ISSN: 0976-3031

Available Online at http://www.recentscientific.com

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research
Vol. 10, Issue, 05(F), pp. 32498-32501, May, 2019

International Journal of Recent Scientific Research

DOI: 10.24327/IJRSR

Research Article

DENSITY AND DIVERSITY OF WATER BIRDS IN AYYANAR LAKE THANJAUR DISTRICT, TAMIL NADU, SOUTHERN INDIA

Sivanantham Mohanraj[1] and Jeganathan Pandiyan[2]

[1]Department of Zoology Bishop Heber College (Autonomous),Tiruchirappalli – 620 017, Tamil Nadu, India
[2]Department of Zoology and Wildlife Biology,AVC College (Autonomous), Mannampandal – 609 305, Mayiladuthuari, Tamil Nadu, India

DOI: http://dx.doi.org/10.24327/ijrsr.2019.1005.3484

ARTICLE INFO

Article History:
Received 4th February, 2019
Received in revised form 25th March, 2019
Accepted 18th April, 2019
Published online 28th May, 2019

Key Words:

wetlands, water birds, Populations, Ayyanar lake, conservations

ABSTRACT

Waterbird Community of Ayyanar wetlands in Thanjaur District, Tamil Nadu, Southern India was studied during January 2013 to December 2014. The methodology followed was mainly observations using binocular the site was done by direct count. A total of 34 species belong to 7 orders and 17 families, including 13 Resident species, 16 Resident Migrant species, 5 Migrant species. During the 29 species Least concern, 5 species of Near Threatened were recorded in the area during the period. Darter, Little Cormorant, Black Headed Ibis, Glossy Ibis, Eurasian spoonbill, Spot billed Pelican, Asian Open bill Stork, Painted Stork etc. were the most abundant near threatened and migrant species found in the Ayyanar wetlands.

INTRODUCTION

Wetlands are a significant factor in the health and existence of other natural resources of the state, such as inland lakes, ground water, fisheries and wildlife (Akbar *et al.,* 2009). Most of the wetlands are supports to resident and migratory birds, fish fauna and aquatic vegetation (Khan and Ghalib, 2006). Wetlands are extremely important areas throughout the world for wildlife production, recreation, sediment control, flood prevention (Sivaperuman and Jayson, 2000). Wetlands are important bird habitats and birds use them for feeding, roosting, nesting and rearing young (Weller, 1999 and Stewart, 2001). Wetlands provides home for large diversity of wildlife including birds, mammals, fish, amphibians, insects and plants (Buckton, 2007). Wetlands in India cover an area of 58.2 million hectares (Prasad *et al.,* 2002). Approximately 23% (310 of 1340) of the bird species found in India (Manakandan and Pittie, 2001) are known to be dependent on wetlands (Kumar *et al*., 2005).

The preparation of a list of species is basic to the study of avifauna of a site, because a list indicates basic species presence (Bibby *et al.,* 1998). Past studies have documented the bird communities of different wetland habitats of India (Zargar and Naqash, 1993; Kumar and Gupta, 2009; Tak *et al.,* 2010; Acharya *et al*., 2010). But, the water birds and shorebirds characteristics of fresh water region have been modified by the reduction in water flow due to upstream water diversion (Glenn *et al*., 1996, 2006). Birds are the most conspicuous and significant component of different wetland habitats, i.e. their presence or absence may indicate the ecological conditions of the particular area (Rajpar and Zakaria, 2011). In this study water birds refer to the bird species that entirely depend on wetlands for a variety of activities such as foraging, nesting, loafing and moulting. Wetlands of Tamil Nadu are perhaps the least ornithological studied ecosystem. Tamil Nadu wetlands are mainly used for agriculture, aquaculture purpose. Due to the importance lake a preliminary study was designed to document the distribution of avifuna of Ayyanar lake.

Study Area

The study was carried out in the Ayyanar lake (10º.47N: 78º.51E) at Ponvilainthanpatti village, Solagampatti Panchayath in the district of Thanjaur, Tamil Nadu, Southern India from January 2013 to December 2014. It covers an area of 91.96 ha. The major water source to this lake is rain season only. The water resource is used for agriculture and inland aquaculture practices. About 100 ha.

Corresponding author:* **Sivanantham Mohanraj
Department of Zoology Bishop Heber College (Autonomous),Tiruchirappalli – 620 017, Tamil Nadu, India

Table 1 List of Water birds recorded in Ayyanar Lake During from January 2013 to December 2014.

S. No	Common Name	*Scientific name*	Orders	Family	Status	IUCN
1	Spot-billed duck	*Anas poecilorhyncha*	Anseriformes	Anatidae	RM	LC
2	Lesser whistling duck	*Dendrocygna javanica*	Anseriformes	Anatidae	RM	LC
3	White breasted kingfisher	*Halcyon smyrnensis*	Coraciiforms	Dacelonidae	R	LC
4	Pied kingfisher	*Ceryle rudis*	Coraciiforms	Cerylidae	R	LC
5	Common kingfisher	*Alcedo atthis*	Coraciiforms	Alecdinidae	RM	LC
6	Purple moorhen	*Porphyrio porphyrio*	Gruiformes	Rallidae	R	LC
7	Common coot	*Fulica atra*	Gruiformes	Rallidae	RM	LC
8	White breasted waterhen	*Amaurornis phoenicurus*	Gruiformes	Rallidae	R	LC
9	Wood sandpiper	*Tringa glareola*	Ciconiformes	Scolopacidae	M	LC
10	Marsh sandpiper	*Triga stagnatilis*	Ciconiformes	Scolopacidae	M	LC
11	Common redshank	*Triga totanus*	Ciconiformes	Scolopacidae	RM	LC
12	Common greenshank	*Triga nebularia*	Ciconiformes	Scolopacidae	M	LC
13	Paintail snipe	*Gallinago stenura*	Ciconiformes	Rostratulidae	M	LC
14	Pheasant tailed jacana	*Hydrophasianus chirurgus*	Ciconiformes	Jacanidae	R	LC
15	Black winged stilt	*Himantopus himantopus*	Charadriformes	Recurvirostridae	M	LC
16	Red wattled lapwing	*Vanellus indicus*	Charadriformes	Charadridae	R	LC
17	Whiskered tern	*Chlidonias hybrida*	Charadriformes	Laridae	RM	LC
18	River tern	*Sterna aurantia*	Charadriformes	Laridae	R	NT
19	Little grebe	*Tachybaptus ruficollis*	Ciconiformes	Podicipedidae	R	LC
20	Derter	*Anhinga melanogaster*	Ciconiformes	Anhingidae	R	NT
21	Little cormorant	*Phalacrocorax niger*	Pelecaniformes	Phalacrocoracidae	RM	LC
22	Little egret	*Egretta garzetta*	Ciconiformes	Ardeidae	R	LC
23	Large egret	*Casmeradius albus*	Ciconiformes	Ardeidae	R	LC
24	Cattle egret	*Bubulcus ibis*	Ciconiformes	Ardeidae	RM	LC
25	Grey heron	*Ardeo cinerea*	Ciconiformes	Ardeidae	RM	LC
26	Purple heron	*Ardea purpurea*	Ciconiformes	Ardeidae	RM	LC
27	Black crowned night heron	*Nycticorax nycticorax*	Ciconiformes	Ardeidae	RM	LC
28	Indian pond heron	*Ardeola grayii*	Ciconiformes	Ardeidae	R	LC
29	Black headed ibis	*Threskiornis melanocephalus*	Ciconiformes	Threskiornithidae	R	NT
30	Glossy ibis	*Plegadis falcinellus*	Ciconiformes	Threskiornithidae	RM	LC
31	Eurasian spoonbill	*Platalea leucorodia*	Ciconiformes	Threskiornithidae	RM	LC
32	Spot billed pelican	*Pelicanus philippensis*	Pelecaniformes	Pelecanidae	RM	NT
33	Asian open bill stork	*Anastomus oscitans*	Ciconiformes	Ciconidae	RM	LC
34	Painted stork	*Mycteria leucocephala*	Ciconiformes	Ciconidae	RM	NT

Agricultural land is irrigated from this lake. The distance between the wetland and the nearest urban area is about 25km. Major flora includes *Eichhornia crassipes*, *Phragmites karka*, *Zizania latifolia*, *Cynodon* spp., *Limnophila* spp., *Sagittaria* spp., *Saccharum latifolium*, *Erianthus pucerus*, *Erianthus ravennae*, *Leersia hexandra*, and Cyperus rotundus besides birds the *Euphlyctis hexadactylus*, Mirghal sp. *Ctenopharyngodon idella*, *Oreochromis mossambicus*, *Salmophasia bacaila*, *Puntius Filamentosus*, *Catla catla* and *Labeo rohita*, and the water insects include *Rhithrogena germanica* and dragon flies. In addition to that various species of algae and other flora and fauna were present in the lake.

MATERIALS AND METHODS

Water birds were counted individually using the 'direct count' method following the method described by Yates and Goss-Custard (1991). Since lake appeared relatively homogenous, birds were counted with 7 × 50m binocular and 20 x 60m spotting scope from vantage points of the lake. Two counts of 3.00h duration were made every day on clear and sunny days to minimize bias arising from variation in weather. During the census, arrival or departure of flocks of birds was carefully counted to avoid missing or duplication of records. Care was taken to see that the birds were not disturbed due to the visits for counting. Data was collected by recording the number of individuals of each species (species wise count). Birds were identified to species level using available field guides (Ali and Replay, 2002).

RESULTS AND DISCUSSION

The Water Birds identified in Ayyanar lake during January 2013 to December 2014. The observations revealed that the wetland provides habitat for totally 34 species of water birds belonging to 7 orders and 17 families, including 13 Resident species, 16 Resident migrant species, 5 Migrant species. During the 29 species Least concern, 5 species of Near Threatened are present in the Ayyanar lake Thanjaur District, Tamil nadu, Southern India. The order wise proportions species of water birds varied follows: order: Ciconiiformes with 20 species followed by Charadriiformes with 4 species each Coraciiformes 3 species, Gruiformes 3 species and Anseriformes, Pelecaniformes by a two species each. The family wise proportions species of water birds varied follow in the Ayyannar lake: family: Anatidae with 9 species followed by Scolopacidae with 4 species, each Rallidae 3 species and Threskiornithidae 3 species. During the each 2 species of Ciconidae and Laridae. The Alecdinidae, Anhingidae, Apodidae, Cerylidae, Charadridae, Dacelonidae, Jacanidae, Phalacrocoracidae, Pelecanidae, Rostratulidae and Recurviros tridae by a Elaven species of each one family in the Ayyanar lake.

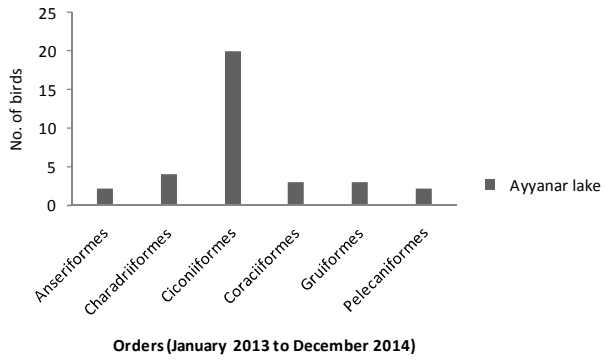

Fig 1 Graph showing of Order wise as water birds in Ayyanar wetland from (January 2013 to December 2014).

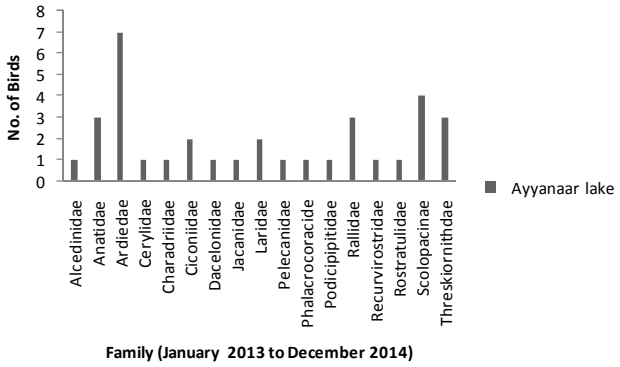

Fig 2 Graph showing of Family wise as water birds in Ayyanar wetland from (January 2013 to December 2014).

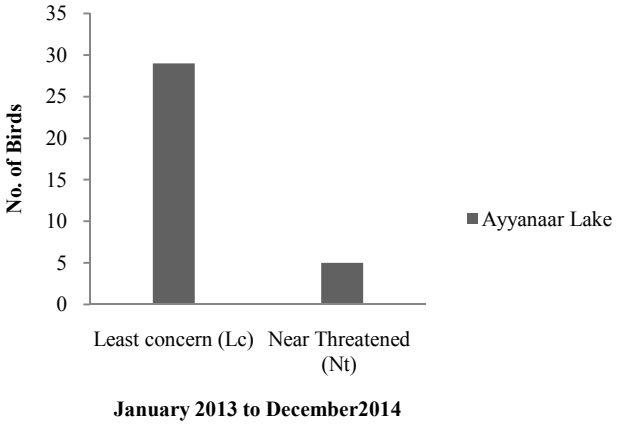

Fig 3 Graph showing of Least Concern (Lc) and Near Threatened(Nt) wise as water birds in Ayyanar wetland from (January 2013 to December 2014).

Lower species richness of birds in this area is attributed due to the smaller size of the wetland (Gajardo *et al.,* 2009). As reported earlier from the Southern Ghats highest number of bird were recorded during the month of monsoon and there was a reduction in population size during the summer (Daniels, A.J.R., 1998). Many factors which threaten the Ayyanar wetland ecosystem and in turn the bird population, were identified during the study. Among them the prominent were poaching of birds. Birds use wetlands as sources of drinking water and for feeding, resting, shelter and social interaction (Steward, R.E., 2007). Pollution mainly from the chemicals is the major threats faced by birds in this ecosystem. This area is one of the major feeding and breeding grounds of many ducks, terns and other resident species. The local people use water that has leaked out from this tank for agricultural activities and there by this polluted water would reach all the adjoining bird visiting areas. During summer season the local dwellers empty the scanty water bodies and catch fish. Uncontrolled fishing depletes the food sources of wetland birds. Small size gill nets are used for fishing which results in the removal of even small sized fishes, indirectly affecting the availability of food for water birds. In this present study, floating vegetation revealed highest congregations of water birds.

This was attributed to availability of large food resources in these habitats. The maximum individuals of herons, egrets, Grebe in the study site shows these species preferred water depths of less than 1 metre (3.3ft), and avoiding areas more than a few meters deep. They are attracted to bodies of water with aquatic vegetation (Bird Life International, 2009). Previous water birds in natural habitats where human intervention was less, avian species diversity and evenness was higher than disturbed sites where intensive farming was carried out (Rana, S.V.S. 2005). This indicates structure of water bird community as related to diversity in habitats of wetlands. The results clearly revealed of habitats as main factor which contributed to populations of water bird communities. The major problem in the Ayyanar lake is the increasing rate of siltation which has caused a noticeable deterioration in wetland quality in recent years. Other threats include encroachment as more land is converted to rice paddy. Similar loss of wetland habitats was also observed in the Hokersar and Hygam wetlands (Foziah, A. 2009; Bashir *et al*., 2003). Unless appropriate conservation measure is taken remaining wetland habitats may be lost in the near future.

CONCLUSION

The study proved that if the present ecological characteristics of this wetland continues, the birds were unable to inhabit this habitat in the immediate future. Proper awareness class regarding the importance of birds to the local people through different programmes will ultimately help the protection of birds of this region. The occurrence of an average population of 34 water bird species during the study period is perhaps an indication of the fact that in near future the Ayyanar lake becomes a favorable habitat for water birds. The present study implied that the Ayyanar lake is moderately support many water birds. In spite of its importance both ecological and socio-economic the lake has received little attention. We recommend initiating a detail study on population status of water birds with periodic monitoring in Ayyanar lake for its future conservation and management. Being this area is one of the main habitats of wetland birds in Ayyanar lake it should be declared as a protected site.

Acknowledgements

We thank the Head of Department of Zoology and Wildlife Biology of AVC College (Autonomous) Mannampandal for providing necessary facilities and support during the study. We would like to express our gratitude to Tamil Nadu Forest Department (Triuchirappalli) for permitting to logistic support to carry out this study period.

References

Ali and Replay: The Book of Indian Birds (Thirteenth Edition) Bombay Natural History Society Oxford University press, (2002).

Akbar M. M.M.U. Hassan, Z.U. Nisa, M.M.U. Hassan, Hassanb M *et al*. Waterfowl diversity at Chashma barrage (wildlife sanctuary Mianwali) and Marala headworks (game reserve Sialkot) Pakistan during 1996–2005. International Journal of Agriculture and Biology. 2009; 11, 188–192.

Acharya B.K. L. Vijayan Chettri B *et al*. The bird Community of Shingba Rhododendron wildlife Sanctuary, Sikkim, Eastern Himalaya, India. Journal of Tropical Ecology. 2010; 52, 149-159.

Bibby C. M. Jones Marsden S *et al*. Expedition Field Techniques: Birds surveys, Expedition Advisory Centre. Royal Geographical Society London, 1998.

Bashir S. A.R. Yousuf Shah A.M *et al*. Effect of Bird foraging on dynamics of plant community in Hokersar wetland Kashmir. Journal of research and development. 2003; 3, 109-115.

Buckton S. Managing wetlands for sustainable livelihoods at Koshi Tappu. Danphe. 2007; 16, 12-13.

Bird Life International, In: IUCN Red List of Threatened Species. Version 2011.2. <http: //www.iucnredlist.org/>. (09 January 2012) (2009).

Daniels A.J.R. A field guide to the birds of south western India, Oxford University press, New Delhi. 1998; pp. 217.

Foziah A. Study on waterfowl population and human use of Hokersar and Hygam wetlands of Kashmir valley for conservation planning. Ph.D. Thesis Saurashtra University Rajkot, Gujarat. 2009; pp 245.

Gajardo A.G. P.V. Sepulveda Schlatter R *et al*. Waterbird assemblages and habitat characteristics in Wetlands: influence of temporal variability on species- habitat relationships. Water birds. 2009; 32(2), 225-233.

Khan M.Z. Ghalib S.A *et al*. Birds Population and Threats to Some Selected Important Wetlands in Pakistan. J. Nat. Hist. Wildl. 2006; 5 (2) 209-215.

Kumar A. J.P. Sati P.C. Tak Alfred J.R.B *et al*. Hand book on Indian waterbirds and their conservation Zoological Survey of India. 2005; 472.

Kumar P. S.K. Gupta S.K *et al*. Diversity and abundance of wetlands birds around Kurukshetra, India. Our Nature. 2009; 7, 212-217.

Manakadan R. Pittie A *et al*. Standarddized common and scientific names of the birds of the Indian sub continent Buceros. 2001; 6, 1-37.

Mohanraj S. Pandiyan J. Invasion of Shorebirds into inland wetlands of Periyakulam lake, Tiruchirappalli, Southern India. J. Sci. Trans. Environ. Technovation. 2014; 7(3), 113-117.

Prasad S.N. T.V. Ramachandra N. Ahalya T. Sengupta A. Kumar A.K. Tiwari V.S. Vijayan, L. Vijayan L *et al*. Conservation of wetlands of India- Areview. Tropical Ecology. 2002; 43, 173-186.

Rana S.V.S Essentials of Ecology and Environmental Science. 2nd edn.Prentice-Hall of India private Ltd., New Delhi. 2005.

Sivaperuman C. Jayson E.A Birds of Kole wetlands, Thrissur, Kerala. Zoos' Print J. 2000; 15(10), 344-349.

Stewart R.E Technical Aspects of Wetlands- Wetlands as Bird Habitat. National water Summary on wetland Resources. United States Geological Survey. 2001; Pp.86.

Steward R.E Technical Aspects of Wetlands: Wetlands as Bird Habitat: United States Geological Survey Water Supply Paper. 2007; Pp. 24-25.

Tak P.C. J.P. Sati Rizvi A.N *et al*. Status of water birds at Hathnikund Barrage wetland, Yamunangar District, Haryana, India. Journal of Threatened Taxa. 2010; 2, 841-844.

Weller, M.W Wetland birds habitat resources and conservation implications. Press syndicate of the University of Cambridge. United Kingdom. 1999; Pp. 316.

Yates M.G Goss-Custard J.D *et al*. A comparison between high-water and low water counts of shore birds on the wash, East England. Bird Study. 1991; 38, 179-187.

Zargar A. R Naqash R.Y *et al*. Waterfowl Census Report Dept. of Wildlife Protection, Govt. of Jammu and Kashmir, Srinagar 1993.

How to cite this article:

Sivanantham Mohanraj and Jeganathan Pandiyan., 2019, Density and Diversity of Water Birds in Ayyanar lake Thanjaur District, Tamil Nadu, Southern India. *Int J Recent Sci Res.* 10(05), pp. 32498-32501.
DOI: http://dx.doi.org/10.24327/ijrsr.2019.1005.3484

****