

Study on Bird species diversity in and around Pardi Lake, Gadchiroli MS, India

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Abstract

In the present study on bird species diversity in and around Pardi Lake, Gadchiroli recorded total of 50 species. Aquatic birds play a significant and main role in the ecological balance of the ecosystem. The present study helps to evaluate aquatic bird diversity and various species, composition, the density of birds, and distribution of aquatic birds of Pardi Lake. For observation of aquatic birds in and around the lake, the line transects and point transects methods were applied. The present study might help to check the anthropogenic activities for lake management and waterbird conservation. So, an effective way to save these birds is to save their habitats. In the present investigation, observed residential and migratory bird species. The most abundant species were *Bulbulcus ibis* and *Egreta garzetta*.

Keywords : Aquatic birds, various bird species diversity, Pardi Lake, Gadchiroli.

1. Introduction

Birds are cosmopolitan in nature and have been found all over the world. They have been considered indicator species of the limited area because they are ecologically adaptable and interfere in all types of habitats. Water birds have attracted the attention of the public and scientists because of their beauty, abundance, visibility, and social behavior [1]. In Indian wetlands, 193 bird species out of 318 species are completely dependent on wetlands.

Waterbirds are important visitors to most wetland ecosystems. Aquatic bird activity is considered an indicator of wetland ecosystem quality and forms a key link in many aquatic animal food chains. As the birds are the indicators of environment hence used for conservation and environmental impact assessment [2]. Wetlands are important habitats for birds, and birds use them for eating, cuddling and raising young. In this study, the monitoring status of waterfowl and bird diversity is known. Water birds comprise a large group of species including Anseriformes, Charadiiformes, Ciconiformes, Gruiformes, Gaviformes, Pelecaniformes and Procellariiformes [3]. Past studies documented on bird diversity of Maharashtra state, mostly in western ghat, by Gole [4], Kasambe *et al.* [5,6] Patil *et al.* [7] records of Aves of Central India. Birds documentation on bird diversity of Marathwada by Balkhande, *et al.* [8] and in Vidarbha by Chitampally, [9, 10,11]. This study would be helpful in providing information on the effects of anthropogenic activities on water dependent and terrestrial birds.

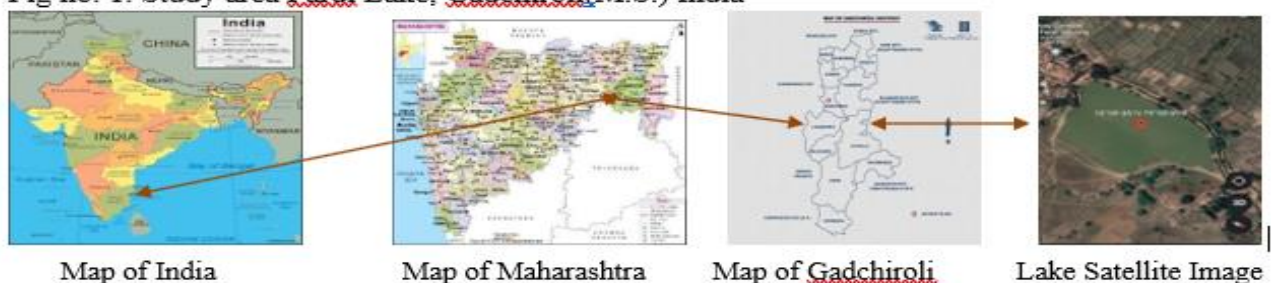
2. Materials and Method

Study Area :

Pardi lake is perennial water source and lies between 20°09'45" N to 79°55'39" E. The location of the Pardi Lake, surrounded by forest on three sides, and diverse structure of habitats with the major vegetation. The study was conducted during two-year February 2016 to January 2018. These habitats are also structured by different levels of human disturbance varying from activities like logging, cattle grazing and human settlements.

The surrounding area of lake was majorly covered by congress grass (*Parthenium hysterophorus*), Bermuda (*Cynodon dactylon*) and giant pigweed (*Trianthema portulacastrum*) and surrounding area of lake utilized by the villagers for dumping waste. Study area represents unique geographical site having mixed vegetations of tropical dry deciduous forest, dominated by *Tectona grandis*, *Terminalia arjuna*, kikar tree (*Acacia nilotica*), neem (*Azadirachta indica*), peepal (*Ficus religiosa*), eucalyptus oblique, bunyan tree (*Ficus bengalensis*), sheesham (*Dalbergia sisso*), *butea monosperma* interspread with patches of tropical moist rainforest *Syzigium cumini*, *Terminalia chebula*, *Embilica officianalis* and Foothills have midows with shrubs like Lantana camera, and paddy cultivation interpread with thorny shrub, *Acacia nilotica*, *zizypus jejoba* and *Azadirachta indica* as a predominant flora. This unique climatic condition of agro-forest ecosystem provides suitable feeding ground for avifauna. Pardi lake, Gadchiroli was surveyed for investigation of aquatic birds and several species by the line transect method of Sale and Berkmuller [12] and also point transect method of Verner [13]. The period of survey was two years (February 2016 to January 2018) of during three season (monsoon, winter and summer) birds were observed in each monthly interval. The observation was taken in most active periods for birds is early morning hours 6:30 - 10:00 am and evening hours 4:00 - 6:30 pm. During each visit, a bird census was carried out. The birds were observed with the help of binocular and camera (Nikon b700) at different selected sites and photographs were taken which ever necessary. The aquatic birds were observed, identified and classified as per standard method and guide by Ali and Ripley [14] and Grimmett *et al.* [15].

Fig no. 1. Study area Pardi Lake, Gadchiroli(M.S.) India



The checklist was prepared using standardized common and scientific names of the birds following Manakadan and Pittie [16]. The observed birds were categorized as a C- Common/Abundant, U-Uncommon, O- Occasional, R- Rare, according to their abundance.

Status of birds were classified into C- Common/ Abundant, U-Uncommon, O- Occasional, R- Rare.

Results and Discussion

In the present survey during the study in and around the Pardi lake, Gadchiroli. The total 50 species were recorded during the study from February 2016 - January 2018. In this study migratory status showed that Resident, Passage migrant, Breeding migrant represented in table no. 1.

Table: Showing recorded data on bird species diversity in and around the Pardi lake, Gadchiroli

S. N.	Common name	Scientific name	Season	A	IUCN status	FG	M
1	Black-winged Stilt	<i>Himantopus himantopus</i>	AL	++	LC	P	R
2	Red-wattled Lapwing	<i>Vanellus indicus</i>	MN	++	LC	I	R
3	Cattle Egret	<i>Bulbulcus ibis</i>	AL	+++++	LC	I	R
4	Smaller Egret	<i>Egreta garzetta</i>	MN	+++++	LC	P	R
5	Larger Egret	<i>Casmerodius albus</i>	MN	+++	LC	P, I	R
6	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	WN	+++	LC	P, I	R
7	White-breasted Kingfisher	<i>Halcyon smyrens</i>	AL	++	LC	C, I	R
8	Indian Pond Heron	<i>Ardeola grayii</i>	AL	+++	LC	P	R
9	Grey heron	<i>Ardeola cineria</i>	WN	+	LC	P	M
10	Common Red Shank	<i>Tringa tetanus</i>	AL	++	LC	P	R
11	Common Moorhen	<i>Gallinula chloropus</i>	AL	+++	LC	P	R
12	Purple Moorhen	<i>Porphyrio porphyrio</i>	AL	++	LC	P	R
13	Spot-billed Duck	<i>Anas poecilorhyncha</i>	AL	++	LC	P	R
14	Little Grebe	<i>Tachybaptus ruficollis</i>	MN	++	LC	P	R
15	Common Coot	<i>Fulica atra</i>	AL	++	LC	P	R
16	Oriental White Ibis	<i>Threskiornis melanocephalus</i>	AL	++	LC	P, I	R
17	Black Ibis	<i>Pseudibis papillosa</i>	MN	++	LC	P, I	R
18	Asian Pied Starling	<i>Sturnus contra</i>	AL	++	LC	O	R
19	Common Myna	<i>Acridotheres tristis</i>	AL	+++	LC	O	R
20	Bank Myna	<i>Acridotheres ginginianus</i>	AL	++	LC	O	R
21	House Crow	<i>Corous splendens</i>	AL	+++	LC	O	R
22	Rose-ringed Parakeet	<i>Psittacula krameri</i>	AL	+++	LC	F	R
23	Little Green Bee-eater	<i>Merops orientalis</i>	AL	++++	LC	I	PM
24	Red-vented Bulbul	<i>Pycnonotus cafer</i>	AL	++++	LC	O	R
25	Brown rock chat	<i>Oenenthe fusca</i>	AL	++	LC	I	R
26	Indian Robin	<i>Saxicoloides fulicata</i>	AL	+++	LC	P	R
27	Purple Sunbird	<i>Nectarinia asiatica</i>	AL	+++	LC	N	R
28	Black Drongo	<i>Dicrurus macrocercus</i>	AL	+++	LC	I	R
29	Common Pochard	<i>Aythya ferin</i>	WN	+	LC	P	PM
30	Common Moorhen	<i>Gallinula chloropus</i>	AL	+++	LC	I	R
31	Common Teal	<i>Anas crecc</i>	WN	+	LC	P	PM
32	Indian cormorant	<i>Phalacrocorax fuscicollis</i>	AL	+++	LC	P	R

33	Little cormorant	<i>Phalacrocorax niger</i>	AL	+++	LC	P	R
34	Asian open bill	<i>Anastomus ascitan</i>	MN	+++	LC	P,C	PM
35	Intermediate egret	<i>Ardea intermedia</i>	MN	++	LC	P,I	PM
36	Grey waghtail	<i>Motacila cinerea</i>	AL	++	LC	I	R
37	Bronse Winged Jacana	<i>Metopidius indicus</i>	WN	+++	LC	P,C	R
38	Purple heron	<i>Ardea pupurea</i>	WN	+	LC	P,I	M
39	Baya weaver	<i>Ploceus philipinus</i>	AL	++	LC	G	R
40	Indian bush lark	<i>Mirafra erythroptera</i>	AL	++	LC	O	R
41	Ashy crowned sparrow lark	<i>Erimopteryx griseus</i>	WN	++	LC	O	PM
42	Common babbler	<i>Turdoidus caudata</i>	AL	+++	LC	I	R
43	Jungle babbler	<i>Turdoidus striata</i>	AL	++	LC	I	R
44	Indian roller	<i>Coracijs bengalensis</i>	AL	+++	LC	I	R
45	Chestnut munia	<i>Lonchura atricapila</i>	AL	++	LC	G	R
46	Red wattled lapwing	<i>Vanellus indicus</i>	MN	++	LC	I	R
47	Scaly breasted munia	<i>Lonchura punctulata</i>	MN	++	LC	I	R
48	Squacco heron	<i>Ardeola ralloides</i>	MN	++	LC	P,I	R
49	Common sandpiper	<i>Actitis hypoleucos</i>	MN	++	LC	I	R
50	Magpie robin	<i>Copsychus saularis</i>	AL	++	LC	I	R

A-Abundance, FG- Foraging Guild, IUCN- International Union For Conservation of Nature, M- Migratory status, MN- Monsoon, AL- All season, WN- Winter, LC- Least concern, P-piscivorous, C-carnivorous, I- insectivorous, O-Omnivorous, F- frugivorous, N- Nectarivorous, G- Grainivorous, BM-Breeding migrant, PM- Passage migrant, R- Resident.



Foraging guild of the bird in the study area indicates dominance of insectivorous, Carnivorous, Grainivorous, Omnivorous, Frugivorous, Piscivorous, Herbivorous, Nectivorous recorded in the study area. Black headed ibis placed near threaten category (table no.1) while all other bird are least concern as per IUCN red data. In the present investigation, observed residential and passage migratory bird species. The most abundant species were *Bulbulcus ibis* and *Egretta garzetta*.

Check list of the bird diversity prepared on the basis of the field guide (books) Ali and Ripley [14]. other Dominant species are squacco heron, Black drongo, green bee eater, sandpiper, Bayani and Dandekar [11], recorded 255 species from TATR (Tadoba Andhari Tiger Reserved forest of Chandrapur district Maharashtra.

The present study had reveal that the no. of water dependent bird species found higher in number. Anthropogenic activities like factors play negative relation and resulted in lesser abundance, diversity and richness of bird. Similar finding was given by Manikannan *et al.* [16], Mohan and Gaur [17], Kumar *et al.* [17-18] and Gupta *et al.*[19]. Among these species some are recorded as rare, common and uncommon and variations observed in species during winter season. Individually number of bird's species was recorded high in number during winter season as compared to monsoon and summer seasons. It is due to winter season is favorable for visitor birds for rest and other activities and study area provided a good and favorable condition for the birds nesting, breeding and feeding purpose. This is similar with Joshi, [20], Kasambe, R. and Wadatkar[6] and Rajashekara and Venkatesha [21].

3. Conclusion

Pardi Lake is perennial, the abundant of aquatic birds shows that lake is suitable for birds. From the above results it concluded that the abundant of birds specifies the healthy status of Lake and availability of water for nesting, breeding and feeding with specialized micro habits, different kinds of food sources for both adults and nestlings in this lake. A such study might help to check anthropogenic activities for lake management and

water bird conservation. Public participation is more important for the conservation of water-dependent avian diversity. So, an effective way to save these birds is to save their habitats

Conflicts of interest: The author stated that no conflicts of interest.

4. References

1. Kumar A, Sati JP, Tak PC, Alfred JRB (2005): Handbook on Indian wetland birds and their conservation. Zoological Survey of India.
2. Gregory R. D., Noble, D., Field, R., Marchant, J., Raven, M. and Gibbons, D. W. 2003 .Using birds as indicators of biodiversity. *Ornis Hungarica* 12: 11-24.
3. Mistry, J. 2008
4. Gole, P. (2000) Survey of Birds of Bhimashankar Wildlife Sanctuary and formulation of Management guidelines for their protection. Final Report. A project sponsored by the Forest Department, Government of Maharashtra.
5. Kasambe, R. & Khan, N. (2015): Checklist of birds of Karnala Bird Sanctuary, District Raigad, Maharashtra, Newsletter for Birdwatchers 55(2).
6. Kasambe, R. and Wadatkar, J. S. (2003): Checklist of Birds from Pohara-Malkhed Reserve Forest, District Amravati, Maharashtra. *Zoos' Print Journal*. 17 (6): 8
7. Patil Kishor G, Bobade Sumedh L, Shende Virendra A, Pawar Santosh S, Chavhan Arvind B. Aves of Ajanti reservoir region of Wena River, Hinganghat (Wardha) Central India. *Int. Res. Journal of Science & Engineering*, 2018, 6 (2): 55-76.
8. Balkhande, J.V., Bhovate, C. S., and Kulkarni (2012). Check List Of Birds of River Godavari, Dhargar Takli Near Purna, Dist.Parbhani Maharashtra, *Bionano Frontier* . 5 (2).
9. Chittampalli, M., Bhatkhande, B.P.N., 1993. *Hansdev s Mrigpakeshi Shastra*. M.S. Board of literature and culture, Mumbai. pp.1-279.
10. Wagh, G.A., Jane, N., Wadatkar, J.S. & Rawankar, A.S.(2015): Waders diversity in Amravati Region, Maharashtra, *Proc. Wetlands-Present status, Eco. & Cons.*3-9.
11. Bayani, A., & Dandekar, N. (2017). A revised avian checklist of Tadoba Andhari Tiger Reserve (TATR), Chandrapur, Maharashtra, India, *Indian Birds*, Vol. 13 No. 5.
12. Sale J.B.; Berkmuller, K. ,(1988). *Manual of Wildlife Techniques for India*. Wildlife Institute of India, Dehradun. India.

13. Verner J. and Ritter L.V. (1985): A comparison of transects and Point counts in Oak-pine woodlands of California, *The condor*. 87:47-68.
14. Ali, S. and Ripley, D. (1984): Compact Edition of the Handbook of the Birds of India and Pakistan: Together with Those of Bangladesh, Nepal, Bhutan and Sri Lanka. Bombay Natural History Society, Oxford University Press. Pp.737+104 colour plates.
15. Grimmett, R., Inskipp, C. & Inskipp, T. (2011): Birds of the Indian subcontinent. Oxford University, Replika Press, Pvt. Ltd.
16. Manikannan R, Pittie A. Standardised common and scientific names of the birds of the Indian subcontinent. *Buceros*. 2001; 6(1):1-37.
17. Mohan D, Gaur A. avian diversity around Jajiwad pond-a natural wetland. Proceedings of taal 2007: The 12th World Lake Conference. 2008, 542-546.
18. Kumar A, Sati JP, Tak PC, Alfred JRB (2005): Handbook on Indian wetland birds and their conservation. Zoological Survey of India.
19. Kumar A, Sati JP, Tak PC, Alfred JRB. Handbook on Indian wetland birds and their conservation. Zoological Survey of India. 2005.
20. Gupta RC, Kaushik TK, Gupta PK. Winter migratory wetland birds in Haryana are confronting adverse conditions in rural ponds resulting in reduction in arrival number: a case study of village amin in thanesar block in Kurukshetra district. *Indian Journal of Fundamental and Applied Life Sciences*. 2012; 2(1):1-7.
21. Joshi PS, 2012. An annotated checklist of aquatic avifauna of Rajura, Godada and Dhanora lakes of Buldhana district (M.S.) India. *Science Research Reporter*, 2(1): 3033.
22. Rajashekara S and Venkatesha MG, (2010). The diversity and abundance of waterbirds in lakes of Bangalore city, Karnataka, India. *Biosystematica*, 4(2): 63-73.