



BIODIVERSITY CONSERVATION OF TATIPUDI RESERVIOR WITH REFERENCE TO AVIFAUNA

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ABSTRACT: Tatipudi is a village and panchayat in Gantyada Mandal, Vizianagaram district in Andhra Pradesh, India. Tatipudi Reservoir Project was constructed across Gosthani River, With a water spread area of 2600 ha at FRL receiving water from catchment area. The project is aimed to irrigate a total ayacut of 15,378 acres (62 km²) in Vizianagaram District and to provide drinking water to Visakhapatnam City. The Project utilizes 3.325 tmcft of the available water and the reservoir storage capacity is about 3 tmcft. The Gosthani rises in the Ananthagiri Hills of the Eastern Ghats and flows through the Borra Caves which flows down in the form of a river passing 120 km before joining the Bay of Bengal through an estuary near Bheemunipatnam. The Reservoir is about 10 Kms from S Kota. The reservoir has been identified under National Wetland Conservation Programme by Ministry of Environment and Forests (Govt. Of India). The reservoir supports rich biodiversity including fishes and birds. This reservoir supports commercial fishery and the fish biodiversity include some important fish species from conservation point of view. A large number of water birds visit the reservoir during winter season. Both these features make the reservoir a biodiversity hotspot and need a systematic conservation strategy, the most positive aspect of the reservoir is its catchment area which predominantly forest area. The migratory birds visit the reservoir during winter season. The paper deals with avifaunal diversity in the reservoir and its surrounding area. The mosaic of habitats makes it a unique avifaunal refuge. Protected catchment area is also a supportive feature for the conservation of birds species. The paper discuss in detail the aquatic habitats available in the reservoir, their biological features (presence of macrophytes and benthos) habitat utilization patterns of birds and conservation aspects.

Key Words: Biodiversity, Waterbirds, Wetland, Habitats, catchment area.

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INTRODUCTION

Wetlands are defined as 'lands transitional between terrestrial and aquatic eco-systems where the water table is usually at or near the surface or the land is covered by shallow water [1]. The various reservoirs, shallow ponds and numerous tanks support wetland biodiversity and add to the countries wetland wealth. It is estimated that freshwater wetlands alone support 20 per cent of the known range of biodiversity in India [2]. Wetlands in India occupy 58.2 million hectares, including areas under wet paddy cultivation (Directory of Indian Wetlands). One of the best known functions of wetlands is to provide a habitat for birds. Wetlands are important bird habitats, and birds use them for breeding, nesting rearing young. Birds also use wetlands as a source of drinking water and for feeding, resting, shelter, and social interactions [3].

There is an urgent need to conserve the wetlands as waterfowl habitats an international treaty was signed which is called Ramsar conservation. The official name of the treaty, “the Conventions of Wetlands of International Importance especially as waterfowl habitat reflects the original emphasis upon the conservation and wise use wetlands primarily as habitat for water birds. Over the years, the conservation has broaden its scope to cover all aspects of wetland conservation, recognizing wetlands as ecosystems that extremely important for biodiversity conservation and for the well being of human communities.

MATERIAL AND METHODS

Thatipudi is one of the major irrigation projects of vizianagaram district constructed on the river Gostani .This is located 20 km from vizianagaram. The Latitude and Longitude of Tatipudi reservoir is 18.17 and 83.1976.This reservoir is an important source of fish production in the area. It is also used for fisheries and other domestic purpose by the local residents. The reservoir supports rich biodiversity habitat for wildfowl including the migratory birds. This location is very beautiful with lush green mountains on all the sides.

The reservoir supports a rich biodiversity and provide habitat for wildlife including migratory birds. The reservoir has been studied for many limnological and biodiversity aspects but no work has been done on ecology and biodiversity of migratory birds which is an important aspect of wetland ecology. Though, a great deal of work is done on the avifuna of Andhra Pradesh in general but a very little information is available on birds of Tatipudi reservoir. Study of avifaunal diversity of Tatipudi wetland was conducted between October, 2013 and March, 2015. Field visits have been conducted weekly once in all three seasons. Birds were observed within the transect of 300 m. Binoculars of 10 X 50m were used for observations. Spot identification was done using field guides [4,5]. The checklist was prepared using the standardized common and scientific names of the birds of the Indian subcontinent by Manakkadan and pittie [6], Grewal et al [7].

RESULTS AND DISCUSSION

In the present study 104 species of birds belonging to 29 families and 11 orders were recorded between October and March. Anatidae and Charadriidae were found to be the most dominant families represented by 13 and 15 species respectively followed by family Ardeidae and family Accipitridae represented by 11 and 12 species each. In the present study Ardeidea was found to be the third dominant species indicating the wetland moderately supports shorebirds. Rathore and Sharma [8] also reported Anatidae to bedominating family with 12 species in Sarsai Nawar in UP. Vijayan [9] also reported 17 species of Anatidae in Bharatpur wetland. Basavarajappa [10] recorded 27 species of water birds belonging to 13 families in the agro ecosystem of Maidan area of Karnataka which provided congenial habitat for the survival of waterbirds.

Seasonal variation was clearly indicates in the present study. 74 species were recorded during October belonging to 16 families and 9 orders. Charadriidae was the most dominant family contributing 15 species during this month. Anatidae was the second dominant family contributing 13 species in the month of October.

A sharp increase was recorded during November and December 95 species of waterbirds in the wetland were recorded belonging to 26 families and 10 orders. This indicate that most of the wintering waterbirds belonging to Anatidae and Charadriidae family. In the month of January there was a total no of 90 species belonging to 26 families and 10 orders. There was a gradual decline in species richness in the reservoir as the weather condition changes from colder to warmer. Migratory species start migrating back from march onwards Only 80 species of waterbirds were recorded during the March consisting of 16 families. Members of charadriida and Anatidae family were found to dominate among the winter migratory birds. Their monthly occurrence pattern clearly indicated that these birds found between October and March. In the present study species recorded the maximum no of birds in the month of December and January minimum in May and June in Tatipudi reservoir wetland of vizianagaram district.



Large crested Grebe,
Podiceps cristatus



Little Grebe,
Tachybaptus ruficollis



Large Whistling Teals,
Dendrocygna bicolor



Lesser Whistling Teals,
Dendrocygna javanica



River Tern,
Sterna aurantia



White Ibis,
Threskiornis melanocephalus

Birds of Thatipudi Reservoir

Figure 1.1 Birds of Thatipudi Reservoir in Vizianagaram District, Andhra Pradesh, India.



Red crested Pochard,
Netta rufina



Tufted Ducks,
Aythya fuligula



Pintail Duck,
Anas acuta



Shoveller,
Anas clypeata



Cotton Teal,
Nettapus coromandelianus



Wigeon,
Anas penelope

Birds of Thatipudi Reservoir

Figure 1.2 Birds of Thatipudi Reservoir in Vizianagaram District, Andhra Pradesh, India



Spoonbills,
Platalea leucorodia



Garganey & Grey headed Lapwing,
Anas querquedula & Vanellus cinereus



Black tailed Godwit,
Limosa limosa



Golden Plover,
Pluvialis fulva



Temminck's Stint,
Calidris temminckii



Grey Wagtail,
Motacilla cinerea

Birds of Thatipudi Reservoir

Figure 1.3 Birds of Thatipudi Reservoir in Vizianagaram District, Andhra Pradesh, India



Wood Sandpiper,
Tringa glareola



Common Sandpiper,
Actitis hypoleucos



Spotted Redshank,
Tringa erythropus



Kentish Plover,
Charadrius alexandrinus



Long-tailed Shrike,
Lanius schach



Brown Shrike,
Lanius cristatus

Birds of Thatipudi Reservoir

Figure 1.4 Birds of Thatipudi Reservoir in Vizianagaram District, Andhra Pradesh, India



1.5 Images Thatipudi Reservoir in Vizianagaram District, Andhra Pradesh, India

List of birds recorded in Thatipudi Reservoir during October, 2013 to March, 2015

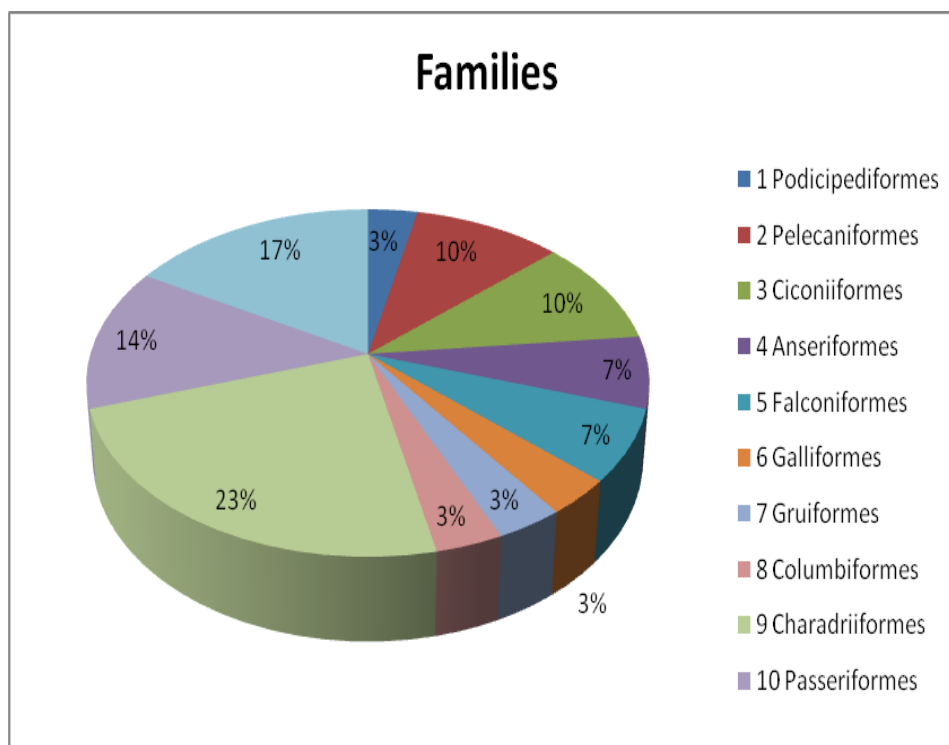
S.No	Scientific Name	Common Name	Family	Order
1	<i>Podiceps cristatus</i>	Great Crested Grebe	<i>Podicipedidae</i>	<i>Podicipediformes</i>
2	<i>Podiceps ruficollis</i>	Little Grebe		
3	<i>Pelecanus philippensis</i>	Grey Pelican	<i>Pelecanidae</i>	<i>Pelecaniformes</i>
4	<i>Phalacrocorax niger</i>	Little Cormorant	<i>Phalacrocoracidae</i>	
5	<i>Phalacrocorax carbo</i>	Great Cormorant		
6	<i>Phalacrocorax fuscicollis</i>	Shag		
7	<i>Anhinga rufa</i>	Snake bird/ Darter	<i>Anhingidae</i>	
8	<i>Ardeola grayii</i>	Pond Heron	<i>Ardeidae</i>	<i>Ciconiiformes</i>
9	<i>Bubulcus ibis</i>	Cattle Egret		
10	<i>Egretta intermedia</i>	Median Egret		
11	<i>Egretta Grarzetta</i>	Little Egret		
12	<i>Egretta gularis</i>	Reef Egret		
13	<i>Casmerodius alba</i>	Large Egret		
14	<i>Nycticorax nycticorax</i>	Night Heron		
15	<i>Ardea cinerea</i>	Grey Heron		
16	<i>Ardea purpurea</i>	Purple Heron		
17	<i>Ixobrychus cinnamoneus</i>	Cinnamon Bittern		
18	<i>Ixobrychus sinensis</i>	Yellow Bittern		
19	<i>Mycteria leucocephala</i>	Painted Stork	<i>Ciconiidae</i>	
20	<i>Anastomus oscitans</i>	Open billed Stork		
21	<i>Leptoptilos javanices</i>	Lesser Adjutant stork		
22	<i>Threskiornis melanocephalus</i>	Black-headed ibis	<i>Threskiornithidae</i>	
23	<i>Plegadis falcinellus</i>	Glossy ibis		
24	<i>Platalea leucorodia</i>	Eurasian Spoonbill		
25	<i>Dendrocygna bicolor</i>	Large Whistling Duck	<i>Dendrocygnidae</i>	<i>Anseriformes</i>
26	<i>Dendrocygna javanica</i>	Lesser Whistling Duck		
27	<i>Tadorna ferruginea</i>	Brahminy Duck	<i>Anatidae</i>	
28	<i>Anas acuta</i>	Pintail Duck		
29	<i>Sarkidiornis melanotos</i>	Comb Duck		
30	<i>Anas crecca</i>	Common Teal		
31	<i>Anas poecilorhyncha</i>	Spotbill Duck		
32	<i>Anas Penelope</i>	Wigeon		
33	<i>Anas querquedula</i>	Gargeny		
34	<i>Anas clypeata</i>	Shoveler		
35	<i>Netta rufina</i>	Redcrested Pochard		
36	<i>Aythya nyroca</i>	White Eyed Pochard		
37	<i>Aythya fuligula</i>	Tufted Duck		
38	<i>Nettapus coromandelianus</i>	Cotton Teal		
39	<i>Anser indicus</i>	Barheaded Goose		
40	<i>Elanus caeruleus</i>	Blackwinged Kite	<i>Accipitridae</i>	<i>Falconiformes</i>
41	<i>Pernis ptilorhynchos</i>	Honey Buzzard		
42	<i>Milvus migrans</i>	Pariah Kite		
43	* <i>Haliastur Indus</i>	Brahminy Kite		
44	<i>Accipiter badius</i>	Shikra		

45	<i>Accipiter badivs</i>	Sparrow Hawk		
46	<i>Haliaetus leucogaster</i>	Whitebellied Sea Eagle		
47	<i>Ichthyophagia ichthyaetus</i>	Grey-headed Eagle		
48	<i>Circus.aeruginosus</i>	Marsh Harrier		
49	<i>Circaetus gallicus</i>	Short toed Snake Eagle		
50	<i>Spilornis cheela</i>	Crested Serpent Eagle		
51	<i>Pandion haliaetus</i>	Osprey		
52	<i>Falco perigrinus</i>	Perigrine Falcon	Falconidae	
53	<i>Falco Tinunculus</i>	Kestrel		
54	<i>Francolinus.pondicerianus</i>	Grey Partridge	Phasianidae	Galliformes
55	<i>Perdica asiatica</i>	Jungle Bush Quail		
56	<i>Coturnix chinensis</i>	Blue-breasted Quail		
57	<i>Rallus striatus</i>	Slaty breasted Rail	Rallidae	Gruiformes
58	<i>Amaurornis phoenicurus</i>	Whitebreasted Waterhen		
59	<i>Gallicrex cinerea</i>	Water Cock		
60	<i>Gallinula chloropus</i>	Moorhen		
61	<i>Porphyrio porphyrio</i>	PurpleMoorhen		
62	<i>Fulica atra</i>	Coot		
63	<i>Hydrophasianus chirurgus</i>	Pheasant-Tailed Jacana	Jacanidae	Charadriiformes
64	<i>Metopidius indicus</i>	Bronze winged Jacana		
65	<i>Vanellus indicus</i>	Red Wattled Lapwing		
66	<i>Vanellus.malabaricus</i>	Yellow Wattled Lapwing		
67	<i>Vanellus duvaucalii</i>	River Lapwing		
68	<i>Himantopus himantopus</i>	Black winged stilt	Recurvirostridae	
69	<i>Charadrius dubius</i>	Little Ringed Plover	Charadriidae	
70	<i>Charadrius alexandrinus</i>	Kentish Plover		
71	<i>Pluvialis fulva</i>	Pacific Golden Plover		
72	<i>Esacus recurvirstris</i>	Stone Plover		
73	<i>Tringa totanus</i>	Red Shank		
74	<i>Tringa erythropus</i>	Spotted Red Shank		
75	<i>Tringa glareola</i>	Spotted Sandpiper		
76	<i>Tringa.hypoleucos</i>	Common Sandpiper		
77	<i>Tringa glareola</i>	Wood Sandpiper		
78	<i>Tringa stagnatilis</i>	Marsh Sandpiper		
79	<i>Philomachus pugenax</i>	Ruff		
80	<i>Gallinago gallinago</i>	Common Snipe		
81	<i>Calidris alba</i>	Sanderling		
82	<i>Calidris minutus</i>	Little Stint		
83	<i>Calidris temminckii</i>	Temminck's stint		
84	<i>Burhinus oedicephalus</i>	Stone Curlew	Burhinidae	
85	<i>Limosa limosa</i>	Blacktailed Godwit	Scolopacidae	
86	<i>Larus brunnicephalus</i>	Brownheaded Gull	Laridae	
87	<i>Larus rudibundus?</i>	Blackheaded Gull		
88	<i>Sterna aurantia</i>	River Tern		
89	<i>Pterocles indicus</i>	Painted Sandgrouse	Pteroclididae	Columbiformes
90	<i>Dicrurus adsimilis</i>	Black drongo	Dicruridae	Passeriformes
91	<i>Dicrurus caerulescens</i>	Whitebellied Drongo		

92	<i>Anthus novaeseelandiae</i>	Paddyfield pipit	<i>Motacillidae</i>	
93	<i>Motacilla citreola</i>	Citrine wagtail		
94	<i>Motacilla caspica</i>	Grey wagtail		
95	<i>Motacilla madaraspatensis</i>	Large pied Wagtail		
96	<i>Alauda gulgula</i>	Skylark	<i>Alaludidae</i>	
97	<i>Lanius cristatus</i>	Brown Shrike		
98	<i>Lanius Schach</i>	Long tailed Shrike		
99	<i>Ploceus philippinus</i>	Baya weaver bird	<i>Ploceidae</i>	
100	<i>Halcyon smyrnensis</i>	White breasted kingfisher	<i>Halcyonidae</i>	<i>Coraciiformes</i>
101	<i>Ceryle rudis</i>	Pied kingfisher	<i>Cerylidae</i>	
102	<i>Alcedo atthis</i>	Small blue king fisher	<i>Alcedinidae</i>	
103	<i>Merops orientales</i>	Green Bee-eater	<i>Meropidae</i>	
104	<i>Hirundo rustica</i>	swallow	<i>Hirundinidae</i>	

Order wise Avifaunal species diversity in Tatipudi Reservoir in Vizianagaram District

S.n0	Orders	Families	Species
1	Podicipediformes	1	2
2	Pelecaniformes	3	5
3	Ciconiiformes	3	17
4	Anseriformes	2	15
5	Falconiformes	2	14
6	Galliformes	1	3
7	Gruiformes	1	6
8	Columbiformes	1	1
9	Charadriiformes	7	27
10	Passeriformes	4	8
11	Coraciiformes	5	5
	Total	29	104



CONCLUSION

The observation indicate that the wetland support 36 migratory species of water birds and most of them are ducks and waders feeding and foraging in open water zone. The most of the members of family the Anatidae are herbivore in nature and depend on aquatic flora. They dive up to the depth of 3 meters for feeding. Hence a habitat with open water with submerged vegetation is the most suitable habitats should be mapped in Tatipudi reservoir and attempts should be made to keep them free from human interference.

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