



## Biodiversity of Birds in Vembakottai Water Reservoir, Virudhunagar District, TamilNadu

\*Pulugandi C and M.K. Rajan

*Post-graduate and Research Department of Zoology, Ayya Nadar Janaki Ammal College (Autonomous), Sivakasi-626 124, India*

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#### \*Corresponding author

**Pulugandi C**

Post-graduate and Research Department of Zoology, Ayya Nadar Janaki Ammal College (Autonomous), Sivakasi-626 124, India  
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### Abstract

This paper deals with biodiversity of birds in Vembakottai water reservoir, Virudhunagar district, Tamilnadu. A total of 34 species of birds belonging to 19 families were identified from the study area between July 2012 to June 2013. A maximum number of 7 species were found in family. Ardeidae, followed by Ciconiidae (3 spp.), Threskiornithidae (3 spp.), Anatidae (3 spp.), Pelecanidae (2 spp.), Scolopacidae (2 spp.), Alcedinidae (2 spp.) and one species each belonging to the families Sternidae, Burhinidae, Meropidae, Cerylidae, Charadriidae, Peccurivirostridae, Turnicidae, Accipitridae, Phalacrocoracidae, Coraciidae, Apodinae and Anhingidae. Thus the study revealed that Ardeidae is the dominant family and others are less dominant. Status and distribution of birds species through different seasons such as Monsoon (June to October) winter (November to February) and summer (March to June) were also studied.

**Keywords:** Biodiversity, Water reservoir, dominant family

### 1. Introduction

Biological diversity means the variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part. This includes diversity within species, between species and of ecosystem. Water is a basic and primary need of all vital processes and it is now well established that the life first arose in aquatic environment. These wetlands are traditional zones that occupy intermediate position between dry land and open water. These wetlands are rich in flora and fauna and birds are one of the important biotic factors which prefer to live near these wetlands<sup>1</sup>.

Avian fauna occupies a special position in an aquatic ecosystem. They not only have an aesthetic role but also occupy a very important position in food chain. India has 243 species of water birds and species of wetlands, dependent and associated birds<sup>2</sup>.

Reservoirs are biologically very potential and rich in flora and fauna. The marshy places forms natural habitat for feeding, breeding and nesting grounds<sup>3</sup>. Birds are one of the most populous life forms on the planet, and its diversity leads to a richness of life and beauty. Apart from this, birds have always fascinated mankind with their intrinsically beautiful plumage, melodious songs and artistic behavior. There are around 9000 species of birds living in the world today, with a tremendous diversity of life style. Besides this, birds are valuable for many aspects i.e. sensitive indicator of pollution and also play great role in pest control<sup>4</sup>. Tropical regions have a rich store of birds diversity. Birds community investigations in nature and man-made habitats are so far poor in many South Indian regions. The most important environmental use is that birds serve as ecological indicator. They are capable of supplying information on adverse changes in the features of any ecosystem. The survival of several endangered birds species can be ensured only through the more effective conservation of habitats in the broad spectrum of country side. Hence, it was proposed to study “Biodiversity of birds in Vembakottai water reservoir”, Sivakasi taluk, Virudhunagar district.



Map showing Tamilnadu



Map showing Virudhunagar District

Figure 1: Map Showing Study Area

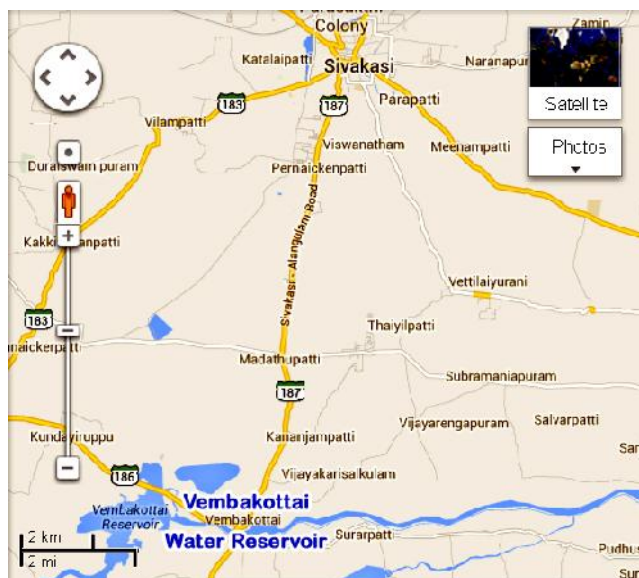


Figure 2: Map showing Vembakottai Water Reservoir

## 2. Materials and Methods

### Study area (Fig.1)

In the present study the biodiversity of birds in Vembakottai water reservoir, 14 kms south of Sivakasi (9° 33' N, Latitude and 77° 77' E, Longitude) was studied. The reservoir has been constructed across the river vaippar. This reservoir is one of the fresh water sources

### Study Period

The study was carried out for one year from July 2012 to June 2013. The study period was classified into three seasons namely

1. Monsoon season - July to September
2. Winter season - October to February
3. Summer season - March to June

### Data Collection

Field data of birds of the reservoir area were observed during winter season at morning hours between 6.30 am and 9.00 am, from 12 Noon to 2 pm and evening from 4.00 pm to 6.00 pm, during summer season at morning hours between 5.00 am to 7.00 am, from 12 Noon to 2 pm and evening from 5.00 pm to 7.00 pm while, during monsoon season at morning hours between 6.00 am and 8.30 am, from 12 Noon to 2 pm and evening from 4.30 pm to 6.30 pm respectively by using Japan made, Super Zenith 3<sup>o</sup> field binocular (20 x 50 magnification). Photographs and video graphs taken using Digital Video Camera Recorder (Sony Handy cam, 40 x Zoom), were used for observations and recorded census data. The Identification of birds was were done by using some standard field guides [5,6,7,8].

**Relative abundance of birds families were calculated by using the following formula:**

$$\text{Abundance \%} = \frac{\text{Total number of individuals of the species}}{\text{Total number of individual of all species}} \times 100$$

## 3. Results and Discussion

### Result

#### 1. Species composition and Relative abundance

Biodiversity of birds in Vembakottai water reservoir, Virudhunagar district, Tamilnadu. A total of 34 species of birds (Table 1) belonging to 19 families were identified from the study area between July 2012 to June 2013. A maximum number of 7 species were found in family. Ardeidae, followed by Ciconiidae (3 Sps), Threskiornithidae (3 Sps), Anatidae (3 Sps), Pelecanidae (2 Sps), Scolopacidae (2 Sps), Alcedinidae (2 Sps) and one species each belonging to the families Sternidae, Burhinidae, Meropidae Cerylidae, Charadriidae, Pecurvirostridae, Turnicidae, Accipitridae, Phalacrocoracidae, Coraciidae, Apodinae and Anhingidae. Thus the study revealed that Ardeidae is the dominant family and others are less dominant (Table 2).

#### 2. Status and distribution of birds species through the season (Table 3)

In the monsoon season (July to September) 16 species were found to be 'Rare', 7 species were 'Common', One species was 'Occasional' and 11 species were completely 'Absent'. In the winter season (October to February) 16 species were found in 'Abundance', 13 species were found in 'Common', 5 species were 'Frequent'. In the summer season (March to June) 16 species were 'Occasional,' 6 species were 'Common: 4 species were found to be 'Rare' 4 species were found in 'Abundance' and 4 species were completely 'Absent'.

**Table 1:** Diversity of birds observed at Vembakottai Water Reservoir, Virudhunagar District

S.No.	Family	Common Name	Scientific Name
1.	Anhingidae	Darter or snake bird	<i>Anhinga rufa</i>
2.	Phalacrocoracidae	Little cormorant	<i>Phalacrocorax niger</i>
3.	Accipitridae	Common parish kite	<i>Milvus migrans</i>
4.	Turnicidae	Coot	<i>Fulica atra</i>
5.	Pecurvirostridae	Black winged stilt	<i>Himantopus himantopus</i>
6.	Charadriidae	Yellow wattled lap wing	<i>Vanellus malabaricus</i>
7.	Cerylidae	Pied kingfisher	<i>Ceryle rudis</i>
8.	Meropidae	Blue tailed bee eater	<i>Merops philippinus</i>
9.	Burhinidae	Great stone plover	<i>Esacus magnirastris</i>
10.	Sternidae	Gull billed tern	<i>Gelochlidon nilotica</i>
11.	Alcedinidae	Blue eared kingfisher	<i>Alcedo meninting</i>
		Brown headed stork billed	<i>Pelargopsis capensis</i>

		kingfisher	
12.	Scolopacidae	Wood or spotted sandpiper	<i>Tringa glareola</i>
		Common sandpiper	<i>Tringa hypoleucos</i>
13.	Pelecanidae	White pelican	<i>Pelecanus onocrotalus</i>
		Spotted billed pelican	<i>Pelecanus philippnesis</i>
14.	Anatidae	Marbled teal	<i>Marmaronetta angustirostris</i>
		Spot bill or grey duck	<i>Anas poecilorhyncha</i>
		Scaup duck	<i>Aythya marila</i>
15.	Threskiornithidae	Black ibis	<i>Pseudibis papillosa</i>
		White ibis	<i>Threskiornis aethiopica</i>
		Spoon bill	<i>Platalea leucorodia</i>
16.	Ciconiidae	Painted stork	<i>Mycteria leucocephala</i>
		Open bill stork	<i>Anastonus oscitans</i>
		White stork	<i>Ciconia ciconia</i>
17.	Ardeidae	Black necked crane	<i>Grus nigri colis</i>
		Large egret	<i>Ardea alba</i>
		Night heron	<i>Nycticorax nycticorax</i>
		Cattle egret	<i>Bubulcus ibis</i>
		Median egret	<i>Egretta intermedia</i>
		Little egret	<i>Egretta garzetta</i>
		Pond heron	<i>Ardeola grayii</i>
18.	Coraciidae	Indian roller	<i>Coracias benghalensis</i>
19.	Apodinae	House swift	<i>Apus affinis</i>

**Table 2: Relative abundance of birds families in Vembakottai Water Reservoir Virudhunagar District**

S.No	Family	No.of species	Relative Abundance %
1.	Ardeidae	7	20.58
2.	Anatidae	3	08.82
3.	Threskiornithidae	3	08.82
4.	Ciconiidae	3	08.82
5.	Alcedinidae	2	05.88
6.	Scolopacidae	2	05.88
7.	Pelecanidae	2	05.88
8.	Anhingidae	1	02.94
9.	Phalacrocoracidae	1	02.94
10.	Accipitridae	1	02.94
11.	Turnicidae	1	02.94
12.	Pecurvirostridae	1	02.94
13.	Charadriidae	1	02.94
14.	Cerylidae	1	02.94
15.	Meropidae	1	02.94
16.	Burhinidae	1	02.94
17.	Sternidae	1	02.94
18.	Coraciidae	1	02.94
19.	Apodinae	1	02.94
	Total	34	

**Table 3: Status and distribution of birds species at Vembakottai Water Reservoir Virudhunagar District**

S.No	Scientific Name	Monsoon (July to September)	Winter (October to February)	Summer (March to June)
1.	<i>Anhinga rufa</i>	Rare	Abundance	Occasional
2.	<i>Phalacrocorax niger</i>	Rare	Abundance	Occasional
3.	<i>Milyus migrans</i>	Rare	Common	Rare
4.	<i>Fulica atra</i>	Absent	Abundance	Common
5.	<i>Himantopus himantopus</i>	Rare	Common	Common
6.	<i>Vanellus malabaricus</i>	Rare	Common	Common

7.	<i>Ceryle rudis</i>	Rare	Common	Rare
8.	<i>Merops philippinus</i>	Rare	Common	Absent
9.	<i>Esacus magnirastris</i>	Absent	Common	Occasional
10.	<i>Gelochlidon nilotica</i>	Rare	Common	Occasional
11.	<i>Alcedo meninting</i>	Rare	Common	Occasional
12.	<i>Pelargopsis capensis</i>	Absent	Common	Occasional
13.	<i>Tringa glareola</i>	Rare	Common	Common
14.	<i>Tringa hypoleucos</i>	Absent	Abundance	Absent
15.	<i>Pelecanus onocrotalus</i>	Absent	Abundance	Common
16.	<i>Pelecanus philippnesis</i>	Absent	Abundance	Common
17.	<i>Marmaronetta angustirostris</i>	Absent	Abundance	Absent
18.	<i>Anas poecilorhyncha</i>	Absent	Abundance	Abundance
19.	<i>Aythya marila</i>	Absent	Abundance	Absent
20.	<i>Pseudibis papillosa</i>	Rare	Common	Abundance
21.	<i>Threskiornis aethiopica</i>	Rare	Common	Rare
22.	<i>Platalea leucorodia</i>	Rare	Common	Rare
23.	<i>Mycteria leucocephala</i>	Occasional	Frequent	Abundance
24.	<i>Anastonus oscitans</i>	Absent	Frequent	Abundance
25.	<i>Ciconia ciconia</i>	Rare	Frequent	Occasional
26.	<i>Grusnigri colis</i>	Absent	Frequent	Occasional
27.	<i>Ardea alba</i>	Common	Frequent	Occasional
28.	<i>Nycticorax nycticorax</i>	Common	Abundance	Occasional
29.	<i>Bubulcus ibis</i>	Common	Abundance	Occasional
30.	<i>Egretta intermedia</i>	Common	Abundance	Occasional
31.	<i>Egretta garzetta</i>	Common	Abundance	Occasional
32.	<i>Ardeola grayii</i>	Common	Abundance	Occasional
33.	<i>Coracias benghalensis</i>	Rare	Abundance	Occasional
34.	<i>Apus affinis</i>	Common	Abundance	Occasional

### Discussion

In the present study, Ornithological survey of Vembakottai water reservoir, Virudhunagar district were studied and 34 species of birds belonging to 19 families were recorded. The study revealed that Ardeidae is the dominant family than others. The Ardeidae found in all types of inland aquatic habitats such as wetlands, ponds, irrigation tank, lakes, rivers and reservoir. The family found to throughout year 2012 to 2013. Some are migratory where as others are native. The birds are specific in their choice of wetlands. This often strongly associated with prey distribution and abundance. Water birds mainly feed on invertebrates which shows wide variation in the density and diversity between the seasons and hence the variation in the prey population dynamics should influence the birds population. Similar observations were studied by Kam et al<sup>9</sup>.

Birds have been considered as useful biological indicators because they are ecological versatile and live in all kinds of habitats as herbivores or carnivores. They are susceptible to the changes in wetlands ecosystem. Some birds are migratory, which are responsible for fluctuations in the population of birds that occur during different seasons of the year, which may help to know whether are is normal or getting polluted, as total absence of birds from any area may be considered as pollution indication. Similar type of results was carried out by Borale et al<sup>10</sup>. As the summer advances, some of migratory birds, including *pelecanus onocrotalus* and *threskiornis aethiopica*, disappeared. From the finding of Gole's result<sup>11</sup> was clear that most of migratory birds including the hordes of black winged slit that made the dirty river so colourful, left the river when the quality of water became better. The aquatic fauna is susceptible to changes in aquatic bodies so birds population are fluctuated depends up on the nature of the habitat. According to Bhat et al<sup>12</sup>, In winter season availability of abundant food, water supply through canal and increased investigation attack migratory and residents bids in this area, the wetland area provides feeding as well as breeding ground to the migratory and residents. So, majority of the birds was observed in winter season.

### 4. Conclusion

In the present investigation a total of 34 species of birds belonging to 19 families were observed from the study area between July 2012 to June 2013. Status and distribution of birds species through different seasons such as monsoon (July to September), winter (October to February) and summer (March to June) were studied. Thus the study

revealed that availability of aquatic micro, macro organisms have been found directly proportional to maximum birds diversity. Ultimately more migratory birds were attracted to this reservoir during winter than summer, and it is considered a factor for the migratory birds more information on the characteristics of the water of the reservoir, favourable climatic condition and suitable habitats are necessary for birds conservation.

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