

A Preliminary Study of Avian Diversity in and Around Chirawa Town, Jhunjhunu (Raj.)



Anita Jhahria

Lecturer,
Deptt. of Zoology,
Shri Kalyan Govt. P.G. College,
Sikar, Rajasthan

Abstract

A Survey of avian diversity in and around Chirawa town situated in Jhunjhunu (Raj.) was conducted from January 2014 to July 2014. The methodology strategy was based on point counts method, use of binoculars and canon camera photography. A total of 44 species belonging to 23 families were identified. All the identified species were terrestrial in nature. Results of the Relative Diversity Index showed that Accipiteridae was the dominant family in Chirawa town (RD Value=11.36) followed by Columbidae (RD Value=9.09), Alaudidae (RD Value=9.09) and Phasianidae (RD Value=6.81). Among bird species adapted to diverse habitat in the study area *Columbia livia* (Rock Pigeon), *Streptopelia senegalensis* (Laughing Dove), *Streptopelia decaocto* (Eurasian Collared Dove), *Passer domesticus* (House Sparrow), *Pavo cristatus* (Indian Peafowl), *Cinnyris asiaticus* (Purple Sunbird), *Psittacula krameri* (Rose Ringed Parakeet), *Pycnonotus cafer* (Red vented bulbul), *Acridotheres tristis* (Common Myna) and *Athene brama* (Spotted Owlet) were found as dominant species.

Among them, 39 species were resident species, 04 species were winter visitors (*Calandrella brachydactyla*, *Ammomanes phoenicurus*, *Sylvia curruca* and *Luscinia svecica* and 01 species was a passage visitor (*Eremopterix grisea*). Two endangered species of vulture family were also recorded (*Gyps bengalensis* and *Neophron percnopterus*).

Based on the feeding habits 25% of birds were Insectivorous followed by Omnivorous (22.72%), Carnivorous (18.18%), Granivorous (18.18%), Frugivorous (6.81%), Granivorous & Frugivorous (6.81%) and Nectarivorous (2.27%). As groundwater level is scarce (dark zone) water harvesting measures need to be incorporated for alleviating the water level which will in turn increase productivity of agricultural land. Agriculture provides a concentrated and highly predictable source of food to birds.

Keywords: Avian Diversity, Terrestrial, Resident, Bird Species and Chirawa (Northeast Rajasthan).

Introduction

Avian diversity is one of the most important constituent of overall biodiversity. Birds are found in almost all types of habitats present on the earth and play their vital role in various food chains. Throughout the world, 9702 bird species belonging to more than 1800 genera exist (Sibley and Monroe, 1990). Out of more than 9000 bird species of the world, the Indian subcontinent contains about 1300 species or over 13% of the world's birds (Grimmett et al., 1999).

The study area, Chirawa, Jhunjhunu (Raj), is located in the Northwestern part of Rajasthan state which is an appropriate habitat for avian diversity due to the agricultural fields and vegetations. This area is densely covered with vegetation (Katewa & Galav., 2009). *Ziziphus mauritiana* (ber), *Prosopis juliflora* (vilayati babul), *Azadirachta indica* (neem), *Prosopis cineraria* (khejri), *Ficus religiosa* (peepal), *Capparis decidua* (Ker), *Acacia nilotica* (kikar) are some of the dominant vegetation found throughout the study area.

In Rajasthan, various ornithologists have reported bird species (Saxena 2003, Sharma 1998, Changani 2002, 2009, Bhatnagar et al. 2011 and Koli et al. 2011). The people of this area do not have sufficient knowledge about the importance of wild life in ecosystem. At present, this area is declared under dark zone due to lack of ground water level and impact of this situation, agricultural land is decreasing which affects avian diversity. Therefore, the present study was conducted which was aimed to know the distribution of avian diversity of Chirawa Town situated in

Jhunjhunu district (Raj) and to draw attention of researchers, naturalists, conservationists and bird lovers on management of avian diversity.

Aim of the Study

Birds are considered as excellent indicators of the effects urbanization has on ecosystems since they are highly diverse and conspicuous biota of the ecosystem. They are also identified as indicators of aquatic and terrestrial habitat. Habitat loss due to landscape changes or human interference is often cited as the main reason of loss of biodiversity. The present study aims to know the bird diversity in Chirawa, as actually no one has attempted here to know birds as suitable bioindicators which can be identified by an easy screening of birds diversity.

Materials and Methods

Chirawa town is situated in Jhunjhunu district and its location is 28° 04'N and 75°32' E (Fig.1). The study area lies in the semiarid zone of Rajasthan. Summer is very hot and winter is very cold. Maximum temperature is about 45°C and minimum is near about 0°C.

The study was carried out from January 2014 to July 2014 in and around Chirawa town at various sites Narher, Devroad, Chirawa town, Ojjatu & Shyopura. These sites were weekly visited (on Sunday) and all field surveys were performed in the morning from sunrise to 10.00 am. and in evening from 3.00 pm to sunset, using point counts method. Two observers always independently recorded the bird species in each study site with the help of binoculars and using photography by Canon cameras to aid with further identification (plates of some dominant bird species). Bird species were identified using standard books (Ali & Ripley, 2007., Grimmett et al., 1999 & Amano Samarpan 2006). Residential status of the birds was categorized as Resident, winter visitors, summer visitors and passage visitors. The birds which were seen regularly in the study area were placed under the category residential, birds seen only in the winter and summer seasons were placed respectively under winter visitor and summer visitor and bird species which were seen only once or twice during the study period were considered passage visitor. Relative Diversity (RD) was calculated using the following formula:

$$RD = \frac{\text{Number of species in a family}}{\text{Total number of species}} \times 100$$

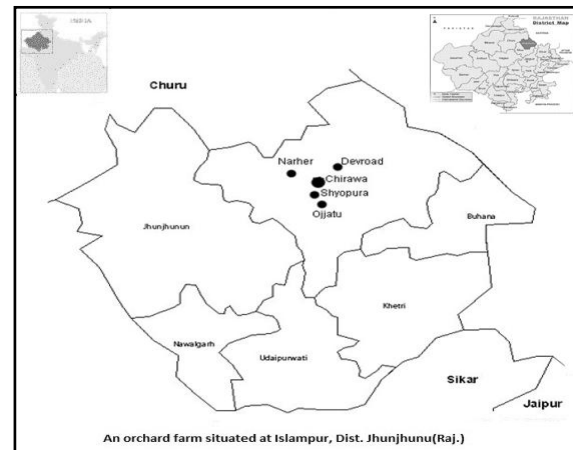


Fig.1 - Location of Study Area



Fig.2. Plates of Some Dominant Bird Species Occurring in Chirawa

Result and Discussion

Table 1 shows that 44 bird species were observed in and around the Chirawa town during the study period. The present study results revealed that of the 44 avian species supported 88.63% of the species as resident, 9.09% of the species as winter visitors & 2.27% of the species as passage visitor (Figure-3).

**Table - 1
Birds Checklist of Chirawa Town (Jhunjhunu)**

Serial no.	Family	Scientific Name	English Name	Status	Feeding Habit
1	Columbidae	<i>Columba livia</i>	Rock pigeon	R	Granivorous
2	Columbidae	<i>Streptopelia decaocto</i>	Eurasian collared dove	R	Granivorous
3	Columbidae	<i>Streptopelia tranquebarice</i>	Red collared dove	R	Granivorous
4	Columbidae	<i>Streptopelia senegalensis</i>	Laughing dove	R	Granivorous
5	Passeridae	<i>Passer domesticus</i>	House sparrow	R	Granivorous
6	Ploceidae	<i>Ploceus philippinus</i>	Baya weaver	R	Omnivorous
7	Phasianidae	<i>Pavo cristatus</i>	Indian peafowl	R	Omnivorous
8	Phasianidae	<i>Francolinus podicerianus</i>	Grey francolin	R	Omnivorous
9	Phasianidae	<i>Francolinus francolinus</i>	Black francolin	R	Omnivorous
10	Nectariniidae	<i>Cinnyrus asiaticus</i>	Purple sunbird	R	Nectarivorous
11	Psittacidae	<i>Psittacula krameri</i>	Rose ringed parakeet	R	Granivorous & Frugivorous
12	Psittacidae	<i>Psittacula eupateria</i>	Alexandrine parakeet	R	Granivorous & Frugivorous
13	Psittacidae	<i>Psittacula cyanocephala</i>	Plum headed parakeet	R	Granivorous & Frugivorous
14	Pycnonotidae	<i>Pycnonotus cafer</i>	Red vented bulbul	R	Frugivorous
15	Pycnonotidae	<i>Pycnonotus leucotis</i>	White eared bulbul	R	Frugivorous

16	Sturnidae	<i>Acridotheres ginginianus</i>	Bank myna	R	Granivorous
17	Sturnidae	<i>Acridotheres tristis</i>	Common Myna	R	Granivorous
18	Sturnidae	<i>Sturnus contra</i>	Asian pied starling	R	Granivorous
19	Picidae	<i>Dendrocopos mahrattensis</i>	Yellow crowned woodpecker	R	Insectivorous
20	Picidae	<i>Dinopium benghalense</i>	Lesser golden back	R	Insectivorous
21	Upupidae	<i>Upupa epops</i>	Common hoopoe	R	Insectivorous
22	Corvidae	<i>Corvus splendens</i>	House crow	R	Carnivorous
23	Corvidae	<i>Corvus culminatus</i>	Indian jungle crow	R	Carnivorous
24	Corvidae	<i>Dendrocitta vagabunda</i>	Rufous treepie	R	Frugivorous
25	Cuculidae	<i>Eudynamys scolopacea</i>	Asian koel	R	Omnivorous
26	Dicruridae	<i>Dicrurus macrocercus</i>	Black drongo	R	Insectivorous
27	Charadriidae	<i>Vanellus indicus</i>	Red wattled lapwing	R	Insectivorous
28	Cisticolidae	<i>Orthotomus sutorius</i>	Common tailor bird	R	Insectivorous
29	Coraciidae	<i>Coracias benghalensis</i>	Indian roller	R	Carnivorous
30	Strigidae	<i>Athene brama</i>	Spotted owl	R	Insectivorous
31	Accipitridae	<i>Milvus migrans</i>	Black kite	R	Carnivorous
32	Accipitridae	<i>Elanus caeruleus</i>	Black shouldered kite	R	Omnivorous
33	Accipitridae	<i>Accipiter badius</i>	Shikra	R	Carnivorous
34	Accipitridae	<i>Gyps bengalensis</i>	White rumped vulture	R	Carnivorous
35	Accipitridae	<i>Neophron percnopterus</i>	Egyptian vulture	R	Carnivorous
36	Alaudidae	<i>Calandrella brachydactyla</i>	Greater short toed lark	WV	Omnivorous
37	Alaudidae	<i>Eremopterix grisea</i>	Ashy crowned sparrow lark	PV	Omnivorous
38	Alaudidae	<i>Ammomanes phoenicurus</i>	Rufous tailed lark	WV	Omnivorous
39	Alaudidae	<i>Mirafra erythroptera</i>	Indian bush lark	R	Omnivorous
40	Sylviidae	<i>Sylvia curruca</i>	Lesser white throat	WV	Insectivorous
41	Timaliidae	<i>Turdoides striata</i>	Jungle babbler	R	Insectivorous
42	Muscicapidae	<i>Saxicoloides fulicata</i>	Indian robin	R	Insectivorous
43	Muscicapidae	<i>Luscinia svecica</i>	Blue throat	WV	Insectivorous
44	Alcedinidae	<i>Halcyon smyrnensis</i>	White throated kingfisher	R	Carnivorous

R – Resident, WV- Winter Visitor, PV- Passage Visitor

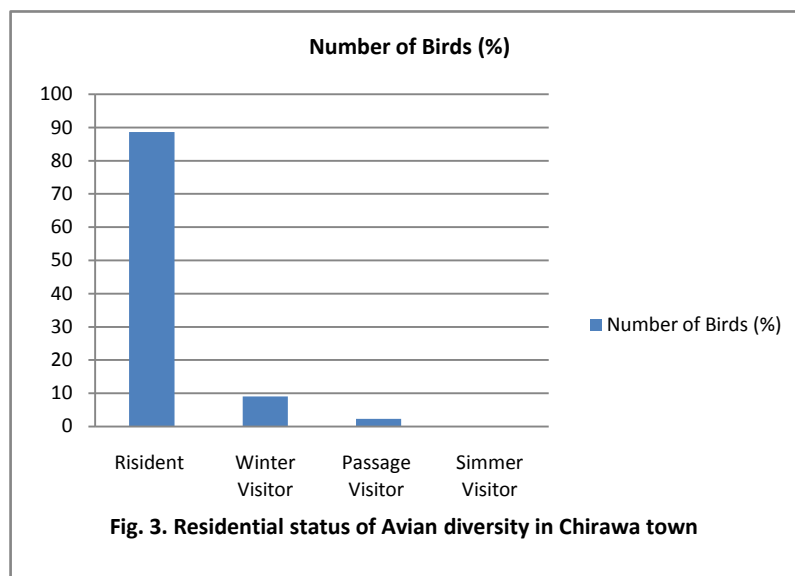


Fig. 3. Residential status of Avian diversity in Chirawa town

These visitors included species such as greater short toed lark (WV), Rufous tailed lark (WV), Lesser white throat (WV), Blue throat (WV) and Ashy crowned sparrow lark (PV). Resident birds include some endangered avian species (e.g. Egyptian vulture & white rumped vulture). The population of vultures has catastrophically decreased in the past decade & this family is globally threatened. During field survey we observed these vulture species so this

study will provide a base for making strategies for saving them. We should perform our responsible role in saving our avian diversity and ecosystem. Twenty three families were noticed during the study period in the observed area. Among them Accipitridae was the dominant family with 05 species. Results of the Relative Diversity predict that the Accipitridae family has a high diversity of species and the other families are indicated in the Figure-4.

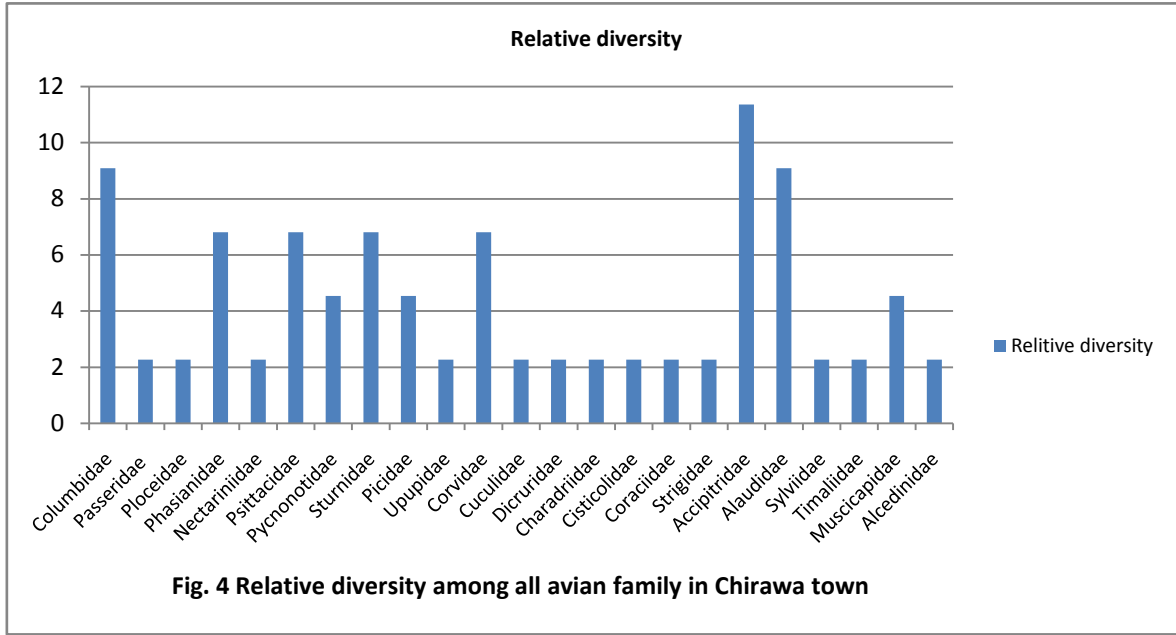


Fig. 4 Relative diversity among all avian family in Chirawa town

On the basis of the feeding habit of the 44 species depicted that 25 % of birds are insectivorous, followed by omnivorous (22.72%), carnivorous

(18.18%), granivorous (18.18%) frugivorous (6.81%), nectarivorous (2.27%) and frugivorous plus insectivorous (6.81%) (Figure-5).

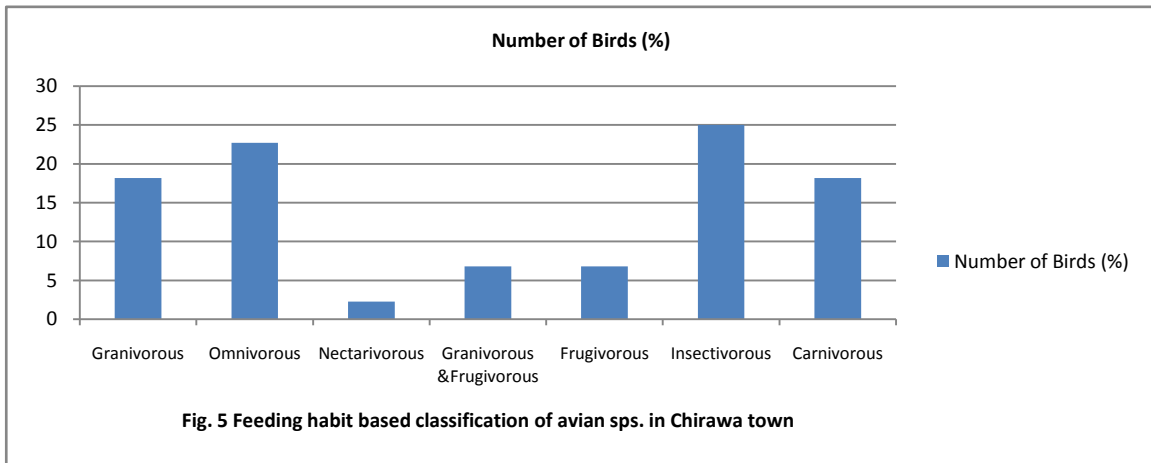


Fig. 5 Feeding habit based classification of avian sps. in Chirawa town

Chirawa town has naturally vegetated area and a large area is under cultivation of important crops like wheat, mustard, bajra and pulses etc. These cultivated areas are important source of food to birds. This food in general is of three kinds: (1) Grains, seeds and fruits, (2) Green vegetations of the crop plants and grasses and (3) Insects, other arthropods, rodents etc., found in the soil, crops and other plants (O Connor and Shrub, 1986). So bird species have been able to harvest energy and reproduce very efficiently in agricultural habitats leading to their large population build-ups.

This area in the past decade is categorized under dark zone on the basis of availability of ground water level. Therefore the cultivation of crops has been affected due to lack of water sources because in this region, main water source for cultivation of crops is ground water in the form of tube wells. Availability of ground water is being decreased due to misuse practice adopted by farmers forcing the state govt. to declare it as dark zone for releasing electricity connection and for digging tube wells.

Thus, this factor was the main reason causing the destruction of avian diversity in this region. Naturally agricultural land provides good adobe for wildlife species especially avian species. As ground water level is scarce (dark zone) water harvesting measures need to be incorporated for alleviating the water level, which will in turn increase productivity of agricultural land. If some attention is focused on this region for maintaining and increasing groundwater level then it could be supported for developing Jhunjhunu district as a good site for harboring avian diversity & a heaven for bird watchers. Thus, this study provides insight into the basic data of the avian diversity as bioindicators in Chirawa town.

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