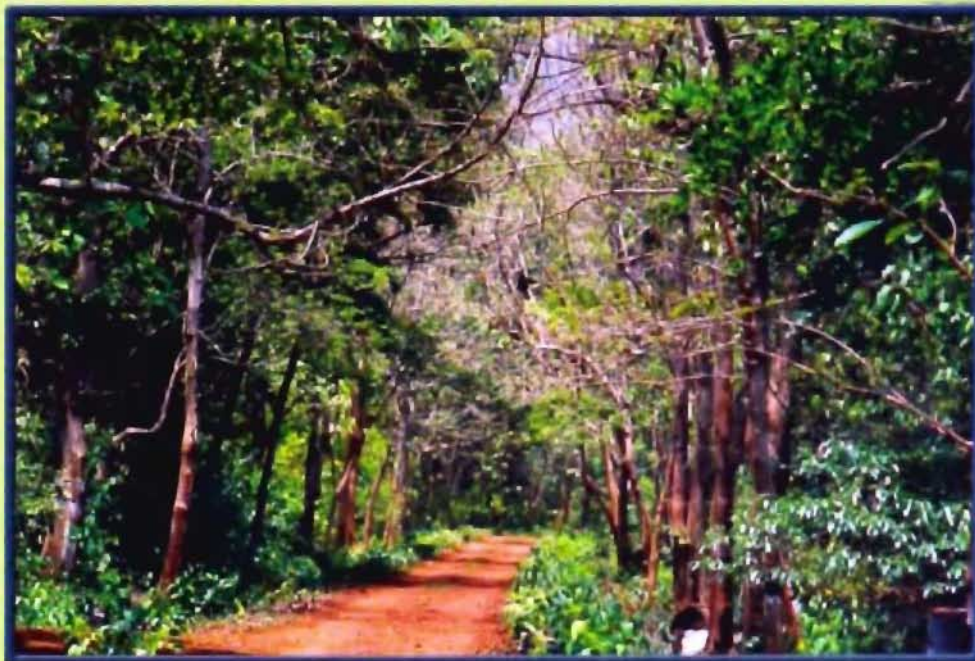


Records of the Zoological Survey of India

Mammal and Avi-Fauna of Kuldiha Wildlife Sanctuary, Orissa

ATINDRA MURMU
P.C. MAZUMDAR
S. CHAUDHURI



Zoological Survey of India



Occasional Paper No. 344

Mammal and Avi-Fauna of Kuldiha Wildlife Sanctuary, Orissa

Atindra Murmu, P.C. Mazumdar and S. Chaudhuri

Zoological Survey of India, M-Block, New Alipore, Kolkata - 700053

Edited by the Director, Zoological Survey of India, Kolkata

**Zoological Survey of India
Kolkata**

CITATION

Atindra Murmu, P C Mazumdar and S. Chaudhuri, 2013. *Mammal and Avi-Fauna of Kuldiha Wildlife Sanctuary, Orissa, Occ. Paper No. 334* : 1-51. (Published by the Director, Zool. Surv. India, Kolkata)

Published : July, 2013

ISBN 978-81-8171-341-4

© Government of India, 2013

ALL RIGHTS RESERVED

- No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior permission of the publisher.
- This book is sold subject to the condition that it shall not, by way of trade, be lent, re-sold, hired out or otherwise disposed of without the publisher's consent, in any form of binding or cover other than in which it is published.
- The correct price of this publication is the price printed on this page. Any revised price indicated by a rubber stamp or by a sticker or by any other means is incorrect and should be unacceptable.

PRICE

India : ₹ 350.00

Foreign : \$ 20 ; £ 15

Published at the Publication Division by the Director, Zoological Survey of India, M-Block, New Alipore, Kolkata - 700 053 and printed at Hooghly Printing Co. Ltd., Kolkata-700 071

Records of the Zoological Survey of India Occasional Paper

No. 344

2 0 1 3

Page No. 1-51

CONTENTS

1.	Introduction	1
2.	Climate	2
3.	Physiography	2
4.	Soil	2
5.	Vegetation	3
6.	Faunal Composition	3
7.	Abbreviation	3
8.	Systematic Account	4
8.1.	Class-Mammalia	4
	Order-Insectivora	4
	Order-Scadantia	4
	Order-Chiroptera	4
	Order-Primates	6
	Order-Pholidota	6
	Order-Carnivora	7
	Order-Proboscidea	8
	Order-Artiodactyla	8
	Order-Rodentia	9
8.2.	Class-Aves	9
	Order-Podicipitiformes	9
	Order-Pelecaniformes	10
	Order-Ciconiformes	11
	Order-Anceriformes	14
	Order-Falconiformes	17
	Order-Gruiformes	18

Order-Charadriiformes	20
Order-Columbiformes	23
Order-Psittaciformes	24
Order-Cuculiformes	25
Order-Strigiformes	26
Order-Caprimulgiformes	27
Order-Apodiformes	27
Order-Trogoniformes	28
Order-Piciformes	31
Order-Passeriformes	32
9. Discussion	45
10. Recommendation	46
11. Summary	47
12. Acknowledgements	47
13. References	47

INTRODUCTION

Kuldiha Wildlife Sanctuary is located in the Balasore district of the state of Orissa and is the largest block among all reserve forest occupies the crest and inner valley. Excepting this block which consists of hilly terrain in the Eastern, South and South Eastern of the block, rest are situated on the more leveled ground. As per records available in the year 1914, the four tribal villages namely Phusurpara, Ampara, Kuldiha and Totadiha were included in this forest region. Thus this forests might have got name 'Kuldiha' from one of those villages. On the other opinion 'Kuldiha' name derived from regional word 'Land of ancestors'. The king of Nilagiri and their family member choose this place for hide at the time of war. Probably that time they must have given the name of place as kuldiha which is now Kuldiha.

Kuldiha Wildlife Sanctuary covering an area of 272.75 sq. km. comprising of Kuldiha reserve, Devgiri reserve forest, Tenda reserve forest and some adjoining forest of Nilgiri Sub-Division was declared as a sanctuary on 04-01-84 under the territorial jurisdiction of Baripada Division. With the formation of Wildlife Division the administrative control of the Sanctuary came under the territorial jurisdiction Balasore Wildlife Division with effect from 01-10-2003. The Sanctuary lies between 21020/N and 22030/ N and 86030/E and 86045/E. The Sanctuary is linked with Simlipal National Park of Mayurbhanj district through Sukhupata & Nato hill ranges.

Kuldiha Sanctuary area, adjoining to Nilagiri forest in the north and Mayurbhanj forest in the west, is typical representative of mixture of Peninsular (coastal) Sal forest and moist deciduous forest. It comes in the Biogeographic region of Deccan Peninsula. Being associated with other ecological zones, the sanctuary has given rise to a rich diversified fauna. Detailed information on the faunal composition of this sanctuary especially of birds and mammals is not available. As a part of the fauna of conservation area programme, Zoological Survey of India has conducted a number of surveys in this sanctuary during the year from 2009 to 2010. For this purpose, during those surveys attempts were made to find the existing faunal composition along with ecological data, population trends and factors affecting them. In addition to systematic field observations necessary discussions with management people as well as local people were also made. In the present paper an account of the faunal composition with special reference to birds and mammals of Kuldiha Wildlife Sanctuary along with ecological conditions have been given.

CLIMATE

The atmosphere of this sanctuary area is having sub-tropical and hot, because this tract climatically the proximity of Bay of Bengal. The central and northern part of the sanctuary is relatively more humid and the southern part is comparatively drier than the rest of area. There are three distinct seasons viz. summer, monsoon and winter. November to February comes under winter, whereas March-April-May forms the summer. The monsoon is quite conspicuous during June-July-August-September and October constitute the post monsoon period. During summer season occasionally wind storm and limited downpours takes place. The mean maximum temperature is 38°C during summer and minimum 8°C during winter. The maximum temperature at times touches 42°C. Relative humidity of this sanctuary varies from 62% (minimum) to 88% (maximum). Kuldiha stands in the innerland parallel to Bay of Bengal. The maximum and minimum average rainfall during the last six years (2001-2006) are respectively 290 mm. (June to September) and 8 mm. (November to February). It may be pointed out that Kuldiha hill area touches 1000 mm. rainfall during 1974 (Pujari, 1977).

PHYSIOGRAPHY

According to biogeographic classification by Rodger and Panwar (1988), the Kuldiha Wildlife Sanctuary falls within the Biogeographic zone of Deccan Plateau and within the Biogeographic Province of Chhotanagpur Plateau. The Sanctuary is Mahanadian Biogeographic Region. It falls under tropical deciduous forest biome. River Budhabalanga and its tributary flows in the west-northern part of the forest. The famous Risia Dam has been constructed both irrigation purpose and necessity of forest flora-fauna.

The central part of the is almost plain but various mountain system passes through the sanctuary. The range of altitude of hills varies from 169 mtrs. to 682 mtrs. The Asta Pahar (423 mtrs.) extends from southern side of Jadachua and nearly middle of the sanctuary. The Davgiri Pahar (682 mtrs.) covers the southern side, Ranga Matia Pahar (629 mtrs.) covers northern side and Kolia Parbat (495 mtrs.) covers the eastern side of the sanctuary. The Kuldiha Pahar (606 mtrs.) situated near Kuldiha rest house. The rocks of the sanctuary comprises with Khondolite (grayish or reddish-brown in colour), Pyrogenic Granites (dark in colour), Charnockite (greenish grey in colour) and Garnetiferous Granites etc. A good exposure of laterite have been found in the south-west portion of the sanctuary. This is an alternation product of Khondolites.

Soil

Alluvial soil is much limited in this area. However this Alluvial soil mainly have found to bank of nalas, rivers, dam and other water sources. Due to weather change the Khondolites transformed from sandy soil to heavy redloam. This redloam

soil is rich for high content of iron-oxides. So, this type of soil is not suitable for agriculture purpose. The soil which is derived from granite gneisses is fit fertile.

Vegetation

The vegetation type of this area is mostly under thick forest cover and grassland are in very small pockets. Scrubs are conspicuously present towards the fringe of the villages. The semi-evergreen and moist deciduous vegetation along the perennial water bodies form the riparian zones. The following vegetation types are found in Kuldiha Wildlife Sanctuary.

According to Champion and Seth(1968) the forest of Kuldiha Sanctuary as well as the distribution of plant communities inside the sanctuary which has been divided into different forest types are furnished below-

- I) Group-2, Sub Group-2B (Northern Semi Evergreen Forest, 2B-C3-Orissa Semi Ever Green Forest).
- II) Group-3/C-C1, (1-D), Peninsular (Coastal) Sal Forest.
- III) Group-3-B/C-2, Moist Mixed Deciduous Forest.

FAUNAL COMPOSITION

Kuldiha Wildlife Sanctuary is rich for its great variations of micro and macro ecosystem. Though there is some anthropogenic pressure exists due to eco-tourism and cattle grazing etc. yet vertebrate faunal diversity still now very healthy. It can very well be conceived that such diverse topography and edaphic conditions together with climatic variations and rich floral diversity is likely to support a diverse faunal composition. This varied ecosystem in turn has resulted in a rich, both qualitative and quantitative fauna in the sanctuary. Mazumder & Dasgupta (1993) gave a complete account of the birds of the state. Das *et. al.*(1993) gave a complete account of the mammals of the state. Behura & Guru (1969) gave a complete account of the Wildlife of Orissa. But no information is available as regards of the faunal composition of the sanctuary. Based on sightings, earlier published, records and collected local information. An account of the fauna of the sanctuary is given below For systematic account of mammals Alfred *et. al.*, 2000 and for that of birds Ali & Repley, 1983 have been followed here.

For determination of status following abbreviations have been used :

IWPA = Indian Wildlife (Protection) Act, 1972.

CAMP = Conservation Assessment and Management Plan of Biodiversity Conservation Prioritization Project Workshop 1998.

RDB = Indian Red Data Book.

VU = Vulnerable.

NE = Not Evaluated.

DD = Data Deficiency.

LRlc = Lower Risk Least concern.

LRnt = Lower Risk near threatened

Mammals of Kuldiha WLS

Class MAMMALIA

Order INSECTIVORA

Family SORICIDAE

1. *Suncus Murinus* (Linnaeus)

Common Name : House Shrew (Eng); Chuchundra (Oriya).

Remarks : Most common especially in and around houses, stores and fringes areas of the forest. Nests were found by the side of the bushes, garbage and drain. Nests were made of leaves, paper, polythene, clothes etc. breeding females were found in pre and post monsoon period.

Status : CAMP- LRlc (Nationally and Globally).

Order SCANDENTIA

Family TUPAIIDAE

2. *Anathana ellioli* (Waterhouse)

Common name : Madras Tree Shrew (Eng).

Remarks : Common. A number of animals were found inside the forest. Food consists mainly insects but fruit are also taken. A pair or family party establishes a territory and drives away intruders of its own species. Moves on ground and take to trees as a means of escape or shelter. They resemble a squirrel in appearance.

Status : CAMP- LRnt.

Order CHIROPTERA

Family PTEROPODIDAE

3. *Cynopterus sphinx* (Vahl)

Common name : Short nosed fruit Bat (Eng); Baduri (Oriya).

Remarks : Most common throughout the reserve. Large number of them was found to visit all the orchards and fruit bearing trees of the forests causing much damage. Even then they play an important role in the natural pollination and dispersal of seed in the forest ecosystem.

Status : CAMP- LRlc (Nationally); DD (Globally).

4. *Rousettus leschenaultia* (Desmarest)

Common name : Indian Fulvous Fruit Bat (Eng); Baduri (Oriya).

Remarks : Common. Visits orchards of the villages as well as in the forests for wild fruits. Found to roost in small caves and crevices of low his of the reserve.

Status : CAMP- LR1c (Nationally); DD (Globally).

Family MEGADERMATIDAE

5. *Megaderma lyra* (Geoffroy)

Common name : Indian False Vampire (Eng); Baduri (Oriya).

Remarks : Common. Roosts were found in deserted rooms, as well as regularly used semi dark garage, godowns and various palaces. At tower house of pitanau, it was found to roost temporarily during late night in the toilet along with *Rhinolophus rouxi*.

Status : CAMP LR1c (Nationally), DD (Globally).

Family RHINOLOPHIDAE

6. *Rhinolophus rouxi* (Temminck)

Common names : Peninsular Horseshoe Bat (Eng), Baduri (Oriya).

Remarks : Common. A number of animals were found during late night in the Elephant Tower House near Jadachua..

Status : CAMP LRnt (Nationally), DD (Globally).

Family VESPERTILIONIDAE

7. *Pipistrellus coromandra* (Gray)

Common names : Indian Pipistrelle (Eng); Baduri (Oriya).

Remarks : Common. A number of animals could be seen at dusk while flying over Dam and other open places. Large roosts of 11-18 individuals were found in the holes of trees, walls and many other places even also under the culverts.

Status : CAMP LRnt (Nationally).

8. *Pipistrellus mimus* (Wroughton)

Common names : Indian Pygmy Pipistrelle (Eng); Baduri (Oriya).

Remarks : Common in and around residential areas human beings. Roost of six to seven individuals were found in the hole of a tree at Kuldiha.

Status : CAMP- NE.

9. *Scotophilus kuhlii* (Leach)

Common names : Asiatic lesser yellow Bat (Eng); Baduri (Oriya).

Remarks : Common. Large number of them were found to roost in small groups in different places of less used man made structure and also in caves and crevices. A troop of few individuals were found roosting in the crevices of the wall of old unused forest building near Jadachua.

Status : CAMP LRnt (Nationally), DD (Globally).

Order PRIMATES

Family CERCOPITHECIDAE

10. *Macaca mulatta* (Zimmermann)

Common names : Rhesus Macaque (Eng); Pati Makar (Oriya).

Remarks : Common in the forested areas. Occasionally raids the orchards and vegetable gardens. Altogether eight troops were observed. Troop size varied from 13 to 26 animals. Juveniles and youngs were found both in summer and winter.

Status : IWPA-Schedule II; CAMP LRic (Nationally), DD (Globally); CITES-Appendix -II.

11. *Semnopithecus entellus* (Dufresne)

Common names : Langur, Entellus Monkey (Eng); Hanu Makar (Oriya).

Remarks : Common in the fringe areas of the forest, regularly invading the agricultural crops and orchards. Some of the troops move around a large area during the day for foraging. Troop size varied from 11-29 animals of different ages.

Status : IWPA- Schedule II; CAMP LRic (Nationally), DD (Globally); CITES-Appendix I.

Order PHOLIDATA

Family MANIDAE

12. *Manis crassicaudata* (Gray)

Common names : Indian Pangolin (Eng.); Bazrakota (Oriya).

Remarks : Moderately common. Not a single could be seen throughout the survey period but two & three burrows of these animals were found in the different forested area. Rare in the sanctuary.

Status : IWPA- Schedule I, Part I; RDB-VU; CITES Appendix II; CAMP LRnt (Nationally), DD (Globally).

Order CARNIVORA

Family CANIDAE

13. *Canis aureus* (Linnaeus)

Common names : Asiatic Jackal (Eng); Siala (Oriya).

Remarks : Common. The animal is not primarily a forest dweller, prefers to live near human habitations and beneficial in controlling rodent population in crop fields. Mostly it was seen singly, but occasionally found in pairs also. Juvenile individuals were observed more during summer.

Status : IWPA- Schedule II, Part-II; CAMP- LR1c (Nationally);

CITES- Appendix III.

14. *Vulpes bengalensis* (Shaw)

Common names : Bengal Fox (Eng); Kokisiali (Oriya).

Remarks : Moderately common in the reeds and grass jungles along the bank of rivers and canals, in the cultivated fields, but not in the deep forest. It comes out of the dusk and moves almost throughout the night in and around villages in search of food. It helps in the biological control of several agricultural pest species. Only two animals could be seen near Purana Pani Area.

Status : IWPA, Schedule II, Part-II; CAMP, LRnt (Nationally), DD (Globally); CITES, Appendix III.

Family URSIDAE

15. *Melursus ursinus* (Shaw)

Common names : Sloth Bear (Eng.); Bhalu, Bhalluka (Oriya).

Remarks : Moderately common. A solitary male have met within the forest near Jadachua FRH. As reported by the villagers this animal possesses some threat for them and some incidents of human mauling by this animal occurred. Lives in natural caves among the rocks deep inside the forests as well as near human habitation. Reported to raid the mature crop field neighbouring the forest.

Status : IWPA-Schedule I, Part I; CITES- Appendix I; CAMP- VU (Nationally), DD (Globally).

Family VIVERRIDAE

16. *Herpestes edwardsi* (Geoffroy)

Common names : Indian Grey Mongoose.

Remarks : Fairly common. A good number of specimens were observed in different parts of the sanctuary. Found to live in various habitats, such as forests rock and even in cultivated fields.

Order PROBOSCIDEA

Family ELEPHANTIDAE

17. *Elephas maximus* (Linnaeus)

Common names : Indian Elephant (Eng.); Hati (Oriya).

Remarks : Common throughout the sanctuary, two to three troops were sighting during the survey period. Owing to shortage of food inside the forest it was found to raid the cultivated fields and orchards.

Status : IWPA- Schedule I, Part I; RDB-VU; CITES Appendix I; CAMP VU (Nationally), DD (Globally).

Order ARTIODACTYLS

Family SUIDE

18. *Sus scrofa* (Linnaeus)

Common names : Wild Boar (Eng.); Bara (Oriya).

Remarks : Moderately common. Found in bush jungles and in the forest muddy and swampy areas. Only one herd of 7-8 animals could be seen once near Kuldiha. There is certain amount of hunting pressure during harvesting period due to its crop raiding habit.

Status : IWPA- Schedule III, ; CAMP- LR1c (Nationally), DD (Globally).

Family TRAGULIDAE

19. *Moschiola meminna* (Erleben)

Common names : Mouse Deer (Eng.); Gurandi (Oriya).

Remarks : Moderately common. Only two animals have seen throughout the survey period in the forested tracts of Kuldiha. There is certain amount of hunting pressure for its flesh.

Status : CAMP- LRnt (Nationally), DD (Globally).

Family CERVIDAE

20. *Axis axis* (Erleben)

Common names : Spotted Deer (Eng.); Harin (Oriya).

Remarks : Common, lives in herds. Herds of 5 to 10 animals were observed at different places. During harvesting period these animals often raid the cultivated fields. There is considerable amount of hunting pressure for skins and antlers.

Status : IWPA- Schedule IV ; CAMP- LR1c (Nationally), DD (Globally).

21. *Muntiacus muntjak* (Zimmermann)

Common names : Barking Deer (Eng.); Kuntra, Kutura (Oriya).

Remarks : Moderately common. Not a single could be seen but its peculiar bark was heard at several places in the sanctuary.

Status : IWPA- Schedule III; CAMP- LRIc (Nationally), DD (Globally).

Order RODENTIA

Family SCIURIDAE

22. *Funambulus pennantii* (Wroughton)

Common names : Indian Palm Squirrel (Eng.); Gunchi Musha (Oriya).

Remarks : Fairly common near villages and road side of the sanctuary but not in deep forests. Takes shelter houses, garden, grooves and hedges and on road side trees. Cause much damage to orchards but not to crop fields.

23. *Ratufa indica* (Erxleben)

Common names : Indian Giant Squirrel (Eng.); Gunchi Musha (Oriya).

Remarks : Moderately common. A rich population of this species have found in dense forested area.

Status : IWPA- Schedule II, CITES II, Appendix II; CAMP- VU9 (Nationally), DD (Globally).

Status : IWPA- Schedule V, CAMP LRIc (Nationally), DD (Globally)

Class AVES

Order PODICIPITIFORMES

Family PODICIPEDIDAE

1. *Podiceps cristatus* (Linnaeus)

Common names : Great Crested Grebe (Eng);

Size : 46-51 cm.

Habits : Winter visitor. Usually seen in separated pairs or scattered parties. Affects Open water lakes, reservoirs, jheels and salted pans and also tidal waters. Feeds on fish, tadpoles, aquatic insects and occasionally some vegetable matters.

Remarks : Rare, Only a pair was seen throughout the survey period near a reservoir. Within Indian limited breeds between June and August in Ladakh and Gujrat.

2. *Podiceps ruficollis scapensi* (Salvadori)

Common names : Little Grebe or Dabchick (Eng).

Size : 25-29 cm.

Habits : Chiefly resident but shifting locally depending on drought and flood. Usually keeps in small separated pairs or small separated parties. Affects all types of inland waters, irrigation reservoirs, ponds, village tank but hardly rivers and sea. Feeds on fish, frog, tadpoles, molluscs, crustaceans and insects.

Remarks : A number of birds were seen in different water bodies. Breeds between April and October.

Order PELICANIFORMES

Family PHALACROCORACIDAE

3. *Phalacrocorax carbo* (Linnaeus)

Common names : Cormorant (Eng).

Size : About 80 cm.

Habits : Resident and locally migratory depending on availability of food. Keeps singly, in pairs or small parties. Affects inland reservoirs, lakes and reservoirs. Feeds on fish.

Remarks : Common. A number of birds were seen in different water bodies. Breeds between September and February depending on monsoon and availability of fish supply for the young.

4. *Phalacrocorax fuscicollis* (Stephens).

Common names : Indian shag (Eng).

Size : About 63 cms.

Habits : Resident, moving locally depending on condition of water and fish supply.

Affects wheels, reservoirs, river, irrigation tanks and tidal estuaries. Feeds mainly on fish.

Remarks : Moderately common. Only four birds could be seen throughout the survey period in different water bodies. Breeds between July and February depending on earlier or late monsoon rainfall and local water condition

5. *Phalacrocorax niger* (Vieillot)

Common names : Little cormorant (Eng).

Size : 51 cm.

Habits : Resident, shifting locally with water condition. Keeps singly, in pairs or small flocks. Affects lakes, rivers, canals, irrigation reservoirs, village tanks, and estuaries. Feeds mainly on fish.

Remark : Common. A number of birds were seen in different water bodies. Breeds between July and September.

6. *Anbina rufa melanogaster* (Pennant)

Common names : Darter or Snake-bird (Eng).

Size : About 90 cm.

Habits : Resident, shifting locally with water condition. Keeps singly or in scattered parties. Affects different inland waters. Feed chiefly on fishes.

Remarks : Rare. A single bird was seen throughout the survey period in Rishia Dam. Breeds between July and December. Population of this birds is feared to be decreasing all over the country.

Order CICONIIFORMES

Family ARDEIDAE

7. *Ardea cinerea* (Linnaeus)

Common names : Grey Heron (Eng).

Size : 75 cms.

Habits : Resident. Keep singly or in small parties. Affects all type of wetlands largely crepuscular, hunting in early morning and dusk. Feeds on fish, frogs, insects, crustaceans and molluses.

Remarks : Rare. Only a single bird could be seen throughout the survey period. Breeds between July and October.

8. *Ardea purpurea* (Linnaeus)

Common names : Purple Heron (Eng).

Size : 97 cms.

Habits : Resident and local migrant. Keeps singly or occasionally in small parties. Largely crepuscular. Affects inland water with tall cover. Feeds on fish, frogs, molluses, crustaceans and aquatic insects.

Remarks : Rare. Only a single bird could be seen throughout the survey period near waterbody. Breeds between June and September.

9. *Ardeola grayii* (Sykes)

Common names : Indian Pond Heron, Paddy Birds

Size : 46 cms.

Habits : Resident, shifting locally with water conditions. Keeps singly or in small loose parties. Affects inland and costal wetlands. Feeds on frogs, fish, crustaceans, water beetles and other insects.

Remarks : Common. A number of birds were seen feeding in different water bodies. Breeds between May and September.

10. *Bubulcus ibis* (Linnaeus).

Common names : Cattle Egret (Eng) .

Size : 51 cms.

Habits : Resident. Keeps singly or in small loose parties. Usually found in association with grazing cattle. Affects damp grassland, paddy fields, inland waters and forest glades. Feeds mainly on insects, also takes to a minor extent tadpoles, frogs and lizards.

Remarks : Common. A good number of birds were seen in different parts of the sanctuary. Breeds between June and August.

11. *Ardea alba* (Linnaeus).

Common names : Large Egret, Great White Heron (Eng).

Size : 96 cms.

Habits : Resident, shifting locally with water conditions. Keeps singly or in small loose parties. Affects jheels, marshes, rivers and inland water bodies. Feeds on fish, frogs, crustaceans and aquatic insects.

Remarks : Uncommon. Only two birds were seen throughout the survey period near water bodies. Breeds between July and September.

12. *Egretta intermedia* (Wagler)

Common names : Smaller and Median Egret (Eng).

Size : 45 cm.

Habits : Resident and nomadic, shifting locally with water condition. Conial, found in small flocks. Affects jheels, marshes, reservoirs and inundation. Feeds on fish, frog and aquatic insects.

Remarks : Moderately common. Six birds were seen near different water bodies of the sanctuaries. Breeds between July and September.

13. *Egretta gezetta* (Linnaeus)

Common names : Little Egret.

Size : 55-65 cm.

Habits : Resident, shifting locally with water conditions. Usually found in flocks on the edge water bodies. Affects marshes, reservoirs, jheels, lakes, rivers, inundated paddy fields and mudflats. Feeds on fish, frogs, crustaceans and aquatic insects.

Remarks : Common. A number of birds were seen near different habitats. Breedes between July and September.

14. *Nycticorax nycticorax* (Linnaeus)

Common names : Night Heron.

Size : 58-65 cms.

Habits : Resident, shifting locally with water conditions. Gregarious, nocturnal or crepuscular and keeps singly. Affects reservoirs, jheels, tanks, streams, ponds and rivers. Feeds on fish, frogs, aquatic insects and odonata larvae.

Remarks : Uncommon. Only Two birds could be seen throughout the survey periods near waterbodies. Breedes between June, July and September.

15. *Butorides striatus javanicus* (Horsefields)

Common names : Little Green Heron (Eng).

Size : 46 cms.

Habits : Resident. Crepuscular and nocturnal. Occasionally active during daytime. Keeps singly. Affects rivers, lakes, reservoirs and marshes and rice fields. Feeds on fish, frogs, shrimps, crabs and aquatic insects.

Remarks : Uncommon. Only a single bird could be seen throughout the survey periods near a waterbody. Breedes between March and September depending with water conditions.

Family CICONIDAE

16. *Anastomus oscitans* (Boddaert)

Common names : Openbill Stork (Eng).

Size : 68 cms.

Habits : Resident, shifting locally water condition Keeps sigly or in small flocks. Affects jheels, marshes, shallow wetlands like lake reservoirs, paddy fields and riverbeds. Feeds on mollusks, frogs, fishes, crabs and other small animals.

Remarks : Moderately common. Only four birds could be seen throughout the survey periods in different habitats. Breeds between July and September.

17. *Pseudibis papillosa* (Temminck)

Common names : Indian Black Ibis(Eng).

Size : 68 cms.

Habits : Resident. Keeps in small parties or flocks. Affects drier margins of jheels, river banks, stable fields and occasionally wading into puddles. Feeds on frogs, small fish, earthworms, beetles and other insects. In addition also takes lizard, small snakes, scorpions, crustaceans and grains.

Remarks : Uncommon. Only two birds could be seen throughout the survey periods in different habitats. Breeds between March and October.

18. *Plegadis falcinellus* (Linnaeus)

Common names : Glossy ibis (Eng).

Size : 55-65 cm.

Habits : Partly resident and partly winter visitor. Keeps in small parties or flocks. Affects marsh land or shallow water. Feeds on mollusks, crustaceans, worms, insects, tadpoles and small frogs.

Remarks : Rare. Only a single bird could be seen throughout the survey period. Breeds between May and July.

Order ANSERIFORMES

Family ANATIDAE

19. *Dendrocygna bicolor* (Vieillot)

Common names : Large whistling Teal (Eng).

Size : 51cms.

Habits : Resident, nomadic and possibly also local migrant in past. Keeps in small flocks. Affects reedy and vegetation covered jheels and tanks. Feeds on aquatic vegetation.

Remarks : Uncommon. Only a flock of four could be seen throughout the survey period in Rishia Dam. Breeds between June and October, but chiefly between July and August.

20. *Tadorna ferruginea* (Pallas)

Common names : Ruddy shelduck, Brahminy Duck (Eng); Kesar Pandia. Panda Hansa (local).

Size : 66cms.

Habits : Winter visitor. Keeps in pairs or small flocks. Affects open lakes, rivers with

extensive shingly banks and mudflats Feeds on grains, aquatic plants, algae and aquatic in-vertebrates.

Remarks : Uncommon. Only a small flock of six birds could be seen throughout the survey period in a water reservoir. Breeds between May and June around high altitude lakes and swamps of Ladakh and Nepal.

21. *Ans acuta* (Linnaeus)

Size : 56-74 cms.

Common names : Pintail (Eng).

Habits : Winter visitor. Keeps in flocks, Largely crepuscular, feeds at roosts during day. Affects lakes marshes, jheels. Wet paddy fields and rivers. Feeds on plant seed, grass, crows, shoots and also molluscs and other in-vertebrates.

Remarks : Moderately common. A flock of ten birds could be seen throughout the survey period near a waterbody. Breeds in N. Europe. Asia and N. America, winters south to N. Africa, Middle east south and south east Asia.

22. *Anas crecca* (Linnaeus)

Common names : Common Teal (Eng).

Size : 38 cms.

Habits : Winter visitor, Keeps in flocks, jheels, marshes, pools reservoirs and rivers. Feeds on shoots, tubers, seeds of aquatic plants and grains of wild and cultivated rice.

Remarks : Moderately common. A flock of twenty birds could be seen throughout the survey period in a water reservoir. Breeds in Europe and N and Ne Asia.

23. *Anas poecilorhyncha* (J. R. Rorster)

Common names : Spotbill Duck (Eng).

Size : 61 cms.

Habits : Resident, nomadic and occasionally migratory. Keeps usually in pairs, small parties or moderate sized flocks. Affects freshwater vegetation covered jheels, lakes, reservoirs, marshes and tanks but rarely on rivers. Feeds on aquatic plants, their seeds and arable crops, occasionally also takes aquatic insects.

Remarks : Uncommon. Only a pair could be seen throughout the survey period near a flowing stream. Breeds between July and October depending largely on water condition.

24. *Anas strepera* (Linnaeus)

Common names : Gadwall (Eng).

Size : 51 cms.

Habits : Winter visitor. Gregarious. Keeps in small flocks. Affects fresh water reedy marshes and jheels with extensive vegetation cover and open water spread of dams and reservoirs. Feeds on aquatic plants and grains of arable crops, takes molluscs and aquatic insects.

Remarks : Uncommon. Only a small flock of six birds could be seen throughout the survey period near dam. Breeds. In Eurasia and America.

25. *Anas Penelope* (Linnaeus)

Common names : Wigeon (Eng).

Habits : Winter visitor. Keeps in flocks. Affects shallow reedy jheels, marshes, reservoirs and pools. Feeds on aquatic plants, grasses, seeds of arable crops, algae; occasionally also takes aquatic animals.

Remarks : Uncommon. Only a small flock of four birds could be seen throughout the survey period near a reservoir. Breeds in temperate regions Eurasia north of Arctic circle and beyond.

26. *Anas querquedula* (Linnaeus)

Common names : Garganey, Bluewinged Teal (Eng).

Size : 41 cm.

Habits : Winter visitor. Keeps in flocks. Affects all type of wetlands including jheels, marshes, lakes, reservoirs, rivers, and village ponds. Feeds on seeds, shoots of marsh plants, grasses and grains; also takes aquatic insects, larvae, worms and mollusks.

Remarks : Uncommon. Only a small flock of six birds could be seen throughout the survey period near a reservoir. Breeds across Palaearctic from Britain to Pacific.

27. *Anas clypeata* (Linnaeus)

Common names : Shoveller (Eng).

Size : 51cms.

Habits : Winter visitor. Gregarious, Usually keeps in small flocks. Affects in jheels, lakes, rivers, reservoirs, irrigation and village tanks. Feeds on mollusks, crustaceans, insects larvae, worms and aquatic plants.

Remarks : Uncommon. Only a pair of birds could be seen throughout the survey period near a reservoir. Breeds in Europe, North Asia and North America but not North of Arctic Circle.

28. *Nettapus coromandelianus* (Gmelin)

Common names : Cotton Teal, Quacky-duck (Eng).

Size : 33 cms.

Habits : Resident. Shifting locally with water conditions. Keeps in pairs or small flocks. Affects village tanks, ponds, vegetations covered pools and channels. Feeds on aquatic plants, arable, crops; also takes crustaceans and insect larvae.

Remarks : Common. A number of birds were seen near water bodies. Breeds between July and August.

29. *Sarkidiornis melanotos* (Pennant)

Common names : Nakta, Comb Duck (Eng); Naki hansa (Local)

Size : 76cms.

Habits : Resident. Shifting locally with water conditions. Keeps in flocks. Affects ready tanks, jheels, irrigation tanks, reservoirs and pools. Feeds on aquatic plants, shoots, seeds, arable crops and aquatic insects.

Remarks : Uncommon. Only a pair of birds could be seen throughout the survey period near a reservoir. Breeds between July and September during SW monsoon.

Order FALCONIFORMES

Family ACCIPITRIDAE

30. *Milvus migrans govinda* (Sykes)

Common names : Pariah Kite (Eng).

Size : 61cms.

Habits : Resident, shifting locally to drier areas during heavy rain fall. Affects urban localities and human habitations. Largely omnivorous in feeding habits and an efficient and useful scavenger.

Remarks : Common. A number birds were seen in different habitats throughout the survey period. Breeds between September and April.

31. *Heliastur Indus* (Boddaert)

Common names : Brahminy Kite (Eng).

Size : 48cms.

Habits : Resident. Shifting locally with water conditions. Keeps Singly or in pairs. Affects reservoirs, rivers, jheels, inundated rice fields and flooded inland areas. Feeds on fish, frogs, crabs, lizards, small snakes, small birds, orthopteran insects and thrown garbage.

Remarks : Uncommon. Only a pair could be seen throughout the survey period. Breeds between December and March.

32. *Accipiter nisus* (Linnaeus)

Common names : Sparrow Hawk (Eng).

Size : 31-36 cms.

Habits : Partly resident and partly migratory. Keeps singly. Affects well wooded, broken foothills, light forest, grooves and orchades. Feeds on birds of its own weight and size.

Remarks : Uncommon. Only a single bird could be seen throughout the survey period perching on a tree branch. Within Indian limit breeds in Kashmir between April and June.

33. *Hierraetus fasciatus* (Vieillot)

Common names : Slender Hawk Eagle (Eng).

Size : 68-72 cm.

Habits : Resident. Keeps singly. Affects well wooded country, hill and plains. Feeds on birds and small mammals.

Remarks : Uncommon. Only a single bird could be seen throughout the survey period resting on a tree branch. Breeds between December and January varying locally.

34. *Pavo cristatus* (Linnaeus)

Common names : Indian Peafowl (Eng); Mania (Male), (Female) Local.

Size : Male 92-122 cms, Female 86cms.

Habits : Resident. Keeps in small flocks, segregate after breeding season. Feeds on seeds, grains, tender shoots of crops, flower-buds, wild figs, centipedes, scorpions, lizards, small snakes and insects.

Remarks : Common. A number of birds were seen in different forest habitats. Breeds after rains in June and continuing till September.

Order GRUIFORMES

Family TURNICIDAE

35. *Turnix sylvatica dussumier* (Temminct)

Common names : Little Bustard-Quil (Eng); San gundla (Local).

Size : Male 13cm, Female slightly larger.

Habits : Resident. Keeps singly or in pairs. Affects grassland scrub

Habits : Resident. Keeps singly or in pairs. Affects grassland and scrub jungle bordering cultivation and open light deciduous forest. Feeds on grass and weed seeds, grains, green shoots and small insects.

Remarks : Uncommon. Only a pair was seen through out the survey period inside forest bush. Breeds throughout the year but chiefly during the rains.

36. *Turnix tanki* (Blyth.)

Common names : Indian Yellowlegged Button Quil (Eng).

Size : Male 15cm, Female slightly larger.

Habits : Resident. Keeps singly or in pairs. Affects grassland, preferably damp spots intermixed with low scrub. Feeds on grains, grass and weed seeds, green shoots and small insects.

Remarks : Uncommon. Only three birds were seen throughout survey periods in forest bushes. Breeds after rains between June and September.

Family RALLIDAE

37. *Amaurornis phoenicurus* (Pennant)

Common names : Indian Whitebreasted Waterhen (Eng).

Size : 32cm.

Habits : Resident. Keeps singly or in pairs. Affects reedy marshland, ponds, ditches, village tanks and inundated rice-fields. Feeds on insects and their larvae, worms, molluscs, seeds and shoots.

Remarks : Moderately common. Seven birds were seen throughout the survey period near different waterbodies. Breeds between June and October.

38. *Gallinula chloropus* (Linnaeus)

Common names : Indian Moorhen(Eng).

Size : 32cm.

Habits : Partly winter visitor. Shifts locally with water conditions. Keeps in pairs or in small parties. Affects jheels, swamps, reed-margined ponds, village tanks, ditches and available open water. Feeds on seeds, fruits, shoots of water plants, mollusks, insects and larvae, young frogs and small fishes.

Remarks : Uncommon. Only a pair of birds were seen throughout survey periods near a waterbody. Breeds between July and September during SW monsoon.

39. *Fulica atra* (Linnaeus.)

Common names : Coot (Eng).

Size : 42cm.

Habits : Resident as well as abundant winter visitor. Keeps in small parties and flocks. Affects jheels , tanks open water. Feeds on shoots and seeds of aquatic plants, wild and cultivated rice; also takes worms, insects, mollusks and occasionally small fish.

Remarks : Uncommon. Only three birds were seen throughout survey periods near a village tanks.. Breeds between July and August.

40. *Hydrophasianus chirurgus* (Scopoli)

Common names : Pheasant-tailed Jacana (Eng).

Size : 31cm.

Habits : Resident but shifting locally during draught and flood. Keeps in pairs or small parties. Affects jheels , tanks, water reservoirs and village ponds. Feeds on seeds, roots, aquatic insects and their larvae; also takes bivalves and other mollusks.

Remarks : Uncommon. Only a pair of birds were seen throughout survey periods near a water body. Breeds between June and September during SW monsoon.

Order CHARADRIIFORMES

Family JACANIDAE

41. *Metopidius indicus* (Latham)

Common names : Bronzewinged Jacana (Eng).

Size : 28-31 cm.

Habits : Resident. Keeps in pairs or small parties. Affects floating vegetation covered water reservoirs, jheels and tanks. Feeds on vegetative matters; but also takes insects and mollusks.

Remarks : Moderately common. Six birds were seen throughout the survey period in different waterbodies. Breeds between June and September soon after the SW monsoon has properly set in.

Family CHADRIIDAE

42. *Vanellus indicus* (Baddaert)

Common names : Redwattled Lapwing (Eng).

Size : 33cm.

Habits : Resident. Keeps in pairs or small loose flocks. Affects the neighbourhood of jheels, tanks, rivers, ditches; very commonly seen in cultivated fields. Feeds on insects and their larvae, mollusks and vegetable matters.

Remarks : Common. A number of birds were seen in different habitats. Breeds between March and September.

43. *Vanellus malabaricus* (Boddaert)

Common names : Yellow-wattled Lapwing (Eng).

Size : 27 cm.

Habits : Resident with local migratory movement. Keeps in pairs or small parties.

Affects barren land, stubbles fallow fields of drier biotope. Feeds chiefly on insects.

Remarks : Moderately common. Only four birds could be seen throughout the survey period in different habitats. Breeds between April and July.

44. *Limosa limosa* (Linnaeus)

Common names : Blacktailed Godwit (Eng).

Size : Male 41cm, Female larger.

Habits : Winter visitor. Keeps in small to large flocks. Affects inland jheels, marshes, tidal creeks, estuaries, lakes; but is predominantly a freshwater species. Feeds on mollusks, crustaceans, worms; also takes seeds of grass and aquatic plants.

Remarks : Uncommon. Only two birds could be seen throughout survey periods near a water reservoir. Breeds between May and June in N and C Europe and Asia.

45. *Tringa totanus* (Linnaeus)

Common names : Common Redshank (Eng).

Size : 28cm.

Habits : Winter visitor. Keeps singly or in small parties, often found in association with other small waders. Affects river banks, jheel margins, water reservoirs and tanks. Feeds on mollusks, crustaceans, worms, aquatic insects and their larvae.

Remarks : Rare. Only a single bird could be seen throughout survey periods near a water reservoir. Breeds in Tibetan Plateau facies of Ladakh and Kashmir between May and June.

46. *Tringa stagnatilis* (Bechstein)

Common names : Marsh Sandpiper, Little greenshank (Eng).

Size : 25 cm.

Habits : Winter visitor. Keeps in parties or small flocks in association with other sandpipers. Affects swampy edges of freshwater ponds, jheels and inundated paddy fields. Feeds on crustaceans, worms, insects and small mollusks.

Remarks : Moderately common. A small party of six birds were seen on the edge of a reservoir. Breeds in SE Europe and C and S Russia.

47. *Tringa nebularia* (Gunnerus)

Common names : Greenshank (Eng).

Size : 36cm.

Habits : Winter visitor. Keeps singly or in a small parties in association with other sandpipers. Affects swampy riverbanks, tanks, jheels and paddy fields. Feeds on tadpoles, crustaceans, worms, insects and small mollusks.

Remarks : Moderately common. Altogether five birds were seen in different water bodies. Breeds in N Europe and across N Asia.

48. *Rostratula benghalensis* (Linnaeus)

Common names : Painted snipe (Eng).

Size : 25 cm.

Habits : Resident. Keeps singly or in small flocks. Crepuscular, active in early morning, evening and night. Affects marshes, deep pools, ditches and mud patches. Feeds on mollusks, crustaceans, aquatic insects arable crops.

Remarks : Common. A number of birds were seen on several occasions in different habitats. Breeds throughout the year but chiefly between July and September.

49. *Himantopus himantopus* (Linnaeus)

Common names : Painted Snipe (Eng).

Size : 25 cms.

Habits : Resident, shifting locally with water conditions. Keeps in small flocks. Affects freshwater marshes, jheels, village tanks, irrigation reservoirs and inundated ploughed fields. Feeds on mollusks, crustaceans, aquatic insects and seeds of marshy plants.

Remarks : Common. A number of birds were seen in different habitats. Breeds between April and August.

50. *Burhinus oedicnemus* (Linnaeus)

Common names : Indian Stone Curlew (Eng).

Size : 41 cm.

Habits : Resident, with some local movements. Crepuscular and nocturnal. Keeps in pairs or small flocks. Affects thorn scrubs, light forest. dry riverian tracts and tank beds, orchards and groves of trees around villages. Feed on insects, worms slugs , small reptiles; also occasionally takes some seed.

Remarks : Uncommon. Four birds were seen throughout the survey period in different habitats. Breeds between February and August, chiefly march and April.

Order COLUMBIFORMES

51. *Terron phoenicoptera* (Latham)

Common names : Bengal Green Pigeon (Eng).

Size : 33 cm.

Habits : Resident. Keeps in flocks. Affects dry and moist deciduous forests with fruit bearing trees. Feeds on drupes, berries and wild figs of various kinds.

Remarks : Common. A number of birds were seen throughout the survey period. Breeds chiefly between March and April but sometimes continuing till June or later.

52. *Streptopelia orientalis* (Latham)

Common names : Rufous Turtle-Dove (Eng).

Size : 33cm.

Habits : Resident. Keeps in pairs or small parties. Affects mixed deciduous forests around cultivation. Feeds on green shoots, paddy and other cereals; also takes seeds of different weeds.

Remarks : Common. A number of birds were seen throughout the survey period. Breeds between May and July.

53. *Streptopelia decaocto* (Frisvaldszky).

Common names : Indian Ring Dove (Eng).

Size : 32cm.

Habits : Resident with marked seasonal migration. Keeps in pairs or small parties. Affects open dry country with cultivation and groves. Feeds on grain and seeds.

Remarks : Common. A number of birds were seen in different habitats. Breeds throughout the year depending on climatic conditions.

54. *Streptopelia tranquebarica* (Hermann).

Common names : Indian Red Turtle Dove (Eng).

Size : 23cm.

Habits : Resident with marked local migration. Keeps in pairs or small parties. Affects open scrub jungle and cultivation in deciduous biotope. Feeds on grains of paddy and other cereals; also takes grass and weed seeds.

Remarks : Common. A number of birds were seen in different habitats. Breeds throughout the year but chiefly between April and September.

55. *Streptopelia chinensis* (Scopoli)

Common names : Indian Spotted Dove (Eng).

Size : 30 cm.

Habits : Resident with some local migration. Keeps in pairs or small parties. Affects gardens, groves, cultivation and moist deciduous jungles. Feeds on grains of paddy and other cereals, lentils and pulses, grass and weed seeds.

Remarks : Common. A number of birds were seen in different habitats. Breeds throughout the year but mainly between April and July.

56. *Chalcophaps indica* (Linnaeus)

Common names : Indian Emerald Dove (Eng).

Size : 27cm.

Habits : Resident. Keeps singly or in pairs. Affects thick secondary or mixed jungle and outskirts of forest clearings. A ground feeding bird and feeds on grains, seeds and fallen berries.

Remarks : Uncommon. Only three birds were seen throughout the survey period feeding on forest road. Breeding season variably locally but chiefly between March and May.

Order PSITTACIFORMES

Family PSITTACIDAE

57. *Psittacula eupatria* (Linnaeus)

Common names : Large Indian Parakeet, Alexander Parakeet.

Size : Male-53 cm, Female slightly smaller.

Habits : Resident with local migration dependent on food supply. Keeps in small parties or flocks where food is abundant. Affects dry and mixed deciduous forest and well wooded country. Feeds on fruits, vegetables and seeds of all kinds; also takes cereals.

Remarks : Moderately common. Only six in two flocks birds were seen throughout the survey period perching in forest tree branch. Breeds between December and April.

58. *Psittacula krameri* (Scopoli)

Common names : Roseringed Parakeet (Eng).

Size : 42 cm.

Habits : Resident. Keeps in small or large parties. Affects moist and dry deciduous forests, lightly wooded country and cultivation near human habitations. Feeds on fruits, grains, cereals and seeds of all kinds.

Remarks : Common. A good number of birds were seen in different habitations. Breeds between January and May. A most destructive pest of agriculture and horticulture.

59. *Psittacula cyanocephala* (Linnaeus)

Common names : Blossomheaded Parakeet (Eng).

Size : 36 cm.

Habits : Resident, moving locally depending on food supply. Keeps in small parties. Affects light forest, well-wooded compounds and cultivation. Feeds on grains and fruits of all kind; also takes buds and flashy petals.

Remarks : Moderately common. Only ten birds were seen in two parties throughout the survey period. Breeds between January and April. Destructive bird species of Orchard fruit and cultivation.

Order CUCULIFORMES

Family CUCULIDAE

60. *Cuculus micropterus* Gould.

Common names : Indian Cuckoo (Eng).

Size : 33 cm.

Habits : Resident, nomadic or seasonal visitor. Keeps singly to tree-tops. Affects forests and well-wooded country. Feeds on caterpillars and various insects.

Remarks : Moderately common. Only six birds were seen throughout the survey period in forest canopy. Breeds between March and August.

61. *Eudynamis scolopacea* (Linnaeus)

Common names : Indian Koel (Eng).

Size : 43 cm.

Habits : Resident, nomadic and local migrant. Keeps singly or in pairs. Affects lightly wooded country-gardens, orchards and trees in and around cultivation, towns and villages. Feeds on fruits and berries; also takes caterpillars, insects, terrestrial snails and egg of small birds.

Remarks : Common. A number of birds were seen and their call heard at different areas. Breeds between May and June but varying locally.

62. *Centropus sinensis* (Stephens)

Common names : Crow Pheasant (Eng).

Size : 48 cm.

Habits : Resident. Keeps singly or in pairs. Affects light forest, scrubs and bush jungle, grassland, plantation and cultivation. Feeds on mice, bats, lizards, frogs, snakes, mollusks and insects.

Remarks : Common. A number of birds were seen in different habitats. Breeds between November and May.

Order STRIGIFORMES

Family STRIGIDAE

63. *Tyto alba* (Scopoli)

Common names : Indian Barn Owl (Eng).

Size : 36 cm.

Habits : Resident. Crepuscular and nocturnal. Keeps singly. Affects the neighbourhood habitation and cultivation. Feeds on small birds, bats, rats and mice.

Remarks : Common. A number of birds were seen near forest edges of different areas. Breeds throughout the year, the peak periods varying locally.

64. *Otus scops* (Linnaeus)

Common names : Scops owl (Eng).

Size : 19 cm.

Habits : Resident. Nocturnal. Keeps singly or in pairs. Affects forests, orchards and densely foliated trees around cultivation. Feeds on beetles, grasshopper and other insects; also takes small birds, mice and lizards.

Remarks : Common. A number of birds were seen in different habitats. Breeds between February and May.

65. *Cypsiurus parvus* (Lichtenstein)

Common names : Indian Palm Swift (Eng).

Size : 13cm.

Habits : Resident. Gregarious but more scattered; rarely keeps in close packed flocks. Affects open country and cultivation with palms. Feeds on winged insects, bugs and beetles taken in air.

Remarks : Common. A number of birds were seen flying in different areas. Breeds throughout the year.

66. *Ceryle rudis* (Linnaeus)

Common names : Indian Pied Kingfisher (Eng).

Size : 31 cm.

Habits : Resident. Keeps singly or in pairs. Affects all kind of stagnant fresh water-rivers, canals, reservouirs etc. Feeds mainly on fish; also takes tadpoles and aquatic insects.

Remarks : Moderately common. Only four birds could be seen throughout the survey period perching on tree branches near waterbodies. Breeds between February and April.

Order CAPRIMULGIFORMES

Family CAPRIMUGIDAE

67. *Caprimulgus indicus* Latham.

Common names : Indian Jungle Nightjar (Eng).

Size : 29 cm.

Habits : Resident with partial local migration. Keeps singly. Affects forest clearing and scrub-covered slopes. Feeds on beetles, bugs, moths and other winged insects.

Remarks : Common. A number of birds were seen at night in forest roads. Breeds between February and May.

Order APODIFORMES

Family APODIDAE

68. *Appus affinis* (J.E. Grey)

Common Names : Indian House Swift (Eng).

Size : 15 cm.

Habits : Resident. Keeps in small parties and loose rabbles. Spend most of the day on the wings. Affects habitations, cliffs and ruins. Feeds on tiny flying bugs and beetles, winged ants and Dipteran insects.

Remarks : Common. A number of birds were found flying in different areas. Breeds throughout the year except the coldest months.

69. *Glaucidium radiatum* (Tickell)

Common names : Barred Jungle Owlet (Eng).

Size : 20cm.

Habits : Resident. Largely, crepuscular but also moves during night. Keeps singly or in pairs. Affects mixed deciduous forest and secondary jungle. Feeds on locusts, cicades, grasshopper and other insects; also takes mollusks, lizards, small birds and mice.

Remarks : Common. A number of birds were seen in different habitats. Breeds between March and May.

70. *Athene brama* (Temmick)

Common names : Spotted Owlet (Eng).

Size : 21cm.

Habits : Resident. Crepuscular and nocturnal. Keeps in pairs or family parties. Affects the neighbourhood of habitations and cultivations, avoid heavy forests. Feeds on beetles, moths and other insects; also takes earthworms, lizards, small birds and mice.

Remarks : Common. A number of birds were seen in different habitats. Breeds between February and April.

Order TROGONIFORMES

Family TROGONIDAE

71. *Harpectes fasciatus* (Pennant)

Common names : Central Indian Trogon (Eng).

Size : 31cm.

Habits : Resident. Essentially a forest dwelling bird, keeps singly or in widely separated pairs. Affects moist-deciduous and semi-evergreen forests. Feeds on caterpillars, grasshoppers, beetles and other insects; also takes leaves and berries.

Remarks : Common. A number of birds were found throughout the survey period in forest biotope. Breeds between February and May.

72. *Alcedo atthis* (Linnaeus)

Common names : Small Blue Kingfisher (Eng).

Size : 18cm.

Habits : Resident. Keeps singly or in pairs. Affects village ponds, water reservoirs, canals and roadside ditches. Feeds on aquatic insects, small fish and tadpoles.

Remarks : Moderately common. Only three birds could be seen throughout the survey period. Breeds between March and June.

73. *Halcyon smyrnensis* (Linnaeus)

Common names : Whitebreasted Kingfisher (Eng).

Size : 28cm.

Habits : Resident. Keeps singly or in seorated pairs. Affects tanks, canals, streams, wet paddy fields and roadside ditches; less dependent on water than other kingfishers and often found in a very wide range of habitats. Feeds on small animals and insects; fish being a secondary preference.

Remarks : Common. A number of birds were seen in different habitats. Breeds between April and July

Family MEROPIDAE.

74. *Merops leschenaulti* Vieillot.

Common name : Chestnutheaded Bee-eater (Eng).

Size : 21cm.

Habits : Resident. Keeps in parties. Affects the neighbourhood of streams in forest. Feeds on winged insects.

Remarks : Uncommon. Only two birds could be seen throughout the survey period. Breeds between February and June.

75. *Merops philippinus* Linnaeus.

Common names : Bluetailed Bee-eater (Eng).

Size : 31 cm.

Habits : Resident. Keeps in loose flocks. Affects neighbourhood of waters like jheels, tanks, streams and reservoirs. Feeds on winged insects of all kinds.

Remarks : Uncommon. Only three birds could be seen throughout the survey period. Breeds between March and June.

76. *Merops orientalis* Latham.

Common names : Small Green Bee-eater (Eng).

Size : 21 cm.

Habits : Resident with marked local migration. Keeps in loose parties. Affects areas having light forests and cultivation, less dependent on presence of water. Feeds on insects of all kinds.

Remarks : Common. A number of birds were seen in different habitats throughout the survey period. Breeds between February and June.

Family CORACIIDAE

77. *Coracius benghalensis* (Linnaeus)

Common names : Northern Roller, Blue Jay (Eng).

Size : 31cm.

Habits : Resident. Keeps singly or in pairs. Affects cultivation, groves, gardens and other trees near villages; also light deciduous forests. Feeds on insects of all kinds; also takes frogs, lizards and field mice.

Remarks : Common. A number of birds were seen in different habitats throughout the survey period. Breeds between March and June.

Family UPUPIDAE

78. *Upupa epops* Linnaeus

Common names : Hoopoe (Eng).

Size : 31 cm.

Habits : Resident. Keeps singly or in pairs. Affects cultivation, light forest and neighbourhood of habitations and villages. Feeds on insects of all kinds.

Remarks : Uncommon. Only two birds could be seen throughout the survey period. Breeds between March and May

Family BUCEROTIDAE

79. *Tockus birostris* (Scopoli).

Common names : Grey Hornbill (Eng).

Size : 61 cm.

Habits : Resident. Keeps in pairs or small parties. Affects open forests and well wooded areas with fruiting and trees. Feeds on fruit, berries and flower petals; also takes insects, lizards, mice and other small animals.

Remarks : Moderately common. Only four birds could be seen throughout the survey period. Breeds between March and June.

80. *Anthracoceros coronatus* (Beddaert)

Common names : Malabar Pied Hornbill (Eng).

Kuchla kha (Orissa).

Size : 89 cm.

Habits : Resident. Keeps in pairs or small parties. Affects open forests and large fruit trees near villages and gardens. Feeds on berries, drupes, also takes lizards, snakes and other animals.

Remarks : Moderately common. Only four birds could be seen throughout the survey period. Breeds between March and April

Order PICIFORMES

Family CAPITONIDAE.

81. *Megalaima zeylanica* (Gmelin)

Common name : Green Barbet (Eng).

Size : Length 27 cm.

Habits : Resident. Keeps singly or in small loose parties. Affects forest, well-wooded areas and trees near habitation. Feeds on wild figs, drupes, berries and flower petals; also takes insects.

Remarks : Common. A number of birds were seen in different habitats throughout the survey period. Breeds between March and May.

82. *Dinopium benghalense* (Linnaeus)

Common names : Goldenbacked Woodpecker (Eng).

Size : Length 29 cm.

Habits : Resident. Keeps in pairs or family parties. Affects light forest, plantations, groves and trees in open country. Feeds on insects and their larvae, predominantly ants.

Remarks : Common. A number of birds were seen in throughout the survey period. Breeds between March and May.

83. *Picoides nanus* (Vigors)

Common names : Browncrowned Pygmy Woodpecker (Eng).

Size : Length 13 cm.

Habits : Resident. Usually keeps in pairs, sometimes also found singly. Affects light deciduous forest, secondary jungle and groves of trees around cultivation. Feeds on insects and grubs.

Remarks : Common. A number of birds were seen throughout the survey period. Breeds between February and April.

84. *Picoides mahrattensis* (Latham)

Common names : Yellow-fronted Pied or Mahratta Woodpecker (Eng).

Size : Length 18 cm.

Habits : Resident. Keeps in pairs. Affects all types of light forest, open woodland and open country with scattered trees. Feeds on insects and their larvae.

Remarks : Common. A number of birds were seen throughout the survey period. Breeds between February and May.

85. *Pitta brachyura* (Linnaeus)

Common names : Indian Pitta (Eng).

Size : Length 19 cm.

Habits : Resident. Keeps singly. Mainly terrestrials and usually seen hopping on the ground. Affects scrub jungle and broadv leaved forest. Feeds on insects, grubs and worms.

Remarks : Moderately common. Only birds could be seen throughout the survey period. Breeds between May August.

Order PASSERIFORMES

Family ALAUDIDAE

88. *Mirafra assamica* Horsfield

Common names : Bengal Bush Lark (Eng).

Length : 15 cm.

Habits : Resident. Keeps singly or in pairs or small loose parties. Affects cultivation and open grassland. Commonly found on laterite and moorum soil. Feeds on grass and weeds seeds, tiny beetle and other insects.

Remarks : Common. A number of birds were seen in different habitats. Breeds between March and August, principally May and June.

89. *Mirafra erythroptera* Blyth

Common names : Red-winged Bush Lark (Eng).

Size : 14cm.

Habits : Resident. Keeps singly or in pairs or small loose parties. Affects sparse story scrub and bush jungle and fallow land in open plains and plateau country. Feeds on grass and weed seeds, tiny beetles and other insects.

Remarks : Moderately common. A small party of six birds could be seen throughout the survey period. Breeds between March and October.

90. *Eremopterix grisea* (Scopoli)

Common names : Ashycrowned Finch-Lark (Eng).

Size : 12 cm.

Habits : Resident, subject to local migration during monsoon from periods. Keeps singly or in pairs or small loose parties. Affects cultivation and open dry scrub. Feeds on seeds, grains and insects.

Remarks : Common. A number of birds were seen in different habitats throughout the survey period. Breeds between February and May.

91. *Hirundo rustica* Linnaeus

Common names : Western Swallow (Eng).

Size : 18 cm.

Habits : Winter visitor. Keep in close packet parties. Affects open cultivation, habitation lakes and reservoirs. Feeds on Dipteran insects and ants.

Remarks : Moderately common. Only a flock of ten birds were seen throughout the survey period near a reservoir. Breeds in Pakistan hills, Himalayas and North-East India during April And May.

92. *Hirundo daurica* Linnaeus.

Common names : Red-rumped Swallow.

Size : 19 cm.

Habits : Resident. Keeps in scattered pairs or family parties. Affects upland cultivation and grassy hills during summer; open country and forest clearing during winter. Feeds on flying beetles and bugs; also takes winged ants and termites.

Remarks : Common. A number of birds were seen throughout the survey periods in different habitats. Breeds between April and August.

Family LANIDAE

93. *Lanius vittatus* Valenciennes

Common names : Indian Baybacked Strike (Eng).

Size : 18 cm.

Habits : Resident. Keeps singly or separated pairs. Affects open scrub and bushes in cultivation. Feeds on caterpillars, beetles and other insects; also takes lizards, young mice and and nestling birds.

Remarks : Moderately common. Only four birds could be seen throughout the survey period in different habitats. Breeds between May and July.

94. *Lanius schach* Linnaeus

Common names : Rufousbacked Strike (Eng).

Size : 25 cm.

Habits : Resident. Keeps singly or separated pairs. Affects bushes and open forests, Gardens and cultivations. Feeds on caterpillars, various insects, lizards, frogs, mice and small birds.

Remarks : Uncommon. Only two birds could be seen throughout the survey period in different habitats. Breeds between March and July.

95. *Lanius cristatus* Linnaeus

Common names : Brown Shrike (Eng).

Size : 19 cm.

Habits : Winter visitor. Keeps singly or in separated pairs. Affects forest edges and clearings, grass covered hillsides with bushes and small trees. Feeds on various insects, lizards, mice and small birds.

Remarks : Moderately common. Only five birds could be seen throughout the survey period in different habitats. Breeds Siberia and N Amurland.

Family ORIOLIDAE

96. *Oriolus oriolus* (Linnaeus)

Common names : Indian Golden Oriole (Eng).

Habits : Resident. Keeps singly or in pairs. Affects well wooded forests, gardens with large trees and orchards around villages. Feeds on wild figs, berries, insects and caterpillars.

Remarks : Moderately common. Only six birds could be seen throughout the survey period in different habitats. Breeds between April and August.

97. *Oriolus xanthornus* (Linnaeus)

Common names : Indian Blackheaded Oriole (Eng).

Size : 25 cm.

Habits : Resident. Keeps singly or in pairs. Affects open broadleaved forest and well wooded areas. Feeds on wild figs, berries and flower nectar; also takes moths, bugs, ants and other insects.

Remarks : Common. A number of birds were seen throughout the survey periods in different habitats. Breeds between March and August.

Family DICRURIDAE

98. *Dicrurus adsimilis* (Bechstein)

Common names : Indian Black Droongo or King Crow (Eng).

Size : 31cm.

Habits : Resident. Keeps singly. Affects light hill forest and open wooded country near habitation and cultivation. Feeds on various insects; also takes lizards, mice and small birds.

Remarks : Moderately common. Only four birds could be seen throughout the survey period. Breeds between April and August.

99. *Dicrurus caerulescens* (Linnaeus)

Common names : Indian Whitebellied Drongo (Eng).

Size : 24 cm.

Habits : Resident. Keeps in pairs or threes. Affects open forest and well wooded areas. Feeds on various insects.

Remarks : Common. A number of birds were seen in different habitats. Breeds between March and June.

100. *Dicrurus paradiseus* (Linnaeus)

Common names : Large Racket-tailed Drongo (Eng).

Size : 35cm.

Habits : Resident. Keeps singly or in pairs. Affects deciduous forests, well-wooded foothill country and bamboo jungle. Feeds on various insects and their larvae.

Remarks : Uncommon. Only two birds could be seen throughout the survey period. Breeds between April and June

101. *Artamus fuscus* Vieillot.

Common names : Ashy Swallow-Shrike (Eng).

Size : 19 cm.

Habits : Resident with seasonal local migration. Keeps in parties or loose flocks. Affects open wooded country. Feeds on butterflies, dragonflies and winged termites; occasionally also takes flower nectar.

Remarks : Moderately common. Only a flock of six birds were seen throughout the survey period. Breeds between March and June.

Family STURNIDAE

102. *Sternus malabaricus* (Gmelin)

Common names : Greyheaded Myna (Eng).

Size : 21 cm.

Habits : Resident, moving locally during monsoon and winter. Keeps in small flocks. Affects open jungle and thinly wooded areas near habitations. Feeds on fruits, berries, flower-nectar and insects.

Remarks : Common. A number of birds were seen in different habitats. Breeds between April and July.

103. *Sternus pagodarum* (Gmelin)

Common names : Blackheaded Myna, Brahminy Myna (Eng).

Size : Length c. 22 cm.

Habits : wild Resident keeps in parties. Affects dry well wooded areas and scrub jungle. Feeds on fruits, berries and figs; also takes insects.

Remarks : Common. A number of birds were seen in different habitats throughout the survey period. Breeds between March and August.

104. *Sturnus contra* Linnaeus

Common names : Indian Pied Myna (Eng.).

Size : Length c. 23cm.

Habits : Resident. Keeps in small parties. Affects cultivation, damp grassland and habitations. Feeds on insects, fruit and cereal grains.

Remark : Common. A number of birds were seen in different habitats during survey periods. Breeds between March and September.

105. *Acridotheres tristis* (Linnaeus)

Common names : Indian Myna (Eng).

Size : Length c 23 cm.

Habits : Resident. Keeps in family parties or flocks. Affects human habitation, cultivation and outlying forests. Feeds on fruits, grains, insects and grubs; also takes everything that can be eaten.

Remarks : Common. A number of birds were seen in different habitats throughout the survey period. Breeds between April and July.

106. *Acridotheres ginginianus* (Latham)

Common names : Bank Myna.

Size : Length c 21 cm

Habits : Resident keeps in flocks. Affects cultivation, damp grassland and habitations. Feeds on fruits, grain and insects.

Remarks : Moderately common. Only a flock of seven birds could be seen once throughout the survey period. Breeds between April and July.

107. *Acridotheres fuscus* (Wagler)

Common names : Jungle Myna (Eng).

Size : Length c 23cm.

Habits : Resident, Keep in small parties or flocks. Affects cultivation near well-wooded areas and edges of habitation. Feeds on fruits, grains, berries and insects.

Remark : common. A number of birds were seen throughout the survey Periods in different habits. Breeds between April and July.

108. *Gracula religiosa* Linnaeus

Common names : Hill Myna (Eng).

Size : Length c 29cm.

Habits : Resident with seasonal local movements. Keeps in small parties. Affects edge of close forest and cultivation clearings with standing trees. Feeds on fruits, berries, wild figs, flower buds and insect.

Remarks : Moderately common. Only seven birds in two parties were observed throughout the survey period in forest edges. Breeds between April and July.

Family CORVIDAE

109. *Dendrocitta vegabunda* (Latham)

Common names : Tree Pie (Eng).

Size : Length c 46-50cm.

Habits : Resident. Keeps in pair or family parties. Affects open wooded country, and garden with trees and bushes, Omnivorous-feeds on large variety of fruits, frogs, lizards, small snakes, young rodents; also takes eggs, nestling and small birds.

Remarks : Common. A number of birds were seen throughout the survey period in various habitats. Breeds between April and June.

110. *Corvus splendens* Vieillot

Common names : Indian House Crow (Eng).

Size : Length c 43 cm.

Habits : Resident, with seasonal movements. Keeps in pairs or parties and flocks. Affects all types country around human habitations and cultivation. Very useful between March and August as a municipal scavenger. Feeds on everything that can be eaten.

Remarks : Common around Human habitations. Breeds between March and August, but peak periods varying locally.

111. *Corvus macrorhynchos* Wagler

Common names : Jungle Crow (Eng).

Size : Length c 48 cm.

Habits : Resident. Keeps singly, in pairs or small scattered parties. Affects well-wooded country, outskirts of forest villages, towns and cities. Feeds on animal and vegetable matters.

Remark : Common. A number of birds were seen in different habitats throughout the survey periods. Breeds between March and May, but varying locally.

Family CAMPEPHAGIDAE

112. *Coracina novaehollandiae* (Gmelin)

Common names : Large Cuckoo-Shrike (Eng).

Size : Length c 28 cm.

Habits : Resident with local migration. Keeps in pairs or loose parties. Affects open woodland and trees in cultivation. Feeds on large insects and their larvae.

Remarks : Moderately common. Only five birds could be seen throughout the survey periods near forest edges. Breeds between March and July.

113. *Coracina melanoptera* (Ruppel)

Common names : Blackheaded Cuckoo-Shrike (Eng).

Size : Length c 19 cm.

Habits : Resident with seasonal local movements. Keeps singly, in pairs or small parties. Affects open mixed forest, thick hedges and secondary growth. Feeds on insects; also takes berries.

Remarks : Moderately common. Only five birds could be seen throughout the survey periods in forest habitats. Breeds between June and September.

114. *Pericrocotus flammeus* (Forster)

Common names : Scarlet Minivet (Eng).

Size : Length c 22 cm.

Habits : Resident. Keeps in flocks. Affects mixed deciduous and evergreen forests. Feeds on caterpillars, crickets, cycads and various other insects.

Remarks : Common. A number of flocks were found flying in forest canopy throughout the survey period. Breeds between May and June.

115. *Pericrocotus cinnamomeus* (Linnaeus)

Common names : Small Minivet (Eng).

Size : Length c 15 cm.

Habits : Resident. Keeps in small flocks. Affects deciduous and mixed forest, cultivated areas and plantations. Feeds on moths, caterpillars and various other insects.

Remarks : Common. A number of birds were found in forest canopy during survey periods. Breeds between March and September.

Family IRENIDAE

116. *Aegithina tiphia* (Linnaeus)

Common names : Indian Iora (Eng).

Size : Length c 14 cm.

Habits : Resident. Keeps in pairs. Affects thin jungle and scrub in light deciduous forest, village groves and roadside avenues. Feeds on caterpillars, insects and larvae.

Remarks : Common. A number of birds were found throughout the survey periods in different habitats. Breeds between July and August.

117. *Chloropsis aurifrons* (Temminck)

Common names : Goldfronted chloropsis (Eng).

Size : Length c. 19 cm.

Habits : Resident, subject to local movements, keeps in pairs or small parties. Affects light deciduous forest and secondary scrub. Feeds on berries, insects, spiders and flower nectar.

Remarks : A common number of were seen throughout the survey period in different habitats. Breeds between May and August.

118. *Chloropsis cochinchinensis* (Gmelin)

Common Names : Goldmanfled chloropsis (Eng).

Size : Length c. 18cm.

Habits : Resident. Keeps singly or in pairs. Affects open forest and well-wooded areas. Feeds on various insects and larvae, berries, wild figs and flower nectar.

Remarks : A common number of birds were seen throughout the survey period in different habitats. Breeds between March and September.

Family PYCNONOTIDAE

119. *Pycnonotus jocosus* (Linnaeus)

Common Names : Redwhiskered Bulbul (Eng).

Size : Length c. 20cm.

Habits : resident . keeps in pairs or small flocks. Affects open forest, scrub jungle in forest edges and secondary growth . Feeds on fruits , berries, figs ,flower buds and nectar; also takes insects and spiders.

Remark : Common. A number of birds were seen in different habitats throughout the survey period. Breeds between April and June.

120. *Pycnonotus cafer* (Linnaeus)

Common Names : Redvented Bulbul (Eng).

Size : Length c. 20 cm.

Habits : Resident. Keeps in pairs or small parties. Affects light deciduous forest and secondary gardens near human habitation. Feeds on fruits, berries and flower nectar; also takes various insects and spiders.

Remark: Common. A number of birds were seen in different habitats throughout the survey period Breeds between February and November, chiefly during monsoon.

121. *Pycnonotus luteolus* (Lesson)

Common Names : Whitebrowed Bulbul (Eng).

Size : Length c. 20cm.

Habits : Resident. Keeps mostly in pairs. Affects dry open scrub and forest edges. Feeds on fruit, berries and flower-nectar; also takes insects and spiders.

Remarks : Moderately common. Only six birds were seen throughout the survey period in bushes near forest edges. Breeds between April and August.

Family MUSCICAPIDAE

122. *Pomatorhinus Schisticeps* Hodgson

Common Names : Scimitar Babbler (Eng).

Size : Length c. 22cm.

Habits : Resident. Keeps in pairs or small parties. Affects scrub and bush jungle in deciduous and evergreen forests. Feeds on various insects, spiders; also takes berries and flower-nectar.

Remarks : Uncommon. Only two birds could be seen throughout the survey period in forest bushes. Breeds between November and March.

123. *Dumetia Hyperythra* (Franklin)

Common Names : Rufousbellied Babbler (Eng).

Size : Length c. 13cm.

Habits : Resident. Keeps in loose flocks, Affects tall grass and scrub jungle. Feed on various insects; also takes flower-nectar.

Remarks : Uncommon. Only two birds could be seen throughout the survey period in forest bushes. Breeds between April and September

124. *Chysomma Sinense* (Gmelin)

Common Names : Yellow-eyed Babbler (Eng).

Size : Length c.18cm.

Habits : Resident. Keeps in small parties after breeding season. Affects scrub, secondary growth and bush-clad grassy hill side forests. Feeds on various insects, caterpillars, spiders; also takes berries and flower-nectar.

Remarks : Uncommon. Only two birds could be seen once throughout the survey period in forest scrubs. Breeds between July and August.

125. *Turdoides earlei* (Blyth)

Common names : Striated Babbler (Eng).

Size : Length c 21 cm.

Habits : Resident. Keeps in flocks. Affects reed bed and tall grass in swamp areas. Feeds on insects and vegetable matters.

Remarks : Moderately common. Only a flock of seven birds could be seen once throughout the survey periods at the edge of a water reservoir. Breeds twice a year between March and October.

126. *Turdoides striatus* (Dumont)

Common Name : Jungal Babbler (Eng).

Size : Length c. 25cm.

Habits : Resident. Keeps in parties. Affects deciduous forest and cultivation. Feeds on various insects and spiders; also takes grains, seeds, figs and berries.

Remarks : A common number of birds were seen throughout the survey period in different areas .Breeds between June and August.

127. *Muscicapa parva* Bechstein

Common Names : Redbreasted Flycatcher (Eng).

Size : Length c.13cm.

Habits : Winter visitor and passage migrant. Keeps singly, sometimes in association with other species.Affects open forest, bushes and wooded areas. Feedson insects.

Remarks : Moderately common. Only four birds could be seen throughout the survey period in forest bushes. Within Indian limit breeding recorded in Ladhakh area during May.

128. *Muscicapa superciliaris* Jerdon

Common Names : Whitebrowed Blue Fly catcher (Eng).

Size : Length c 10cm.

Habits : Winter visitor.Keeps singly in mixed hunting parties. Affects open deciduous forest, gardens and orchards. Feeds on insects.

Remarks : Uncommon. Only two birds could be seen throughout the survey period in forest tracts. Breeds in Himalyas and NE India during April and July.

129. *Muscicapa tickdliae* (Blyth)

Common names : Tickell's Red-breasted Blue Flycatcher (Eng).

Size : Length c. 14cm.

Habits : Resident with local movements. Keeps singly , often found in mixed hunting parties . Affects thick bushes, scrubs in deciduous open forest and wooded areas . feeds on insects.

Remarks : Common. A number of birds were seen throughout the survey period in different habitats. Breeds between May and June.

130. *Muscicapa Thalassina* swainson

Common Name : Verditer Flycatcher (Eng).

Size : Length c. 15cm.

Habits : Winter visitor . Keeps singly or in pairs. Affects open light forest, bushes and forest edges. Feeds on insects.

Remarks : Common. A number of birds were seen throughout the survey period in different habitats. Breeds in Himalayas and NE India between April and August.

131. *Rhipidura aureola* Lesson

Common Names : Whitebrowed Fantail Flycatcher (Eng).

Size : Length c. 17cm.

Habits : Resident with local migration during winter. Keeps singly or in pairs. Affects forest and wooded areas. Feeds on insects.

Remarks : moderately common. Only four birds could be seen through the survey period in different habits. Breeds between march and June.

132. *Terpsiphone paradise* (Linnaeus)

Common names : Paradise Flycatcher (Eng).

Size : Length c. 20cm.

Habits : Summer visitor. Keeps in pairs. Affects shady forest and well-wooded areas. Feeds on winged insects.

Remarks : moderately common. Only two pairs could be seen through the survey period in forest shades. Breeds between May and June.

133. *Cisticola juncidis* (Rafinesqune)

Common names : Streaked Fantail Flycatcher (Eng).

Size : Length c. 10cm.

Habits : Resident. Keeps singly or in loose parties. Affects various fields and grasslands. Feeds on insects.

Remarks : Moderately common. Only five birds could be seen throughout the survey period in grasslands. Breeds between May and October depending on rains and suitable ground vegetation. Two or three broods are generally reared.

134. *Prinia Hodgsonii* Blyth

Common names : Asly-grey Wren-warbler (Eng).

Size : Length c 11cm.

Habits : Resident. Keeps singly or in pairs. Affects bushes at forest edges, scrub and secondary growth.

Remarks : Common. A number of birds were seen throughout the survey period in forest bushes. Breeds between July and August.

135. *Prinia subflava* (Gmelin)

Common names : Plain Wren-Warbler (Eng).

Size : Length c 13cm.

Habits : Resident. Keeps in Pairs or small parties. Affects grassland, scrubs and open cultivation. Feeds on various insects and their larvae; also takes flower nectar.

Remarks : Common. A number of birds were seen throughout the survey period in different habitats. Breeds in between June and October.

136. *Prinia socialis* Sykes

Common names : Ashy Wren-Warbler (Eng).

Size : Length c 13cm.

Habits : Resident. Keeps singly or in Pairs. Affects Grassland and and scrubs in deciduous forest, open secondary growth and reedbeds.

Remarks : Moderately common. Only four birds could be seen through the survey period in different habitats. Breeds between June and September.

137. *Orthotomus sutorius* (Pennant)

Common names : Tailor Bird (Eng).

Size : Length c 13cm

Habits : Resident. Keeps singly or in pairs. Affects deciduous jungle and secondary growth near habitation and cultivation. Feeds on insects and their larvae.

Remarks : Common. A number of birds were seen throughout the survey period in different habitats. Breeds in between June and August.

138. *Phragamaticola aedon* (Pallas)

Common names : Thickbilled Warbler (Eng).

Size : Length c 20cm.

Habits : Winter visitor. Keeps singly. Affects tall grass and scrub, reeds and bushes. Feeds on insects.

Remarks : Uncommon. Only two birds could be seen throughout the survey period in forest bushes. Breeds in southern Siberia to northeastern China and Japan.

DISCUSSION

Kuldiha Wildlife Sanctuary being extended over Deccan Peninsula and Choto Nagpur Plateau represents a varied physiography entire land mass comprising the sanctuary consists of hills and hillocks of which Devgiri Pahad being the highest point in elevation (682 m above mean sea level). The hilly track is in accessible being only connected by small bridle path and some foot path. The plain plateaus and valleys are only available in the eastern portion of the sanctuary bordering Mayur Bhanja and in areas bordering Jadachua. These diverse ecological conditions have resulted in a varied macro and micro habitats resultantly which gave rise to a wonderful faunal diversity of which elephant being the apex of the pyramid. To conserve this area, subsequently it was declared as a sanctuary in 1984. This highly diverse ecosystem is being endangered by the following factors.

1. The villagers with their cultivated fields and huge cattle are entirely dependent on the natural resources of the sanctuary. Cattle were found grazing even in the deepest part of the sanctuary. Huge grazing not only degrades the natural habitat but also is likely to lead to serious out break of contagious diseases amongst the wild herbivores.
2. Collection of forest produces like firewood, fellings of trees, logs, Sal leaves and removal of litters is also a great threat and need be controlled.
3. Catching of fish in an uncontrolled manner from Rissia Reservoir was observed to cause much habitat disturbance as the migratory wintering water birds was found to be very less in number of appearance.
4. The water tanks created for the wildlife were found to be totally occupied by the domestic Water Buffalo and even the salt leaks formed for wild herbivores were found to be occupied by the Domestic Buffalo.
5. Forest fire caused by local inhabitants to facilitate their collection of flowers of 'Mahua' during such season is of great concern. As it was found during survey trips the total disappearance of ground dwelling/feeding wild fauna.
6. Water is a limiting factor during summer. The use of common water holes by wild animals and livestock is a cause of conflicts conveyance of diseases.
7. Due to paucity of grasses, the wild animals sometimes graze on agricultural lands. While trying to save their crops people sometimes injure the wild animals.
8. The sanctuary was found to have a lot of tourists throughout the year except rainy season when it becomes inaccessable. Continuous movement of vehicle and noise created by tourists disturbs the atmosphere of the sanctuary. Moreover consumption of alcoholic drinks within the sanctuary need be stopped.

RECOMMENDATION

To conserve the great national heritage contained in Kuldiha Wildlife Sanctuary, socioeconomic condition of the people living in and around must be taken into consideration. Practical aspects as regards to the needs and requirements of the local people cannot be ignored by simple notification and farming rules. Following recommendation may be considered for the conservation of the sanctuary.

1. The forest must be demarked into the core and buffer zones.
2. To meet up the need of forest produce by the local people, the buffer zone may be demarked as protected forest, from where they may collect fuel wood and other requirements under the total control of the management authorities. However attempts should be made to minimize their requirements gradually through initiation of the social forestry.
3. The domestic cattle are potential carriers of contagious diseases. Therefore all the cattle around the century must be immunized every year. Moreover, these cattle should be fed rather than allowed to graze free inside the sanctuary. Cultivation of fodder in the wasteland may be initiated to minimize the grazing pressure.
4. The water tanks that have been made so disturbed by livestock that wild animals do not use many of them. These remote tanks meant for wildlife must be kept free from livestock disturbance.
5. The local people should be involved in several management of the sanctuary; such as protection, fire fighting, maintenance of water holes, roads and eco-development practices. They should be sensitized towards nature conservation.
6. The forest corridors around the sanctuary should be strengthened.
7. The interface conflicts in the sanctuary need be monitored regularly.
8. Well-equipped research wing need be arranged. This wing will carry out researches on the eco development of the area, status of different species, population fluctuations, animal behavior, diseases and others, carrying capacity of the forest need also be studied from time to time in respect of different species occurring within the sanctuary.
9. Wild ungulates need large tracts of undisturbed forests with grassy openings, preferably moist and marshy patches in close proximity of perennial water. This must be ensured in all management applications and disturbance factor should not be ignored.
10. More forest guards need be employed for regular patrolling within the sanctuary so that any sort of illicit activities can be prevented.

SUMMARY

Based on survey works a detailed account of faunal composition of the Kuldiha Wildlife Sanctuary has been prepared. Total 23 species of mammals and 138 species of birds have been made for habitat improvement and management of the sanctuary.

ACKNOWLEDGEMENTS

Thanks are due to the Director, Zoological Survey of India for providing necessary facilities for the work. We are thankful to the Chief Conservator of Forest Orissa, Divisional Forest Officer and Ranger (Wildlife) of Kuldiha Wildlife Sanctuary for providing necessary facility to execution smoothly this work. We are also thankful to the local people of Kuldiha WLS for their various help. We are extremely thankful to the O/C & staff of Birds and Mammals section of our department.

REFERENCES

- Abdulali, Humayun, 1968-72. A catalogue of birds in the collection of the Bombay Natural History Society. 13 parts, *J. Bombay nat. Hist. Soc.*, : 65-69.
- Acharjyo, L. N (1977). Wildlife Sanctuaries of Orissa. *Orissa Review*. **34** (3): 21-24.
- Agarwal, V .C., Lal, J. P. & Das, P .K. (1991). Mammalia. In: *Fauna of Orissa, State Fauna Series*, 1 (Part-IV): 43-180.
- Alfred, J.R.B. & Chakraborty, S. 2002. Endemic Mammals of India. *Rec. zool. Surv. India, Occ. Paper No. 201* : 1-37.
- Alfred, J.R.B., Sinha, N.K. and Chakraborty, S. 2002. Check list of Mammals of India, *Rec. Zool. Surv. India, Occ. Paper No. 199*: 1-289 (Published, Director Zoological Survey of India, Kolkata).
- Ali, Salim. 1939-40. The birds of Central India. 2 parts: *J. Bombay nat. Hist. Soc.*, **41**.
- Ali, Salim. 1979. The Book of Indian Birds, *Bombay Natural History Society*, Bombay. xvii+ 187.
- Ali, S & Ripley, S.D, 1983. Handbook of the birds of India and Pakistan. Oxford University Press, Delhi.
- Ali S.M., Chattopadhyaya, S., Kankane, P .L. and Gayen, N .C. (1988). A new species of Palm Civet from Orissa, India. *Rec. zool. Surv. India*, **85**: 45-48.
- Annandale, N. and Kemp, S. (1915). Fauna of Chilka Lake. *Mem. Indian. Mus.*, **5**(1): 1-118.
- Anon. 1991. Vertebrate Paleozoology: *Animal Resources of India* : 685-690. Pub: Zoological Survey of India, Calcutta.

- Anon.1999. Checklist of Animals: Simlipal Tiger Reserve Simlipal Biosphere Reserve, Published by Field Director, Simlipal Tiger Reserve, Bhanjapur, Baripada: vi+49.
- Anwaruddin Choudhury.1997. Checklist of mammals of Assam. Gibbon Books, 1-102.
- Behura, B.K. and Guru, G.B. (1969). Wildlife of Orissa. *Prakruti* (Utkal University Journal of Science), 6: 995-126.
- Behura, B. K. (1977). Wild mammals and birds of Orissa. *Orissa Review*, 34(3): 21-24.
- Behura, B. K. (1977). Wild mammals and birds of Orissa. *Souvenir-64th Indian Science Congress Bhubaneswar*, Pp. 88-92.
- Behura, B. K. (1980). Conservation of wildlife in Orissa. *Orissa Review*, 37 (4): 5-14.
- Behura, B. K. and Mohanty-hejmadi, P. (1987). Endangered animals of Orissa. *Pranikee*, 8: 55-59.
- Bhattacharyya, T.P and Ghosh, M.K.2004. Faunal Composition of Kaimur Wildlife Sanctuary (Bihar). *Conservation Area Series*, 22: 1-49.
- Bhattacharyya, T.P., Sett, A.K., Saktivel, R. and Anand, S.2006. Avifaunal Composition of Point Calimere Wildlife and Bird Sanctuary. *Conservation Area Series*, 31: 1-62.
- Bharos, A.M.K.1996a. Occurrence of wolf(*Canis lupus* Linn.) in Rewa district, M.P. *J. Bombay nat. Hist. Soc.*, 93 (1): 81.
- Blanford, W.T.1894. A note on birds from Central in Barnes' handbook. *J. Bombay nat. Hist. Soc.*, 9 (2): 185-189.
- Burton R.W.1943. The Indian Wild Dog. *J. Bombay nat. Hist. Soc.*, 43 (1):99.
- Chakraborty, R. and Kar, S.2006. Leopard menace menace in Kangerghati National Park. *Tiger Paper*, xxxii: No. 3.
- Chattopadhyay, K., Home, A. and Chakraborty, A (1989). Notes on the Avifauna of Simlipal Orissa. *Newsletter for Bird Watchers*, 29 (7 & 8) : 2-3.
- Champion, H.G. and Seth S.K. 1968. A revised Survey of forest types of India. Govt. of India Press, Delhi. pp. 403.
- Choudhury, S. R. (1975) : Forestry and wildlife conservation in the Tropics. *Indian Forester*, 101 (1) : 45-46.
- Choudhury, S. R. (1976) : Behaviour ecology of wildlife. *Cheetal*, 19 (1) : 24-34.
- Choudhury, S. R. (1978) : My idea of 'Sanctuary' *Orissa Review*, 35 (3): 23-26.

- Custer T.W. & Osborn R.G.1978. Feeding site description of three Heron species near Beaufort, North California. *Wading Birds*, 335-360.
- D' Abreu, E.A.1931. Notes on the Fauna of British India: Birds, chiefly with reference to the Central Provinces. *J. Bombay nat. Hist. Soc.*, **35** : 217-219.
- Das, G. M.(1977): Wildlife Preservation. *Orissa Review.*, **34** (3): 1-6.
- Das, P.K., Lal, J.P. & Agawal, V.C. 1993. Mammalia, Zoological Survey of India. *State Fauna Series, 1 : Fauna of Orissa., Part 4* : 143-180.
- Das, P.K., & Agawal, V.C. 1993. New records of mammals from Orissa. *Science & Culture.*, **39**: 429-30.
- Dasgupta, J. M and Majumdar, M,1991. Birds. In: *Fauna of Orissa, State Fauna Series, 1 (Part-IV)*: 75-142. Dir.,ZSI, Kolkata.
- Daniel, J.C and Grubh, B.R.1966. In Indian Wild Buffalo, *Bubalus bubalis* (Linn) in Peninsular India: A preliminary survey. *J. Bombay nat. Hist. Soc.*, **63** (1): 32-35.
- Dev, U.N. 1986. Checklist of birds of Simlipal. N.W.C.S.O., Bhubaneswar, 4 (1 & 2): 1-57.
- Director Z.S.I. 1987. *Fauna of Orissa, State Fauna Series, 1(part-1)*: 1-340.
- Director Z.S.I.2006. Fauna of Biligiri Rangaswamy Temple Wildlife Sanctuary (Karnataka). *Conservation Area Series, No.27*: 1-263.
- Director Z.S.I. 2008. Vertibrate Fauna of Kangerghati, Gurughasidas and Sanjay National Parks (Madhya Pradesh and Chhatisgarh). *Conservation Area Series, No. 36*: 1-263.
- Divekar, H.K. and Bhusan, Bharat.1998. Status survey of the wild Asiatic Buffalo, *Bubalus bubalis* (Linn) in the Raipur and Baster districts of Madhya Pradesh. *J. Bombay nat. Hist. Soc. Report No. 3/1998*. Bombay, 76p.
- Dogra, Bharat.1993. Parks and People-Report on a workshop. *Sanctuary Asia.*, **13**(6): 59-65.
- Ellerman, J.R.1961. The Fauna of India,including Pakistan Burma and Ceylon. Mammalia, Rodentia. Part-I & II. Govt. of India, Calcutta.
- Emlen, J.T.1971. Population densities of birds derived from transect count. *Auk.*, **88**: 323-342.
- Hutterer, R.1993. Order- Insectivora.pp. 69-130. In: Mammal species of the world: A taxonomic and geographic reference. (Eds.D.E. Wilson and D.M Reeder). Smithsonian Inst. Press, Washington and London.
- Jerdon, T.C. 1867. The Mammals of India. A Natural History of all the animals known to inhabit continental India. Roorke.

- Kar, S. K. 1990. National Parks and Sanctuaries in Orissa. *Orissa Review*, 47 (1): 38-40.
- Kar, S. K. (1990): The Bhitarkanika Wildlife Sanctuary. *Orissa Review*, 47 (5): 15-17.
- Kar, C. S. (1999). A checklist of mammalian fauna of Bhitarkanika WLS and Gahirimatha (Marine) WLS in Orissa, India. In Pugs, Wild Orissa Bhubaneswar, pp. 15-17.
- Khajuria, H. 1975. Book Review: The book of Indian Animals by S.H. Prater. *Newsl. Zool. Surv. India*, I: II.
- Khajuria, H. 1981. Studies on Wildlife of Narmada Valley I. General Introduction & Summary of Results. *Rec. zool. Surv. India*, 78: 7-20.
- Kumar, V. (1981). Faces of Wildlife in India. *Orissa Review*, 37 (12): 31-33.
- Krishnan, M. 1971. An ecological survey of larger mammals of Peninsular India. *J. Bombay nat. Hist. Soc.*, 68 (3): 503-555.
- Lamba, B.S. 1980. Environment & Wildlife. *Zoologiana*, 3: 11-14.
- Mahabal, A. 2004. Aves. In : Fauna of Pench National Park. *Fauna Conservation Area Series*, 20: 1-3K
- Majumdar, A.K. 1953. On a collection of birds from Simlipal Hills, Mayurbhanj district, Orissa. *Rec. Indian. Mus.*, 50(2): 157-172.
- Manakadan, R. and Pittie, A. 2001. Standardised Common and Scientific names of the Birds of the Indian Sub-continent. *Buceros*, 6 (1) : 1-37.
- Mazumdar, N. and Dasgupta, J.M. 1993. Birds Zoological Survey of India, *State Fauna Series*, 1: *Fauna of Orissa*. Part 4 : 75-142.
- Mishra Ch. G (1980). Wildlife resources of Orissa and its utilization in the development of the state. *Orissa Review.*, 37(3): 35-39.
- Mukherjee, A.K. 1982. *Endangered Animals of India* : 1-122.
- Negi, S.S. 1991. Biosphere Reserves, Hand book of National Parks, Sanctuaries and Biosphere Reserves in India, 264 pages.
- Noronha, R.P. 1954. More notes on Indian Buffalo. *J. Bombay nat. Hist. Soc.*, 52 (1): 202-204.
- Padhi, G.S and Kar, S.K (1992). Wildlife resources and their management in Orissa. *Ori-Forest* (July-Sept, 1992): 7-10.
- Patnaik, S. 2003. Simlipal: It's not Man vs. Animals, *Community Forest*, 3(1): 4-7.
- Patnaik, S. K & Acharjyo L N (1985). Wildlife Conservation in Orissa. *Cheetal*, 27 (1 & 2): 38-44.

- Rodgers W. A and Panwar H.S.1988. Planning a Wildlife Protected Area Network in India. Wildlife Institute of India, Dehradun.
- Ripley, S.D. 1978. Changes in the bird fauna of a forest area Simlipal Hills, Mayurbhanja district, Orissa. *J. Bombay nat. Hist. Soc.*, 75: 570-574.
- Ripley, S.D. 1982. A synopsis of the birds of India and Pakistan. Pub: *Bombay Natural History Society* : 1-652.
- Roy, D. K .(1985). Wildlife study. Newsletter- Nature & Wildlife Conservation.
- Ramakrishna, S. Z. Siddiqui,, P Sethy & S Dash,2006. *Faunal Resources of Simlipal Biosphere Reserve Mayurbhanj, Orissa. Conservation Area Series*, 28: 1-87
- Ryley, K.V.1914. Scientific results from the Mammal Survey VI. *J. Bombay Nat. Hist. Soc.*, 22: 658-664.
- Saha, S.S., Chattopadhyay, S., Mukherjee, R.P. & Alfred, J.R.B. 1992. Wildlife & its conservation in West Bengal, *State Fauna Series, Part-1*: 419-443
- Saharia, V.B.1982. Wildlife in India. Natraj Publication, Dehradun.
- Sagar, S.R and Singh L.A.K. (1990): Technique to distinguish track of leopard and tiger. *Indian Forester*, 116 (3): 214-219.
- Sahgal, Bittu and Divekar, H.K. 1987. Bastar. *Sanctuary Asia*, 7(4): 344-359, 385-389.
- Sanyal, D.P. & Sarkar, A.K. 1976. Report on Orissa Survey, 1975-76. *News. Zool. Surv. India*, 2: 159-160.
- Saxena, Rajiv.1996. A note on the status of four-horned antelope in Madhya Pradesh. *Journal of Tropical Forestry*, 12(4): 246-247.
- Sharma ,P.K. and Sai V.S.1987. *Journal of Tropical Forestry*, 3(2): 113-123.
- Singh, D.F. & Pradhan, M.S. 1993. Vertebrate Fauna of Tansa Wildlife Sanctuary, Maharashtra. *Rec. zool. Surv. India*, 91: 449-470.
- Sinha, B.N. 1971. Geography of Orissa. National Book Trust, New Delhi.
- Sinha, Y.P. 1986. Bats of Bihar: Taxonomy and field ecology. *Rec. zool. Surv. India, Occ. Paper No. 77*: 1-60.
- Tikader, B.K. 1983. Threatened Animals of India, : 1-307.
- Tiwary, S.K., Alfred, J.R.B. & Patnaik, S.K. 1998. An account of the Mammalian Fauna of Chandaka Wildlife Sanctuary, Orissa. *Rec. zool. Surv. India*, 96 (1-4): 25-38.
- Yazdani, G.M., Pradhan, M.S. & Singh, D.F. 1992. *Fauna of Sanjay Gandhi National Park, Bombay (Vertebrates)*. *Rec. zool. Surv. India*, 92: 225-251.
- Z.S.I. 1994. The Red Data Book of Indian Animals, Part-1: Vertibrata (Mammalia, Aves, Reptilia and Amphibians): i-xxi+1-534.



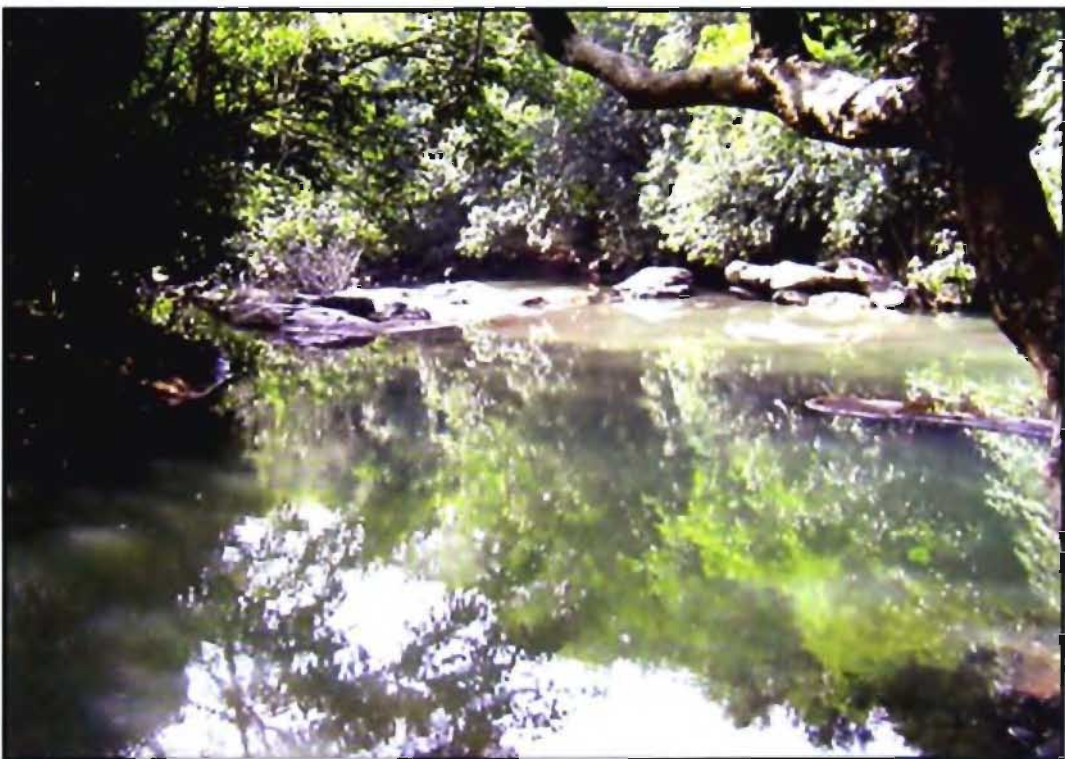
Entry Gate at Kuldiha WLS.



Forest personnel with survey party at Jadachua Rest House



Kuldiha Forest Rest House



Natural Water Source in Kuldiha WLS



Pug-mark of Tiger (*Panthera tigris*) in Kuldiha WLS.



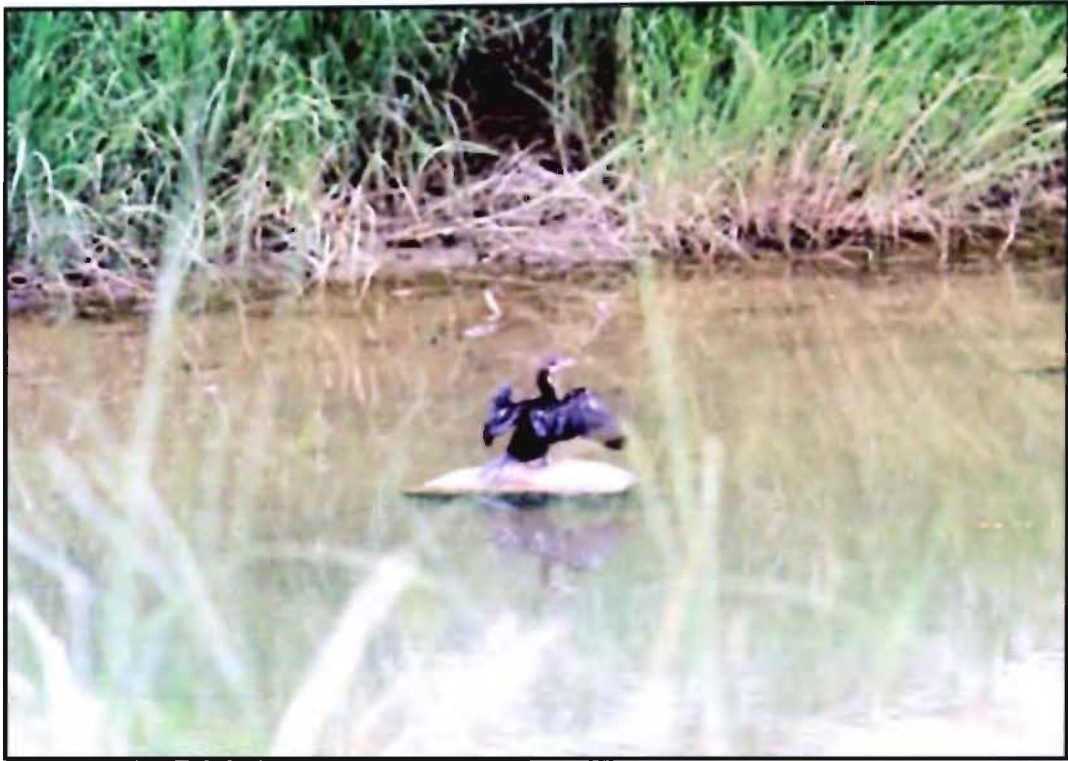
Giant Squirrel (*Ratufa indica*) in Kuldiha WLS.



Elephant in Kuldiha WLS.



Jungle Crow



Little Cormorant



Asian Koel



Red Whiskered Bulbul



Pond Heron



Jungle Myna

Indian House Crow





White Throated Kingfisher



Cattle Egret



Indian Black Drongo



Indian Pied Myna

