoo	<i>Eudynamys scolopaceus</i>
Pied Cuckoo	<i>Clamator jacobinus</i>
Common Buzzard	<i>Buteo buteo</i>
Oriental Turtle Dove	<i>Streptopelia orientalis</i>
Spangled Drongo	<i>Dicrurus bracteatus</i>
Paddyfield Warbler	<i>Acrocephalus Agricola</i>
Dollar Bird	<i>Eurystomus orientalis</i>

Table.4. List of some birds that are decreasing due to human disturbances

Name of Birds	Scientific Name
White-Rumped Vulture	<i>Gyps bengalensis</i>
Steppe Eagle	<i>Aquila nipalensis</i>
Little Stint	<i>Calidris minuta</i>
White-bellied Heron	<i>Ardea insignis</i>
Indian Skimmer	<i>Rynchops albigollis</i>
Nilgiri Pipit	<i>Anthus nilghiriensis</i>
Great Indian Bustard	<i>Ardeotis nigriceps</i>



Fig.3. Green belt area near SKG Sugar Mill, Siwan, Bihar



Fig.4. Forest cover area are being cut for human settlement near SKG Sugar Mill, Siwan, Bihar

V. CONCLUSION

Over all Saran District is moderately healthy in bird species richness, due to Gang River basin but due to many anthropogenic activities it is affecting in large extent. So, we should aware about it.

VI. ACKNOWLEDGEMENT

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VII. CONFLICT OF INTEREST

No conflict of interest.

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