41(1): 1–9, 2020 ISSN: 0256-971X (P)



# URBAN BIRD DIVERSITY OF SHEOPUR CITY, NORTH MADHYA PRADESH, INDIA

# SATYA NARAYAN RAWAT<sup>1\*</sup> AND R. J. RAO<sup>1</sup>

<sup>1</sup>Conservation Biology Lab, School of Studies in Zoology, Jiwaji University, Gwalior, India.

#### **AUTHORS' CONTRIBUTIONS**

This work was carried out in collaboration between both authors. Author SNR designed the study, managed the literature searches performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author RJR managed the analyses of the study. Both authors read and approved the final manuscript.

Received: 05 November 2019 Accepted: 11 January 2020 Published: 17 February 2020

**Original Research Article** 

# ABSTRACT

The high rate of Urbanization and the consequent loss of bird habitat at the global level is increasing day by day. Due to this activity challenging ecosystem will create problems in the future because more people prefer to live in the cities. The main objective of the study was to know the current status of urban bird diversity, habitat and conservation plan. Point count and Line transect methods were used for the bird survey. The various bird species were sighted through binocular and species identification was done by using different identification keys. Photograph of birds was taken by the Nikon DSLR camera and GPS locations of each study site were recorded in the datasheet. The total numbers of 90 bird species were recorded from all study sites belonging to 16 orders and 43 families. In recent times some species migrated from urban to semi-urban areas because they have not existed in narrow habitat. However, some scavengers bird seen at dead animal dumping sites. Family Columbidae was found dominant with a 6% contribution followed by families like Muscicapidae, Sturnidae, Motacillidae, Scolopacidae and Anatidae with 5% contribution each and further followed by other families with less than 5% contribution. These present results indicate that Rock dove is highly habituated in the urban ecosystem while House sparrow, Golden oriole, Grey hornbill and Egyptian vulture are sensitive species. So they are seen as local migratory species. The conservation plan is needed to develop green belts at street level and with the maintenance of the old gardens; new parks should be established in urban areas. The artificial nest (wooden nest), food (mixed grains) and water properly take place in parks. Birds are also important for the maintenance of the ecosystem because they act as an effective tool for biological pest control.

Keywords: Bird habitat; urbanization; species; ecosystem; conservation.

# **1. INTRODUCTION**

Although the study of urban birds has a fairly long history, urban ecosystems have been largely ignored throughout many decades of ecological research [1]. In most cases, diversity in urban habitats decreases or remains similar to wildlands [2,3]. Although urbanization increases total bird densities, it appears

that only a few species contribute to this increase. Only a few species can exit and thrive in the most built parts of the city where vegetation is almost absent, such as business districts and industrial zones. Thus, urbanization increases the abundance of feral pigeons, swallows, swifts and some other species that breed in walls. Bird species that cannot exist in less predictable or resource-poor environments may be

<sup>\*</sup>Corresponding author: Email: rawatsatyanarayan@gmail.com;

able to flourish in cities, where these hurdles associated with food and water resources are removed.

Threats to bird species diversity are principally due to a decline in the areas of their habitats, fragmentation of habitats and declines in habitat quality and some cases of mammals, hunting [4]. For aquatic bird species and semi-aquatic species, the declines in habitat quality are due to diversion of ground and surface water, resulting in the drying up of streams and other water bodies, from siltation and pollution from pesticides and other chemicals. In the Gwalior-Chambal Region of Northern Madhya Pradesh, four Wildlife Sanctuaries and one National Park are situated. Among them, Ghatigaon Sanctuary in Gwalior district and Karera Sanctuary in Shivpuri district are declared as the Wildlife Sanctuaries for the protection of endangered bird species (especially for Great Indian Bustard bird). As human populations spread, people convert forests, grasslands, and wetlands into developed landscapes of residential, commercial, institutional or industrial buildings and associated infrastructure. Native bird species richness typically declines as the density of human development increases [5]. As development density and habitat fragmentation increase, bird community structure shifts from development-sensitive specialists to development-adaptive generalists.

Rapid urban growth directly influences the outlook of the Indian nation, as its cities continue to evolve. This, in part, is due to a complex interplay of complementary and contradictory factors. The presence of birds also shows the biological importance or going technical, the biodiversity significance of an area [6]. Native bird species richness typically declines as the density of human development increases [5,7,8]. As development density and habitat fragmentation increase, bird community structure shifts from developmentdevelopment-adaptive sensitive specialists to generalists [7]. All bird communities in the urban environments are characterized by high abundances of exotic species, resident granivores and omnivores and few insectivorous, migrant species.

#### **2. METHODOLOGY**

#### 2.1 Study Area

Present studies were done from the year 2016 to 2018. The research work was carried out in the Sheopur city and its surrounding areas of North Madhya Pradesh.

# 2.2 Habitat Characteristics of the Surveyed Locations of Sheopur City

It has a grassland habitat with herbs, shrubs and large trees. Kans (*Saccharum spontaneum*), Bhanjura (*Apluda mutica*), Lapurse (*Aristida hysterix*), Gulmohar (*Delonix regia*), Neem (*Azadirachta indica*), Mango (*Mangifera indica*), Pipal (*Ficus religiosa*), Bahera (*Terminalia bellirica*), etc. are some floral species found in this area. Along with Sheopur city Sheep River (Banjara dam) was the most suitable habitat for different aquatic bird species.

## 2.3 Methods

The study was conducted during all seasons throughout the year (2016 - 2018) covering the winter (migratory) season. The survey was conducted mostly in the morning hours between 6.00 am to 11.00 am and late afternoon from 2.00 pm to 7.00 pm, Data of bird's species with their habitat and population was collected from all the selected sites through regular field surveys on a seasonal basis. A detail of the locality including GPS readings, common name and habitat were recorded in the field datasheet. Immediate photographs were taken with the help of a camera for the identification of species.

#### **2.4 Instruments**

Different research instruments were used in the present study viz. Binocular (Olympus,  $7 \times 50$ ), Global Position System (GPS) (Garmin 60), Digital Camera (Nikon, 10x optical zoom and 8 megapixels).

Table 1. GPS locations of different study sites in S	Sheopur	city
--	---------	------

S. no.	Study site name	GPS location
1.	Forest research and development sub centre area	76°44'03.8" E, 25°40'26.8" N
2.	Fort area	76°41'47.7"E, 25°39'24.5" N
3.	Govt. Nursery Park	76°41'32.67"E, 25°40'57.82"N
4.	Eidgah park	76°42'09. 7"E, 25°39'51.7"N
5.	Railway station area	76°42'01. 4"E, 25°40'18.1" N
6.	Banjara dam (Seep River)	76°41'19. 3"E, 25°40'10.6" N



Fig. 1. Selected study sites in Sheopur city

# 2.5 Species Identification

The birds were mainly identified using books by Grimiit et al. (2015). The English, scientific and local names of the birds have been taken from Ali [9], Grewal et al. [10] and Khan [11]. The following three characteristics were applied to identify the bird species.

- 1. External morphology (Colour, shape, size, beak, leg, and Tail).
- 2. Song and calls.
- 3. Habitat of the birds.

#### 2.6 Visual Methods

Each study site was surveyed at regular time intervals and every bird sighted was noted down along with various important parameters.

# 2.7 Line Transect Method

Line transect method offers great flexibility in use. It is simple to carry out and requires no special apparatus or tools. In this method, the observer walks on the predetermined transect and records the birds which are seen and heard. The result of these transects can be used to give information about the relative frequency of different species of the birds and the relative frequency of the same species in different habitats.

In this method, the observer made a straight line from 100 meters to 1 km long transect. The width of the sampling area was fixed as 50 m (25 m on either side) along the transect. The line transect was conducted between 06:30 to 09:30 hrs and 15:30 to 18:30 hrs. In addition to these fixed timing of surveys, some

irregular visits were also made during the other hours of the day.

All the birds sighted and heard were recorded while sampling the birds. Birds that were sighted or heard from the backside of the moving observer were also recorded. Each call from a spot is recorded as one individual bird. Repeated calls from the same spot were ignored. The number of the observer was one. No data was collected when climatic factors like rain and mist restricted the visibility considerably. If the birds were flying at 40 m high or if the birds pass above the canopy with any business in the area, they were not recorded. The number of bird species, at first sight, is recorded first and the subsequent sightings were added to it. The height at which a bird was sighted was recorded by visual estimation. The positions of birds were classified into different zones like flowers, twigs, branches, and trunk of the trees. The positions were also recorded using codes. Four general bird activities, viz., feeding, flying, resting and nesting were recorded along the transect.

#### 2.8 Point Counts Method

In this method, the observer stands at a fixed point for a specific period of time (10 minutes) and makes a count of all birds, either within a specified circle of 10-15 meters or as far as the visibility permits (open radius). The observer can detect the birds by sight or by sound or by both. Vegetation condition of the point, time of observation, species sighted, number of birds, the height of occurrence and activity were noted.

#### **3. RESULTS**

In the present study, a total of 90 bird species were recorded belonging to 16 orders, 43 families are shown in Table 2. The family Columbidae was found to be dominant with a 6% contribution followed by families like Muscicapidae, Sturnidae, and Anatidae with a 5% contribution which is further followed by Motacillidae, Scolopacidae, Leiotrichidae and Ardeidae families with less than 5% contribution as shown in Fig. 2.

#### 3.1 Urban Avian Diversity in Sheopur City

Sheopur district is the northeast part of Madhya Pradesh state and is an old city area, highly congested and few buildings habituated birds like the blue pigeon. In the present time, highest bird diversity was found in the forest department area located at Shivpuri road.

S. no.	Common name	Scientific name	Habitat	Status	IUCN status
	Order: Passeriformes				
	Family: Muscicapidae				
1	Black Redstart	Phoenicurus ochruros	MV, HH	WV	LC
2	Common Stonechat	Saxicola torquatus	MV, PF	LM	LC
3	Indian Robin	Saxicoloides fulicatus	UG, MV	R	LC
4	Oriental Magpie-robin	Copsychus saularis	UG, MV	R	LC
5	Tickell's Blue-flycatcher	Cyornis tickelliae	MV	R	LC
	Order: Passeriformes				
	Family: Sturnidae				
6	Asian Pied Starling	Gracupica contra	HH, UG	R	LC
7	Bank Myna	Acridotheres ginginianus	HH, UG	R	
8	Brahminy Starling	Sturnia pagodarum	OH, HH	R	LC
9	Common Myna	Acridotheres tristis	HH, UG	R	LC
10	Jungle Myna	Acridotheres fuscus	MV, UG	LM	LC
	Order: Passeriformes				
	Family: Motacillidae				
11	Grey Wagtail	Motacilla cinerea	AH	R	LC
12	White Wagtail	Motacilla alba	AH, OH	R	LC
13	Western Yellow Wagtail	Motacilla flava	AH	WV	LC
14	White-browed Wagtail	Motacilla	AH	WV	LC
	C	maderaspatensis			
	Order: Passeriformes	â			
	Family: Leiotrichidae				
15	Common Babbler	Argya caudata	HH, UG, MV	R	LC
16	Yellow-billed Babbler	Turdoides affinis	HH, UG	R	LC

#### Table 2. Showing different bird species found in urban areas of Sheopur City

S. no.	Common name	Scientific name	Habitat	Status	IUCN status
17	Large Grey Babbler	Argya malcolmi	UG, MV	R	LC
18	Jungle Babbler	Turdoides striata	HH, MV	R	LC
	Order: Passeriformes				
	Family: Hirundinidae				
19	Barn Swallow	Hirundo rustica	AH, MV	LM	LC
20	Streak-throated Swallow	Petrochelidon fluvicola	MV	R	LC
21	Wire-tailed Swallow	Hirundo smithii	MV	R	LC
	Order: Passeriformes				
	Family: Corvidae				
22	House Crow	Corvus splendens	HH, AH	R	LC
23	Rufous Treepie	Dendrocitta vagabunda	MV	R	LC
24	Large-billed Crow	Corvus macrorhynchos	MV	R	LC
	Order: Passeriformes				
25	Family: Cisticolidae	D:: · · /·		D	
25	Asny Prinia	Prinia socialis	UG, PF	K D	
20		Orthotomus sutorius	UG, PF	ĸ	LL
	Order: Passeriformes				
27	Ashy arounad Sparrow lark	Enomontonix anisous	DE OG	<b>W</b> / <b>V</b> /	IC
21	Ashy-clowned Sparlow-lark	Eremopierix griseus	FF, 00	VV V	LC
	Craer: Passerilormes				
28	Family: Estriloidae	Longhung nungtulata	MV DE	IM	IC
20	Order: Degeerifermen	Еонспита ринститата	IVIV, FF	LIVI	LC
	Gruer: Passernormes				
20	Indian Daradisa fluoatahar	Tomainhono nanadisi	MX	IM	IC
29	Ordore Degeoriformed	Terpsipnone paradisi	IVI V	LIVI	LC
	Family, Laniidaa				
30	Ray backed Shrike	Lanius vittatus	DE MV	IM	IC
50	Order: Passariformos	Lanius vilialus	FF, IVI V	LIVI	LC
	Family: Placeidae				
31	Baya Weaver	Ploceus nhilippinus	MV	IM	IC
	Order: Passeriformes	Tioceus philippinus	111 1	LIVI	Le
	Family: Dicruridae				
32	Black Drongo	Dicrurus macrocercus	MV. AH	R	LC
	Order: Passeriformes	Dierurus muerocereus			20
	Family: Oriolidae				
33	Indian Golden Oriole	Oriolus kundoo	MV	LM	LC
	Order: Passeriformes				
	Family: Passeridae				
34	House Sparrow	Passer domesticus	PF, MV, UG	R	LC
35	Yellow-throated Sparrow	Gymnoris xanthocollis	PF	R	LC
	Order: Passeriformes	v			
	Family: Nectariniidae				
36	Purple Sunbird	Cinnyris asiaticus	MV, PF	R	LC
	Order: Passeriformes	•	·		
	Family: Pycnonotidae				
37	Red-vented Bulbul	Pycnonotus cafer	MV, PF	R	LC
	Order: Passeriformes	. v			
	Family: Zosteropidae				
38	Oriental White-eye	Zosterops palpebrosus	MV	LM	LC
	Order: Passeriformes	_ * *			
	Family: Passerellidae				
39	Field Sparrow	Spizella pusilla	PF	R	LC

S. no.	Common name	Scientific name	Habitat	Status	IUCN status
	Order: Columbiformes				
	Family: Columbidae				
40	Rock Dove	Columba livia	UG, PF	R	LC
41	Eurasian Collared-Dove	Streptopelia decaocto	UG, MV	R	LC
42	Laughing Dove	Spilopelia senegalensis	UG, PF	R	LC
43	Red Turtle-Dove	Streptopelia	UG, PF	R	LC
		tranquebarica			
44	Eastern Spotted Dove	Spilopelia chinensis	UG, MV	R	LC
45	Yellow-footed	Treron phoenicopterus	MV	R	LC
	Green-pigeon				
	Order: Cuculiformes				
	Family: Cuculidae				
46	Western Koel	Eudynamys scolopaceus	MV	LM	LC
47	Greater Coucal	Centropus sinensis	UG, MV	R	LC
48	Indian Cuckoo	Cuculus micropterus	MV	R	LC
	Order: Charadriiformes				
	Family: Scolopacidae				
49	Common Greenshank	Tringa nebularia	AH	R	LC
50	Green Sandpiper	Tringa ochropus	AH	R	LC
51	Common Redshank	Tringa totanus	AH	R	LC
52	Terek Sandpiper	Xenus cinereus	AH	М	LC
	Order: Charadriiformes				
	Family: Laridae				
53	Indian River Tern	Sterna aurantia	AH	М	NT
	Order: Charadriiformes				
	Family:Recurvirostridae				
54	Black-winged Stilt	Himantopus himantopus	AH	LM	LC
	Order: Charadriiformes				
	Family: Jacanidae				
55	Bronze-winged Jacana	Metopidius indicus	AH	LM	LC
	Order: Charadriiformes				
	Family: Charadriidae				
56	Red-wattled Lapwing	Vanellus indicus	AH, UG	R	LC
	Order: Coraciiformes				
	Family: Meropidae				
57	Little Bee-eater	Merops pusillus	MV	R	LC
58	Asian Green Bee-eater	Merops orientalis	MV	R	LC
	Order: Coraciiformes				
	Family: Alcedinidae				
59	Pied Kingfisher	Ceryle rudis	AH	R	LC
60	Common Kingfisher	Alcedo atthis	AH, MV	R	LC
61	White-breasted Kingfisher	Halcyon smyrnensis	AH, MV	R	LC
	Order: Coraciiformes				
	Family: Coraciidae				
62	Indian Roller	Coracias benghalensis	AH, MV	R	LC
	Order: Gruiformes				
	Family: Rallidae				
63	Common Moorhen	Gallinula chloropus	AH	R	LC
64	White-breasted Waterhen	Amaurornis phoenicurus	AH	R	LC
	Order: Galliformes				
	Family: Phasianidae				
65	Indian Peafowl	Pavo cristatus	MV, UG	R	LC
66	Grey Francolin	Francolinus	MV	R	LC
		pondicerianus			

Order: Piciformes      67    Brown-headed Barbet    Psilopogon zeylanicus    MV, UG    R    LC      68    Coppersmith Barbet    Psilopogon zeylanicus    MV, UG    R    LC      69    Black-rumped Flameback    Dinopium benghalense    MV, UG    R    LC      Order: Accipitriface      70    Egyptian Vulture    Neophron perconpterus    RA, AH    R    EN      71    Shikra    Accipiter badius    MV, UG    R    LC      72    Black-winged Kite    Elanus caeruleus    MV    LM    LC      Order: Buccrotiformes      Family: Buccrotiformes      Family: Buccrotiformes      Family: Ardeidae      7      Order: Buccrotiformes      Family: Ardeidae      7      7      Cattle Egret    Bubulcus ibis    AH, UG    LM    LC      7    Cattle Egret    Subulcus ibis    AH    LC    Corder: Plecaniformes      Family: Ardeidae	S. no.	Common name	Scientific name	Habitat	Status	IUCN status	
Family: Megalaimidae      67    Brown-headed Barbet    Psilopogon zeylanicus    MV, UG    R    LC      68    Coppersmith Barbet    Psilopogon    MV, UG    R    LC      69    Black-rumped Flameback    Dinopium benghalense    MV, UG    R    LC      69    Black-rumped Flameback    Dinopium benghalense    MV, UG    R    LC      0    Order: Accipitriformes    Family: Accipitrifae    Not Compare the adults    MV, UG    LM    LC      70    Espytian Vulture    Neophron percnopterus    RA, AH    R    EN      71    Black-winged Kite    Elanus caeruleus    MV    LM    LC      0    Order: Buccrotiformes    Family: Upupidae    T    T    Indian Grey Hornbill    Ocyceros birostris    MV, UG    R    LC      0    Order: Buccrotiformes    Egretta garzetta    AH, UG    R    LC    C      74    Common Hoopoe    Upupa epops    OH, UG    LM    LC    C      75    Cattle Egret    Egretta garzetta    AH, UG    R    LC    C		Order: Piciformes					
67    Brown-headed Barbet Coppersmith Barbet Baemacephalus    MV, UG MV, UG R    R    LC      68    Coppersmith Barbet haemacephalus    MV, UG R    LC      69    Black-rumped Flameback Family: Accipitridae    Dinopium benghalense Family: Accipitridae    MV, UG R    LC      70    Egyptian Vulture Panily: Accipitridae    Neophron percopterus MV, UG Black-winged Kite Elanus caeruleus    RA, AH R    R    EN      71    Shikra Corder: Buccrotiformes Family: Buccrotiformes Family: Buccrotiformes    MV, UG R    LC    C      72    Black-winged Kite Banus caeruleus    MV, UG R    LC    C      72    Black-winged Kite Family: Buccrotiformes Family: Upupidae    C    C    C      73    Indian Grey Hornbill    Ocyceros birostris    MV, UG R    LC    C      74    Common Hoopoe    Upupa epops    OH, UG    LM    LC      74    Common Hoopoe    Upupa epops    OH, UG    LM    LC      75    Cattle Egret    Egretta garzetta    AH, UG    LM    LC      76    Little Egret    Ardea alba    AH    R    LC      79    Red-naped Ibis <td></td> <td>Family: Megalaimidae</td> <td></td> <td></td> <td></td> <td></td>		Family: Megalaimidae					
68  Coppersmith Barbet  Psilopogon haemacephalus  MV, UG  R  LC    Order: Piciformes    Family: Picidae  Dinopium benghalense  MV, UG  R  LC    Order: Accipitriformes  Family: Accipitriformes  RA, AH  R  EN    70  Egyptian Vulture  Neophron percnopterus  RA, AH  R  EN    71  Shikra  Accipitre badius  MV, UG  LM  LC    Order: Buccrotiformes    Family: Buccrotiformes    Family: Upupidae	67	Brown-headed Barbet	Psilopogon zeylanicus	MV, UG	R	LC	
haemacephalus        Grder: Piciformes Family: Picidae        69 Black-rumped Flameback      Dinopium benghalense      MV, UG      R        69 Black-rumped Flameback      Dinopium benghalense      MV, UG      R        7      Black-winged Kite      Elamus caeraleus      MV      LC        Order: Buccrotiformes        Family: Duppidae        73      Indiam Grey Hornbill      Ocyceros birostris      MV, UG      R        7      OH, UG      LM      LC        Order: Pelecaniformes        Family: Ardeidae        7      Cattle Egret      Bubulcus ibis      AH, UG      LC        Order: Pelecaniformes      Family: Ardeidae        7      Cattle Egret      Bubulcus ibis      AH, UG      LM      LC        Order: Pelecaniformes      Family: Ardeidae   <	68	Coppersmith Barbet	Psilopogon	MV, UG	R	LC	
Order: Ficilornes      69    Black-rumped Flameback    Dinopium benghalense    MV, UG    R    LC      Order: Accipitriformes      Family: Accipitridae    MV, UG    LM    LC      70    Egyptian Vulture    Neophron percnopterus    RA, AH    R    EN      71    Shikra    Accipiter badius    MV, UG    LM    LC      Order: Buccrotiformes      Family: Buccrotiformes    Family: Duppidae			haemacephalus				
Family: Picidae      69    Black-rumped Flameback    Dinopium benghalense    MV, UG    R    LC      0    Gegptian Vulture    Neophron percnopterus    RA, AH    R    EN      70    Egyptian Vulture    Neophron percnopterus    RA, AH    R    EN      71    Shikra    Accipiter badius    MV, UG    LM    LC      72    Black-winged Kite    Elanus caeraleus    MV    LM    LC      73    Indian Grey Hornbill    Ocyceros birostris    MV, UG    R    LC      74    Common Hoopoe    Upupa epops    OH, UG    LM    LC      74    Common Hoopoe    Upupa epops    OH, UG    LM    LC      75    Cattle Egret    Bubulcus ibis    AH, UG    R    LC      76    Little Egret    Ardea alba    AH    R    LC      77    Indian Pond-heron    Ardea alba    AH    R    LC      77    Indian Pond-heron    Ardea alba    AH    M    LC      79    Red-naped Ibis    Pseudibis papillosa    AH    M		Order: Piciformes					
69      Black-rumped Flameback      Dinopium benghalense      MV, UG      R      LC        70      Egyptian Vulture      Neophron percnopterus      RA, AH      R      EN        70      Shikra      Accipiter badius      MV, UG      LM      LC        72      Black-winged Kite      Elanus caeruleus      MV      LM      LC        71      Shikra      Accipiter badius      MV, UG      R      LC        73      Indian Grey Hornbill      Ocyceros birostris      MV, UG      R      LC        74      Common Hoopoe      Upupa epops      OH, UG      LM      LC        74      Common Hoopoe      Upupa epops      OH, UG      LM      LC        75      Cattle Egret      Bubulcus ibis      AH, UG      R      LC        76      Little Egret      Ardea alba      AH      LM      LC        76      Great White Egret      Ardea alba      AH      R      LC        77      Indian Pond-heron      Ardeaa alba      AH      R      LC        76      Ret-maped Biri		Family: Picidae					
Order: Accipitriformes        Family: Accipitriformes      RA, AH      R      EN        70      Egyptian Vulture      Neophron percnopterus      RA, AH      R      EN        71      Shikra      Accipiter badius      MV, UG      LM      LC        72      Black-winged Kite      Elanus caeruleus      MV, UG      R      LC        Order: Bucerotiformes      Family: Dupidae      7      India Grey Hornbill      Ocyceros birostris      MV, UG      R      LC        71      India Grey Hornbill      Ocyceros birostris      MV, UG      R      LC        73      India Grey Hornbill      Ocyceros birostris      MV, UG      R      LC        74      Common Hoopoe      Upupa epops      OH, UG      LM      LC        74      Common Hoopoe      Ardea alba      AH, UG      LM      LC        75      Cattle Egret      Bubulcus ibis      AH, UG      LM      LC        76      Cattle Egret      Ardea alba      AH      R      LC        79      Red-naped Ibis      Pseudibis papillosa	69	Black-rumped Flameback	Dinopium benghalense	MV, UG	R	LC	
Family: Accipitridae        70      Egyptian Vulture      Neophron percnopterus      RA, AH      R      EN        71      Shikra      Accipiter badius      MV, UG      LM      LC        72      Black-winged Kite      Elanus caeruleus      MV      LM      LC        73      Indian Grey Hornbill      Ocyceros birostris      MV, UG      R      LC        74      Common Hoopoe      Upupa epops      OH, UG      LM      LC        74      Common Hoopoe      Upupa epops      OH, UG      LM      LC        75      Cattle Egret      Bubulcus ibis      AH, UG      R      LC        76      Little Egret      Egretta garzetta      AH, UG      LM      LC        76      Great White Egret      Ardeoa gravii      AH      R      LC        77      Indian Pond-heron      Ardeoa gravii      AH      R      LC        77      Indian Pond-heron      Ardeoa gravii      AH      M      LC        78      Red-naped Ibis      Pseudibis papillosa      AH      M      LC		Order: Accipitriformes					
70    Egyptian Vulture    Neophron percoopterus    RA, AH    R    EN      71    Shikra    Accipiter badius    MV, UG    LM    LC      72    Black-winged Kite    Elanus caeruleus    MV    LM    LC      Order: Bucerotiformes      Family: Ducerotidae		Family: Accipitridae					
71    Shikra    Accipiter badius    MV, UG    LM    LC      72    Black-winged Kite    Elanus caeruleus    MV    LM    LC      Order: Bucerotiformes      Family: Bucerotiformes    MV, UG    R    LC      Order: Bucerotiformes    Family: Upupidae    -    -      74    Common Hoopoe    Upupa epops    OH, UG    LM    LC      Order: Pelecaniformes    Family: Ardeidae    -    -    -      75    Cattle Egret    Bubulcus ibis    AH, UG    LC    -      76    Little Egret    Egretta garzetta    AH, UG    LM    LC      76    Little Egret    Ardeola gravii    AH    R    LC      77    Indian Pond-heron    Ardeola gravii    AH    R    LC      78    Great White Egret    Ardeola gravii    AH    M    LC      78    Black headed Ibis    Pseudibis papillosa    AH    M    LC      80    Black headed Ibis    Threskiornis    AH    M    NT      81    Rose-ringed Parakeet	70	Egyptian Vulture	Neophron percnopterus	RA, AH	R	EN	
72    Black-winged Kite    Elanus caeruleus    MV    LM    LC      Order: Bucerotiformes    Family: Bucerotidae	71	Shikra	Accipiter badius	MV, UG	LM	LC	
Order: Bucerotiformes      Family: Bucerotiformes    Ocyceros birostris    MV, UG    R    LC      74    Common Hoopoe    Upupa epops    OH, UG    LM    LC      Order: Bucerotiformes      Family: Upupidae    7      74    Common Hoopoe    Upupa epops    OH, UG    LM    LC      Order: Pelecaniformes      Family: Ardeidae    7    Cattle Egret    Bubulcus ibis    AH, UG    R    LC      76    Little Egret    Egretta garzetta    AH, UG    LM    LC      78    Great White Egret    Ardeola gravii    AH    R    LC      Order: Pelecaniformes      Family: Threskiornithidae    7    Readeol Ibis    Pseudibis papillosa    AH    M    LC      80    Black headed Ibis    Threskiornits    AH    M    NT      melanocephalus    MV, UG    R    LC    C      0rder: Psittacidae    Psittacula krameri    MV, UG    R    LC      81    Rose-ringed Parakeet    Psittacula cyanocephala    MV, UG    LC	72	Black-winged Kite	Elanus caeruleus	MV	LM	LC	
Family: Buccrotiformes      73    Indian Grey Hombill    Ocyceros birostris    MV, UG    R    LC      74    Order: Buccrotiformes    Family: Upupidae    74    Common Hoopoe    Upupa epops    OH, UG    LM    LC      74    Common Hoopoe    Upupa epops    OH, UG    LM    LC      0rder: Pelecanformes    Family: Ardeidae    AH, UG    LM    LC      75    Cattle Egret    Bubulcus ibis    AH, UG    LM    LC      76    Little Egret    Egretta garzetta    AH, UG    LM    LC      77    Indian Pond-heron    Ardeola grayii    AH    LM    LC      78    Great White Egret    Ardea alba    AH    R    LC      79    Red-naped Ibis    Pseudibis papillosa    AH    M    LC      80    Black headed Ibis    Threskiornis    AH    M    LC      81    Rose-ringed Parakeet    Psittacula krameri    MV, UG    LM    LC      9    Order: Strigformes    Family: Strigidae    Sotted Owlet    Ahene brama    MV    R    LC <td></td> <td><b>Order: Bucerotiformes</b></td> <td></td> <td></td> <td></td> <td></td>		<b>Order: Bucerotiformes</b>					
73    Indian Grey Hornbill    Ocyceros birostris    MV, UG    R    LC      Order: Bucerotiformes      Family: Upupidae		Family: Bucerotidae					
Order: Bucerotiformes      74    Common Hoopoe    Upupa epops    OH, UG    LM    LC      Order: Pelecaniformes      Family: Ardeidae      75    Cattle Egret    Bubulcus ibis    AH, UG    R    LC      76    Little Egret    Egretta garzetta    AH, UG    LM    LC      77    Indian Pond-heron    Ardeola grayii    AH    LM    LC      78    Great White Egret    Ardea alba    AH    R    LC      Order: Pelecaniformes      Family: Threskiornithidae    79    Red-naped Ibis    Pseudibis papillosa    AH    M    LC      80    Black headed Ibis    Threskiornis    AH    M    NT      melanocephalus      Order: Psittaciformes      Family: Psittaciformes      Family: Strigidae      81    Rose-ringed Parakeet    Psittacula krameri    MV, UG    LM    LC      Order: Strigiformes      Family: Strigidae    Spotted Owlet    Athene brama    MV    R    LC <t< td=""><td>73</td><td>Indian Grey Hornbill</td><td>Ocyceros birostris</td><td>MV, UG</td><td>R</td><td>LC</td></t<>	73	Indian Grey Hornbill	Ocyceros birostris	MV, UG	R	LC	
Family: Upupidae      74    Common Hoopoe    Upupa epops    OH, UG    LM    LC      74    Common Hoopoe    Upupa epops    OH, UG    LM    LC      75    Cattle Egret    Bubulcus ibis    AH, UG    R    LC      75    Cattle Egret    Egretta garzetta    AH, UG    LM    LC      76    Little Egret    Ardeola grayii    AH    LM    LC      78    Great White Egret    Ardeola grayii    AH    R    LC      78    Great White Egret    Ardeola grayii    AH    R    LC      79    Red-naped Ibis    Pseudibis papillosa    AH    M    NT      79    Red-naped Ibis    Threskiornis    AH    M    NT      79    Red-naped Ibis    Threskiornis    AH    M    NT      79    Red-naped Ibis    Threskiornis    AH    M    LC      80    Black headed Ibis    Threskiornis    AH    M    LC      81    Rose-ringed Parakeet    Psittacula krameri    MV, UG    LM    LC   <		Order: Bucerotiformes					
74  Common Hoopoe  Upupa epops  OH, UG  LM  LC    Order: Pelecaniformes    75  Cattle Egret  Bubulcus ibis  AH, UG  R  LC    76  Little Egret  Egretta garzetta  AH, UG  LM  LC    77  Indian Pond-heron  Ardeola grayii  AH  LM  LC    78  Great White Egret  Ardeola grayii  AH  R  LC    Order: Pelecaniformes    Family: Threskiornithidae    79  Red-naped Ibis  Pseudibis papillosa  AH  M  LC    80  Black headed Ibis  Threskiornis  AH  M  NT    melanocephalus    Order: Psittaciformes    Family: Stittacidae    81  Rose-ringed Parakeet  Psittacula krameri  MV, UG  R  LC    Order: Strigiformes    Family: Strigidae    83  Spotted Owlet  Athene brama  MV  R  LC    Order: Anseriformes    Family: Strigidae    84  Lesser Whistling-duck  Dendrocygna javanica  AH  R  LC     O		Family: Upupidae					
Order: Pelecaniformes      Family: Ardeidae      75    Cattle Egret    Bubulcus ibis    AH, UG    R    LC      76    Little Egret    Egretta garzetta    AH, UG    LM    LC      77    Indian Pond-heron    Ardeola grayii    AH    LM    LC      78    Great White Egret    Ardeoa alba    AH    R    LC      78    Great White Egret    Ardeoa alba    AH    R    LC      Order: Pelecaniformes      Family: Threskiornithidae      79    Red-naped Ibis    Pseudibis papillosa    AH    M    LC      80    Black headed Ibis    Threskiornis    AH    M    NT      80    Black headed Ibis    Threskiornis    AH    M    NT      melanocephalus      Order: Psittaciformes      Family: Psittacida      Red-naped Ibis    Psittacula krameri    MV, UG    R    LC      Order: Strigiformes      Family: Strigidae      81    Rose-ringed Parakeet    Psittacul	74	Common Hoopoe	Upupa epops	OH, UG	LM	LC	
Family: Ardeidae      75    Cattle Egret    Bubulcus ibis    AH, UG    R    LC      76    Little Egret    Egretta garzetta    AH, UG    LM    LC      77    Indian Pond-heron    Ardeola grayii    AH    LM    LC      78    Great White Egret    Ardea alba    AH    R    LC      78    Great White Egret    Ardea alba    AH    R    LC      Order: Pelecaniformes      Family: Threskionithidae      79    Red-naped Ibis    Pseudibis papillosa    AH    M    NT      med-naped Ibis    Pseudibis papillosa    AH    M    NT      med-naped Ibis    Threskiornis    AH    M    NT      med-naped Ibis    Threskiornis    AH    M    NT      melanocephalus      Order: Psittaciformes      Family: Psittacidae      81    Rose-ringed Parakeet    Psittacula krameri    MV, UG    LC      Order: Strigiformes       Spotted Owlet    Athene brama <td></td> <td>Order: Pelecaniformes</td> <td></td> <td></td> <td></td> <td></td>		Order: Pelecaniformes					
75    Cattle Egret    Bubulcus ibis    AH, UG    R    LC      76    Little Egret    Egretta garzetta    AH, UG    LM    LC      77    Indian Pond-heron    Ardeola grayii    AH    LM    LC      78    Great White Egret    Ardeola grayii    AH    R    LC      78    Great White Egret    Ardeola grayii    AH    R    LC      79    Red-naped Ibis    Pseudibis papillosa    AH    M    LC      80    Black headed Ibis    Threskiornis    AH    M    NT      melanocephalus    Order: Psittaciformes    Family: Psittacidae    S    S    S      81    Rose-ringed Parakeet    Psittacula krameri    MV, UG    R    LC      Order: Strigiformes    Family: Strigidae    S    S    S    S      83    Spotted Owlet    Athene brama    MV    R    LC      Order: Anseriformes    Family: Anatidae    S    Cotton Pygmy-goose    Nettapus    AH    R    LC      84    Lesser Whistling-duck    Dendrocygna javanica		Family: Ardeidae					
76    Little Egret    Egretta garzetta    AH, UG    LM    LC      77    Indian Pond-heron    Ardeola grayii    AH    LM    LC      78    Great White Egret    Ardea alba    AH    R    LC      Order: Pelecaniformes      Family: Threskiornithidae      79    Red-naped Ibis    Pseudibis papillosa    AH    M    LC      80    Black headed Ibis    Threskiornis    AH    M    NT      melanocephalus      Order: Psittaciformes      Family: Psittacidae      81    Rose-ringed Parakeet    Psittacula krameri    MV, UG    R    LC      Order: Strigiformes      Family: Strigidae      83    Spotted Owlet    Athene brama    MV    R    LC      Order: Anseriformes      Family: Anatidae      84    Lesser Whistling-duck    Dendrocygna javanica    AH    R    LC      Order: Anseriformes      Family: Anatidae      84    Lesser Whistling-duck <td< td=""><td>75</td><td>Cattle Egret</td><td>Bubulcus ibis</td><td>AH, UG</td><td>R</td><td>LC</td></td<>	75	Cattle Egret	Bubulcus ibis	AH, UG	R	LC	
77    Indian Pond-heron    Ardeola grayii    AH    LM    LC      78    Great White Egret    Ardea alba    AH    R    LC      Order: Pelecaniformes      Family: Threskiornithidae      79    Red-naped Ibis    Pseudibis papillosa    AH    M    LC      80    Black headed Ibis    Threskiornis    AH    M    NT      melanocephalus      Order: Psittaciformes      Family: Psittaciformes      Family: Psittaciformes      Family: Psittaciformes      Family: Strigidae      81    Rose-ringed Parakeet    Psittacula cyanocephala    MV, UG    LM    LC      Order: Strigiformes      Family: Strigidae      83    Spotted Owlet    Athene brama    MV    R    LC      Order: Anseriformes      Family: Anatidae      84    Lesser Whistling-duck    Dendrocygna javanica    AH    R    LC      Coromandelianus      Spatula querquedula    AH	76	Little Egret	Egretta garzetta	AH, UG	LM	LC	
78    Great White Egret    Ardea alba    AH    R    LC      Order: Pelecaniformes    Family: Threskiornithidae	77	Indian Pond-heron	Ardeola grayii	AH	LM	LC	
Order: Pelecaniformes      Family: Threskiornithidae      79    Red-naped Ibis    Pseudibis papillosa    AH    M    LC      80    Black headed Ibis    Threskiornis    AH    M    NT      80    Black headed Ibis    Threskiornis    AH    M    NT      melanocephalus      Order: Psittaciformes      Family: Psittacidae      81    Rose-ringed Parakeet    Psittacula krameri    MV, UG    R    LC      82    Plum-headed Parakeet    Psittacula cyanocephala    MV, UG    LM    LC      Order: Strigiformes      Family: Strigidae      83    Spotted Owlet    Athene brama    MV    R    LC      Order: Anseriformes      Family: Strigidae      84    Lesser Whistling-duck    Dendrocygna javanica    AH    R    LC      Corton Pygmy-goose    Nettapus    AH    R    LC      Corton Pygmy-goose    Nettapus    AH    M    LC      86    Garganey	78	Great White Egret	Ardea alba	AH	R	LC	
Family: Threskiornithidae      79    Red-naped Ibis    Pseudibis papillosa    AH    M    LC      80    Black headed Ibis    Threskiornis    AH    M    NT      80    Black headed Ibis    Threskiornis    AH    M    NT      melanocephalus      Order: Psittaciformes      Family: Psittacidae    MV, UG    R    LC      81    Rose-ringed Parakeet    Psittacula krameri    MV, UG    LM    LC      Order: Strigiformes      Family: Strigidae      83    Spotted Owlet    Athene brama    MV    R    LC      Order: Anseriformes      Family: Strigidae      84    Lesser Whistling-duck    Dendrocygna javanica    AH    R    LC      Corton Pygmy-goose    Nettapus    AH    R    LC      Corton Pygmy-goose    Nettapus    AH    M    LC      86    Garganey    Spatula querquedula    AH    M    LC      87    African Comb Duck    Sarkidiornis melanotos		Order: Pelecaniformes					
79    Red-naped Ibis    Pseudibis papillosa    AH    M    LC      80    Black headed Ibis    Threskiornis    AH    M    NT      melanocephalus    melanocephalus    NT    melanocephalus    NT      Order: Psittaciformes      Family: Psittacidae    Psittacula krameri    MV, UG    R    LC      82    Plum-headed Parakeet    Psittacula cyanocephala    MV, UG    LM    LC      Order: Strigiformes      Family: Strigidae    Strigidae    V    R    LC      83    Spotted Owlet    Athene brama    MV    R    LC      Order: Anseriformes      Family: Anatidae    Strigidae    V    R    LC      84    Lesser Whistling-duck    Dendrocygna javanica    AH    R    LC      Corton Pygmy-goose    Nettapus    AH    R    LC      86    Garganey    Spatula querquedula    AH    M    LC      87    African Comb Duck    Sarkidiornis melanotos    AH    R    LC		Family: Threskiornithidae					
80    Black headed Ibis    Threskiornis    AH    M    NT      melanocephalus      Order: Psittaciformes      Family: Psittacidae    MV, UG    R    LC      81    Rose-ringed Parakeet    Psittacula krameri    MV, UG    R    LC      82    Plum-headed Parakeet    Psittacula cyanocephala    MV, UG    LM    LC      Order: Strigiformes      Family: Strigidae         LC      83    Spotted Owlet    Athene brama    MV    R    LC            LC              LC <t< td=""><td>79</td><td>Red-naped Ibis</td><td>Pseudibis papillosa</td><td>AH</td><td>М</td><td>LC</td></t<>	79	Red-naped Ibis	Pseudibis papillosa	AH	М	LC	
melanocephalus      Order: Psittaciformes      Family: Psittacidae    NV, UG    R    LC      81    Rose-ringed Parakeet    Psittacula krameri    MV, UG    R    LC      82    Plum-headed Parakeet    Psittacula cyanocephala    MV, UG    LM    LC      Order: Strigiformes      Family: Strigidae      83    Spotted Owlet    Athene brama    MV    R    LC      Order: Anseriformes      Family: Anatidae      84    Lesser Whistling-duck    Dendrocygna javanica    AH    R    LC      Corder: Anseriformes      Family: Anatidae      84    Lesser Whistling-duck    Dendrocygna javanica    AH    R    LC      Cordor Pygmy-goose    Nettapus    AH    R    LC      Coromandelianus      86    Garganey    Spatula querquedula    AH    M    LC      87    African Comb Duck    Sarkidiornis melanotos    AH    M    LC      Order: Suliformes <td c<="" td=""><td>80</td><td>Black headed Ibis</td><td>Threskiornis</td><td>AH</td><td>М</td><td>NT</td></td>	<td>80</td> <td>Black headed Ibis</td> <td>Threskiornis</td> <td>AH</td> <td>М</td> <td>NT</td>	80	Black headed Ibis	Threskiornis	AH	М	NT
Order: Psittaciformes      Family: Psittacidae      81    Rose-ringed Parakeet    Psittacula krameri    MV, UG    R    LC      82    Plum-headed Parakeet    Psittacula cyanocephala    MV, UG    LM    LC      Order: Strigiformes      Family: Strigidae      83    Spotted Owlet    Athene brama    MV    R    LC      Order: Anseriformes      Family: Anatidae      84    Lesser Whistling-duck    Dendrocygna javanica    AH    R    LC      6 Garganey      Spatula querquedula    AH    M    LC      86    Garganey    Spatula querquedula    AH    M    LC      87    African Comb Duck    Sarkidiornis melanotos    AH    M    LC      88    Ruddy Shelduck    Tadorna ferruginea    AH    R    LC      Order: Suliformes      Family: Phalacrocoracidae      89    Little Cormorant    Microcarbo niger    AH    LM    LC       Order: Ciconiiformes <td< td=""><td></td><td></td><td>melanocephalus</td><td></td><td></td><td></td></td<>			melanocephalus				
Family: Psittacidae      81    Rose-ringed Parakeet    Psittacula krameri    MV, UG    R    LC      82    Plum-headed Parakeet    Psittacula cyanocephala    MV, UG    LM    LC      Order: Strigiformes      Family: Strigidae      83    Spotted Owlet    Athene brama    MV    R    LC      Order: Anseriformes      Family: Anatidae      84    Lesser Whistling-duck    Dendrocygna javanica    AH    R    LC      Souted Owlet    Dendrocygna javanica    AH    R    LC      84    Lesser Whistling-duck    Dendrocygna javanica    AH    R    LC      Souted Owlet    Athene brama    MV    R    LC      Order: Anseriformes      Family: Anatidae      84    Lesser Whistling-duck    Dendrocygna javanica    AH    R    LC      85    Cotton Pygmy-goose    Nettapus    AH    R    LC      86    Garganey    Spatula querquedula    AH    M    LC      88 <td></td> <td>Order: Psittaciformes</td> <td></td> <td></td> <td></td> <td></td>		Order: Psittaciformes					
81    Rose-ringed Parakeet    Psittacula krameri    MV, UG    R    LC      82    Plum-headed Parakeet    Psittacula cyanocephala    MV, UG    LM    LC      Order: Strigiformes      Family: Strigidae      83    Spotted Owlet    Athene brama    MV    R    LC      Order: Anseriformes      Family: Anatidae      84    Lesser Whistling-duck    Dendrocygna javanica    AH    R    LC      85    Cotton Pygmy-goose    Nettapus    AH    R    LC      6      86    Garganey    Spatula querquedula    AH    M    LC      87    African Comb Duck    Sarkidiornis melanotos    AH    M    LC      88    Ruddy Shelduck    Tadorna ferruginea    AH    R    LC      Order: Suliformes      Family: Phalacrocoracidae      89    Little Cormorant    Microcarbo niger    AH    LM    LC      Order: Ciconiifarmes      Family: Ciconiidae      90    Asian Openb		Family: Psittacidae			_		
82    Plum-headed Parakeet    Pstitacula cyanocephala    MV, UG    LM    LC      Order: Strigiformes    Family: Strigidae    MV    R    LC      83    Spotted Owlet    Athene brama    MV    R    LC      Order: Anseriformes    Family: Anatidae    MV    R    LC      84    Lesser Whistling-duck    Dendrocygna javanica    AH    R    LC      85    Cotton Pygmy-goose    Nettapus    AH    R    LC      86    Garganey    Spatula querquedula    AH    M    LC      87    African Comb Duck    Sarkidiornis melanotos    AH    M    LC      88    Ruddy Shelduck    Tadorna ferruginea    AH    R    LC      90    Asian Openbill    Anastomus oscitans    AH    LC      90    Asian Openbill    Anastomus oscitans    AH    M    LC	81	Rose-ringed Parakeet	Psittacula krameri	MV, UG	R	LC	
Order: Strigiformes      Family: Strigidae      83    Spotted Owlet    Athene brama    MV    R    LC      Order: Anseriformes      Family: Anatidae    Emily: Anatidae      84    Lesser Whistling-duck    Dendrocygna javanica    AH    R    LC      85    Cotton Pygmy-goose    Nettapus    AH    R    LC      86    Garganey    Spatula querquedula    AH    M    LC      87    African Comb Duck    Sarkidiornis melanotos    AH    M    LC      88    Ruddy Shelduck    Tadorna ferruginea    AH    R    LC      Order: Suliformes      Family:Phalacrocoracidae      89    Little Cormorant    Microcarbo niger    AH    LM    LC      Order: Ciconiiformes      Family: Ciconiidae      90    Asian Openbill    Anastomus oscitans    AH    M    LC      Micro due dependention      90      Asian Openbill	82	Plum-headed Parakeet	Psittacula cyanocephala	MV, UG	LM	LC	
Family: Strigidae      83    Spotted Owlet    Athene brama    MV    R    LC      Order: Anseriformes      Family: Anatidae    84    Lesser Whistling-duck    Dendrocygna javanica    AH    R    LC      84    Lesser Whistling-duck    Dendrocygna javanica    AH    R    LC      85    Cotton Pygmy-goose    Nettapus    AH    R    LC      86    Garganey    Spatula querquedula    AH    M    LC      87    African Comb Duck    Sarkidiornis melanotos    AH    M    LC      88    Ruddy Shelduck    Tadorna ferruginea    AH    R    LC      Order: Suliformes      Family:Phalacrocoracidae      89    Little Cormorant    Microcarbo niger    AH    LM    LC      Order: Ciconiiformes      Family: Ciconiidae      90    Asian Openbill    Anastomus oscitans    AH    M    LC      90    Asian Openbill    Anastomus oscitans    AH    M    LC		Order: Strigiformes					
83    Spotted Owlet    Athene brama    MV    R    LC      Order: Anseriformes    Family: Anatidae    Number of the state		Family: Strigidae			~		
Order: Anseriformes      Family: Anatidae      84    Lesser Whistling-duck    Dendrocygna javanica    AH    R    LC      85    Cotton Pygmy-goose    Nettapus    AH    R    LC      85    Cotton Pygmy-goose    Nettapus    AH    R    LC      86    Garganey    Spatula querquedula    AH    M    LC      87    African Comb Duck    Sarkidiornis melanotos    AH    M    LC      88    Ruddy Shelduck    Tadorna ferruginea    AH    R    LC      Order: Suliformes      Family:Phalacrocoracidae      89    Little Cormorant    Microcarbo niger    AH    LM    LC      Order: Ciconiiformes      Family: Ciconiidae      90    Asian Openbill    Anastomus oscitans    AH    M    LC      90    Asian Openbill    Anastomus oscitans    AH    M    LC	83	Spotted Owlet	Athene brama	MV	R	LC	
Family: Anatidae      84    Lesser Whistling-duck    Dendrocygna javanica    AH    R    LC      85    Cotton Pygmy-goose    Nettapus    AH    R    LC      85    Cotton Pygmy-goose    Nettapus    AH    R    LC      86    Garganey    Spatula querquedula    AH    M    LC      87    African Comb Duck    Sarkidiornis melanotos    AH    M    LC      88    Ruddy Shelduck    Tadorna ferruginea    AH    R    LC      Order: Suliformes      Family:Phalacrocoracidae      89    Little Cormorant    Microcarbo niger    AH    LM    LC      Order: Ciconiiformes      Family: Ciconiidae      90    Asian Openbill    Anastomus oscitans    AH    M    LC      Hubitat, AH, Amatia Hubitat, MV, Mixed vagatation, UG, Under garden, OH, Onen hebitat, PE, Daddy fall, UU    Paddy fall, UU		Order: Anseriformes					
84    Lesser Whistling-duck    Dendrocygna javanica    AH    R    LC      85    Cotton Pygmy-goose    Nettapus    AH    R    LC      85    Cotton Pygmy-goose    Nettapus    AH    R    LC      86    Garganey    Spatula querquedula    AH    M    LC      87    African Comb Duck    Sarkidiornis melanotos    AH    M    LC      88    Ruddy Shelduck    Tadorna ferruginea    AH    R    LC      Order: Suliformes      Family:Phalacrocoracidae      89    Little Cormorant    Microcarbo niger    AH    LM    LC      Order: Ciconiiformes      Family: Ciconiidae      90    Asian Openbill    Anastomus oscitans    AH    M    LC      Hobitat, AH, Amatia Hobitat, MV, Mixed vagatation, UG, Under, carden, OH, Onen hobitat, PE, Daddy fold, UH    Said of the faild, UH	- 0.4	Family: Anatidae			D		
85    Cotton Pygmy-goose    Nettapus    AH    R    LC      86    Garganey    Spatula querquedula    AH    M    LC      87    African Comb Duck    Sarkidiornis melanotos    AH    M    LC      87    African Comb Duck    Sarkidiornis melanotos    AH    M    LC      88    Ruddy Shelduck    Tadorna ferruginea    AH    R    LC      Order: Suliformes      Family:Phalacrocoracidae      89    Little Cormorant    Microcarbo niger    AH    LM    LC      Order: Ciconiiformes      Family: Ciconiidae      90    Asian Openbill    Anastomus oscitans    AH    M    LC      Hobitat: AH    Amatic Hobitat: MV    Mixed vagatation    UC    Date hobitat: PE    Paddy field    Mit	84	Lesser Whistling-duck	Dendrocygna javanica	AH	R		
86    Garganey    Spatula querquedula    AH    M    LC      87    African Comb Duck    Sarkidiornis melanotos    AH    M    LC      88    Ruddy Shelduck    Tadorna ferruginea    AH    R    LC      Order: Suliformes      Family:Phalacrocoracidae      89    Little Cormorant    Microcarbo niger    AH    LM    LC      Order: Ciconiiformes      Family: Ciconiidae      90    Asian Openbill    Anastomus oscitans    AH    M    LC      Habitat, AH    Amatic Habitat, MV, Mixed vacatation, UG, Unban garden, OH    Onen habitat, PE    Paddy field, UH	85	Cotton Pygmy-goose	Nettapus	AH	R	LC	
86    Garganey    Spatula querquedula    AH    M    LC      87    African Comb Duck    Sarkidiornis melanotos    AH    M    LC      88    Ruddy Shelduck    Tadorna ferruginea    AH    R    LC      Order: Suliformes      Family:Phalacrocoracidae      89    Little Cormorant    Microcarbo niger    AH    LM    LC      Order: Ciconiiformes      Family: Ciconiidae      90    Asian Openbill    Anastomus oscitans    AH    M    LC      Hobitat AH, Aquatia Habitat MV, Mixed vagatation, UG, Unberg garden, OH, Open hebitat, PE, Dadity field, UH	0.6	0	coromandelianus	A T T	м	LC.	
87    African Comb Duck    Sarkiatornis metanotos    AH    M    LC      88    Ruddy Shelduck    Tadorna ferruginea    AH    R    LC      Order: Suliformes      Family:Phalacrocoracidae      89    Little Cormorant    Microcarbo niger    AH    LM    LC      Order: Ciconiiformes      Family: Ciconiidae      90    Asian Openbill    Anastomus oscitans    AH    M    LC      Habitat MV, Mixed vagatation, UG, Unkern garden, OH, Onen hebitat, PE, Daddy faild, UU	86	Garganey	Spatula querquedula	AH	M		
oo  Ruddy Snelduck  Tadorna jerruginea  AH  K  LC    Order: Suliformes  Family:Phalacrocoracidae    89  Little Cormorant  Microcarbo niger  AH  LM  LC    Order: Ciconiiformes  Family: Ciconiidae    90  Asian Openbill  Anastomus oscitans  AH  M  LC    Habitat: AH  Aquatic Habitat: MV  Mixed vacatation  US  Due to behiat  PE  Paddy field  UH	8/ 00	AITICAN COMD DUCK	Sarkiaiornis melanotos		M		
Order: Suliformes      Family:Phalacrocoracidae      89    Little Cormorant    Microcarbo niger    AH    LM    LC      Order: Ciconiiformes      Family: Ciconiidae      90    Asian Openbill    Anastomus oscitans    AH    M    LC      Habitat: AH    Aquatic Habitat: MV    Mixed vagatation    UC    Under the habitat    DE    Ded the field    UU	88	Kuday Shelauck	1 adorna ferruginea	АН	К	LU	
Family: Phalacrocoracidae      89    Little Cormorant    Microcarbo niger    AH    LM    LC      Order: Ciconiiformes      Family: Ciconiidae      90    Asian Openbill    Anastomus oscitans    AH    M    LC      Habitat: AH    Aquatic Habitat: MV    Mixed vacatation    UC    Under the bitat: PE    Death field    UH		Urder: Suliformes					
89  Little Cormorant  Microcarbo niger  AH  LM  LC    Order: Ciconiiformes    Family: Ciconiidae    90  Asian Openbill  Anastomus oscitans  AH  M  LC    Habitat: AH  Aquatic Habitat  Microcarbo niger  AH  M  LC	- 20	Family:Phalacrocoracidae	Minner	4.1.1	1.14		
Order: Ciconiliormes      Family: Ciconiidae      90    Asian Openbill    Anastomus oscitans    AH    M    LC      Habitat: AH    Aquatic Habitat    My    Mixed vacatation    UC    Under agrice    Deer behiat    PE    Padu field    UH	89	Liule Cormorant	microcarbo niger	АН	LM	LL	
Family: Ciconildae    90  Asian Openbill  Anastomus oscitans  AH  M  LC    Habitat: AH  Aquatic Habitat: MV  Mixed vapatation  UC  Under agridan  OH  Open habitat: PE  Dath field  UU		Urder: Ciconitormes					
YU  Astan Openonin  Anastomus oscitans  AH  M  LC    Habitat: AH  Aquatic Habitat  MV  Mixed vagatation  UC  Under agridan  OH  Open habitat  DE  Daddy fald  UU		ramily: Ciconiidae	Augatomug	A 11	М		
	90 Habita	Asian Openonii t: AH Aquatic Habitat MV Mina	Anasiomus oscitans	AII	IVI bitat DE D	addy field UU	

Him Aqualle Habitat, MV Mixed vegetation, 66 675an garden, 611 6pen habitat, 77 7 rada Human habitations

Residential Status: R - Resident, LM - Local migratory, SM - Semi migratory, M - Migratory, WV- Winter visitor IUCN Status: LC - Least concern, NT - Near Threatened, VU – Vulnerable, EN – Endangered



Fig. 2. Family wise distribution of birds in Sheopur city

# 4. DISCUSSION

Birds occupy almost all habitat types and diversity of birds often serves as a good indication of the overall diversity of a given area [12]. Birds are also known to be responsive to any kind of changes to their ambient conditions hence can be used as bioindicator [13,14].

The present study which recorded 90 bird species belonging to 16 Order and 43 Families reflects a moderately healthy overall biodiversity for the present study locations of the Sheopur city area.

Mentioned that the study locations under present investigation are facing anthropogenic disturbances in the forms of urbanization, tourist pressure, livelihood dependence (mainly in the form of cattle grazing and fuelwood collection) and pollution [15,16,17]. Similarly, urbanization and other problems may see this study area.

It must be noted that the present study was done on a field survey basis. Thus the possibilities of recording the most common species were much higher which automatically evoked the chance of missing rare bird species. The bird diversity; activity and abundance were more in site VI Banjara dam (Seep River) with 68 species, which declined in the site I Forest research and development sub-center area with 56 species, site II Fort area with 52 species, site III Govt. Nursery Park with 48 species, site IV Eidgah park with 45 species and site V Railway station area with 34 bird species. The impact of anthropogenic alteration of the

habitats in and around the all study locations of Sheopur city also increased in recent time.

# **5. CONCLUSION**

In the Sheopur city, most people are well aware of bird diversity. Indian Peafowl is highly protected there due to the religious belief of people. Through the Sheopur city, there passes a river called the Seep River on which a dam is constructed. This dam acts as a feeding and breeding ground for aquatic as well as some terrestrial birds. There is a need for proper management of green parks and insert the artificial wooden nest in green areas for the birds.

# ACKNOWLEDGEMENT

Author SNR would like to thank UGC SAP BSR Fellowship for financial assistance to carry out this work.

#### **COMPETING INTERESTS**

Authors have declared that no competing interests exist.

## REFERENCES

- 1. Collins JP, Kinzig A, Grimm NB, Fagan WF, Hope D, Wu JG, Borer ET. A new urban ecology. Am. Sci. 2002;88:416-425.
- 2. Marzluff JM. Worldwide urbanization and its effects on birds. In Marzluff JM, et al. (ed.) Avian ecology and conservation in an urbanizing world. Kluwer Academic Publ., Boston, MA. 2001;19-38.
- Chace JF, Walsh JJ. Urban effects on native avifauna: A review. Landscape Urban Plan. 2006;74:46-69.
- Kumar A, Walker S, Molur S. Prioritisation of endangered species. Setting Biodiversity Conservation Priorities for India. New Delhi, WWF-India. 2000;2:341-425.
- 5. Savard JPL, Clergeau P, Mennechez G. Biodiversity concepts and urban ecosystems. Landsc. Urban Plann. 2000;48:131-142.

- Harney NV, Bhute KB. Diversity of avifauna in and around Chalbardi (Rai) lake near Bhadrawati, district Chandrapur (M.S.), India. Journal of Global Biosciences. 2014;3(2):399-405.
- Nilon CH, Long CN, Zipperer WC. Effects of wildland development on forest bird communities. Landsc. Urban Plann. 1994;32:81-92.
- Friesen LE, Eagles PFJ, Mackay RJ. Effects of residential development on forest-dwelling neotropical migrant songbirds. Conserv. Biol. 1995;9:1408-1414.
- 9. Ali S. The book of Indian birds. Bombay Natural History Society, Oxford University Press. 2002;326.
- Grewal B, Harvey V, Pfister O. A photographic guide of the Birds of India. Periplus Edition (H K) Ltd. Singapore; 2002.
- 11. Khan JA, Khan DN, Ahmed A. Preliminary investigations of bird community structure at Aligarh, India. Tropical Ecology. 2008;34:217-225.
- 12. Furness RW, Greenwood JJD. Birds as a monitor of environmental change. Chapman and Hall, London; 1993.
- Schwartz CW, Schwartz ER. An ecological reconnaissance of the pheasants of Hawaii. Auk. 1951;68: 281–314.
- Padoa–Schioppa E, Baietto M, Massa R, Bottoni L. Bird communities as bioindicators: The focal species concept in agricultural landscapes. Ecological Indicators. 2006;6(1): 83–93.
- Islam MZ, Rahmani AR. Important bird area in India: Priority sites for conservation. IBCN, Bombay Natural History Society, BirdLife International, UK. 2004;28:1133.
- Mallick JK. Past and present status of the Indian Tiger in northern West Bengal, India: An overview. Journal of Threatened Taxa. 2010; 2(3):739–952.
- Karmakar M. Ecotourism and its impact on the regional economy – A study of North Bengal (India). Tourismos: An International Multidisciplinary Journal of Tourism. 2011; 6(1):251–270.

© Copyright MB International Media and Publishing House. All rights reserved.