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Study on Avifaunal Diversity From Thiruthalaiyur Lake Tiruchirapalli Forest Division, Tamil Nadu

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Abstract: *Thiruthalaiyur Lakes are constituted covering an extent of 369.26ha. It consists of two tanks orderly big tank (278.61ha. perimeter: 8173.09mts) and small tank (90.65ha. perimeter: 4477.27mts. Simple transect method, point count method, indirect evidence and Information from people was followed for observing birds. Total 117 bird species belonging to 42 families, 10 sub families and 12 orders were recorded during one year study period during March 2014 to March 2015 at Thiruthalaiyur lake of Tiruchirapalli Forest Division. Out of these, 61 species belong to the order Passeriformes under 17 families. Study reveals that the order Passeriformes dominates the other 11 orders covering the bird population of the lake.*

Keywords: *Thiruthalaiyur, Lakes, Simple transect method, indirect evidence, and Birds etc.*

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I. Introduction

Birds play an important role in maintaining the ecological balance. They keep the environment clean by acting as scavengers; protect the plant community by destroying the insect pests and other vermin, help fertilizing the plants through pollination, support for better survival of the plants through seed dispersal and supply nutrient rich manure through their excreta. But in the past due to pressure from ever increasing population, modification of habitats, construction of dams, urbanization, green revolution, industrialization, etc. [1, 2,3] vast extent of forests have been encroached upon leading to large scale destruction. As a result, we faced environmental degradation, loss of valuable fertile top soil, habitat destruction and fragmentation leading to ecological imbalance. The unpleasant situation created by the unwise activities has forced the environmentalists and other naturalists to pressurise the authorities concerned to halt the trend of destroying the nature and other natural resources indiscriminately. More and more areas have been brought under legal protection by declaring them as wildlife sanctuaries, national parks, tiger reserves, biosphere reserves, bird sanctuaries, conservation reserves and community reserves [4]. Tamil Nadu has become an important state having 4 tiger reserves, 10 wildlife sanctuaries, 5 national parks, 3 biosphere reserves, 13 bird sanctuaries, 1 conservation reserve and 1 community reserve. Consequently Tiruchirapalli Forest Division was opened Butterfly conservatory during 2010. Spread across 25 acres in Upper Anicut reserve forest in Srirangam, under the ambit of the Tiruchi forest division. The uniqueness has made Tiruchirapalli Forest Division rich in flora and fauna. It has immense floral, faunal, ecological and geomorphological significance. This Division is rich in wildlife with at least 30 types of mammals, more than 200 species of birds, many species of fishes, reptiles and amphibians. But it is disturbed very much and its number is also much reduced due to biotic pressures, construction of irrigation projects, conversion of natural forests into rubber plantations and encroachments. Many of its animals have been driven to the verge of extinction due to hunting, poaching and habitat loss in the past. The vegetation and flora of the protected area are exceptional because of extraordinary variety of species occurring within a small area and many of these species have been from all parts of the world while compared. Though the sanctuary is rich in biodiversity, so far no scientific study has been made exploring the abundance of the natural wealth showered on this region. The present paper lists out the avifauna available in this protected area.

II. Material And Methods

2.1 Study area

Thiruthaalaiyur Lake is a large fresh water irrigation reservoir located 45 km from Trichy, close to Thuraiyur. It is located in an interior village, away from any main road (15 km from Thuraiyur, 20 km from Musiri. It is fed by a stream from Kolli hills. The water level in this lake depends on the monsoon rains in the Kolli hills. The tank is called as *"Thiruthalaiyur"*. It is consists of two adjacent fresh water tanks that act as buffer irrigation tanks for cultivation. These water bodies receive water from the Ayyar River system. These tanks, situated about 0.8km North of Thiruthalaiyur revenue village in Musiri Taluk of Tiruchirappalli District,

These tanks are constituted covering an extent of 369.26ha. It consists of two tanks orderly big tank (278.61ha. perimeter: 8173.09mts) and small tank (90.65ha. perimeter: 4477.27mts). It is under the minor basin of Musiri. The latitudinal and longitudinal extents of the tanks are as follows: Latitudinal Extent: 11^{o} 02'15" N to 11^{o} 03'37" Longitudinal Extent: 78^{o} 32'36" E to 78^{o} 34'08.

III. Methodology

The site is studied for birds on regular basis from March 2014 to March 2015. Road Side Counts [5] Survey team travelled in a vehicle or by foot inside to the reserve forest (in night time with flash lights). Point Survey method [5] in selected Reserve Forest, the survey team spent 15 to 20 minutes in one spot. Indirect evidence: Foot prints, pug marks, scratch marks and scats were identified and recorded. Information from people The team also interviewed, forest personal, rural and tribal people living close to the R.F.and digital methods were followed to record the species, which is supplemented with field guide to identifying birds [6, 7]. Birds have been observed by using binocular and photographs were taken by using digital camera respectively. The survey was carried out two times per day at morning 6.30 to 8.30 am, afternoon 4.00 to 6pm regularly from March 2014 to March 2015. Three number of night survey was made for studying night birds in the month of February 2015.

IV. Results

The Thiruthalaiyur lake exhibits two different types of vegetation based on the topography. The Northern upper part of the lake area is dry land where cotton, castor, maize and coriander are cultivated alternatively. The southern lower part is a wetland where paddy is cultivated. Apart from the cultivated plants, the entire area is characterised by *Prosopis juliflora*. *Accacia nilotica* is planted at the far opposite side on all the sides. As the water level have shallow with lot of floating and submerged vegetation. *Ipomea aquatica* is found growing as a weed in the reservoir. The *Typha anqustata* and *Fimbristylis dicholoma* grass is also seen growing in this lake. There is growth of *Prosopis juliflora* and *Azadirachta indica* plants over the bund. Except this, there is no appreciable vegetation over the tank bund. Apart from this, there are several species of aquatic vegetation that are of great attraction to many resident as well as migratory birds that visit this area. Total 117 bird species belonging to 42 families, 10 sub families and 12 orders were recorded during one year study period during March 2014 to March 2015 Out of these, the order Passeriformes consists of maximum representation with 61 species (52.13%) under 17 families. Another 2 dominant orders are Ciconiformes (16), Falconiformes (10), The least represented orders are Psittaciformes and Strigiformes with minimum of one species each. The list of bird species are presented in Figur-1and 2 Table 1 Plate 1. Among the birds identified here, Spot-billed Pelican is declared as vulnerable, while Darter, Painted Stork, White Ibis, and Black-and Orange Flycatcher are listed as Near Threatened by the International Union for Conservation of Nature (IUCN).

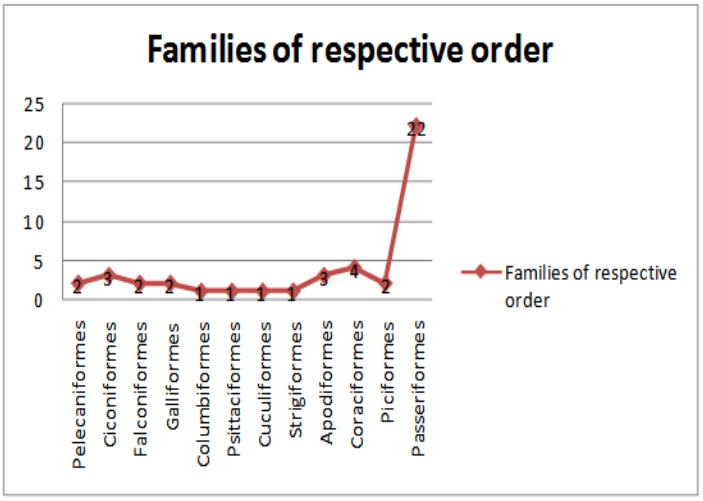

Figure 1. Representing occurrence of order(s) with respect to belonging families of birds.

V. Discussion

The majority of the wetland birds observed during the present study were the migratory and resident birds. The Rich bird diversity is due to more plant diversity which is more provided food as well as nesting and breeding sites. The considerable number of trees in fallow land and boundary of agricultural fields accommodates large number of bird population [8]. Birds are key species are maintaining the ecological balance [9]. The birds are friends of human as they providing important ecosystem service such as pollination and seed

dispersal destroy lot of harmful insects, mosquitoes and from the environment [10, 11]. The aquatic avifaunal diversity of Shetrunji River, on Gujarat State 18 species of birds belonging to 8 families viz.Ciconiidae, Phoenicopteridae, Phalacrocoracidae, Podicipedidae, Anatidae, Ardeidae, Threskiornithidae andAlcedinidae were recorded [12]. 94 species., belonging to 44 families were recorded in Hosur forest division,Eastern Ghats,[13]. 108 species were recorded Thiruvarmbur lake the maximum number of species was found on farmland (56.5%) and in the perennial lake (54.6%) [14]. 95 species of birds belonging to 43 families and 15 orders were recorded in Agronomy field of Orissa University [15]. 40 species of birds were recorded belonging to 27 different families of class Aves from two freshwater reservoirs sites of Rajkot, Gujarat [16]. Thiruthalaiyur Lake shows the presence of Total 117 bird species belonging to 42 families, 10 sub families and 12 orders were recorded. Out of these, the order Passeriformes consists of maximum representation with 61 species (52.13%) under 17 families. Another 2 dominant orders are Ciconiformes (16), Falconiformes (10), The least represented orders are Psittaciformes and Strigiformes with minimum of one species each. It is presumed that the diversified flora of water bodies provides comfortable shelter, suitable foraging grounds and protection from predation and hostile atmospheric conditions to these birds. This lake provide to suitable ground for feeding, roosting, reproduction and nesting to these birds. However present study limits its scope to species diversity of birds, further an attempt should be made to find out the dynamics of recorded bird community in correlation with the environmental condition(s) of water body which can be helpful for better management of the habitat and conservation of its rich avifaunal diversity.

Table 1 Following are the birds sighted during the study periods

	Scientific Name	**Common Name**	**Family Name**	**Order Name**
1	Pelecanus philippensis	Spotted billed Pelican	Pelicanidae	Pelecaniformes
2	Phalacroco raxniger	Little Cormorant	Phalacrocoracidae	
3	Phalacroco axcarbo	Large Cormorant	Phalacrocoracidae	
4	Phalacroco fusciollis	Indian Shag	Phalacrocoracidae	
5	Anhinga rufa	Darter or Snake Bird	Phalacrocoracidae	
6	Ardea alba	Large Egret	Ardeidae	Ciconiformes
7	Bubulcus ibis	Cattle Egret	Ardeidae	
8	Egretta intermedia	Median or Smaller Egret	Ardeidae	
9	Egretta garzetta	Little Egret	Ardeidae	
10	Ardea purpurea	Purple heron	Ardeidae	
11	Ardea cinerea	Grey Heron	Ardeidae	
12	Ardea lastriatus	Little Green Heron	Ardeidae	
13	Ardea lagrayii	Paddy bird or Pond Heron	Ardeidae	
14	Ixobrychus cinnamomeus	Chestnut Bittern	Ardeidae	
15	Ixobrychus sinensis	Yellow Bittern	Ardeidae	
16	Ixobrychus flavicollis	Black Bittern	Ardeidae	
17	Mycteria leucocephala	Painted Stork	Ciconidae:	
18	Anastomus oscitans	Openbill Stork	Ciconidae:	
19	Threskiornis aethiopica	White Ibis	Threskiornithidae	
20	Plegadis falcinellus	Glossy Ibis	Threskiornithidae	
21	Elanus caeruleus	Blackwinged Kite	Accipitridae	Falconiformes
22	Haliastur Indus	Brahminy Kite	Accipitridae	
23	Pernis ptilorhyncus	Honey Buzzard	Accipitridae	
24	Accipiter badius	Shikra	Accipitridae	
25	Aquila clanga	Greater spotted eagle (vu)	Accipitridae	
26	Hieraaetus pennatus	Booted Hawk-Eagle	Accipitridae	
27	Circus pygargus	Montagu's harrier	Accipitridae	
28	Circus aeruginosus*	Marsh Harrier	Accipitridae	
29	Circus macrourus	Pale harrier	Accipitridae	
30	Falco tinnunculus	Kestrel	Falconidae	
31	Francolinus pondicerianus	Grey Partridge	Phasianidae	Galliformes
32	Pavo cristatus	Common Peafowl	Phasianidae	
33	Fulica atra	Coot	Rallidae	
34	Streptopelia decaocto	Ring Dove	Columbidae	Columbiformes
35	Streptopelia chinensis	Spotted Dove	Columbidae	
36	Streptopelia senegalensis	Little Brown dove	Columbidae	
37	Streptopelia tranquebarica	Red turtle dove	Columbidae	
38	Chalcophaps indica	Emerald or Bronzewinged Dove	Columbidae	
39	Psittacula krameri	Roseringed Parakeet	Psittacidae	Psittaciformes
40	Caculus varius	Common Hawk-Cuckoo or Brainfever Bird	Cuculidae	Cuculiformes
41	Clamator jacobinus	Pied Crested Cuckoo	Cuculidae	
42	Eudynamys scolopacea	Koel	Cuculidae	
43	Tyto alba	Barn or Screech owl	Strigidae Subfamily:Tytoninae	Strigiformes
44	Apus melba	Alpine swift	Apodidae	Apodiformes

			Subfamily:Apodinae	
45	Apus affinis	House Swift	Apodidae Subfamily:Apodinae	
46	Cypsiurus parvus	Palm Swift	Apodidae Subfamily:Apodinae	
47	Ceryle rudis	Pied Kingfisher	Alcedinidae	Coraciformes
48	Alcedo atthis	Small Blue Kingfisher	Alcedinidae	
49	Halcyon smyrnensis	White-breasted Kingfisher	Alcedinidae	
50	Merops philippinus	Bluetailed Bee-Eater	Meropidae	
51	Merops orientalis	Green Bee-Eater	Meropidae	
52	Coracias benghalensis	Indian roller Or Bluejay	Coracidae	
53	Upupa epops	Hoopoe	Upupidae	
54	Megalaima haemacephala	Crimsonbreasted Barbet	Capitonidae	Piciformes
55	Megalaima viridis	White-Cheeked Barbet	Capitonidae	
56	Dinopium benghalense	Lesser Golden-Backed Woodpecker	Picidae	
57	Pitta brachyuran	Indian Pitta	Pittidae	
58	Eremopterix grisea	Ashycrowned Finch-Lark	Alaudidae	
59	Mirafra erythroptera	Redwinged Bushlark	Alaudidae	
60	Mirafra javanica	Singing Bush Lark	Alaudidae	
61	Hirundo rustica	Swallow	Hirundinidae	
62	Hirundo smithii	Wiretailed Swallow	Hirundinidae	
63	Hirundo daurica	Redrumped Swallow	Hirundinidae	
64	Hirundo daurica	Striated Or Red-Rumped Swallow	Hirundinidae	
65	Lanius vittatus	Baybacked Shrike	Danidae	
66	Lanius cristatus	Brown Shrike	Danidae	
67	Oriolus oriolus	Golden Oriole	Oriolidae	
68	Dicrurus adsimilis	Black Drongo Or King-Crow	Dicruridae	
69	Dicrurus leucophaeus	Grey Or Ashy Drongo	Dicruridae	
70	Artamus fuscus	Ashy Swallow-Shrike	Artamidae	
71	Sturnus malabaricus	Greyheaded Myna	Sturnidae	
72	Sturnus pagodarum	Brahminy,Myna*	Sturnidae	
73	Sturnus roseus	Rosy Pastor	Sturnidae	
74	Acridotheres tristis	Common Myna	Sturnidae	
75	Dendrocitta vagabunda	Tree Pie	Corvidae	
76	Corvus splendens	House Crow	Corvidae	
77	Corvus macrorhynchos	Jungle Crow	Corvidae	
78	Tephrodornis pondicerianus	Common Wood Shrike	Campephagidae	
79	Coracina melanoptera	Black-Headed Cuckoo-Shrike	Campephagidae	
80	Pericrocotus cinnamomeus	Small Minivet	Campephagidae	
81	Aegithina tiphia	Common Iora	Irenidae	
82	Pycnonotus cafer	Redvented Bulbul	Pycnonotidae	
83	Pycnonotus luteolus	Whitebrowed Bulbul	Pycnonotidae	
84	Pomatorhinus horsefieldi	Slaty-Headed Scimitar Babbler	**Muscicapidae** Subfamily:Timalinae	
85	Turdoldes malcolmi	Large Grey Babbler	**Muscicapidae** Subfamily:Timalinae	
86	Turdoides affinis	Whiteheaded Babbler	**Muscicapidae** Subfamily:Timalinae	
87	Muscicapa latirostris	Brown Flycatcher	Subfamily:Muscicapinae	
88	Terpsiphone paradise	Paradise Flycatcher	Subfamily:Muscicapinae	
89	Prinia subflava	Plain Wren Warbler	Subfamily:Sylviinae	
90	Prinia socialis	Ashy Wren Warbler	Subfamily:Sylviinae	
91	Orthotomus sutorius	Tailor Bird	Subfamily:Sylviinae	
92	Acrocephalus stentoreus	Indian Great Reed Warbler	Subfamily:Sylviinae	
93	Acrocephalus dumetorum	Blyth's Read Warbler	Subfamily:Sylviinae	
94	Acrocephalus Agricola	Paddy Field Warbler	Subfamily:Sylviinae	
95	Sylvia curruca	Orphean Warbler	Subfamily:Sylviinae	
96	Phylloscopus magnirostris	Large Billed Leaf Warbler	Subfamily:Sylviinae	
97	Phylloscopus trochiloides	Greenish Leaf Warbler	Subfamily:Sylviinae	
98	Copsychus saularis	Magpie Robin	Subfamily:Turdinae	
99	Saxicoloides fulicata	Indian Robin	Subfamily:Turdinae	
100	Anthus novaeseelandiae	Paddyfield Pipit	Moticillidae	Passeriformes
101	Motacilla indica	Forest Wagtail	Moticillidae	
102	Motacilla flava	Yellow Wagtail	Moticillidae	
103	Motacilla citreola	Citrine Wagtail	Moticillidae	
104	Motacilla cinerea	Grey Wagtail	Moticillidae	

105	Motacilla maderaspatensis	Large Pied Wagtail	Moticillidae	
106	Nectarinia zeylonica	Purplerumped Sunbird	Nectarinidae	
107	Nectarinia lotenia	Loten's Sunbird	Nectarinidae	
108	Nectarinia asiatica	Purple Sunbird	Nectarinidae	
109	Petronia xanthocollis	Yellowthroated Sparrow	Ploceidae Subfamily:Passerinae	
110	Passer domesticus	House Sparrow	Ploceidae Subfamily:Passerinae	
111	Ploceus philippinus	Baya Weaverbird	Subfamily:Ploceinae	
112	Estrilda amandava	Red Munia Or Avadavat	Subfamily:Estrildinae	
113	Lonchura malabarica	Whitethroated Munia	Subfamily:Estrildinae	
114	Lonchura striata	Whitebacked Munia	Subfamily:Estrildinae	
115	Lonchura punctulata	Spotted Munia	Subfamily:Estrildinae	
116	Lonchura malacca	Blackheaded Munia	Subfamily:Estrildinae	
117	Carpodacuserythrinus	Rosefinch	Fringillidae Subfamily:Fringillinae	

VI. Conclusion

Maintain the watershed catchment's capability for all the river systems and water bodies to work for prosperous wild life habitat i.e both flora and fauna. To enforcement legislations for conservation of wildlife, prevent hunting and poaching. To regulate grazing, penning, non-timber forest produces collection, tourism and other biotic interference in the area and to declare this lake as a protected area. Few large mounds can be established which will act as a roosting and resting place for water fowl. Neer Karuvel – water tolerant - *Acacia nilotica* and *Inga dulce* and other suitable trees species can be planted, which will help in establishing breeding colonies again. Certain areas of the lake can be deepened which will enable to hold water for few more months

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