

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 7, Issue 4, April 2018

Avifaunal Diversity and status of Bhimasandra Pond, Tumakuru District, Karnataka, India

Parimala B^{1*}, Asiya Nuzhat F B²

Assistant Professor, Department of Zoology, University College of Science, Tumkur University, Tumakuru. India.¹

Associate Professor and Chairman, Department of Studies and Research in Zoology, Tumkur University,
Tumakuru. India.²

ABSTRACT:The Bhimasandra Pond which is situated near Tumakuru, Karnataka State, India, provides territory for various avifauna. Different avian species were recorded in different seasons. They are common natives of the terrestrial and aquatic ecosystems and have been considered as an indicator species of inhabited areas. They are very sensitive indicators for pollution and functions as early warning system. Present investigation was carried out on the diversity and status of avifauna in Bhimasandra pond from January 2012 to December 2013. During the present study, totally 71 species were identified belonging to 30 families and 14 orders. During the study more species were sighted in order Passeriformes, followed by Charadriiformes and Ciconiiformes. It was evident that Purple Moorhen, Coots and Ducks have developed high tolerance to this highly fluctuating habitat and human anthropogenic activity.

KEYWORDS:Avifauna, Diversity, Status, Bhimasandra Pond.

I. INTRODUCTION

Indian subcontinent provides habitat for different avifauna in its diverse ecosystems like Deserts, Western Ghats, Waterscape elements etc. Birds are useful in various ways either directly or indirectly to the human beings. Avifauna plays an important link in the food chain in different ecosystem. The avifauna of the sub-continent is rich in variety and number. It represents 2094 forms 1200 species of avifauna [1]. According to BNHS report, approximately 5,00,000, wetland birds of over 130 species both residing and migratory at different wetlands throughout India. Subcontinent supports 1300 plus birds species belonging to 16 orders. Out of these, 900 plus species are residents [2] and rest are migratory. Karnataka state represents 500 plus bird species with 48 listed in threatened category. In the Karnataka state many workers documented avian fauna of different habitat. To mention few, Mysore avifauna was documented [3]. avifauna of Biligiri Rangaswamy Temple Wild life Sanctuary was up dated [4] [5], wetland avifauna of Kundavada lake Davangere [6], avifauna of Nippani reservoir in Belgaum District [7], Gulbarga region [8], Anekere wetland avifaunal diversity [9] were documented. Recently avifaunal diversity and status of Shivamogga municipal city was recorded [10]. Since there is no report on avifaunal diversity and status on the birds prevailing in Bhimasandra pond of Tumakuru, to create the awareness for avifaunal conservation, preliminary observations were made and documented.

II. RELATED WORK

Wetland supports congregation of large number of migratory and resident bird species as it has high nutritional value as well as productivity. Birds are most conspicuous and significant component of freshwater wetland ecosystems and their presence and absence may indicate the ecological conditions of the particular area. The diversity of birds and abundance can reflect ecological trends in other biodiversity [11]. Birds form a major component in natural ecosystem

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 7, Issue 4, April 2018

and they widely recognized as bio-indicators of the quality of the ecosystem [12]. Biologists has given least importance to urban biodiversity conservation as compared to natural and protected ecosystem[13].

III. STUDY AREA

The study was carried out at Bhimasandra pond which is geographically located in between 13°20' 37" N 77°03'59". It is in the 860 meters to 678 meters elevation range (Fig-1)



Fig 1: Satellite View of Bhimasandra Pond

Highest day temperature was recorded in between 29°C. - 37°C. The Bhimasandra wetland is recognized as a heaven for water birds in Tumkur City. This wetland attracts rare migratory birds throughout the year.

IV. MATERIAL AND METHODS

To determine the status and diversity of avian fauna, the Bhimasandra pond was studied extensively through the bed. Study was conducted from January 2012 to December 2013. Two different stations were selected around the pond. Pond was covered twice in a month. On each visit all the birds were identified and counted species wise with as much accuracy as possible using the point count method. Birds were saturated by direct observation using a pair of Olympus binoculars (10x50). Canon EOS 600D 18-55 mm Camera and Tamron 70-300 mm zoom lens was used for bird's photography. Boat Survey and Foot Survey methods were used in order to evaluate the water birds in the pond area. For identification and field-diagnosis of birds, colours plates [14] [15] [16] were used. The common scientific names of the birds given in the list followed the Birds of the world, recommended English Names [12]. The common-Rare, Resident-Migratory Status of the bird are classified as per [17].

V. RESULT AND DISCUSSIONS

During the present investigation 71 different species of birds belonging to 30 families and 14 orders were recorded (Table 1 and 2). More number of species were sighted in the order Passeriformes 14, Charadriiformes 13 and

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

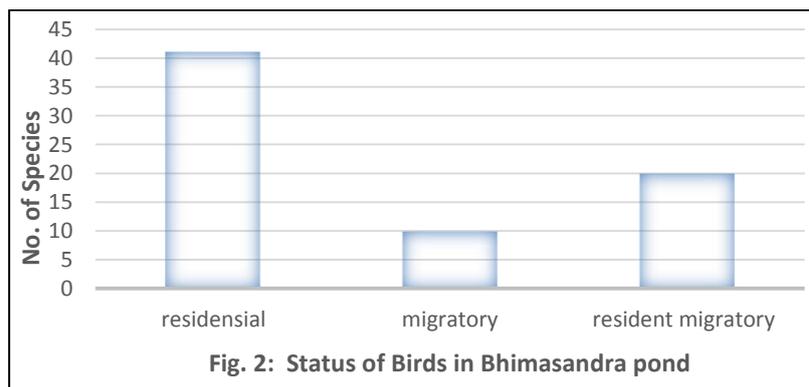
Vol. 7, Issue 4, April 2018

Ciconiiformes 11 while, in Anseriformes 7, Gruiformes 6, Pelecaniformes 5, Coraciiformes 4 and Falconiformes 4 were recorded.

Table 1: Number of Families and Species present in each order

SL No	ORDERS	No. of Families	No. of Species
1	Podicipodiformes	1	1
2	Pelecaniformes	3	5
3	Ciconiformes	3	11
4	Anseriformes	1	7
5	Falconiformes	1	4
6	Gruiformes	1	6
7	Charadriiformes	5	13
8	Columbiformes	1	1
9	Psittaciformes	1	1
10	Cuculiformes	1	2
11	Apodiformes	1	1
12	Coraciiformes	2	4
13	Piciformes	1	1
14	Passiriformes	8	14

Whereas less number of species were sighted in the order Cuculiformes 2 and Apodiformes 2, Columbiformes, Piciformes and Podicipodiformes one species each. In the present study 41 residential birds, 10 migratory birds' and 20 resident-migratory birds were recorded (Table 2 and Fig 2.).



International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 7, Issue 4, April 2018

Table 2. A systematic list of birds with their status

COMMON NAME	SCIENTIFIC NAME	STATUS
Order: Podicipediformes		
Family: Podicipitidae		
Little grebe	<i>Tachybaptus ruficollis</i>	R
Order: Pelecaniformes		
Family: Pelecanidae		
Rosy or White Pelicans	<i>Pelecanus onocrotalus</i>	RM
Spotted billed Pelican	<i>Pelecanus philippensis</i>	RM
Family: Phalacrocoracidae		
Little Cormorant	<i>Phalacrocorax niger</i>	RM
Great Cormorant	<i>Phalacrocorax carbo</i>	RM
Family: Anhingidae		
Darter	<i>Anhinga melamogaster</i>	RM
Order: Ciconiiformes		
Family: Ardeidae		
Grey heron	<i>Ardea cinerea</i>	RM
Purple heron	<i>Ardea purpurea</i>	RM
Pond heron	<i>Ardea lagrayii</i>	R
Cattle egret	<i>Bubulcus ibis</i>	RM
Great egret	<i>Casmerodius albus</i>	RM
Median egret	<i>Mesophoyx intermedia</i>	RM
Little egret	<i>Egretta garzetta</i>	R
Family: Ciconiidae		
Painted stork	<i>Mycteria leucocephala</i>	RM
Openbill stork	<i>Anastomus oscitans</i>	R
Family: Threskiornithidae		
Glossy ibis	<i>Plegadis falcinellus</i>	RM
Black ibis	<i>Pseudibis papillosa</i>	R
Order: Anseriformes		
Family: Anatidae		
Lesser Whistling teal	<i>Dendro cygnajavanica</i>	R
Pintail	<i>Anas acuta</i>	M
Common teal	<i>Anas crecca</i>	RM
Spot billed duck	<i>Anas poecilorhyncha</i>	RM
Garganey	<i>Anas querquedula</i>	M
Shoveller	<i>Anas clypeata</i>	M
Cotton teal	<i>Nettapus coromandlianus</i>	R
Order : Falconiformes		
Family : Accipitridae		
Common Pariah kite	<i>Milvus migrans</i>	R
Brahminy Kite	<i>Hallias turindus</i>	R
Sparrow Hawk	<i>Accipiter nisus</i>	R
King Vulture	<i>Sarcogyps calvus</i>	R
Order: Gruiformes		
Family: Rallidae		

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 7, Issue 4, April 2018

Little crane	<i>Amaurornis akool</i>	R
White breasted water hen	<i>Amaurornis phoenicures</i>	R
Water cock	<i>Gallicrex cinerea</i>	RM
Indian Morehen	<i>Gallinula chloropus</i>	R
Purple Morehen	<i>Porphyria porphyrio</i>	RM
Coot	<i>Fulica atra</i>	R
Order: Charadriiformes		
Family : Jacanidae		
Bronze winged Jacana	<i>Metopidicus indicus</i>	R
Family: Charadriidae		
Sub Family: Charadriinae		
Redwattled lapwing	<i>Vanellus indicus</i>	R
Yellow wattle lapwing	<i>Vanelles malabaricus</i>	M
Grey plover	<i>Pluvialis squatarola</i>	M
Little ringed plover	<i>Charadrius dubius</i>	M
Sub Family: Scolopacinae		
Common sand piper	<i>Tringa hypoleucos</i>	RM
Marsh sand piper	<i>Tringa stagnatilis</i>	M
Little Stint	<i>Calidris minuta</i>	M
Curlew Sand piper	<i>Calidris testacea</i>	M
Family: Rostratulidae		
Painted snipe	<i>Rostratula benghlensis</i>	R
Family: Recurvirostridae		
Black winged stilt	<i>Himantopus himantopus</i>	R
Family: Laridae		
Indian River Tern	<i>Sterna aurantia</i>	RM
Common Tern	<i>Sterna hirundo</i>	R
Order: Columbiformes		
Family: Columbidae		
Spotted Dove	<i>Streptopelia chinensis</i>	R
Order : Psittaciformes		
Family : Psittacidae		
Rose Ringed parakeet	<i>Psittacula krameri</i>	R
Order : Cuculiformes		
Family : Cuculidae		
Koel	<i>Eudynamys scolopacea</i>	R
Crow Pheasant	<i>Centropus sinensis</i>	R
Order : Apodiformes		
Family : Apodidae		
House Swift	<i>Apus affinis</i>	RM
Order: Coraciiformes		
Family: Alcedinidae		
White breasted kingfisher	<i>Halcion smyrnensis</i>	R
Small blue kingfisher	<i>Alcedo atthis</i>	R
Pied Kingfisher	<i>Ceryle rudis</i>	R
Family: Meropidae		
Small green bee eater	<i>Merops orientalis</i>	R
Order : Piciformes		
Family : Picidae		

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 7, Issue 4, April 2018

Lesser Golden Backed Woodpecker	<i>Dinopium benghalense</i>	R
Order: Passeriformes Family : Hirundinidae		
Wire tailed Swallow	<i>Hirundo smithii</i>	RM
Family : Dicruridae		
Black drongo (King Crow)	<i>Dicrurus adsimilis</i>	R
Family : Sturnidae		
Indian Myna	<i>Acridotheres tristis</i>	R
Jungle Myna	<i>Acridotheres fuscus</i>	R
Family : Corvidae		
House crow	<i>Corvus splendens</i>	R
Family: Pycnonotidae		
Red whiskered bulbul	<i>Pycnonotus jocosus</i>	R
Family : Muscicapidae Sub Family: Timaliinae		
Spotted Babler	<i>Pellorneum ruficeps</i>	R
Common Babler	<i>Turdoides caudatus</i>	R
Sub Family : Turdinae		
Magpie Robin	<i>Copsychus saularis</i>	R
Family : Motacillidae		
Large pied Wag tail	<i>Motacilla maderaspatensis</i>	R
Yellow Wagtail	<i>Motacilla flava</i>	R
Grey Wagtail	<i>Motacilla cinerea</i>	M
Paddy field pipet	<i>Antusru fulus</i>	R
Family : Ploceidae		
Sub family: Ploceinae		
Baya Weaver bird	<i>Ploceus philippinus</i>	R

The resident birds are observed in most of the months of study period and migratory birds were observed in winter season only. The relative percentage of total bird species belonging to different families (Table 3) shows that, maximum relative percentage is from Charadriidae, Ardeidae, Anatidae and Rallidae family.

Table: 3 Percentage occurrence in avifauna represented in families

SL. No.	Families	No. of Species	% occurrence
1	Podicipitidae	1	1.41
2	Pelicanidae	2	2.82
3	Phalacrocoracidae	2	2.82
4	Anhingidae	1	1.41
5	Ardeidae	7	9.86
6	Ciconiidae	2	2.82
7	Threskiornithidae	2	2.82
8	Anatidae	7	9.86
9	Accipitridae	4	5.63
10	Rallidae	6	8.45
11	Jacaniidae	1	1.41

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 7, Issue 4, April 2018

12	Charadriidae	8	11.27
13	Rostratulidae	1	1.41
14	Recurvirostridae	1	1.41
15	Laridae	2	2.82
16	Columbidae	1	1.41
17	Psittacidae	1	1.41
18	Cuculidae	2	2.82
19	Apodidae	1	1.41
20	Alcedinidae	3	4.23
21	Meropidae	1	1.41
22	Picidae	1	1.41
23	Hirundinidae	1	1.41
24	Dicruridae	1	1.41
25	Sturnidae	2	2.82
26	Corvidae	1	1.41
27	Pycnonotidae	1	1.41

The birds were found to utilize different wetland habitats extensively for nesting, foraging and roosting on the vegetation. Due to the availability of varied sources of feed as well as foraging, the rich diversity of the birds were documented during the present study. The wetlands provides heterogeneous feeding habits to avifauna [15]. Wetland habitat by supporting different food sources like planktons, fishes and invertebrates, further adding to the diversity of the wetlands [18]. From October onwards a considerable number of water birds dwells in the pond. Highest density of the birds was recorded during winter months. The basic requirement of the migratory birds at their wintering sites are adequate food supply and for their safety [19].

VI. CONCLUSION

The study documents the rich avifauna shows that the area still provides some potential habitats for declining population of the migratory birds. Study area is situated near the city. So it has high human interference. Anthropogenic activities may be the reason for depressed species diversity. Treated effluent water from water treatment plant is flowing into the pond. This is the main reason for declining bird species in the study area. In due course prevailing bird species diversity may decline because of these reasons. Unfortunately, these regions are getting invalid by commercial activity due to urbanisation. There is a need to monitor this area systematically with focused study and a conservation plan should be under taken by the government to save the urban species of birds and their sustainable population. The study could effectively provide the baseline for research which could be used for conservation purpose of the birds.

REFERENCES

- [1] Ali, S., "The Birds of Mysore", Part V. J., The Bombay Natural History Society, Vol. 44, pp. 206-202, 1943.
- [2] Ali, S., "The Book of Indian Birds", 12th edition, BNHS, Oxford University Press, Mumbai, 1996.
- [3] Ali, S, and Ripley, S. D., "The hand Book of Birds of India and Pakistan", Ten Volumes, Oxford University Press, New Delhi, 1968-1974.
- [4] Ali, S., and Ripley, S. D., "Compact Hand Book of Birds of India and Pakistan", Ten volumes, Oxford University Press, Bombay, 1983.
- [5] Aravinda, N. A., Rao Dinesh, and Madhusudan P.S., "Additions of the birds of the Biligiri Rangaswamy temple Wild life Sanctuary", Western Ghats, India, Zoos' Print, Vol. 16, pp. 541-547, 2001.
- [6] Donar, A. D., Reddy, K. R., and Deshpande, D. P., "Avifaunal diversity of Nippani Reservoir, Belgaum district, Karnataka, The Ecoscan, Special Issue, Vol.1, pp. 27-33, 2012.
- [7] Aria Pezeshk, and Richard, L. Tutwiler, "Automatic Feature Extraction and Text Recognition from Scanned Topographic Maps", IEEE Transactions on Geosciences and Remote sensing, VOL. 49, NO. 12, 2011.
- [8] Gill, F. B., "Ornithology", 2nd edition, New York, 1994.
- [9] Grimmette, K, Inskipp, C, and Inskipp, T., "Birds of Indian sub-continent", 2nd edition, Oxford University press, New Delhi. 1999.
- [10] Harisha, M. N., Hosetti, B. B., and Shahnawaz Ahamad, "Wetland avifauna of Kundavada Lake, Davangere, Karnataka", Current biotica, Vol. 5, pp. 351-358, 2011.

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 7, Issue 4, April 2018

- [11] Ishwara Bhat P., Cristopher, S. S., and Hosetti, B. B, "Avifaunal diversity of Anekere wetland, Karkala, Udupi District, Karnataka, India", Vol. 30, No. 6, pp. 1059-1062, 2009.
- [12] Jeevan, E. L., Naik, K. L., Sumanthrapa, D. B., Ashashree, H. M., and Sayeswara, H. A., "Avifaunal diversity and status of Shivamogga Municipal city, Karnataka, India", International Journal of Chemical and Natural Science, Vol. 1, No.1, pp. 1-4, 2013.
- [13] Manjunath, and Bhasker Joshi, "Avifaunal diversity in Gulberga region, North Karnataka", Recent Research in Science and Technology, Vol. 4, No.7, pp. 27-34, 2012.
- [14] Patil, M. S, Hiragond, "Avifauna diversity along the Ghattaprabha river in Shettihalli, Hukkeri Taluk, North Karnataka", The Ecoscan, Vol. 7, pp. 79-82, 2013.
- [15] Saika, P. K., and Saika, M. K., "Diversity of Bird Fauna in N. E. India", Journal of Assam Science Society, Vol. 41, No.2, pp. 379-396, 2000.
- [16] Srinivasa, T. S., Karthekeyan, S., and Prasad, J. N., "Faunal survey of Biligiri Rangaswamy Temple Wildlife Sanctuary", Merlin Nature club, Bangalore, 1997.
- [17] Basavarajappa, S., "Avifauna of agro ecosystems of Maidan area of Karnataka, Zoos' Print, J., Vol. 21, No. 24, pp. 2217-2219, 2004.
- [18] Jules, E. S., "Danger in dividing conservation Biology and Agro Ecology", Conservation Biology, Vol. 11, pp. 1272-1273, 1997.
- [19] Bharatha Lakshmi, B., "Avifauna of Gosthani Estuary near Vishakapatnum, Andra Pradesh, J., Natcon., Vol. 18, No. 2, pp. 291-304, 2006.