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The Unique Habitat Sites Of Family Raliidae In Solapur, (Ms) India

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Short Profile

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Hipparga lake



Degaon



ABSTRACT:

Rails, Crakes, Coots and Moorhens are the members of family Rallidae. Thev frequent watersides of freshwater marshes and lakes. The information about their life moments and distribution in Maharashtra region is poorly available. This chapter delineates with an interesting as well as essential aspect i.e. Habitat. Among all fourteen spots in and around Solapur six out of them are in high priority. There were twelve species of birds which belongs to Rallidae family and more than the twenty five species of twelve families were associated to them with their analogous preferred sites. Hence, they show their uniqueness by the distribution in Solapur.

KEYWORDS: Birds, Habitat, Rallidae, Solapur

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INTRODUCTION:

Birds are the major component of world's biodiversity and ecosystem. They are lords of the air, ruled all corners of the planet earth since last 150 million years ago. They play a miraculous role in natural cycles. As concerned to the research about winged creature as much we human succeed by knowing their entire life and surroundings it is incomplete, day by day it getting more curious. Habitat is messrs to the living creatures. The earth consisting the variety of all kinds of it for the sustain biodiversity. The Gruiformes an order of large flying as well as land dwelling little birds like Cranes and Rails respectively. It comprises five avian families in Indian Subcontinent (Pittie, 2001). Worldwide they are well spreaded except some polar regions. The fundamental family of this order is Gruidae which compose the suborder Grues and are termed as "core-Gruiformes" (Fain et. al., 2007) There are so many extinct species were also reported in this order. (Houde 2009, Olson 1985).

Rails and Crakes dwelling the earth from Oligocene period of time. More than the hundreds of species have been distributed worldwide (Taylor 1996). There were seventeen species of Rallidae bird belongs to Indian Subcontinent (Grimmette et al., 2010). They occurs frequent watersides of freshwater marshes, lakes and streams. These birds were after seen walking on exposed muddy as well as reed beds. Rallidaen members are representative of marshes, reed beds and low wetlands also. The principle objectives of this study deals with the observations at different locations in Solapur which is one of the rich faunal province among semi arid biotope in India. It delineates the equal habitat sites to birds of Rallidae and information about the distribution of such analogous sites.

STUDY REGION:

Solapur is located in western peninsular and Deccan plateau of India. It comes under south region of Maharashtra. The forest types are semiarid biotope, open scrubland, grassland and southern tropical thorny forests (Champion and Seth 1968). Low, prouncedly xerophytic forest, thorny leguminous species dredominate, trees with short boles and low branches, spiny and with few climbers. (Sagreiya 2000)The entire district lies in Bhima-Sina-Maan basins bounded between 17o14'to 18o32'N latitude and 74o42' to 76o15' E longitude at 457 M above MSL. The average temperature and humidity during the study period was 17°C to 37°C and 55-85% respectively. The arboreal as well as the terrestrial vegetation of our interested sites are rich in floristic diversity. (Suryavnashi 2001). The surrounding is cultivated with Sorgum vulgar, Cane Sugar, Cajacus cajan, and vegetables etc. As the entire solapur district covered with grassland and open scrubland but the present paper highlights the wet grassland and water bodies in which concern with Rallidae.

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Sr. no.	Site name	Co ordinates
1	Sambhaji lake	17° 38′ 45″N 75° 54′ 20″E
2	Hipparga lake	17° 44' 17"N 75° 53' 49"E
3	Degaon	17°40′ 09″N 75° 52′ 24″E
4	Siddheshwar Reserve Forest	17°37′ 53″N 75° 53′ 03″E
5	Farit lake	17°37′ 05″N 76° 09′ 34″E
6	Kurnur Dam	17°36′ 55″N 76° 13′ 02″E
7	Bridge Corner Pune Highway A-	17°41′ 32″N 75° 52′ 57″E
8	Bridge Corner Pune Highway B-	17°41′ 27″N 75° 53′ 58″E
9	Bridge Corner Pune Highway C-	17°41′ 14″N 75° 53′ 30″E
10	Bridge Corner Pune Highway D-	17°41′ 30″N 75° 54′ 04″E
11	Shelgi	17°41′ 25″N 75° 55′ 23″E
12	Civil road depot	17°39′ 24″N 75° 55′ 11″E
13	Vijapur road	17°38′ 07″N 75° 53′ 49″E
14	Majarewadi	17°37′ 60″N 75° 55′ 18″E

Table 1 Study sites in Solapur

RESULTS

Sambhaji Lake : It is situated at centre of city attached to national highway number thirteen. One of the busy routes in entire town. This lake lies in between roadway and railway. Highly polluted area near residential zone. But near the water body there is protected land by social forestry department popularly known as "Smurti Udyan" more than the half portion of this area is associated to water body. This attachment gives land to survive. It is thick vegetation of cultivated plantation consists of tree Azadiracta indica, Mangifera indica, Morinda citrifolia, while the ground is covered with shrub like Cassia tora, Malvastrum sp. Lantana camara and grasses like, Typha lotifolia, Cymbopogon martini etc. Out of all the fourteen species of rallidae seven were reported here.

Vijapur road : This is second unprotected marshland. Situated along the Vijapur national highway and sided by large residential colonies and traffic. It is dominated by vegetation like Typha lotifolia, Cynodon dactylon and Acacia arabica. Yearly all it seems wet and the media by which supports and being marshy from the seaways water. The occurrence of Rallidae birds were reported here as fair. When they preferred this site for feeding and foraging.

Bridge corner Pune Highway : National highway number nine which is one of the busiest express road way in India which connects two metro cities via Solapur. But along to that there are some wet sites which support the rallidian life. Along with the corners of Solapur city these site situated at west side. Identified by a large bridge below which a water stream carries the sewage of city from one part to another. But along with that there were a presence of bird species in which we are interested. It is covered with numerous Acacian flora and grasses.

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Degaon: It is highly preferable site for Ralllidae birds. According to observations, all the species of this family were reported here. Which was did not at any other sites of high priority and analogous in Solapur. It is largest marshy land among all presently studied sites in west part of solapur. The vegetation of this site is quite remote. The amphibious grass Typha lotifolia is predominantly present, surrounding covered with shrubs of Cassia tora, Zizipus jujuba, and Acacia etc. and outside to that there were large agriculture land. The water current is periodically makes this site new but seasonally the grass and land becomes dry during summer. The depth of water is up to one feet in height. Ground is covered with merged and submerged shrubs, climbers which make net like mat formation on bottom which helps to hold the water and gives support for freshwater mollusks and aquatic insects. Ultimately it is helpful for birds who share this habitat.

Majarewadi : This site comes in south direction to town. Basically it is formed by trenches which can observable in current situation. It is also right angled to road of state highway and railway. It is situated adjacent to Solapur's popular bakery food producers. In order to identify the site in present and future work intentionally it named here as it is by authors. It is also connected to locality but there is good grass height. Bird species of rallidae were reported as feeding, calling and breeding as well. The water depth of this site is comparatively deep and many small soil dump formation was takes place and grass is succeed in developing over it. And that succession gives birds a good platform to survive. No dought as the bird reported during its breeding then it was a proof sign of availability of food here.

Shelgi : Northern part of city where significant traffic and population daily perform their routines. However, there is also a large site covers boundary. A wetland body covered with thick amphibious grass Typha lotifolia of a normal height of man or more than that of. At the outer boundaries of their spots bounded by Acacia trees. This is a likewise site to the species of Rallidae. Due to present in road side the fluctuation of water current at this site can be seen and it affects to the food i.e. microscopic as well as macro aquatic biota. Species like Black Ibis, Kingfisher, Cattle Egret are dominantly sighted here during feeding.

Civil road : It is one of the smallest size in area as compared to all studied sites. Here, no fluctuations in water content had been observed. Because there is only one way from water can come into trench and it percolate into ground. On the other hand there is no ground grass development occurred because it is totally covered with water and bounded by Acacia trees. Another part of this land is used as dump yard of garbage where the birds used to find their food and the trees for roosting. Trees bounded were thick and short in height. There were no reports of breeding record of any one of species. But due to occurrence of species in like habitat this sites taken in account.

Siddheshwar Reserve Forest : It is the only place where dense natural vegetation remained in Solapur. Where large trees, herbs, shrubs, climbers and many grasses has been examined. It is rich in many flowering plants and numerous insect species specifically Beetle (Coleoptera), Moths and Butterflies (Lepidoptera). On the basis of name of the god 'Shri. Siddheshwar' this reserved forest was named in Marathi as 'Siddheshwar van vihar'. Situated in southern remote area of city. This 500acres land is house of many highlighting creatures like Indian Hare Lepus nigrucollis, Jungle Cat Felis chaus, Jackel Canis aureus, Indian Plaintive Cuckoo Cacomantis passerinus, Asian Paradise-Flycatcher Terpsiphone

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paradisi, Yellow-fronted Pied Woodpecker Dendrocopos mahrattensis, White-browed Fantail-Flycatcher Rhipidura aureola and Tickell's Blue-Flycatcher Cyornis tickelliae observed during survey. In this mixed type of land there were a water body situated at centre bounded by large trees and covered by Typha lotifolia and reeds, Zizipus sp., where the bird species of Rallidae were frequently observed.

Farit lake : The southern part of district in which this site is situated has itself a great natural historic importance. The lake has deep and slope formed to its surrounding. Which dominantly nearly reeds. In which Rallidae bird sighted during foraging. It is the smallest water body among all study sites. No certain dense vegetation is covered. Otherwise a dry stony region is neighbored in which the pure grassland bird like Chestnut-bellied Sandgrouse Pterocles exustus and Indian Courser Cursorius coromandelicus was sighted during water consuming. The occurrence of Brown Crake Amaurornis akool, Chestnut Bittern Ixobrychus cinnamomeus and Little Green Heron Butorides striatus in same during their feeding activity. No matter whatever the absence such dense aquatic grasses or plants or thick vegetation but this site is very remote in its area. Because the main road way is far away from it. Hence the disturbance is not as much. No such indication of pollution by sewage or any other mode.

Kurnur dam : It is one of the largest water body among study sites. Comes in south-east part of district. It is constructed on Bori river near village Kurnur. Hence named on it. Actually, the site place at back water of river line. Where the water steps to flow. Both the riverside are covered with agricultural lands. But the vegetation where rallidae members were observed. It is covered with amphibious grass Typha lotifolia, and Acacia trees. Water is covered with blue green algal sheath. The water is as deeper in dam. In this natural home along with rallidae there were several species had reported such as near threatened Darter, Anhinga melanogaster, endangered Indian Skimmer Rynchops albicollis, Osprey Pandion haliaetus.

Hipperga lake : It is also called as Ekruk lake. It is one of the large water body and percolation tank in district. This is one of the favorite point of resting and roosting site of migratory birds to Deccan land in which Black-tailed Godwit Limosa limosa, Northern Shoveller, Anas clypeata, Pygme Cotton Goose Nettapus coromandelianus, Bar-headed Goose Anser indicus, Common Pochard Aythya ferina were recorded. Situated around 7 km away north to city. It provides largest venture for birds to settle. It is one of the high priority sites for rallidae birds' species. Only there were four species reported. There are lot of chances recommended to observe the more species and their frequencies. This lake is not only important to wetland related bird but it also supports to Passerine and non passerine birds for their survival strategies. An example such as threatened greater spotted eagle

DISCUSSION-

Rallidae consistin of Rails, Crakes, Coot and Moorhens. They feed on aquatic insects, worms, mollusks. Hence, they acquire the habitat web and marshy land. Crakes and rails are shy and generally stay in dense vegetation. They inhibits emergent habitat of wetland, folloded valleys and marshy bodies like lakes and ditches. (Cramp and Simmons 1980, Hagemeijer and Blair 1997, Polak 2005). In every major habitat there are many species occupy same habitat or same site. (Vanjari et. al., 2014, Brahmal et. al., 2013). But there is availability of compartment like arrangement in ecology it termed as

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Microhabitat. Likewise microhabitats are present in each of the marshy land. The interrelation between and habitat is one of the most fundamental ecological relationship that as the area of a region increases. So does the number of different species encroachment. Here in all sites of Solapur slightly changes can observed seasonally like up current flow of water depth, grass height this parameter changes the state and conditions around the year.

The sufficient information of bird species belonging to Rallidae are poorly studied in metadata of ornithology due to their secretive life and impenetrable vegetation to observe them (Flegg and Glue 1973). Therefore the present paper deals with that problem and it highlights the probable, analogous and definite beneficial sites in and around Solapur region. Definitely it gives monographic research on each species of family rallidae in future. It is a very conscious ecosystem because all species living on the edge of human settlement. This article may become the first alarm which gives direction towards the conservation of this prosperous land its following organisms.

The presence of human interference also affects the site and it is one of the major threats. Because, maximum sites are on private owner land sand people used to cut the threat for various purposes. Ultimately it affects on the roosting of birds. And bird can also leave that place permanently. One another problem of such land sites at the end of summer people burn out the old grass because of that grass is already turned yellowish. After the burned out newly fresh progeny of grass will form and that would be use as food for livestock. This complete cycle takes several days but during this period the birds like Moorhen, Swamphen which inhibits that place entire year around affected to clutch destruction, ratio of adult: juveniles and may several unable to survive.

Road construction is very essential aspect in order to town development. But some adjacent plots have ecological sensitive zones, because since a couple of years ago we surveying this site, migrants like comb duck, shoveller, ruddy shell duck and chest nut bitterns with breeding heronries were recorded but now they are neglected during all these making. Hence, all the site of Pune road facing threat like this following Shelgi site is also synchronize by this.

Around the world there are number of wetland and marshy habitat sites facing threat of habitat loss and significantly it was observed that affected on the population of birds (Leo Zwarts, 2004). In association of birds Lesser Adjutant reported first time in solapur, no further details about its occurrence mentioned yet(Rahmani et. al., 2014). Waterbird in Asia-Pacific region have a worse status then elsewhere, they were in very poor state between last four decades. Assessment of their fluctuations however needs to be treated with cushion. Since, the proportion of population for which there is a trend assessment is low. (Delany et. al., 2010) Round about in India depletion of wilderness due to agricultural expansion, habitat destruction, over-exploitation, pollution, and natural hazards contribute to the lass of flora and fauna (Manorama India yearbook 2013 and 2014). Population explosion industrialization, irrigation and urbanization resulted in lowering and degrading the condition of imperiled biodiversity in entire Solapur district. (Khan et al., 2012)

Although, Sambhaji lake and Hipparga lake are high priority sites but they facing the pressure of pollution. (Shinde 2010,). Effect of pollutants like detergents and other chemical affects the water quality which summarily reduces the native diversity (CCMoE 1999, McKim 1974, Piola 2008, Brungs et. al., 1977). Two important subjects come out during the present survey that lack and awareness and protection of these land sites. Common man does not aware up to the species level. But somewhat initiatives could run by forest department and social forestry. By aware about rallidae and the associates of these special habitat sites, ultimately protection sense could born and species can got the

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healthy surroundings.

Table 2 checking of birds of ranning Namuae in Solapu

Sr.	Species
1	White-breasted Waterhen Amaurornis phoenicurus (Pennant, 1769)
2	Purple Swamphen Porphyrio porphyrio (Linnaeus, 1758)
3	Common Moorhen Gallinula chloropus (Linnaeus, 1758)
4	Common Coot Fulica atra (Linnaeus, 1758)
5	Spotted Crake Porzana porzana (Linnaeus, 1766))
6	Little Crake Porzana parva (Scopoli, 1769)
7	Baillon's Crake Porzana pusilla (Pallas, 1776)
8	Ruddy Breasted Crake Porzana fusca (Linnaeus, 1766)
9	Brown Crake Amaurornis akool (Sykes, 1832)
10	Watercock Gallicrex cinerea (Gmelin, 1789)
11	Water Rail Rallus aquaticus (Linnaeus, 1758)
12	Blue Breasted Rail Galliralus striatus (Linnaeus, 1766)

Table 3 Associated bird species on analogous site with Rallidae

Sr.	Species	Family	Activity
1	Bluethroat Luscinia svecica (Linnaeus, 1758)	Muscicapidae	Feeding
2	Oriental White Ibis Threskiornis melanocephalus (Latham, 1790)	Threskiornithidae	Foraging
3	Painted Stork, <i>Mycteria leucocephala</i> (Pennant, 1769)	Ciconiidae	Feeding
4	Western Marsh-Harrier, Circus aeruginosus (Linnaeus, 1758),	Accipitridae	Feeding
5	White-browed Fantail-Flycatcher, <i>Rhipidura</i> aureola (Lesson, 1830)	Muscicapidae	Feeding, calling
6	White necked Stork Ciconia episcopus (Boddaert, 1783)	Ciconiidae	Feeding
7	Large Egret, <i>Casmerodius albus</i> (Linnaeus, 1758)	Ardeidae	Feeding, foraging
8	Grey Heron, Ardea cinerea (Linnaeus, 1758)	Ardeidae	Foraging, breeding
9	Glossy Ibis, <i>Plegadis falcinellus</i> (Linnaeus,1766)	Threskiornithidae	Feeding
10	White Wagtail, <i>Motacilla alba</i> (Linnaeus, 1758),	Motacillidae	Feeding, foraging
11	Northern Shoveller, Anas clypeata (Linnaeus, 1758)	Anatidae	Foraging
12	Garganey, <i>Anas querquedula</i> (Linnaeus, 1758)	Anatidae	Foraging
13	Lesser Whistling-Duck, <i>Dendrocygna</i> <i>javanica</i> (Horsfield, 1821),	Anatidae	Foraging
14	Spot-billed Duck, Anas poecilorhyncha (J.R. Forester, 1781)	Anatidae	Feeding, foraging
15	Indian Great Reed-Warbler, Acrocephalus	Muscicapidae	Foraging, calling

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	stentoreus (Hemprich & Ehrenberg, 1833)		
16	Blyth's Reed-Warbler, Acrocephalus dumetorum (Blyth, 1849)	Muscicapidae	Foraging, calling
17	White-throated Munia, Lonchura malabarica (Linnaeus, 1758)	Estrildidae	Breeding
18	Red Munia, <i>Amandava amandava</i> (Linnaeus, 1758)	Estrildidae	Foraging, calling
19	Red-rumped Swallow, <i>Hirundo daurica</i> (Linnaeus, 1771),	Hirundinidae	Feeding, foraging
20	Black Ibis <i>Pseudibis papillosa</i> (Temminck,1824)	Threskiornithidae	Feeding
21	White-breasted Kingfisher, Halcyon smyrnensis (Linnaeus, 1758),	Alcedinidae	Foraging
22	Plain Prinia, Prinia inornata (Sykes, 1832),	Muscicapidae	Foraging
23	Wood Sandpiper, <i>Tringa glareola</i> (Linnaeus, 1758)	Scolopacidae	Feeding
24	Greater Painted-Snipe, <i>Rostratula</i> benghalensis (Linnaeus, 1758)	Rostratulidae	Feeding
25	Red-wattled Lapwing, Vanellus indicus (Boddaert, 1783)	Charadriidae	Breeding
26	Little Ringed Plover, <i>Charadrius dubius</i> (Scopoli, 1786)	Charadriidae	Breeding
27	Black-winged Stilt, <i>Himantopus himantopus</i> (Linnaeus, 1758)	Recurvirostridae	Feeding
28	Lesser Adjutant <i>Leptotilus javanicus</i> (Horsfield, 1821)	Ciconiidae	Feeding

CONCLUSION:

From above all results and discussion it shows that today this is a good occurrence and privileges for Rallidae and its associated bird species. But many of them are not protected. Those sites are on high risk of extinction due to construction purpose. Comparison between protected and non protected areas as concerning to Rallidae there is lot of differences. Because, lack of awareness about these creatures who forms a valuable ecosystem is beneath the ground. So this investigation conclude with enlightens the small patches of important ecological pockets who provides natural service to Rallidae and others birds in Solapur.

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PLATE 1: Habitat sites in Solapur.

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PLATE 2: Habitat sites in Solapur.

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PLATE 3: Birdd Species of family Rallidae in Solapur.

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PLATE 4: Associated avifauna to family Rallidae in Solapur.

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