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Status of Wetlands and Wetland Birds in New Raipur, in Raipur, Chhattisgarh, India

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Abstract

Wetlands are areas where water is the primary factor controlling the environment and the associated plant and animal life. Birds as best indicators of wetland function or as measures of success in wetland management, restoration and creation. This study was conducted during December 2012 to April 2013. Totally 06 selected healthy and ecological important wetlands were surveyed in New Raipur in Raipur district of Chhattisgarh. Total 72 visits have been made in all study points, 12 in each during this period. Species diversity, Species richness and dominance of birds were calculated. Totally 1113 birds belonging to 93 species, 36 families and 14 orders were recorded, out of these 93 species 42 wetland and 51 terrestrial bird species. Maximum diversity of birds was recorded in Parsada Lake ($H' = 1.54$) followed by Bandha Dam ($H' = 1.42$) and Khanduwa Dam ($H' = 1.35$). Bird abundance and vegetation cover were also recorded. Species richness was higher in Parsada Lake (48) followed by Bandha Dam (35) and Khanduwa (28). The highest number of birds were recorded in Parsada Lake (431), followed by Bandha Dam (212), Khuteri Lake I (140) and Khandwa Dam (134), and Only one Endangered species Egypian Vulture *Neophron percnopterus* was recorded. In most of the wetlands *Lantana camara* (28.25%) followed by *Ipomea carnea* (15.28 %) was recorded. Wetlands in New Raipur has ecological importance, these are one of the productive and protective ecosystems. These occupy area of more than 05 hectares and support a rich food web from microscopic algae and submerged vascular plant to other organisms such as birds, reptiles and mammals. In these wetlands good population of birds are recorded and the site has good openness of food along with spatial space and non-disturbing habitat. These sites will be protected for the birds in future.

Keywords: Wetland • Ecological Important • Birds Diversity • New Raipur • Conservation

Introduction

Wetlands are one of the crucial natural resources. Wetlands are areas of land that are either temporarily or permanently covered by water (Westlake & Pratt, 2006). This means that a wetland is neither truly aquatic nor terrestrial; The wetlands of New Raipur is considered as ecological important wetlands. Ecological wetlands are among the most productive ecosystems in the world they also are a source of substantial biodiversity in supporting numerous species. Wetlands provide habitat for assortment of wild life species. These include Birds, mammals, reptiles etc. Healthy wetlands are essential to survive of many these species. In most of the wetlands common wild life includes ducks, geese, frog's red-winged black birds and trout. One of the first widely used classifications systems, devised by Cowardin *et al.*, (1979), Wetland birds provide us with some of nature's most wonderful sights, from enormous flocks wheeling overhead to newly hatched chicks drying in the sun. Apart from their beauty and recreational and economic importance, these birds are excellent indicators of water quality and measures of biodiversity. "Wetlands" have been defined as swamps and other damp areas of land but in common parlance the word is used

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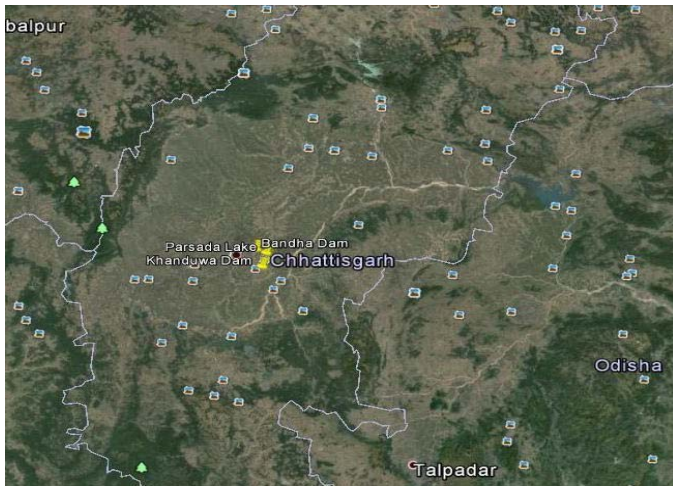


Fig 1: Map indicating the study areas in Naya Raipur

Interchangeably with "Lakes" which denotes a large body of water surrounded by land. U.S. Environmental Protection agencies shaped that Wetlands can be thought of as "biological supermarkets." They produce great quantities of food that attract many animal species. The complex, dynamic feeding relationships among the organisms inhabiting wetland environments are referred to as food webs. Although bird surveys are being conducted in some wetlands as a part of the Asian waterfowl count, no systematic surveys were conducted on the wetlands in Chhattisgarh since its establishment in 2000. This study was conducted to ensure the occurrence of migratory birds and their habitat and to spot the wetlands which has an area of more than 05 hectares in which further scientific study may apply.

Study Area and Methods: 06 selected healthy and ecological important wetlands were surveyed in New Raipur in Raipur district of Chhattisgarh between December 2012 to April 2013. Birds is being counted following wide variety of methods. For water birds, direct counting method was used. In this method, a suitable vantage point is selected and all visible birds are counted. Another method, "total count" was used wherever possible, by walking around the wetlands or from specific vantage points to count the birds. If not completely covered; the percentage of coverage was marked. Birds flying from behind the observer were not counted. Birds that are not visible but their calling coming within the study point range was also recorded. During the study the birds have found were classified according to the two statuses only i.e. migratory and resident, further migratory is classified into Distance Migratory (those coming from outside the country specially from Palaearctic region) and Local Migratory (those coming from higher altitude to lower altitude mostly from The Himalayas to central India) and also based on the frequency of observation. Birds systematically conducted from morning 6:00hrs to 09:00hrs and using Canon EOS_55d (32x M.P) camera and birds were identified as well as captured.

Vegetation: Vegetation cover was recorded in all the wetlands. The proportion of the vegetation cover was recorded in percentage. In most of the wetlands *Lantana camera* (28.27%) followed by *Ipomea carnea* (15.28 %) was the dominant species. In Bandha and Khanduwa dams diverse vegetation was observed whereas in Parsada Lake and Khuteri Lake I & II the water was clear and the vegetation cover was very less. Almost in all the wetlands and surroundings *Ficus bengalensis*, *Acacia nilotica* and *Eucalyptus globules* were observed.

Results

Distribution of Wetland Birds: During the study period 06 wetlands were surveyed at Naya Raipur in Raipur and 1113 birds of 93 species belonging to 36 families were recorded. Out of the 93 species, 43 were wetland and 51 terrestrial, maximum numbers of species were recorded (48) in Parsada Lake followed by Bandha Dam (35) and minimum was recorded in Khanduwa Dam (28) and Khuteri Lake II (24). Ardeidae contributed the maximum species of 09 in all the sites, Followed by Anatidae 08. Other major family was Accipitridae with 07 species. The images of birds observed and captured in the study area is annexed see appendix 3. The maximum number of birds individuals were also recorded in Parsada Lake (431) followed by Bandha Dam (212) and Khuteri Lake II (140).). Cattle Egret *Bubulcus ibis* (63) and Little Cormorant *Phalacrocorax niger* (63) was the most abundant species followed by Tufted Duck *Aythya fuligula* (40) Little Grebe *Tachybaptus ruficollis* (23), and Asian Open-billed Stork *Anastomus indicus* (18) recorded in all the wetlands surveyed. During the study period only one individual endangered species Egypstian Vulture *Neophron percnopterus* at Khanduwa Dam near by Jungle Safari was recorded.

Discussion

In Indian wetlands 318 species of birds were recorded out of which 193 species are fully dependent on wetlands (Guptha M. Vijayan L, Status of Wetlands and wetland birds in Coimbatore, 2011) ^[1]. In our study 93 species were recorded out of which 43 were fully dependent on wetlands.

Study area has a good area of reeds also and it has crucial part in the breeding of the *Anastomus oscitans*, *Phalacrocorax Niger* and *Aythya fuligula*. In Parsada Lake which is opposite of International Cricket Stadium birds were found more in numbers (431). These sites has sufficient quantity of foods therefore 236 individuals belonging to water habitat were depending upon the site. These site will be conserved for birds in future.

Acknowledgement

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Map showing the study areas



Fig: Bandha Dam



Fig: Parsada Lake



Fig: Khuteri Lake II



Fig: Khanduwa Dam



Fig: Khanduwa Dam



Fig: Khuteri Lake



Fig: Bandha Dam

Wetlands in our study area



Fig: Parsada Lake



Fig: Chherkapur



Fig: Parsada Lake

Appendix 1: No of Bird Species, Abundance and Diversity in Different Wetlands

Wetland	Total No. Birds	Species Richness	Diversity
Parsada Lake	431	48	1.54
Bandha Dam	212	35	1.42
Khuteri Lake I	140	21	1.20
Khanduwa Dam	134	28	1.35
Khuteri Lake II	116	24	1.16
Chherkapur Lake	85	19	1.13

Appendix 2: List of Migratory Bird Species found

Bird Species	Order	Family	Status
Common Greenshank	Charadriiformes	Scolopacidae	Migratory/ Winter Visitor
Gadwall	Anseriformes	Anatidae	Migratory/ Winter Visitor
Green Sandpiper	Charadriiformes	Scolopacidae	Migratory/ Winter Visitor
Red-crested Pochard	Anseriformes	Anatidae	Migratory/ Winter Visitor
Wood Sandpiper	Charadriiformes	Scolopacidae	Migratory/ Winter Visitor
Bluethroat	Passeriformes	Muscicapidae	Migratory/ Winter Visitor
Common Pochard	Anseriformes	Anatidae	Migratory/ Winter Visitor
Marsh Sandpiper	Charadriiformes	Scolopacidae	Migratory/ Winter Visitor
Tufted Duck	Anseriformes	Anatidae	Migratory/ Winter Visitor

Appendix 3: Images of birds found during the study



Fig: Asian Open bill Stork



Fig: Black-crowned Night Heron



Fig: Black-headed Ibis



Fig: Common Pochard



Fig: Great Crested Grebe



Fig: Western Reef Egret



Fig: Marsh Sandpiper



Fig: Great Cormorant



Fig: Grey Heron



Fig: Red Start



Fig: Common Hoopoe



Fig: Common Sandpiper



Fig: Gadwall



Fig: Western Yellow Wagtail

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