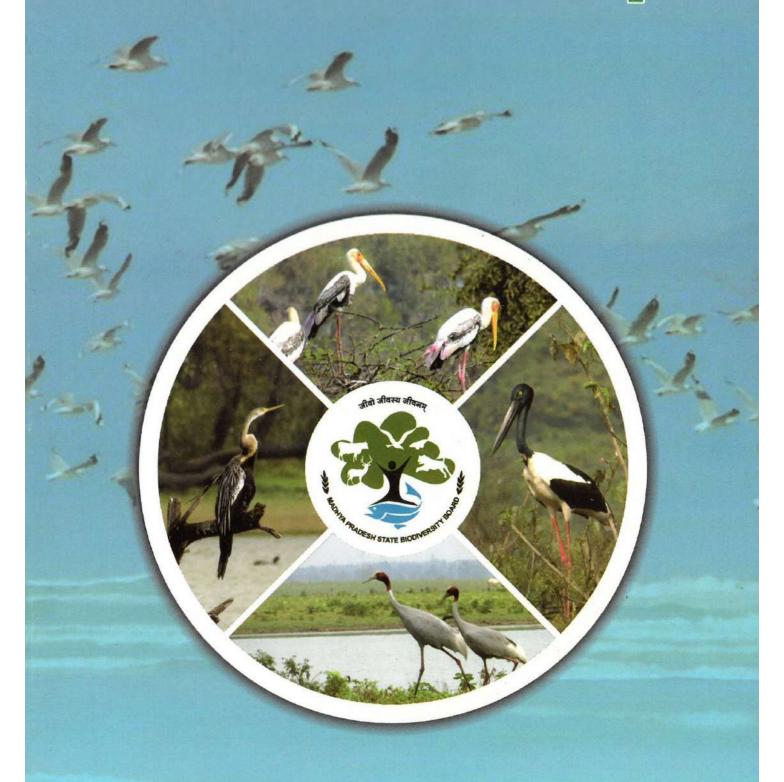
# Birds in Wetlands of Bhopal



Madhya Pradesh State Biodiversity Board (Madhya Pradesh Forest Deptt.)

# Birds in Wetlands of Bhopal



Madhya Pradesh State Biodiversity Board (Madhya Pradesh Forest Deptt.)





Govt. of M. P.
Pragati Bhawan,Bhopal

# MESSAGE

Bhopal, the capital of Madhya Pradesh, apart from its rich historical and cultural legacy is also known for its lakes. Many water bodies of diverse sizes are located in and around the city. These water bodies are home to a large number of species including birds & fishes. More than 100 bird species including many rare and endangered species spend their winter quarter and perform feeding, breeding and nesting in these wetlands.

I congratulate M.P. State Biodiversity Board for taking up a study on wetlands in and around Bhopal City and documenting avifaunal diversity with special emphasis on Rare Endangered and Threatened (RET) birds.

This study would certainly be helpful in preparing an overall strategy and designing conservation plan for birds in Bhopal.

J. Agricollic (Jitendra Agarwal)

# **FOREWORD**

Wetlands constitute an important part of ecosystem which harbour hundreds of species of birds, fish, mammals and insects. The Bhoj wetland and several wetlands near by Bhopal city serve as an important bird area. Therefore a study on birds species found in these wetlands was undertaken with the help of (Bhopal Birds) organization. A book on the findings of the study entitled "Birds in Wetlands of Bhopal" is being published by M.P. State Biodiversity Board which will be helpful in creating awareness regarding the rich avian diversity in these wetlands.

I congratulate Dr. Sangeeta Rajgir and Mohd. Khalique of Bhopal Birds for undertaking this study.

Dr. S.P. Rayal
Member Secretary
M.P. State Biodiversity Board

# PREFACE

Human have known of the link between birds and wetlands for thousands of years. Wetlands are important habitat for birds and they use wetlands for feeding, breeding, nesting and other life-support system.

Bhopal is rich in avian diversity due to existence of many lakes in and around it. About 210 species of birds have been recorded in the city including more than 100 species of wetland birds.

The book is based on one year extensive study on bird species of seven important wetlands of Bhopal as upper lake, Kerwa, Kaliasot, Ghodapachhad, Hathaikheda, Shahpura and Bilkhiria. These wetlands are considerably well known for their avian diversity. Taking this into account, a systematic research has been done in these seven wetlands.

The aim of designing this book is not only documentation of avian diversity of the Bhopal but also create awareness among people about conservation of wetlands and their diversity.

The book contains brief information about these seven wetlands and avian diversity listed in it. Brief information with threats and conservation strategies of vulnerable, near threatened and rare sighting of birds with photographs taken from these wetlands. The list of various threats in different wetlands is included in the book as per information collected during the study. The photographs of about 110 listed bird species in these wetlands with category of resident and migratory species are illustrated in coloured plates. Family wise checklist of bird species with common name and their estimated population in different wetlands is also added in this book.

I am sure that the information of book will be helpful in further studies of wetlands and their conservation action strategies.

Dr. Sangeeta Rajgir Bhopal Birds

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# Introduction

Bhopal is the capital of Madhya Pradesh. The 284.90 square kilometre undulating landscape of Bhopal is well punctuated with water bodies. It has 18 water bodies of diverse sizes, located in and around the city. However people are more familiar with 7 water bodies because of their large size and proximity to the city. These are:-

- (1) Upper Lake (Bhoj Wetland) The Upper Lake came into existence on construction of an earthen dam across the river Kolans at the location of present day Kamla park, by Raja Bhoj in the 11th century. The catchment of the Upper lake is extended in 361 Km² area, while water spread area is 31 Km².
- (2) Shahpura Lake The man made water impoundment was constructed in the southern part of city near Chuna Bhati village in 1974-75 under the Betwa irrigation scheme. This lake was constructed on an small stream, which used to bring the overflow of the oxidation ponds, situated near Mata Mandir. The lake has a catchment area of 8.29Km² and a submergence area of 0.96 Km².
- (3) Hataikheda Reservoir This multipurpose reservoir of Bhopal, situated in BHEL township in the northeast direction The reservoir was constructed in the year 1964 by damming a low line area. It has a maximum length of 4.2 Km² and maximum breath of 2.0 km. The catchment area of the reservoir is 36.90 Km².
- (4) Kerwa Reservoir The Kerwa dam is situated at the outskirt of city near village Mendora . The dam was constructed on the river Kerwa, a tributary of Betwa river in the year 1975. The catchment of the reservoir is about 64.5km² having water spread area of 524 ha.

- (5) Kaliasote Reservoir- The Kaliasote dam located near the water and land management institute (WALMI) Bhopal was constructed as a storage reservoir to conserve excess water of Upper lake discharged through the Bhadbhada spill gates of the lake for irrigation purpose .The name of the Kaliasote derived from the name of the Kalyan Strote, the one of the minister of Raja Bhoj, who had developed spillway of the Upper lake and now known as Kaliasote. The reservoir is having a catchment area of 381.38Km².
- (6) Bilkhiriya Sankal- It is a catchment area of Ajnal dam, about 10 km from the city in eastern side towards Raisen road, this dam is ended with a canopy of two hill having moderate forest area.
- (7) **Ghodapachad Reservoir-** Dam is located just outskirt of city in eastern side. This is also good place for birds.



Satellite Image of 7 wetlands of Bhopal

# **Total No. of Bird Species**

Studies in past revealed more than 80 species of water birds in these water bodies with population of around 20,000 birds at a time. All these water bodies proved as good harbours for birds for their various activities like breeding, nesting, feeding & roosting. But for the last few years, the population of these birds decreased drastically due to development activities, over exploitation of natural resources & other human activities.

For future conservation strategies, it is necessary to create database on the avifauna of the wetlands. A survey for counting the birds in these wetlands was carried out by M.P.State Biodiversity Board through Environment Conservation Society (Bhopal Birds) between Feb. 2015 to Feb 2016.

S. No.	Wetland	No. of Species
1	Upper Lake (Bhoj Wetland)	164
2	Shahpura Lake	50
3	Hataikheda Reservoir	54
4	Kerwa Reservoir	134
5	Kaliasote Reservoir	78
6	Bilkhiriya Sankal	102
7	Ghodapachad Reservoir	57

Detail of species and their no. in each wetland is enclosed as annexure - 1.

# **Vulnerable Species**

Sarus Crane

Scientific Name: Grus antigone

Size: 152 cm

Habitat: Cropland, marsh and

swamps

Nesting: Ground scrape Status: Local migratory

Feeding Habit: Seed, Fruits, Roots, Buds, Lizards, Snakes, Rodents, Fish

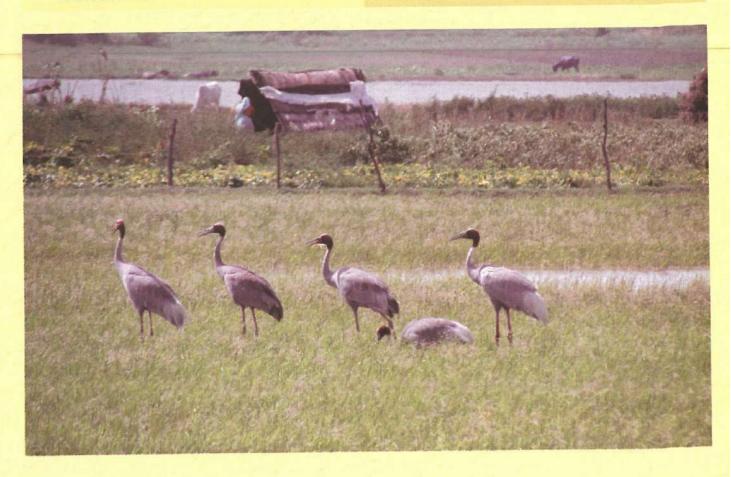


#### **Threat**

 Combination of loss and degradation of wetlands as a result of draining and conversion of agriculture.

 Rampant human usage of wetland mainly for fishery and singhara (Trapa natans = T. bispinosa) cultivation.

- Extensive public awareness especially among the villagers and people engaged in farming concerning sustained pesticide use & habitat management.
- Restoration of existing habitats of Sarus Crane.



## **Near Threatened**

1. Oriental Darter (Snake bird)

Scientific Name: Anhinga

melanogaster Size: 90 cm

Habitat: Fresh water, Ponds, Jheels

Nesting: Platform nest Status: Local Migratory

Feeding Habit: Fish, Aquatic

invertebrates



#### **Threat**

Degradation of wetlands, food scarcity due to fishing, contamination of wetlands due to sewage inflow and use of pesticides

## Conservation efforts required

Restoration of wetlands, habitat management and awareness among the fisherman and relevant authorities

## 2. Painted Stork

Scientific Name: Mycteria

leucocephala Size: 100 cm

Habitat: Marsh and swamp Nesting: Platform nest

Status: Migratory

Feeding Habit: Fish, Aquatic

invertebrates

## **Threat**

- Shrinkage of wetlands
- · Loss of nesting trees
- Heavy disturbance
- Poaching
- Insufficient food in wetlands



- Habitat management
- Check disturbance and poaching
- Awareness among communities and agencies concerning wetland uses

3. Black Necked Stork

Scientific Name: Ephippiorhynchus

asiaticus

Size: 129-150 cm

Habitat: River, Jheels and marshes

Nesting: Platform nest

Status: Migratory Feeding Habit: Fish, Aquatic

invertebrates

#### **Threat**

- Habitat destruction
- · Draining of shallow wetlands
- Over fishing
- Pollution
- Hunting and unsuccessful breeding due to loss of breeding grounds



## Conservation efforts required

- Conservation of habitat
- Check hunting and over fishing in habitat
- Reduce disturbance in their breeding grounds
- Awareness among people

#### 4. Black Headed Ibis

Scientific Name: Threskiornis

melanocephalus Size: 75 cm

Habitat: Marsh and swamps

Nesting: Platform nest

Status: Migratory

Feeding Habit: Fish, Aquatic

invertebrates

#### **Threat**

- Drainage of wetlands and used in agriculture
- Hunting
- Poisoning by pesticide
- Disturbance in breeding grounds

- Conservation of shallow wetlands
- Protection against hunting
- Reduce pesticides in the feeding grounds
- Awareness among communities and relevant authorities



5. Ferruginous Duck

Scientific Name: Aythya nyroca

Size: 42 cm

Habitat: Ponds and lakes Nesting: Floating nest Status: Migratory

Feeding Habit: Aquatic plant, Seeds,

Roots, Fish, Aquatic invertebrates



#### **Threat**

- Loss of habitat
- Degradation of well vegetated wetlands
- Limitation of nutrition and shelter

# Conservation efforts required

- Habitat management
- Conservation in migration route

## 6. Red Headed Vulture

Scientific Name: Sarcogyps calvus

Size: 84 cm

Habitat: Semi deciduous and

deciduous forest

Nesting: Platform nest

Status: Resident

Feeding Habit: carrion



#### **Threat**

- Uses of diclofenac sodium and other NSAIDs
- Loss of nesting and feeding grounds

- Use of meloxicam instead of diclofenac
- Conservation of nesting and feeding grounds
- Awareness among people



# **Migratory - Rare Sighting Bird**

1. Pied Avocet

Scientific Name: Recurvirostra

avosetta Size: 45 cm

Habitat: Jheels, rivers, Large lakes

Nesting: Surface of wetlands Feeding Habit: Fish, Aquatic

invertebrates



## 2. Blue-tailed Bee-eaters

Scientific Name: Merops philippinus

Size: 34cm

Habitat: Better wooded tracts, jheels

and streams

Nesting: Tunnel in a river bank and

sandy mounds

Feeding Habit: Fruit, Flower nectars



## 3. Small Pranticole

Scientific Name: Glareola lactea

Size: 19 cm

Habitat: Sandy and stony margin of

rivers and lakes

Nesting: Shallow scrape in sandy

river bed

Feeding Habit: Insects



## 4. Orange-headed Thrush

Scientific Name: Zoothera citrina citrina

Size: 21 cm

Habitat: Semi deciduous, deciduous

forest

Nesting: Thick pad of mosses

Status: Partial migrant

Feeding Habit: Insects, worms,

berries, fruits



# **Migratory - Abundant Species**

1. Little Grebe

Scientific Name: Tachybaptus

ruficollis Size: 29 cm

Habitat: Ponds and lakes Nesting: Floating nest

Feeding Habit: Fish , Aquatic

invertebrates



2. Glossy Ibis

Scientific Name: Plegadis falcinellus

Size: 60 cm

Habitat: Marsh and swamps

Nesting: Platform nest

Feeding Habit: Fish, Aquatic

invertebrates



3. Black Ibis (new name - Red naped Ibis)
Scientific Name: Pseudibis papillosa

Size: 68 cm

Habitat: Lakes, fields, ponds

Nesting: Platform nest

Feeding Habit: Lizards, Snakes, Small mammals, Rodents, Fish,

Aquatic invertebrates



4. Eurasian Spoonbill

Scientific Name: Platalea leucorodia

Size: 85 cm

Habitat: Marsh and swamps

Nesting: Platform nest

Feeding Habit: Fish, Aquatic

invertebrates



## 5. Greylag Goose

Scientific Name: Anser anser

Size: 90 cm

Habitat: Marsh and fields Nesting: Ground cup nest Feeding Habit: Aquatic plants,

seeds, roots



### 6. Bar Headed Goose

Scientific Name: Anser indicus

Size: 75 cm

Habitat: Marsh, Swamps and fields

Nesting: Ground cup nest

Feeding Habit: Aquatic plants, seeds, roots



## 7. Ruddy Shelduck

Scientific Name: Tadorna ferruginea

Size: 64 cm

Habitat: Marshes and swamps Feeding Habit: Aquatic plants,

seeds, roots



#### 8. Comb duck

Scientific Name: Sarkidiornis melanotos

Size: 76 cm

Habitat: Shallow ponds and lakes

Nesting: Floating nest

Feeding Habit: Aquatic plant, Seeds, Roots,

Invertebrates





9. Cotton Pygmy goose

Scientific Name: Nettapus coromandelianus

Size: 33 cm

Habitat: Marshes, swamp, small ponds

Nesting: Tree holes

Feeding Habit: Fish, Aquatic invertebrates



10. Gadwall

Scientific Name: Anas strepera

Size: 43 cm

Habitat: Shallow ponds and lakes

Nesting: Ground, near water

Feeding Habit: Aquatic plant, Seeds, Roots,

Fish, Aquatic invertebrates



11. Eurasian Wegeon

Scientific Name: Anas penelope

Size: 49 cm

Habitat: Fresh water, jheels, ponds

Nesting: Ground cup

Feeding Habit: Fish, Aquatic invertebrates



12. Spot-billed duck

Scientific Name: Anas poecilorhyncha

Size: 63 cm

Habitat: ponds and lakes Nesting: Floating nest

Feeding Habit: Aquatic plant, Seeds, Roots





#### 13. Northern Shoveler

Scientific Name: Anas clypeata

Size: 51 cm

Habitat: Marsh, swamp, Jheels, ponds

Nesting: Ground cup nest

Feeding Habit: Aquatic plant, Seeds, Roots



#### 14. Northern Pintail

Scientific Name: Anas acuta

Size: 74 cm

Habitat: Marsh, Swamps, Jheels, Reservoirs

Nesting: Ground cup nest

Feeding Habit: Aquatic plant, Seeds, Roots,

Fish, Aquatic invertebrates



# 15. Red creasted pochard

Scientific Name: Netta rufina

Size: 54 cm

Habitat: Fresh water, jheels, ponds, lakes

Nesting: Ground cup nest

Status: Migratory

Feeding Habit: Aquatic plant, Seeds, Roots



## 16. Common Teal

Scientific Name: Anas crecca

Size: 38 cm

Habitat: Marsh and swamps Nesting: Ground cup nest

Feeding Habit: Aquatic plant, Seeds, Roots,

Fish, Aquatic invertebrates





### 17. Common Pochard

Scientific Name: Aythya ferina

Size: 48 cm

Habitat: Fresh water, jheels, ponds

Nesting: Ground cup

Feeding Habit: Fish, Aquatic invertebrates



## 18. Osprey

Scientific Name: Pandion haliaetus

Size: 56 cm

Habitat: Fresh water, lakes, jheels

Nesting: Platform nest

Feeding Habit: Fish, Aquatic invertebrates



## 19. Common Coot

Scientific Name: Fulica atra

Size: 42 cm

Habitat: Fresh water, jheels, ponds

Nesting: Floating nest

Feeding Habit: Fish, Aquatic invertebrates



## 20. Little Ringed Plover

Scientific Name: Charadrius dubius

Size: 17 cm

Habitat: Sand bank, periphery of water

bodies

Nesting: Ground scrape

Feeding Habit: Fish, Aquatic invertebrates,

Insects, Caterpillars



## 21.Bluethroat

Scientific Name: Luscinia svecica

Size: 15 cm

Habitat: Marsh and swamp

Nesting: Ground cup

Feeding Habit: Insects & Caterpillars





#### 22. Black Redstart

Scientific Name: Phoenicurus ochruros

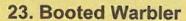
Size: 15 cm

Habitat: Plantation and forest

Nesting: Cup nest

Feeding Habit: Seed, Fruits, Roots, Buds,

Flower nectars



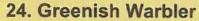
Scientific Name: Hippolais Caligata

Size: 12cm

Habitat: Cropland Nesting: Hanging

Feeding Habit: Invertebrates, Insects,

Caterpillars



Scientific Name: Phylloscopus trochiloides

Size: 11 cm

Habitat: Open deciduous and evergreen

forest

Nesting: Ball nest

Feeding Habit: Invertebrates, Insects,

Caterpillars

## 25. Lesser Whitethroat

Scientific Name: Sylvia Curruca

Size: 13 cm Habitat: Scrub Nesting: Open cup

Feeding Habit: Invertebrates, Insects,

Caterpillars

## 26. Red Breasted Flycatcher

Scientific Name: Ficedula parva

Size: 13 cm

Habitat: Semi deciduous forest

Nesting: Open cup nest

Feeding Habit: Insects, Caterpillars













27. Ultramarine Flycatcher

Scientific Name: Ficedula superciliaris

Size: 10 cm

Habitat: Semi deciduous, deciduous forest

Nesting: Open cup

Feeding Habit: Insects, Caterpillars



28. Tickells Blue flycatcher

Scientific Name: Cyornis tickelliae

Size: 14 cm

Habitat: Semi evergreen forest

Nesting: Open cup

Feeding Habit: Insects, Caterpillars



29. Grey Headed Canary Flycatcher

Scientific Name: Culicicapa Ceylonensis

Size: 9 cm

Habitat: Semi deciduous forest

Nesting: Tree hole

Feeding Habit: Insects, Caterpillars

Insects, Caterpillars



30. Rosy Starling

Scientific Name: Sturnus roseus

Size: 23 cm

Habitat: Cropland Nesting: Undefined

Feeding Habit: Seed, Fruits, Roots, Buds,

Flower nectars





# **Local Migratory**



Black headed bunting



Little Cormorant



Indian Cormorant



Red headed bunting



Grey Heron



Common hawk cuckoo



Indian cuckoo



Eurasian cuckoo



Sirkeer malkoha



Isabelline shrike



Whistling teals



Asian paradise flycatcher



# Resident



Purple Heron



Great Egret



Intermediate Egret



Cattle Egret



Indian Pond Heron



Black Crowned Night Heron



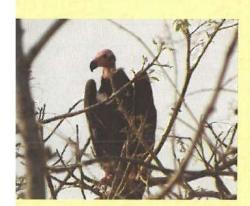
Black-Shouldered Kite



Black Kite



Egyptian Vulture



Red headed Vulture



Crested Serpent Eagle



Marsh Harrier





Shikra



White Eye Buzzard



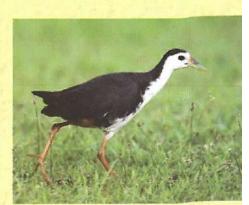
Common Kestrel



Grey Francolin



Indian Peafowl



White Breasted Waterhen



Purple Moorhen



Common Moorhen



Pheasant-tailed Jacana



Grey wagtail



House sparrow



House crow



Bronze-winged jacana



Red wattled lapwing



Black winged stilt



Golden oriole



River tern



Rock pigeon



Yellow footed green pigeon



Laughing dove



Spotted dove



Red collared dove



Rose ring parakeet



Plum headed parakeet





Ashy prinia



Asian koel



Baya weaver



Black drongo



Black hooded oriole



Brahminy myna



Brown fish owl



Brown headed barbet



Chestnut shouldered patronia



Common babbler



Common iora



Common kingfisher





Common myna



Common woodshrike



Coppersmith barbet



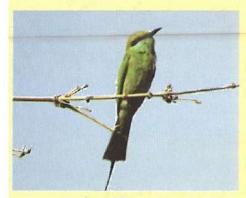
Crested bunting



Great tit



Greater coucal



Green beeeater



Grey hornbill



Indian roller



Indian silverbill



Jungle owlet



Large grey babbler





Purple sunbird



Roufous tailed lark



Rufous treepie



Spotted owlet



Storkbilled kingfisher



Tailor bird



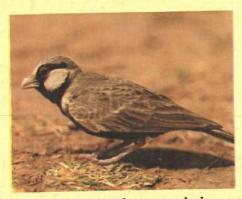
White brested kingfisher



White eye



Alexandrine parakeet



Ashy crowned sparrow lark



Barn Owl



Chestnut tailed starling





Common hoopoe



Mottled wood owl



Pied kingfisher



Red rumped swallow



Wire tailed swallow



Yellow wagtail



Magpie robin



Paddy feild pipit



Pied bushchat



Plain prinia



Purple rumped sunbird



Red vented bubul



Scarlet minivet



Small minivet



White browed wagtail



Whit browed fantail



Yellow eyed babbler



Asian pied starling



Bay backed shrike



Black rumped flame back



Scaly breasted munia

#### **Threats Involved in Wetlands**

## 1. Upper Lake

- Inflow of sewage effluents
- Fishing
- Encroachment
- Siltation
- Firing Range
- Boating
- Hanging Bridge
- River bed cultivation and use of pesticide

#### 2. Kerwa

- Shrinkage of peripheral areas
- Low level of water
- Crop cultivation in peripheral area
- Colonization
- Dumping of Urban waste

### 3. Kaliasote

- Water and Adventure Sports Zone
- Fishing
- Urbanization
- Development of Transportation
- Film shooting area

# 4. Shahpura Lake

- Heavy Traffic
- Conflict with fishermen
- Sewage inflow

## 5. Ghodapacchad Dam

- · Settlement of slums
- Illegal fishing and poaching
- Water supply for ISRO

## 6. Bilkhiria

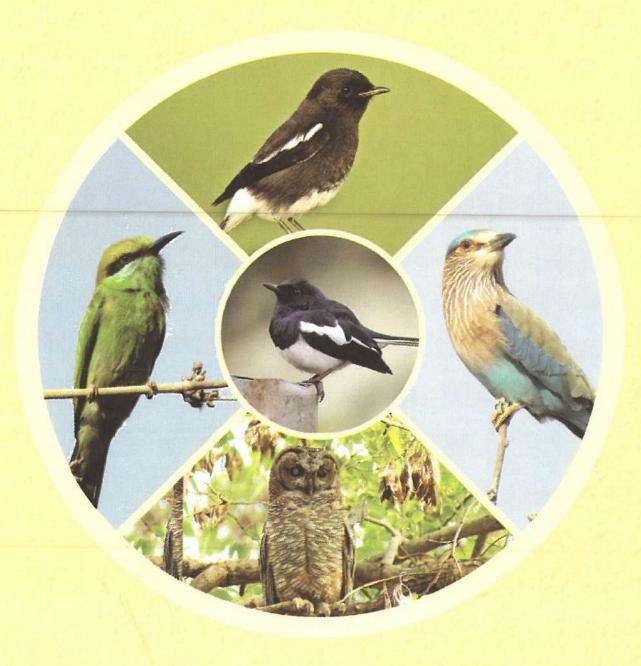
- Pilgrimage
- High level noise
- Siltation
- Over growth of aquatic weeds
- Poaching

## 7. Hataikheda Dam

- Idol immersion
- Tourism

#### Recommendations

- Proper action plan for restoration of these wetlands.
- To run various restoration programme time to time as desiltation, deweeding etc.
- Demarcation of area where the recreational activities can be done. It is also essential to take precaution in habitat of birds and other aquatic fauna.
- Check various hardcore tourism activities as Cruise, motor boats, mudbiking etc.
- Run a wide awareness program for people to conserve wetlands life and their component.



rure-1	onra																											
Annexure-1	Shahpura	Lake	122		200	80	450		0		30	2	2	32	20	12	30	-		0	0	0	0		-	0	0	0
	Bhoj	Wetland	3		300	45	350		12		75	20	10	35	35	150	70	65		45	51	10	1		15	25	15	17
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Population in	Kerwa		9		100	09	38		1		78	15		45	18	35	36	0		30	100	9	0		10	10	8	
	Species	Grebe	Little Grebe (Dabchick)	Cormorants/Shags	Little Cormorant	Indian Cormorant	Great Cormorant	Darters	Darter (Snake bird)	Herons/Egrets	Little Egret	Grey Heron	Purple Heron	Great Egret	Intermediate Egret	Cattle Egret	Indian Pond Heron	Black Crowned Night Heron	Storks	Painted Stork	Asian Openbill	Woolly -Necked Stork	Black necked stork	Ibises & Spoonbills	Glossy Ibis	Black-Headed Ibis	Black Ibis	
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10	Geese & Ducks	40	50	30		0	300	20
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24   15   17   22   22   8   8   8   8   8   8   8		6	3	2	8	4	10	0
30         200         0         150         60         120           16         22         19         20         0         70           16         22         19         20         0         70           10         23         0         0         0         60         60           10         0         0         0         0         170         60         60           10         0         0         0         0         0         73         170 </td <td><b>(1)</b></td> <td>24</td> <td>15</td> <td>17</td> <td>22</td> <td>22</td> <td>8</td> <td>0</td>	<b>(1)</b>	24	15	17	22	22	8	0
37         0         0         0         0         70           16         22         19         20         20         50           0         23         0         0         0         50         50           0         0         0         0         0         60         60         60         60         60         60         60         60         60         60         60         70 <td< td=""><td></td><td>30</td><td>200</td><td>0</td><td>150</td><td>09</td><td>120</td><td>0</td></td<>		30	200	0	150	09	120	0
16         22         19         20         20         50           0         23         0         0         0         60         60           0         0         0         0         0         0         60         60           0         0         0         0         0         170         60         170		37	0	0	0	0	70	0
0         23         0         0         0         60           0         0         0         0         0         60         60           0         0         0         0         0         170         52           1         0         0         0         0         170         170         170           1         1         1         0         0         0         44		16	22	19	20	20	50	0
0         0         0         0         52           0         0         0         0         170           0         0         0         0         170           0         0         0         0         170           20         18         0         0         43           16         1         1         0         43           16         1         1         0         44           10         6         4         8         0         4           10         50         0         0         0         0           11         1         0         0         0         0         0           2         0         0         0         0         0         0         0           3         0         0         0         0         0         0         0         0         0           4         6         0         0         0         0         0         0         0         0         0           4         6         0         0         0         0         0         0         0		0	23	0	0	0	09	0
0         0         0         0         170           0         0         0         0         170           20         18         0         0         43           1         1         1         0         43           1         1         1         4         4         4           1         10         6         4         4         4         4           1         1         1         0		0	0	0	0	0	52	0
0	rd	0	0	0	0	0	170	0
20         18         0         0         43           2         1         1         0         4           (flee)         10         6         4         8         0         4           10         50         20         0         0         120         1           e         1         1         0         0         0         0         2           e         1         0		0	0	0	0	0	20	0
(ite)         1         1         0         4           (ite)         10         6         4         8         0         4           10         6         4         8         0         4           1         1         0         0         0         4           e         1         0         0         0         2           e         2         0         0         0         0           1         0         0         0         0         0           1         0         2         0         0         4           1         0         0         0         0         0           1         1         2         0         0         0         0           1         1         2         0         0         0         0         0           3         0         2         0         0         0         0         0           4         6         0         0         0         0         0         0           3         0         2         0         0         0         0         0		20	18	0	0	0	43	0
e       10       6       4       8       0       4         10       50       20       0       0       120         1       1       0       0       0       2         1       0       0       0       0       0         2       0       0       0       0       4         1       0       2       0       0       4         1       0       0       0       0       0         4       6       0       0       0       0       0         1       1       2       0       0       0       0         3       0       2       0       0       0       2         4       6       0       0       0       0       2         1       1       2       0       0       0       2         3       0       2       0       0       0       32         4       22       2       0       0       0       32         54       22       2       0       0       0       0       32         8       0	Ferruginous Pochard	2	1	-	0	0	4	0
e         10         6         4         8         0         4           10         50         20         0         0         120           1         1         1         0         0         0         120           1         0         0         0         0         0         0         0           2         0         0         0         0         0         4         4         4         4         4         6         0					E TREET AND			
10         50         20         0         120           1         1         0         0         0         2           1         0         0         0         0         0         0           2         0         0         0         0         4         4         4         4         4         4         6         0 <td>Shouldered Kite</td> <td>10</td> <td>9</td> <td>4</td> <td>8</td> <td>0</td> <td>4</td> <td>0</td>	Shouldered Kite	10	9	4	8	0	4	0
1         1         0         0         0         2           1         0         0         0         0         0           2         0         0         0         0         0           1         0         2         0         0         4           1         0         2         0         0         2           1         0         0         0         0         1           4         6         0         0         0         6           1         1         2         0         0         2           3         0         2         0         0         32           4         6         0         0         0         0         6           3         0         2         0         0         0         2           4         6         0         0         0         0         6           3         0         2         0         0         32         0           4         6         0         0         0         0         0           3         0         0         0		10	50	20	0	0	120	0
1         0         0         0         0         0         0         0         0         0         0         0         0         0         0         4         0         0         0         4         0		1	-	0	0	0	2	0
2         0         0         0         5           2         0         2         0         4           1         0         2         0         0         2           1         0         0         0         0         1           4         6         0         0         0         6           1         1         2         0         0         2           3         0         2         0         0         32           34         22         2         0         0         8	Red - Headed Vulture	1	0	0	0	0	0	0
0         2         0         4           0         2         0         0         2           0         2         0         0         2         1           6         0         0         0         1         1           1         2         0         0         6         0         6           1         2         0         0         0         2         0         1         2         0         0         32         4         22         32         0         0         0         8	Crested Serpent Eagle	2	0	0	0	0	5	0
0         2         0         0         2           0         0         0         0         1           6         0         0         0         1           1         2         0         0         2           0         2         0         0         32           4         22         2         0         0         8		2	0	2	0	0	4	1
0         0         0         0         1           6         0         0         0         6         0           1         2         0         0         2         0           0         2         0         0         32         0           4         22         2         0         0         8		1	0	2	0	0	2	0
6         0         0         6           1         2         0         2         1           0         2         0         2         1           0         2         0         0         32         1           4         22         2         0         0         8         8		1	0	0	0	0	1	0
1         2         0         0         2           0         2         0         0         32           4         22         2         0         0         8		4	9	0	0	0	9	0
0         2         0         0         32         4           4         22         2         0         0         8		•	-	2	0	0	2	0
0         2         0         0         32           4         22         2         0         0         8	Partridges /Quails	2						
22 2 0 0 8		3	0	2	0	0	32	0
		24	22	2	0	0	8	0

48. Sarus Crane         3         0         2         0         0         22           Moorthens/Cootss         4         6         2         3         18           5.1. White Breasted Waterhen         4         6         2         3         18           5.2. Common Moorhen         4         6         3         0         0         12           5.2. Common Moorhen         4         0         8         0         0         25           5.3. Common Coot         20         14         25         8         5         100           5.3. Common Moorhen         20         14         25         8         5         100           5.3. Common Moorhen         20         14         25         8         5         100           5.3. Common Moorhen         20         12         6         6         6         6         6           5. Gradual         4         2         4         2         6         6         6         7         6           5. Browner and Super and Moorlen         3         4         4         4         4         4           6. Little ringed         5         1         2 <th< th=""><th></th><th>Cranes</th><th></th><th>* * * * * * * * * * * * * * * * * * * *</th><th></th><th></th><th></th><th></th><th></th></th<>		Cranes		* * * * * * * * * * * * * * * * * * * *					
Moorhens/Coots         4         6         2         2         3           White Breasted Waterhen         4         6         2         3         3           Common Moorhen         8         0         0         0         0         0           Common Moorhen         4         0         8         0         0         0         0         0           Common Moorhen         2         14         25         8         5         0	49.		က	0	2	0	0	22	0
White Breasted Waterhen         4         6         2         2         3           Purple Moorhen         8         0         0         0           Common Moorhen         4         0         8         0         0           Common Moorhen         4         0         8         0         0           Jacanas         5         0         14         25         8         5           Jacanas         Bronze-winged         2         0         2         0         0           Jacana         Bronze-winged         2         0         2         0         0           Jacana         Bronze-winged         2         0         2         0         0           Jacana         Plovers & Lapwings         1         2         1         1         2           Little ringed         1         2         1         1         2         0         0           Red wattled         8         10         0         0         0         0         0         0           Yellow wattled lapwing         0         0         0         0         0         0         0           Waders         1		Moorhens/Coots							
Purple Moorhen         8         0         30         0         0           Common Moorhen         4         0         8         0         0           Jacanas         14         25         8         5           Jacanas         5         0         12         0         0           Jacana Jacana         8         0         2         0         0           Jacana Jacana Plovers & Lapwings          1         2         1         2           Little ringed         1         2         1         2         0         0           Plovers & Lapwing         8         10         18         14         30         0           Red wattled         8         10         18         14         30         0           Waders         12         8         7         5         9         0           March lapwing         0         0         0         0         0         0         0           Waders         12         8         7         5         9         1           March lapwing         0         0         0         0         0         0           Planted swip	20.		4	9	2	2	3	18	8
Common Moorhen         4         0         8         0         0           Jacanas         20         14         25         8         5           Jacanas         Pheasant Lailed         5         0         12         0           Bronze-winged         2         0         2         0         0           Jacana         Plovers & Lapwings         1         2         1         2           Plovers & Lapwing         1         2         1         2         0         0           Little ringed         1         2         1         1         2         1         2           Little ringed         8         10         18         14         30         30         30           Red wattled         8         10         18         14         30         30         30           Watel spwing         0         0         0         0         0         0         0         0           Warders         1         8         7         5         9         2         9           Warders         1         0         0         0         0         0         0 <th< th=""><th>51.</th><th></th><th>8</th><th>0</th><th>30</th><th>0</th><th>0</th><th>12</th><th>9</th></th<>	51.		8	0	30	0	0	12	9
Common Coot         20         14         25         8         5           Jacanas         Pheasant –tailed         5         0         12         0         0           Jacana         Bronze-winged         2         0         2         0         0           Jacana         Plovers & Lapwings         1         2         1         1         2           Plovers & Lapwings         1         2         1         1         2         0           River lapwing         0         0         0         0         0         0         0           Waders         Waders         0         0         0         0         0         0           Marsh sandpiper         0         0         0         0         0         0         0           Waders         0         0         0         0         0         0         0           Pied avocet         0         0         0         0         0         0         0           Common snipe         0         0         0         0         0         0         0           Black tailed         0         0         0         0         <	52.	-	4	0	8	0	0	25	5
Jacanas         Pheasant Jacana         5         0         12         0         0           Jacana         Bronze-winged         2         0         2         0         0           Jacana         Plovers & Lapwings         1         2         0         0         0           Little ringed         1         2         1         1         2         0           Plovers & Lapwings         1         2         1         2         0         0           Red wattled blowing         0         0         0         0         0         0         0         0           River lapwing         0 <th>53.</th> <td></td> <td>20</td> <td>14</td> <td>25</td> <td>8</td> <td>5</td> <td>100</td> <td>- 10</td>	53.		20	14	25	8	5	100	- 10
Pheasant -tailed         5         0         12         0         0           Jacana         Bronze-winged         2         0         2         0         0           Bronze-winged         2         0         2         0         0         0           Plovers & Lapwings         1         2         1         1         2         1           Little ringed         1         2         1         4         30         0           Plover         Red wattled         8         10         18         14         30           Red wattled         8         10         18         14         30         0           Red wattled lapwing         0         0         0         0         0         0           Waders         1         8         7         5         9         0           Marsh sandpiper         0         0         0         0         0         0         0           Common snipe         0         0         0         0         0         0         0           Black tailed         0         0         0         0         0         0         0				1				1	
Bronze-winged         2         0         2         0         0           Jacana         Plovers & Lapwings         1         2         1         1         2           Plovers & Lapwings         1         2         1         1         2         1           Red wattled         8         10         18         14         30         30           Red wattled         8         10         18         14         30         30           River lapwing         0         0         0         0         0         0         0           Yellow wattled lapwing         0         0         0         0         0         0         0           Waders         Waders         7         5         9         6         0         0           Pled avocet         0         0         0         0         0         0         0           Common snipe         0         0         0         0         0         0         0           Spotteded redshank         0         0         0         0         0         0         0           Spottedded redshank         12         8         5 <th< td=""><th>54.</th><td></td><td>D.</td><td>0</td><td>12</td><td>0</td><td>0</td><td>18</td><td>2</td></th<>	54.		D.	0	12	0	0	18	2
Plovers & Lapwings         2         0         0         0           Plovers & Lapwings         1         2         1         2           Little ringed plover         1         2         1         2           Red wattled blowing         8         10         18         14         30           River lapwing         0         0         0         0         0         0           Yellow wattled lapwing         0         0         0         0         0         0           Waders         Waders         8         7         5         9         2           Pied avocet         0         0         0         0         0         0           Common snipe         0         0         0         0         0         0           Spotteded redshank         0         0         0         0         0           Spotteded redshank         0         0         0         0         0           Spotteded redshank         0         0         0         0         0           Spotted wing stilt         12         8         5         5	7,	-	C	c	C				
Plovers & Lapwings         1         2         1         2           Little ringed         1         2         1         2           plover         Red wattled         8         10         14         30           Red wattled         8         10         14         30         0           River lapwing         0         0         0         0         0           Neilow wattled lapwing         0         0         0         0         0           Waders         Naders         7         5         9         0           Marsh sandpiper         12         8         7         5         9           Pied avocet         0         0         0         0         0         0           Common snipe         0         0         0         0         0         0         0           Spotteded redshank         0 <th>ġ</th> <td>-</td> <td>7</td> <td><b>&gt;</b>,</td> <td>V</td> <td>0</td> <td>0</td> <td>10</td> <td>2</td>	ġ	-	7	<b>&gt;</b> ,	V	0	0	10	2
Little ringed         1         2         1         2           Plover         Red wattled         8         10         18         14         30           Red wattled         8         10         18         14         30           River lapwing         0         0         0         0         0           Waders         Vellow wattled lapwing         0         0         0         0         0           Waders         Warsh sandpiper         12         8         7         5         9         0           Pied avocet         0         0         0         0         0         0         0           Common snipe         0         0         0         0         0         0         0           Spotteded redshank         0         0         0         0         0         0           Black wing stilt         12         8         5         5         5		Plovers & Lapwings							
Red wattled         8         10         18         14         30           Red wattled         8         10         18         14         30           River lapwing         0         0         0         0         0           Waders         0         0         0         0         0           Waders         12         8         7         5         9           Marsh sandpiper         0         0         0         0         0           Pied avocet         0         0         0         0         0           Painted snipe         0         0         0         0         0         0           Common snipe         0         0         0         0         0         0         0           Black tailed         0         0         0         0         0         0         0           Spotteded redshank         0         0         0         0         0         0         0         0           Black wing stift         12         8         5         5         5         5	56.		-	2	-	-	2	4	1
Red wattled         8         10         18         14         30           lapwing         0         0         0         0         0           River lapwing         0         0         0         0         0           Vellow wattled lapwing         0         0         0         0         0           Waders		plover		1					
lapwing         0         0         0         0           River lapwing         0         0         0         0           Yellow wattled lapwing         0         0         0         0           Waders         0         0         0         0           Marsh sandpiper         12         8         7         5         9           Pled avocet         0         0         0         0         0           Painted snipe         0         0         0         0         0           Common snipe         0         0         0         0         0           Black tailed         0         2         0         0         0           Spotteded redshank         0         0         0         0         0           Black wing stilt         12         15         8         5         5	57.	-	8	10	18	14	30	35	10
River lapwing         0         0         0         0           Yellow wattled lapwing         0         0         0         0           Waders         Amarsh sandpiper         12         8         7         5         9           Pied avocet         0         0         0         0         0         0           Painted snipe         0         0         0         0         0         0           Common snipe         0         0         0         0         0         0           Black tailed         0         2         0         0         0         0           Spotteded redshank         0         0         0         0         0           Black wing stift         12         15         8         5         5		lapwing							2
Waders         0         0         0         0           Waders         Waders         0         0         0           Marsh sandpiper         12         8         7         5         9           Pied avocet         0         0         0         0         0           Painted snipe         0         0         0         0         0           Common snipe         0         0         0         0         0           Black tailed         0         2         0         0         0           Spotteded redshank         0         0         0         0           Black wing stilt         12         15         8         5         5	28.	River lapwing	0	0	0	0	0	-	0
Waders         Waders         4 <th< td=""><th>29.</th><td>Yellow wattled lapwing</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>2</td><td>0</td></th<>	29.	Yellow wattled lapwing	0	0	0	0	0	2	0
Marsh sandpiper         12         8         7         5         9           Pied avocet         0         0         0         0         0           Painted snipe         0         0         0         0         0           Common snipe         0         0         0         0         0         0           Black tailed         0         2         0         0         0         0         0           Spotteded redshank         0         0         0         0         0         0         0         0           Black wing stilt         12         15         8         5         5         5		Waders							
Pied avocet         0         0         0         0           Painted snipe         0         0         0         0         0           Common snipe         0         0         0         0         0         0           Black tailed         0         2         0         0         0         0           Spotteded redshank         0         0         0         0         0         0           Black wing stilt         12         15         8         5         5	90.	Marsh sandpiper	12	8	7	5	6	25	0
Painted snipe         0         <	61.	Pied avocet	0	0	0	0	0	-	0
Common snipe         0         0         0         0         0           Black tailed         0         2         0         0         0           Spotteded redshank         0         0         0         0         0           Black wing stilt         12         15         8         5         5	62.	Painted snipe	0	0	0	0	0	2	0
Black tailed         0         2         0         0         0           Spotteded redshank         0         0         0         0         0           Black wing stilt         12         15         8         5         5	63.	Common snipe	0	0	0	0	0	1	0
Spotteded redshank         0         0         0         0           Black wing stilt         12         15         8         5         5	64	Black tailed	0	2	0	0	0	2	0
Spotteded redshank         0         0         0         0           Black wing stilt         12         15         8         5         5					1				
Black wing stilt         12         15         8         5         5	65.	Spotteded redshank	0	0	0	0	0	2	0
	.99	Black wing stilt	12	15	80	5	5	30	30



0			80 25	45 0	30 6		17 2	0 0		45 6	30 15	25 6		26 0	10 0	0 0		4 0	2 0	1 0	0 0	1 0	6 2	1 0		0 8	1 + 0	0 0	0 0	2 0
c	0		0	0	15		80	0		46	14	13	The Part of the Pa	0	0	0		0	0	0	0	0	7	0		0	0	0	0	0
	O		0	0	24		က	0		30	9	19		0	0	0		0	0	0	0	0		0		0	0	0	0	0
	0		0	0	8		16	0		18	80	6	V	19	40	0	To the second second	-	0	0	0	0	9	0		0	0	0	0	0
	0 0		40 10	0 40	8 15		4 2	0		18 25	15 12	4 6		17 0	50 0	5 0	Titr	2 0	2 0	0 0	0	1 0	2 1	0 0		2 0	4 0	3 0	1 0	1
 Pranticole	Small Pranticole	Gulls & Terns	Brown headed gull	Black headed gull	River tern	Pigeons & Dove		Yellow footed	green pigeon	Laughing dove	Spotted dove	Red collared dove	Parakeets	Rose ring parakeet			Cuckoos & Coucals	Asian Koel	Jacobin cuckoo	Eurasian cuckoo	Indian cuckoo	Common hawk cuckoo	Greater Coucal	Sirkeer malkoha	Owis	Spotted owlet	Jungle owlet		. Mottled wood owl	-
	67.		68.	.69	70.		71.	72.		73.	74.	75.		76.	77.	78.		79.	80	81.	82.	83.	84.	85.		86.	87.	88	89	



	Kingfishers		4						
91.	Common Kingfisher	8	4	9	3	<del>1</del> <del>12 1</del>	3	1	2
92.	Stork-billed Kingfisher	3	0	0	0		0	-	0
93.	White throated kingfisher	5	2	1	2		3	7	000
94.	Pied kingfisher	2	1		-		1-8-1-8-1-8-1	4	2
	Bee eaters								
95.	Green Bee eaters	7	3	1	4		4	21	9
96	Blue tailed bee eater	0	0	0	0		0	2	0
	Rollers								
97.	Indian Roller	-	2	-	-		1	8	
	Hoopoes					and a			
98.	Common Hoopoe	1	2	_	-		1	5	2
	Hornbills								
99.	Indian Grey Hornbill	3	0	2	0		0	9	2
	Barbets								æ
100.	Brown Headed Barbet	4	0	2	0		0	80	0
101.	Coppersmith barbet	2	0	2	0		0	13	0
	Woodpeckers						3		
102.	Black rumped flameback	1	4	-	0		0	5	0
	Larks								
103.	LINE !	2	4	4	4		3	8	0
104.	Rufous tailed lark	1 20 20 20	9	3	_		2	5	0
105.	St. 11	4	6	0	0		2	25	0
106.		15	0	0	0		2	4	0
107.			2	2	1		2	8	0
108.		-	1	1	3			10	0
109.		-	2	2	-			12	0
110.	Paddy field pipit	2	2	5	1			5	3

	0	0	0	2	0	0	4	A	0			0	0	-	0	0		A STATE OF	0	0	0	6	0	0	0	0	0
	8	2	1	8		0	25		4			0	2	4	2	2			4	21	11	21	9	2	2	2	1
	8	3																									
	0	0	0	3	0	0	3		0			0	0	2	0	-			0	0	0	13	0	0	0	0	0
	0	0	0	1	0	0	3	4	0			0	0	3	0	-			0	0	0	14	0	0	0	0	0
			1000	1	0	0	3		9			0	0	1	2				9	6	10	7	4	0	3	1	1
	9 0	0 0	0 0	2	0	0	8		0			0	0	9	2	-			0	0	0	0	0	0	0	0	0
	9		3		-	1	11		က			-	0	2	2	-			2	7	4	18	3	<b>-</b>	3	2	-
Shrikes/Minivets/Bulbuls	Small Minivets	Scarlet Minivet	Common wood shrikes	Bay backed shrike	Long tailed shrike	Isabelline shrike	Red vented bulbul	loras	Common lora	Thrushes/ Robins/Redstart/	Chats	Orange headed thrush	Blue throat	Magpie robin	Black redstart	Pied bushchat	Babblers/Prinia/	Warblers/Tailorbird	Yellow eyed babblers	Common babblers	Large grey babblers			Plain prinia	Booted warbler	Greenish warbler	
	111						117.		118.		AVA:	119.	120.	121.	122.	123.			124.	125.	126.	127.	128.	129.	130.	131.	132.



	Flycatcher								
131									
101		-	0	0		0	0	7	0
135.		1	0	-				- 0	0
136.	. Tickell's blue flycatcher	3	0				0	2	0
137.		3		7		0	0		0
138		0	0 0	7		0	0	2	0
130		0	0	0		0	0	5	0
3	Tit	-	0	-		0	0	-	0
4.40		1							
140.		2	0	2		0	0		
	-115								0
141.	Purple sunbird	4	3			C			
142.		2		- 0		7	2	9	4
	White eye			0		0	0	0	0
143.	Diga.	0	C						
		0		7		0	0	3	0
144	J. Co.		-						
115		-	0	0		0	2	3	C
140.			0	0		0	0	18	
146.		5	0	0			0 0	01	0
147.	Red munia	0	0	0				23	0
148.	India silverbill	2		0 0			0	8	0
149.	Scaly breasted munia						0	7	0
	Sparrows & Weavers			0		0	0	1	0
150.	House sparrow	a	1						
151.	Chestnut shouldered patronia	0 4	1	14		24	2	6	9
152.	Bava weaver	10	1	7		0	0	12	0
	Starling & Mynas	7.	13	0		0	0	30	0
153.	Brahminy myna	40	Ç						
	Rosy starling	2 0	71 0	m (	7	4	9	12	10
155	Asian pied starling	,	0 0	0		0	0	9	0
	Common myna	4 r	9	9	7		3	11	-
	Of the state of th	0	5	9		10	8	36	y
./61	Chestnut tailed starling	4	0	0	0	0	0	3	
							,	0	5



	Orioles								-
158	158. Eurasian golden oriole	2	0	9	0	0	3	0	-
159	159. Black hooded oriole	2	0	0	0	0	0	0	_
	Drongos		N. American						_
160	160. Black drongo	4	7	3	2	3	8	2	_
161	161. White bellied drongo	4	0	0	0	0	0	0	_
	Crows & Treepies								_
162	162. Rufous Treepie	3	0	4	0	0	9	0	_
163	163. House crow	9	8	6	4	5	20	10	_
164	164. Larged billed crow	2	0	-	0	0	10	0	_





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