ISSN: 2347-5129
(ICV-Poland) Impact Value: 5.62
(GIF) Impact Factor: 0.352
IJFAS 2016; 4(4): 280-285

www.fisheriesjournal.com
Received: 05-05-2016
Accepted: 06-06-2016

Priyatharasini P
Research Scholar, PG and Research Department of Zoology, Nirmala College for Women, Coimbatore-18, Tamil Nadu, India.

Dr. B Dhanalakshmi
Assistant Professor, PG and Research Department of Zoology, Nirmala College for Women, Coimbatore-18, Tamil Nadu, India.

Correspondence
Priyatharasini P
Research Scholar, PG and Research Department of Zoology, Nirmala College for Women, Coimbatore-18, Tamil Nadu, India.

Piscine diversity of Coimbatore wetlands, Tamilnadu, India

Priyatharasini P and Dr. B Dhanalakshmi

Abstract
Wetlands of India preserve a rich variety of fish species.Globally wetlands as well as fauna and flora diversity are affected due to increase in anthropogenic activities. The present investigation deals with the fish diversity of selected major wetlands Periyakulam famously called Ukkadam Lake, Singanallur Lake and Sulur Lake of Coimbatore district fed by Noyyal River. Due to improper management of these lentic wetlands water bodies around Coimbatore district by using certain manures, insecticides in agricultural practices in and around these selected areas has polluted the land and these fresh waters creating hazards for major vertebrate fishes which are rich source of food and nutrition, an important and delicious food of man. The results of the present investigation reveals the occurrence of 19 fish species belonging to 5 order, 8 families 18 species recorded from the Ukkadam wetland followed by Singanallur wetland with 5 different orders 7 different families and 14 species. Ichthyofaunal diversity of Sulur wetland compressed of 6 families with 14 species. The order Cypriniformes was found dominant followed by Perciformes, Ophicephalidae, Siluriformes and Cyprinodontiformes species in Ukkadam and Singanallur wetland lakes while in Sulur it was recorded as Cyprinidae> Cichlida> Ophiocephalidae> Anabantidae> Bagridae> Heteropneustidae. This study on the piscine diversity of these wetlands would help in explore the fish fauna status and estimate the factors that may need rectification for fish conservation and management.

Keywords: Wetlands, piscine diversity, abundance, conservation and management

1. Introduction
Coimbatore, the South Indian Manchester is gifted with a unique spread of a number of wetland water bodies that store rain water, recharge groundwater and provide shelter for a vast array of biodiversity. Coimbatore is mainly developed in the watershed expanse of the Noyyal river basin that has its origin in the Boluvampatty valley of the Vellingiri hills, consists in and around the Noyyal river basin a network of 24 lakes and canals. Currently, the original area of all the lakes has shrunk over the years because of construction activities around the wetlands (lakes) in the form of buildings or slums encroaching receding water levels have led to shrinkage in these lake areas that eventually diminishes the aesthetic quality of these wetlands (Hemambika *et al*., 2014; Ilangovan *et al*., 2014; Dhanalakshmi and Priyatharsini, 2015) [6, 7, 3]. The adverse effects of the public activities have resulted in degradation of these wetlands which ultimately alters the structure and function of a biotic and biotic component of water. The anthropogenic interventions has also lead to poor water quality which in turn has resulted in the reduction in number of native fishes, loss of biodiversity, decline in fish catch and depletion of natural resources in these wetlands (Ezhili *et al*.,2013; Pragatheesh, and Pushp Jain,2013) [4, 14]. Since freshwater fish has been identified a suitable tool for biological assessment due to its easy identification and economic value measure has to been take to conserve these bio-indicators. In order to preserve the fresh water fish diversity that is declining rapidly each day due to unending anthropogenic stressin the wetland bodies it is necessary to conserve these wetland water bodies of Coimbatore district. As a result of the above issues there is an urgent need for proper investigation, survey study and documentation of freshwater icthyodiversity in Coimbatore wetlands which are of economic importance the present work was framed with the main objective to analyse the present status, categories and report on the freshwater piscine diversity in selected wetlands Ukkadam Lake, Singanallur Lake and Sulur Lake of Coimbatore district fed by Noyyal River.

2. Materials and Methods

2.1 Study area: To study the icthyofaunal diversity the major wetlands Ukkadam, Singanallur and Sulur of Coimbatore district were selected and their morphometric details were given below. (PLATE: 1, 2, 3).

Morphometric features of selected wetland-Ukkadam Lake

Latitude: 10° 59.103' N; Longitude: 76° 56.959' E; Catchment area: 63 Sq. Km; Lake bed area: 320.00 acres; Current Lake bed: 337.00 acres; Storage capacity: 70.00 MCft

Biodiversity: Found good number of Pelicans, Painted stork, Open-bill stork, Pond herons, Egrets, White-breasted water hens, Purple Moorehens, Darters, Cormorants, Kingfishers, grebes, Spot-billed ducks and coots.

Plate 1: Morphometric features of selected wetland-Singanallur Lake

Latitude: 10° 59'46" N; Longitude: 77° 01'11" E; Catchment area: 11.776 Sq. miles; Lake bed area: 288 acres; Current Lake bed: 269.27 acres; Storage capacity: 52.27 M. cft.

Biodiversity: Found good number of Pelicans, Painted stork, Open-bill stork, Pond herons, Egrets, White-breasted water hens, Purple Moorehens, Darters, Cormorants, Kingfishers, grebes, Spot-billed ducks and coots.

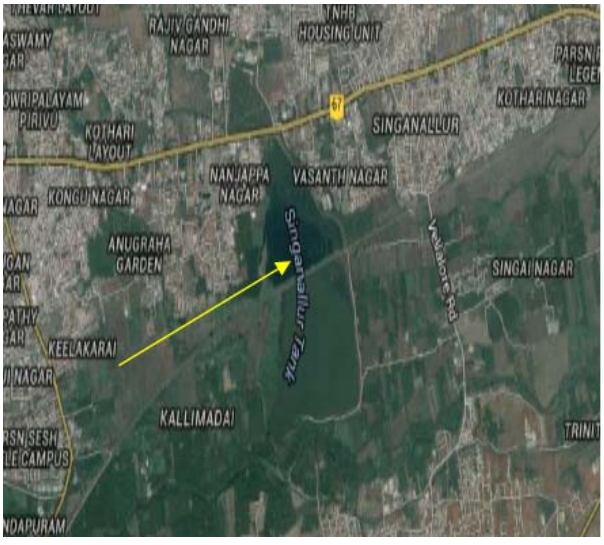


Plate 2: Morphometric features of selected wetland- Sulur Lake

Latitude: 11° 01'40″ N; Longitude: 77° 07'20″ E; Catchment area: 8.704 Sq.miles; Water Spread area: 0.332 Sq.km; Length of the Bund: 1450.00 M; Storage capacity: 17.94 M.cft.

Biodiversity: Rich in visiting migratory birds like Pelicans, Painted stork, Open-bill stork, Pond herons, Egrets, White-breasted waterhens, Purple Moorehens, Darters, Cormorants, Kingfishers, grebes, Spot-billed ducks and coots

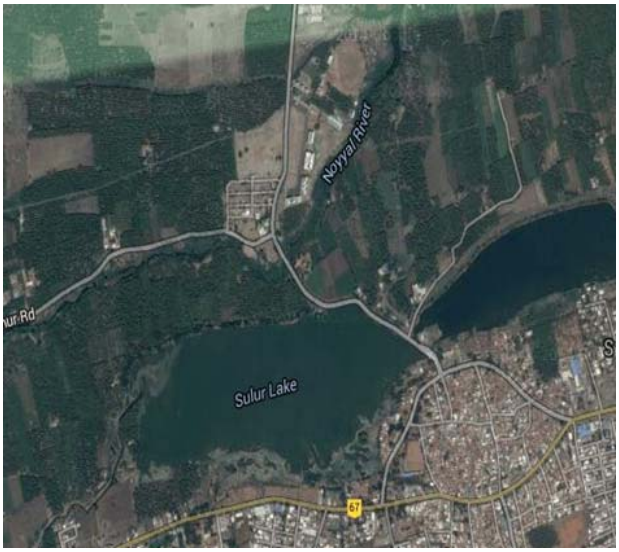


Plate 3

2.2 Methodology: Common fishes were recorded in the landing site, and a sample collection was made for certain species for further laboratory confirmation. Fish species which were not identified on the field (landingcenter) were preserved in 10% formalin.

2.3 Collection of fish*:* Fish samples were collected every month during the study period from the catchment point and fish landing centers with the help of skilled local fishermen. Fish samples were collected through experimental fishing using cast nets (dia. 3.7m and 1.0m) for collecting fish in shallow areas, monofilamentos gill nets (vertical height 1.0m - 1.5m; length 100m – 150m), drag nets (vertical height 2.0m) and a variety of traps. Sampling points were distributed throughout the site to cover its whole area.

2.4 Laboratory Procedures*:* Immediately photographs were taken prior to preservation since formalin decolorizes the fish colour on long preservation. Fish species which were not identified in the spot were brought to laboratory preserved in 10% formalin solution in separate specimen jar according to the size of specimen. The collected specimens were immediately dipped in 10% formalin in a large container that allowed proper spreading of their fins. Two changes of 10% formalin were adopted during the sampling time. Fishes brought to the laboratory were fixed in this solution in separate jars according to the size of species. Smaller fishes were directly placed in the formalin solution while, larger fishes were given an incision on the abdomen before they were fixed. Each container was labeled properly against the physical data sheet of sampling and brought to the laboratory for further taxonomic exercise.

2.5 Identification of fish species: All fish caught were identified to species level using standard taxonomic viz. Fishes of India, FAO identification sheets, ITIS (Integrated Taxonomic Information System) standard report (http://www.itis.gov), and other reference books using standard keys of Jayaram (1999) [8], Qureshi and Qureshi (1983) [15, 17], Talwarand Jhingran (1991) [22], Day Francis (1994) [2] and Shrivastava (1998) [20]. Fish base website was also referred for various aspects of fish fauna (www.fishbase.org).

3. Results and Discussions

The results of the present study revealed the occurrence of 19 fish species belonging to 8 families and 5 orders were recorded from the Ukkadam wetland (Table-1). The order Cypriniformes was dominant with 9 fish species followed by order Perciformes 2, Ophiocephaliformes 3 and Siluriformes with 3 fish species. During the present investigation in the Ukkadam Wetland the order of dominance was as follows. Cypriniformes>Perciformes>Ophiocephaliformes>Siluriformes>Cyprinodontiformes.The family Cyprinidae was represented by 8 species namely *Catla catla*, *Cirrhinus mrigal*, *Labeo rohita*, *Labeo calbasu, Labeo fimbriatus, Labeo bata, Ctenopharyngodon idella,* and *Cyprinus carpio*. Among the 8 species found *Cyprinus carpio carpio* were found be most abundant. The family Cichlidae with one species *Oreochromis mossambicus* was most abundant followed by family Anabantidae with one species *Heteropneuteus fossilis*. The family Channidae was represented by 3 species, *Channa marulius, Channa striatus* and *Channa punctatus*, in which *Channa marulius* and *Channa striatus* was found most abundant. In the Ukkadam wetland *Gambasia affnis* belonging to Poecilidae family and Cyprinodontiformes order was also less observed (Fig-1).Similar observations were made by Salasker and Yeergi (2004) [18]; Garg *et al*.2007; [5] Srikanth *et al.* (2009) [21]; Prabaharan and Senthilmuragan, 2012; [19]. Tripathy Madhusmita, 2012; [24] Sammaiah *et al*. 2013[26];

In Singanallur wetland fishes of 5 different orders with 7 different families with 14 species were recorded during the study period. In the present investigation in the Singanallur Wetland the order of dominance was as follows: Cypriniformes>Perciformes>Ophiocephaliformes>Siluriformes>Cyprinodontiformes (Table-2). In the present survey fish species like *Catla catla, Cyprinus carpio carpio, Cirrihinus mrigala, Ctenopharyn gdonidella, Labeo rohita* and *Labeo fimbratus* belonging to Cyprinidae family was recorded to be most abundant followed by *Oreochromis mossambicus* of Cichlidae family and *Channa marulius, Channa punctatus* and *Channa stratus* of Ophiocephalidae family which was less abundant, Fishes of Bagridae and Claridae and Poecilidae like *Mystus vittatus, Clarias batrachus* and *Gambasia affinis* were also observed (Fig-2). Our present study findings are in corrobating with the observations of Kharat *et al*., 2012; Jayabhaye and Lahane, 2013 [25] and Nikam *et al*., 2014 [12].

The ichthyofaunal diversity of Sulur wetland comprises of 6 families namely, Cyprinidae, Ophiocephalidae, Cichlida, Anabantidae, Heteropneustidae and Bagridae. (Table- 3 and Fig- 3). The sequence of dominance of encountered families is as follows: Cyprinidae> Cichlida> Ophiocephalidae> Anabantidae> Bagridae> Heteropneustidae.On the basis of species richness, order Cypriniformes was dominant with (7species) followed by Perciformes (2 species) Ophiocephaliformes (3 species) and Siluriformes (2 species). The family Cyprinidae was represented by 7 species, *Catla catla, Cyprinus carpio carpio, Cirrihinus mrigala, Cyprinus carpio, Labeo rohita, Labeo bata, Labeo fimbratus*. Among these *Catla catla, Cirrihinus mrigala,* and *Labeo rohita* were most dominant. Qureshi (1983)[15] has recorded 53 species of fishes from Bhoj Wetland, Bhopal. Tamotand Awasthi (2010) [23] have studied biodiversity and conservation of indigenous fish species of Upper Lake. An approach to evaluate fish diversity and limnological status of sewage fed urban Lake (Shahpura), Bhopal, India was made by Praveen Tamot and Ashu Awasthi (2012) [16]. Our present study finding was in association with Pranjal Chakravartty *et al*., 2012 [13].

The family Ophiocephalidae was represented by 3 species, *Channa marulius, Channa punctatus* and *Channa stratus* in which all species were found abundant. The family Cichlidae was represented by only 1 species, *Oreochromis mossambicus* and was found most abundant. The family Heteropneustidae was represented by only1 species, *Heteropneuteus fossils* and was found less abundant. The family Bagridae was represented by only 1 species, *Mystus vittatus* which was found rare. Among the murrels, *Channa marulius* bears high economic importance while, *Channa puntatus* and *Channa stratus* have moderate economic importance. The fishes *Clarias batrachus*, *Mystus vittaus* and *Heteropneustes fossilis* belonging to families Clariidae, Bagridae and Heteropneustidae respectively carry high economic value. Maheshwari (2004) [11] has reported 4 species in the catfish group while Arya *et al*., (2001) [1] have reported 11 carp species and Karamchandani *et al*., (1967) [9] have reported 10 carp species of economic importance which are more or less similar to the present observation.

The result of the present study will provide future strategies

for development and fish fauna conservation in and around the river Noyyal fed wetlands of Coimbatore district, Tamilnadu, India. Moreover the results also suggests that the selected wetlands are important as it provide a wide diversity of piscine fauna with good economic potential and highly significant from fisheries point of view for the fishermen living in its vicinity. Proper utilization, developing advanced techniques for fish culturing, banning illegal methods of fishing and care for propagation of fish culture and to prevent further depletion of freshwater fish resource will be highly beneficial for the socially and economically poor people of these areas. In the light of present study of wetland of Coimbatore District, Tamilnadu it is time to conserve, protect, make proper policies and take necessary steps to implement so that the future generation can get the fishes lively on earth rather than photographs in literature.

Table 1: Ichthyofaunal Diversity of Ukkadam Wetland

S. No	Order	Family	Species	Author	Status
1.	Cypriniformes	Cyprinidae	*Catlacatla*	Hamilton, 1822	++++
2.			*Cirrihinusmrigala*	Hamilton, 1822	++++
3.			*Cyprinuscarpio*	Linnaeus, 1758	++++
4.			*Cyprinuscarpiocarpio*	Valenciennes,1844	+++
5.			*Ctenopharyngdonidella*	Valenciennes, 1844	++++
6.			*Labeorohita*	Hamilton, 1822	++++
7.			*Labeocalbasu*	Hamilton,1822	+++
8.			*Labeofimbratus*	Bloch,1792	+++
9.			*Labeobata*	Bloch,1974	
10.	Ophiocephaliformes	Ophiocephalidae	*Channamarulius*	Hamilton,1822	++++
11.			*Channapunctatus*	Bloch,1793	+++
12.			*Channastriatus*	Bloch,1794	++++
13.	Perciformes	Cichlidae	*Oreochromismossambicus*	Peters	++++
14.		Anabantidae	*Anabas testudineus*	Bloch,1792	+++
15.	Siluriformes	Heteropneustidae	*Heteropneuteusfossilis*	Bloch,1974	+++
16.		Bagridae	*Mystusvittatus*	Bloch,1794	+++
17.		Clariidae	*Clariasbatrachus*	Linnaeus,1754	+
18.			*Mystusseenghala*	Skyes,1839	-
19.	Cyprinodontiformes	Poecilidae	*Gambasiaaffinis*	Baird and Girard,1853	++

* ++++- Most abundant; +++- Abundant; ++- Less abundant; - Rare

Fig: 1 Diagrammatic representation on family wise fresh water fish composition at Ukkadam wetland

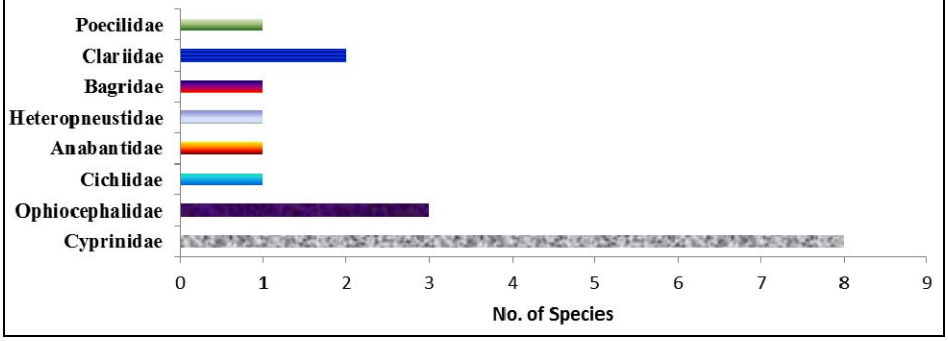


Table 2: Ichthyofaunal Diversity of Singanallur Wetland

S. No	Order	Family	Species	Author	Status
1.	Cypriniformes	Cyprinidae	*Catlacatla*	Hamilton, 1822	++++
2.			*Cirrihinusmrigala*	Hamilton, 1822	++++
3.			*Cyprinuscarpio*	Linnaeus, 1758	++++
4.			*Ctenopharyngdonidella*	Valenciennes, 1844	+++
5.			*Cyprinuscarpiocarpio*	Valenciennes,1844	+++
6.			*Labeorohita*	Hamilton, 1822	++++
7.			*Labeofimbratus*	Bloch	+++
8.	Ophiocephaliformes	Ophiocephalidae	*Channamarulius*	Hamilton,1822	+++
9.			*Channapunctatus*	Bloch,1793	+++
10.			*Channastriatus*	Bloch,1794	+++
11.	Perciformes	Cichlidae	*Oreochromismossambicus*	Peters	++++
12.	Siluriformes	Heteropneustidae	*Heteropneuteusfossilis*	Bloch,1974	++
13.		Bagridae	*Mystusvittatus*	Bloch,1794	++
14.		Clariidae	*Clariasbatrachus*	Linnaeus,1754	-
15.	Cyprinodontiformes	Poecilidae	*Gambasiaaffinis*	Baird and Girard,1853	+

* ++++- Most abundant; +++- Abundant; ++- Less abundant; - Rare

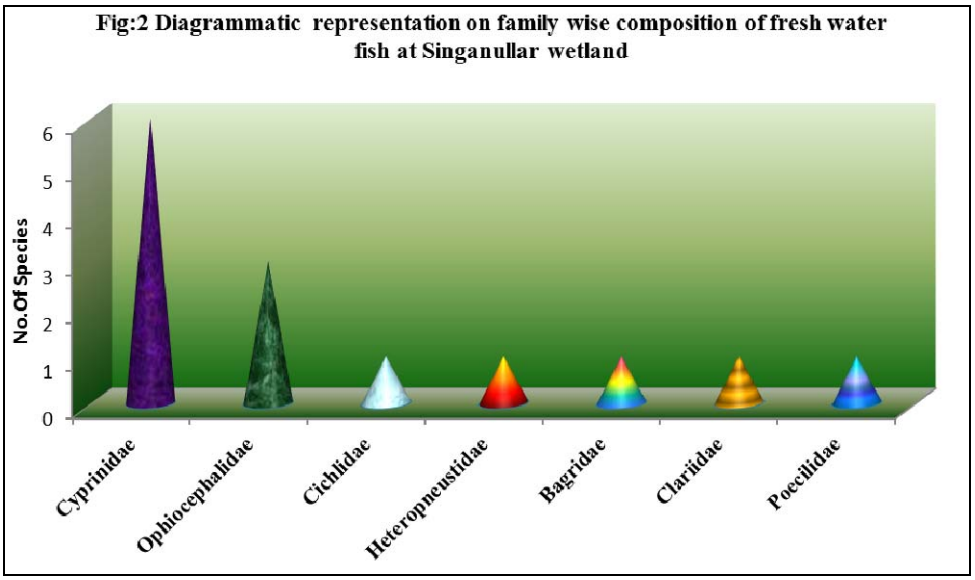
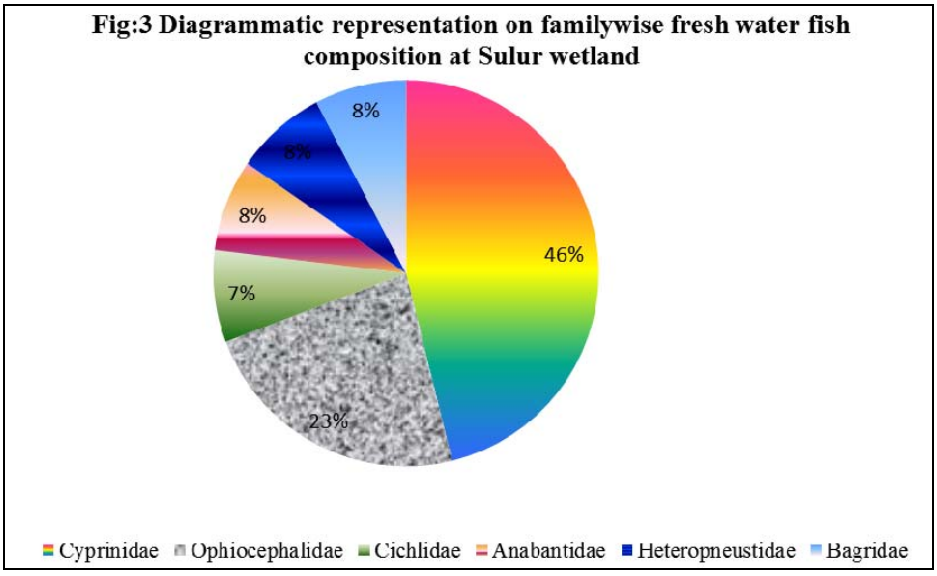


Table 3: Ichthyofaunal Diversity of Sulur Wetland

S. No	Order	Family	Species	Author	Status
1.	Cypriniformes	Cyprinidae	*Catlacatla*	Hamilton, 1822	++++
2.			*Cyprinuscarpiocarpio*		+++
3.			*Cirrihinusmrigala*	Hamilton, 1822	++++
4.			*Cyprinuscarpio*	Linnaeus, 1758	+++
5.			*Labeorohita*	Hamilton, 1822	++++
6.			*Labeofimbratus*	Bloch	+++
7.	Ophiocephaliformes	Ophiocephalidae	*Channamarulius*	Hamilton,1822	+++
8.			*Channapunctatus*	Bloch,1793	+++
9.			*Channastriatus*	Bloch,1794	+++
10.	Perciformes	Cichlidae	*Oreochromismossambicus*	Peters	++++
11.		Anabantidae	*Anabas testudineus*	Bloch,1792	+++
12.	Siluriformes	Heteropneustidae	*Heteropneuteusfossilis*	Bloch,1974	++
13.		Bagridae	*Mystusvittatus*	Bloch,1794	-

* ++++- Most abundant; +++- Abundant; ++- Less abundant; - Rare



4. Acknowledgement

The authors wish to thank the PG and Research Department of Zoology, Nirmala College for women for providing both laboratory and technical support and granting permission to carry out the present study.

5. References

1. Arya SC, Rao KS, Shrivastava S. Biodiversity and Fishery Potential of Narmada Basin Western Zone (M. P. India) with special reference to Fish Conservation. Environment and Agriculture: Agriculture and Pollution in South Asia. 2001, 108-112.

2. Day Francis. The fishes of India. Jagmander book agency, New Delhi, 1994.
3. Dhanalakshmi B, Priyatharsini P. An Assessment of Fresh Water Piscine Diversity in Selected Wetlands in Coimbatore District, Tamilnadu, India-A Preliminary Study. Open Access Library Journal. 2015; 2:e2236.
4. Ezhili N, Manikandan R, Ilangovan R. Diversity and seasonal variation of zooplankton in Ukkadam Lake, Coimbatore, Tamil Nadu, India. Interna. J Current Resear. 2013; 5(8):2091-2094.
5. Garg RK Rao, Saksena DN. Cheklist of fishes of Ramsagar reservoir, Datia District, Madhya Pradesh, India. Zoo 's Print. 2007; 22:2801-2803.
6. Hemambika B, Julffia Begam A, Kirubhanandhini V, Babu S, Mahendiran M, Goldin Quadros. Diversity of birds from the urban wetlands of Coimbatore, Tamilnadu, India. Proceedings of the National Conference on Modern Trends in Zoological Research. 2014, 186-189.
7. Illangovan R, Manikandan R, Ezhili N, Subramaniam K. studies on plankton population and species diversity in three wetlands of Coimbatore, Tamilnadu, India. 2014; 6(8):7968-7972.
8. Jayaram KC. The fresh water fishes of the Indian Region. Narendra Publishing House. Delhi. 1999, 551.
9. Karamchandani SJ, Desai VR, Pisolker MD, Bhatnagar GK. Biological investigation on the fish and fisheries of Narmada River (1958-66). Bull Cent. Inland Fish. Res. Inst., Barrackpore (Mimeo). 1967; 10:40.
10. Kharat SS, Paingankar M, Dahanukar N. Freshwater Fish Fauna of Krishna River at Wai, Northern Western Ghats, India. J Threatened Taxa. 2012; 4(6):2644-2652.
11. Maheshwari Uk, Ichthyobiodiversity. Decline Pattern, Management and Conservation of Natural Seed of Mahseer *Tor tor* in middle stretch of River Narmada, J Nat. Conser. 2004; 8:111-117.
12. Nikam DS, Shaikh AL, Salunkhe PS, Kamble AB, Rao KR. Ichthyofaunal Diversity of Ashti Lake, Tal. Mohol, Dist. Solapur (M.S.). GJRA. 2014; 3(12):l.
13. Pranjal Chakravartty, Mitali Chakravartty, Subrata Sharma. A Survey on the Fish Diversity with Special Reference to the Classified Ornamental Fishes and their Prospects in the Kapla Beel of Barpeta District. The Science Probe. 2012; 1(2):12-2.
14. Pragatheesh A, Pushp Jain. Environmental Degradation of the Coimbatore Wetlands in the Noyyal River Basin, EIA Resource and Response Centre (ERC), Nilgiri, Tamil Nadu, India, 2013, 1-10.
15. Qureshi TA, Qureshi NA. Indian Fisheries, BRU Brothers, Sultan Road, Bhopal, 1983.
16. Praveen Tamot, Ashu Awasthi. An Approach to Evaluate Fish Diversity and Limnological Status of Sewage Fed Urban Lake (Shahpura), Bhopal, India. IJTAS. 2012; 4(1):20-22.
17. Qureshi TA, Qureshi NA. Indian Fishes Publishers Brij Brothers, Sultania Road Bhopal (M.P.) 1983, 5-209.
18. Salasker PB, Yeergi SG. Primary productivity of powailake, Mumbai Maharastra. J Aqua Biol. 2004; 19(1):19-22.
19. Senthilmuragan A, Prabaharan CP. Fish diversity in relation to physico chemical characteristics Kamala River Basin of Darbhanga districet, Bihar, India. IJPBA. 2012; 3(1):211-217.
20. Shrivastava G. Fishes of U.P. and Bihar, Seventh Edition, Vishwavidalaya Prakashan, Chowk, Varanasi India pub, 1998.
21. Srikanth K, Ramu G, Benarjee G. The study on fish diversity of Rammappa Lake, Warangal district, Andhra Pradesh, India. J Aqua Biol. 2009; 24(2):57-60.
22. Talwar PK, Jhingran A. Inland Fishes of India and Adjacent Countries. Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi. 1991; (2):1158.
23. Tamot P, Awasthi A. Biodiversity and conservation of indigenous fish species of Upper Lake, Bhopal, Proc. Nat. Sem. Int. – livelihood: 2010, 378-388.
24. Tripathy Madhusmita. Bio diversity of Chilka and its conservation, Odisha, India. Int. Res. J Environment Sci. 2012; (5):54-57.
25. Uattam M, Jayabhaye Lahane LD. Studies on Ichthyofaunal Diversity of Pimpaldari tank, Hingoli, Maharashtra, India. International Indexed & Refereed Research Journal. 2013; 4(43-44):54-55.
26. Thirupathaiah, M., Ch. Samatha and *Ch. Sammaiah. Diversity of fish fauna in lower Manair reservoir of Karimnagar district (A.P.). India Advances in Applied Science Research. 2013; 4(2):203-2011.