Journal of Innovations in Pharmaceutical and Biological Sciences (JIPBS)
ISSN: 2349-2759
Available online at www.jipbs.com

Research article

Diversity of avi fauna in bhadrakali and waddepelly fresh water reservoirs of Warangal urban environment

Ch. Samatha, M. Thirupathaiah, Ch. Sammaiah*

Environmental Biology Lab, Department of zoology, Kakatiya University, Warangal-506 009, Telangana, India.

Key words: Avifauna, biodiversity, freshwater and reservoir.

***Corresponding Author: Ch. Sammaiah,** Environmental Biology Lab, Department of zoology, Kakatiya University, Warangal-506 009, Telangana, India.

Abstract

Fresh water reservoirs are suitable habitat for birds along with food and water. In the present study an attempt has been made to assess the diversity of avian fauna in two fresh water reservoirs. Nineteen species of birds were observed, belonging to 9 families in Bhadrakali reservoir and 16 species of birds belonging to 9 families from Waddepelly reservoir. Dominant families of resident water birds were Ardeidae followed by Jacanidae. The migratory birds inhabited the reservoirs in winter months.

Introduction

Among all terrestrial vertebrates, birds due to their great power of mobility are successful in exploiting a wide range of terrestrial and aquatic habitats. Each species of bird is adapted to certain habitat and within the environment conditions; it continues its life activities. According to Robbins [1] birds are sensitive indicators of habitat conditions as each bird has its own distinctive breeding even abundance of certain species can be predicted habitat descriptions.

Since birds have a unique status in the food web they become indicators of pollution and other biotic pressures. Where high concentration of bird species occur it is likely that other forms of flora and fauna will occur in similar abundance and variety. The assemblage of birds in the communities is the results of many interacting factors, which are individually insufficient to explain the pattern of bird communities [2]. The bird community in any given habitat changes seasonally also [2, 3, 4]. Interaction of bird species with certain quality of food or to reduce exposure to predation [5, 6].

The water bodies with enough food and weedly vegetation provide a good habitation for the resident and migratory birds. The urban areas are gradually destroying the habitat of water birds. In India 29 water birds are reported as threatened with extinction [7]. India has 243 species of water birds and 67 species of wetland dependent and associated birds [8] almost half of which are migratory and come to the subcontinent from their breeding grounds in northern latitude of China, Russia, Asian countries. Although no regular work on the avifauna of India. The present study deals with the seasonal diversity and abundance of birds fauna in habiting two fresh water reservoirs in urban environment of Warangal.

Experimental

Material and methods

Study area

The present investigation was carried out in two drinking water reservoirs Bhadrakali and Waddepelly of Warangal in urban environment. Bhadrakali reservoir is situated middle of the Warangal city. The reservoir is surround by three sides' houses and one side by hill. It lies between North latitude 18°.00' and East Longitude 79°.30'. The total area of the reservoir is about 120 hectare. The reservoir supports number fishes, mollusks and aquatic insects and their larvae which form a good food source for arriving birds.

Waddepelly reservoir is situated in the outskirt of Warangal city and is surrounded by one side agriculture fields, where different crops grown. The reservoir supports number of fishes, amphibian, mollusks and aquatic insects as good source for resident birds.

Bird watching and recording has been carried out for a period of one year (June 2015- May 2016) and the observation was made with the aid of a binocular. Photography was done with cannon camera with zooms lenses. Recorded birds were identified by using standard books such as Ali [9], Ali & Riply [10].

Results and Discussion

Extensive survey revealed the occurrences of nineteen species of birds belonging to nine families of three orders were recorded in the Bhadrakali reservoir. Sixteen species

of birds belonging to eight families of three orders were recorded from Waddepally reservoir (Table 1). The status of bird fauna common, uncommon and rare bird in both reservoirs is presented in table 1. The percentage of birds also presented in Table 2.

Bird community was found highest on Bhadrakali reservoir than the Waddepelly reservoir, little cormorant population was 12-67% and 10-65% in Bhadrakali and Waddepelly reservoirs respectively. It is indicated that such richness of birds in Bhadrakali may be due to some space or food resources as discussed earlier by Hepp (11). A total of 19 species were recorded in Bhadrakali reservoir and 16 species in Waddepelly reservoir. Out of the 19 species 16 species are common in both the reservoirs. Three species were recorded viz Comb duck, Lesser pied kingfisher and Lesser golden in Bhadrhrakali reservoir only.

Table 1. Avifauna recorded from Bhadrakali and Waddepally reservoirs of Warangal

Bird species				Status	Bhadrakali Reservoir	Waddepally Reservoir
Order	**Family**	**Common Name**	**Scientific Name**			
Anseriformes	Anatidae	Lesser whistling duck	*Dendrocygna javanica*	C	+	+
Anseriformes	Anatidae	Comb duck	*Sarkidiornis melanotos*	R	+	_
Anseriformes	Anatidae	Spot billed duck	*Anas poecilorhyncha*	U	+	_
Charadriformes	Jacanidae	Bronze winged jacana	*Metopidius indicus*	U	+	+
Charadriformes	Jacanidae	Pheasant tailed jacana	*Hydrophasianus chirurgus*	U	+	+
Ciconiiformes	Ardeidae	Cattle egret	*Bubulcus ibis*	C	+	+
Ciconiiformes	Ciconiidae	Painted stork	*Mycteria leucocephala*	U	+	+
Coraciiformes	Cerylidae	Lesser pied kingfisher	*Ceryle rudis*	U	+	_
Coraciiformes	Alcedinidae	White breasted kingfisher	*Halcyon smyrnensis*	U	+	+
Gruiformes	Rallidae	Purple Moorhen or Swamp hen	*Porphyrio porphyrio*	C	+	+
Gruiformes	Rallidae	Common moorhen	*Gallinula chloropus*	C	+	+
Gruiformes	Rallidae	Purple moorhen	*Porphyrio porphyrio*	C	+	+
Gruiformes	Rallidae	Common coot	*Fulica atra*	C	+	+
Passeriformes	Ploceidae	Black breasted weaver	*Ploceus benghalensis*	C	+	+
Passeriformes	Motacillidae	Western Yellow wagtail	*Motacilla flava*	C	+	+
Pelecaniformes	Ardeidae	Indian pond heron	*Ardeola grayii*	C	+	+
Pelecaniformes	Ardeidae	Larger egret Great Egret	*Ardea alba*	C	+	+
Pelecaniformes	Ardeidae	Little egret	*Egretta garzetta*	C	+	+
Piciformes	Picidae	Lesser goldenback	*Dinopium benghalense*	C	+	_
Suliformes	Phalacrocoracidae	Indian Cormorant	*Phalacrocorax fuscicollis*	C	+	+

U= Uncommon, C= Common and R=Rare bird

Table 2. Percentage of birds in Bhadrakali and Waddepally reservoirs

S. No	Name of the Bird species	Bhadrakali reservoir %	Waddepally Reservoir %	Total %
1	Black breasted weaver	1.40	1.37	2.78
2	Bronze winged jacana	2.34	3.02	5.36
3	Cattle egret	2.97	4.81	7.78
4	Comb duck	2.35	-	2.35
5	Common coot	11.65	14.61	26.27
6	Common moorhen	13.63	13.66	27.29
7	Larger egret	3.37	3.24	6.61
8	Lesser golden	1.60	-	1.60
9	Lesser pied kingfisher	1.50	-	1.50
10	Indian Cormorant	12.67	10.65	23.33
11	Little egret	3.37	2.96	6.33
12	Painted stork	1.70	1.64	3.34
13	Pheasant tailed jacana	2.07	2.19	4.27
14	Pond heron	5.04	7.21	12.26
15	Purple heron	6.74	6.26	13.01
16	Purple moorhen	12.31	13.31	25.63
17	Spotbill duck	2.19	1.81	4.00
18	White breasted kingfisher	2.2	2.69	4.89
19	Yellow wagtail	1.52	1.4	2.95

It is indicated that Bhadrakali reservoir was more potential than the Waddepelly reservoir for birds' diversity. It is realized that the birds turn out to be excellent indicator of overall biodiversity such as fishes and zooplankton and benthic fauna etc as the inhabit a broad range of habitats and elevations. Some seasonal changes in water birds number is directly or indirectly connected to the availability of food and water physico-chemical characters. The study is indispensible information for comparison for studies of the few drinking water reservoirs of Warangal. The study clearly indicates that no much difference are not found in the diversity and abundance of water birds in both reservoirs present in urban environment. At Waddepelly reservoir, intense human activities have been seen. This reservoir receiving agricultural seepage and pass railway tract one side of the reservoir. These may be disturbing the water birds in the waddepelly reservoir.

Diversity of birds in Warangal urban environment area

1. ***Hydrophasianus chirurgus***

2. ***Porphyrio porphyrio***

3. ***Ardeola grayii***

4. ***Anas poecilorhyncha***

5. ***Bubulcus ibis***

6. ***Dendrocygna javanica***

7. Ardea alba

8. *Mycteria leucocephala*

9. *Phalacrocorax fuscicollis*

10. *Fulica atra*

11. *Gallinula chloropus*

Conclusion

The diversity of bird species and migration of birds can significantly influence food, space and disturbance of water bodies. The results demonstrate that Bhadrakali reservoir may be suitable for bird's diversity than Weddapally reservoir. Therefore, species diversity is more in Bhadrakali reservoir than the Weddapally reservoir.

References

1. Robbins, C. S: Census techniques for forest birds. Pages 142-163 in Richard M. DeGraaf, technical coordinator. Proceedings of the Workshop: Management of Southern Forests for Nongame Birds. General Technical Report SE-14. U.S. Forest Service, Southeastern Forest Experiment Station, Asheville, NC. 19781; 76.
2. Wiens, J. A: Recovery of seabirds following the ExxonValdez oil spill: an overview. Pages 854–893 in P. G.Wells, J. N. Butler, and J. S. Hughes, editors. Exxon Valdez oil spill: fate and effects in Alaskan waters. STP 1219. American Society for Testing and Materials, Philadelphia, Pennsylvania, USA. 1995.
3. Hilden, O: Habitat selection in birds. Annales Zoologici Fennici 1965; 2:53-75.
4. Anderson, S. H: Seasonal variations in forest birds of western Oregon. Northwest Science 1972; 46:194-206.
5. Franzreb, K. E: Tree species used by birds in logged and unlogged mixed-coniferous forests. Wilson Bull 1978; 90:221-238.
6. Yahner, R.H: Microhabitat Use by Small Mammals in Farmstead Shelterbelts. Journal of Mammalogy, 1982; 63(3):440-445. Retrieved from http://www.jstor.org/stable/1380441.
7. Islam MZ, Rahmani AR: Important bird areas in India: Priority sites for conservation. Indian Bird Conservation Network, BNHS and Bird Life International 2004; Pp xviii + 1133.

8. Kumar, A., J.P. Sati, P.C. Tak & J.R.B. Alfred: Handbook on Indian Wetland Birds and Their Conservation. Zoological Survey of India 2005; 472.
9. Ali. S: The Book of Indian Birds Bombay Natural history Society and Oxford University press Bombay 1981; 210.
10. Ali,S ans Ripley S. D: Hand book of Birds of India and Pakistan. Oxford University Press, Delhi 1983; 180.
11. Hepp, G.R: Effects of environmental parameters on the foraging behaviour ofthree species of wintering dabbling ducks (Anatini). Can. J Zool. 1985; 63:289-294.