

Studies on Ichthyofaunal Biodiversity of Kolavoi Lake, Chengalpet, Tamilnadu, India



Zoology

KEYWORDS : KOLAVOI LAKE, ICHTHYOFAUNAL DIVERSITY, CYPRINIDAE

K. Silambarasan

P.G. and Research Department of Zoology, Sir Theagaraya College, Chennai-600 021

P. Senthilkumar

P.G. and Research Department of Zoology, Sir Theagaraya College, Chennai-600 021

ABSTRACT

Kolavoi Lake is a perennial water resource for human consumption also helpful for the agriculture and fisheries in Chengalpet. Keeping a view that ichthyofaunal diversity of Kolavoi Lake is correlated to aquatic ecosystem; the present investigation was carried out for one year (April 2012-March 2013). Fishes were collected from the catch of local fisherman at three different stations of lake. Initially fishes were identified by vernacular name and common name as named by local fishermen and then identification and classification were made. The present study revealed that the collected ichthyofauna belongs to seven orders; twelve families; sixteen genera and twenty one species. Of these, family Cyprinidae was dominant over other families. The study represent that Kolavoi Lake is rich of fish diversity and sustains high productivity.

INTRODUCTION

Water is one of the most abundant compounds found in nature covering approximately three-fourths of surface of earth (Beebi et al., 2001). Water is the elixir of life, a precious gift of nature to the mankind and millions of other species living on the earth. It is fast becoming a scare commodity in most part of the world (Usharani et al., 2010). Lakes serve as an important freshwater habitat for flora and fauna of region and sustain and support a high regional biodiversity. Lakes and freshwater resources are planets most important freshwater resources and provide innumerable benefits. They are used for domestic and irrigation purposes, and provide ecosystems for aquatic life especially fish, thereby functioning as a source of essential protein, and for significant elements of the world's biological diversity. They have important social and economic benefits as a result of tourism and recreation, and are culturally and aesthetically important for people throughout the world. They also play an equally important role in flood control.

Lakes are inland depressions containing standing water. Lakes are socio economically and bio aesthetically important aquatic ecosystem. Fish are one of the important groups of vertebrates which influence the life of human in various ways. Fish are a rich source of food and provide a meat to tide over the nutritional difficulties of human population. Biodiversity is essential for stabilization of ecosystem and protection of overall environmental quality for understanding intrinsic work of all species on the earth (Shivashankar and Venkataramana, 2012). Fresh water biodiversity has declined faster than either terrestrial or marine biodiversity over the past 30 years (Jenkins, 2003). Fish biodiversity of lake essentially represent the fish faunal diversity and their abundance. Lake conserves a rich variety of fish species which support the commercial fishery (Sharma Riddhi et al., 2011; Sumitra et al., 2007; Kumar Niraj, 2012). Researchers have worked on the ichthyofauna in various water bodies of the country (Jayaram, 1999; Menon, 1998; Rema Devi, 1996; Jhingran et al., 1969; Vijayalaxmi et al., 2010; and Senthilmurugan and Prabakaran, 2012). Hence, the present study aims to provide the basic information of freshwater ichthyofauna in the lake and this preliminary observation may stimulate better investigation in future through understanding of freshwater ichthyofauna along the Kolavoi Lake, Chengalpet.

MATERIALS AND METHODS

STUDY AREA

Kolavoi Lake is situated in the Chengalpet, 58 Km away from the Chennai. It is one of the largest lakes situated about 200 m on the north east of Chengalpet and close to Pulipakkam village, running parallel to the national highway. This lake receives water from 12 tanks and the surplus flows into Palar, Neenjal and Madura rivers. It is one of the biggest water bodies with 894 hectares and a maximum depth of 4.5 meters. Presently 11 villages are benefiting from this lake. It is rich in both flora and fauna. The total capacity of the tank is 476.69 Mct. with one filling. The Government has permitted M/s Mahindra industrial

park Ltd, to draw 0.6Md from Kolavoi Lake (35 Mct per year). At present approximately 200 Kg of fishes are harvested by fishermen per day.



Figure 1: Map showing a study area-Kolavoi Lake, Chengalpet

The study was carried out for one year from April 2012 – March 2013. The specimen were collected using various types of fishing methods such as cast nets (16 mm, 18 mm, 22 mm), gill nets (32 mm, 38 mm, 64 mm, 78 mm), drag nets (4 mm, 15×3 meters) scoop nets and other local contrivances. The collected fish samples were preserved in 10% formalin. These fish samples were brought to the laboratory for detailed examination and identification with the help of standard literatures (Day, 1951; Jayaram, 1999; Talwar and Jhingran 1991; Dattamunshi and Srivastava, 1988). For further identification and specimen with doubtful identifying characters was sent to Zoological Survey of India (ZSI) Chennai, for confirming species identity.

RESULTS AND DISCUSSION

The results showed that the Kolavoi lake water was rich in fish biodiversity. All the species were recorded, their scientific, common and local names of the species along with order and family were illustrated in (Table-I). In respect of ichthyofauna diversity, a total of 21 species belonging to 7 orders and 12 families were identified.

During the entire study period the order cypriniformes was observed as the most abundant including two family's cyprinidae (5 species) and Cichilidae (2 species). Among cyprinidae, major carps; Catla catla, Labeo rohita, Cirrhinus mrigala, Puntius sophore, Puntius dorsalis. Family Cichilidae constitutes Etroplus suratensis, Etroplus maculatus and Tilapia mossambica. The above discussed fish species where the major composition of ichthyofaunal biodiversity of this lake. Other species such as Anguilla bicoalar, Anabas testudinus, Channa punctatus, Channa striatus, Mystus vittatus, Notopterus notopterus, Chanda nama and Chanda ranga were also economically important species. Heteropneustus fossilis and Margnathus pancalus fish species are illegally exploited by the people of this area.

Though several fauna and hydrographical aspects of Chennai

and its environs have been studied by many workers, only a few papers by Raj (1916), Venkateswaralu et al., (1978), Raghunathan (1978), Rema Devi (1994) and Mary Bai et al., (1997) deal with the fish fauna of this area. From available literature it is observed that 170 species are known from Kanchipuram Districts. Of these 52 are primary freshwater species. Of the species listed in the present study, *Gambusia affinis* a larvivorous and ornamental fish *Chanda ranga* and *Chanda nama* (brackish water fishes) were reported.

Table-I: list of fishes recorded from Kolavoi Lake for 2012-2013.

S.No	Order	Family	Species	Common Name
1	Anguilliformes	Anguillidae	<i>Anguilla bicolor</i>	Vilangu
2	Cypriniformes	Cyprinidae	<i>Catla catla</i>	Catla
3	Cypriniformes	Cyprinidae	<i>Labeo rohita</i>	Rohu
4	Cypriniformes	Cyprinidae	<i>Cirrhinus mrigala</i>	Mrigal
5	Cypriniformes	Cyprinidae	<i>Punitus sophore</i>	Kullakendai
6	Cypriniformes	Cyprinidae	<i>Punitus dorsalis</i>	Sallakendai
8	Osteoglossiformes	Notopteridae	<i>Notopterus notopterus</i>	Sottavala
9	Cyprinodontiformes	Poeciliidae	<i>Gambusia affinis</i>	Kosumeen
10	Perciformes	Anabatidae	<i>Anabas testudinus</i>	Panangkottaimeen
11	Perciformes	Channidae	<i>Channa punctatus</i>	Koravai
12	Perciformes	Channidae	<i>Channa striatus</i>	Viral
13	Perciformes	Gobiidae	<i>Glossogobius giuris</i>	Uluvai
14	Perciformes	Cichilidae	<i>Etroplus maculatus</i>	Sellakasumeen
15	Perciformes	Cichilidae	<i>Etroplus suratensis</i>	Sethakendai
16	Perciformes	Cichilidae	<i>Tilapia mosambica</i>	Silapikendai

17	Siluriformes	Heteropneustidae	<i>Heteropneustes fossilis</i>	Theali
18	Siluriformes	Bagridae	<i>Mystus vittatus</i>	Keluthi
19	Perciformes	Chandidae	<i>Chanda ranga</i>	Velli oodan
20	Perciformes	Chandidae	<i>Chanda nama</i>	Velli oodan
21	Sybranchiformes	Mastacembelidae	<i>Margnathus pancalus</i>	Aara

CONCLUSION

India belongs to one of the top 17 mega bio diversity countries. The fish constitute one of the main food items of substance for many peoples of India. They provide a staple diet and supplement of proteins. Fish constitute almost half of the total number of vertebrates of world. Out of 39,900 identified vertebrates, fish contains 54.44% of which 38.72% is freshwater fish species. The result of this study shows that Kolavoi Lake is very rich in fish diversity and sustains high productivity but only a small part of this Lake is utilized for fish culture and proper care are needed to upgrade the fish production and there by the fish diversity in this lake.

REFERENCE

- Beebi S.K., Dadhich A.S., and P. Arunakranti, 2004. Monitoring the Status of water Resources of Srungavarpukota Village area in Andhrapradesh. Nat. Env. Poll. Tech, 3(3):303-306. | 2. DattaMunshi., Srivastava M.P. 1988. Natural history of Fishes and systematics of fresh water fishes of India. Narendra Publishing House, Delhi. | 3. Day, F.S., 1951. The Fishes of India, Williams and sons Ltd, London. | 4. Jayaram K.C., 1999. The Freshwater fishes of the Indian region. Narendra Publishing house, Delhi, India. 551pp. | 5. Jayaram K.C., Venkateswarlu T., and M.B. Raghunathan, 1982. A survey of the Cauvery river system with a major account of its fish fauna. Rec. Zool. Surv. India, Misc., OCC.Pap.36:1-115. | 6. Jenkins. 2003. Prospects for Biodiversity. Science, 302: 1175-1177. | 7. Jingran V.G., Natarajan A., Banarjee S.M., and A. David, 1969. Methodology on Reservoir fisheries investigation in India. Bull. Cant. Int. Fish. Res. Ins. Barackpore, 12:1-109. | 8. Kumar Niraj., 2012. Study of Ichthyofaunal biodiversity of Turkaulia Lake, East-Champaran, Bihar, India. Int. Res. J. of Environ. Sci, 1(2): 21-24. | 9. Mary Bai M., Rema DeviK., and T.J. Indhra, 1997. Fish as biological indicator in Cooum River. Indian Academy of Envi. Sci-IV, 26-28. | 10. Menon A.G.K., 1998. Checklist of freshwater fishes of India. ZSI, Calcutta (in press). | 11. Raghunathan M.B., 1978. Studies on seasonal tanks in Tamilnadu. 1. Chembarampakkam Tank. The Indian journal of Zootomy, 21(2):81-85. | 12. Raj B. Sundara, 1916. Notes on a collection of fish of Madras. Rec. Indian Mus., 12(6):249-294. | 13. Rema Devi K., 1994. The fresh and brackish water fishes of Chengleput-MGR District. Chengleput-MGR District Gazetteers. | 14. Rema Devi K., 1996. Extension of range of distribution of *Horadandia atujkiralai Deraniyagla* (Pisces: Cyprinidae: Rasboridae) to Pondicherry and Tamil Nadu. Journal of Bombay natural History Society, 93(2): 303-304. | 15. Senthilmurugan A., and C. Prabakaran, 2012. Fish diversity in relation to physico chemical characteristics of Kamala basin of Darbhanga, Bihar, India. Int. J. of Pharm & Biol. Arch, 3(1): 211-218. | 16. Sharma Riddhi, Sharma Vipul, Sharma Madhu Sudan, Verma Bhoopendra Kumar, 2011. Studies on limnological characteristic, plankton diversity and fishes (species) in Lake Pichhola, Udaipur, Rajasthan (India). Univ. J. of Envi. Res. and Tech. 1(3): 274-285. | 17. Shivashankar P., and G.V. Venkataramana, 2012. Ichthyodiversity status with relation to water quality of Bhadara River, Western Ghats, Shimoga District, Karnataka. Annals of biological research, 3(10):4893-4903. | 18. Sumitra M., Sharma R., Sharma V., and M.S.Sharma, 2007. Tropical status of Lake Pichhola in relation to Physico-chemical characteristics of its water. National symposium on Limnology, 244-248 pp. | 19. Talwar, P.K. and A.G. Jhingran, 1991. Inland Fishes of India and Adjacent countries. Vol 1 & 2. | 20. Usharani K., Ayyasamy P.M., Shanti K., and P. Lakshmanaperumalsamy, 2010. Physico chemical and bacteriological characteristics of Noyyal River and ground water quality of Perur, India. J.Appl.Sci.Envirion.Manage, 14(2):29-35. | 21. Vijayalaxmi, C., Rajashekar M., and K. Vijayakumar, 2010. Freshwater distribution and diversity status of Mullameri River, a minor tributary of Bheema River of Gulbarga District, Karnataka. Int. J. of Syst. Biol, 2(2):1-9. |