



Study of Ichthyofaunal Biodiversity of Turkaulia Lake, East-Champaran, Bihar, India

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Abstract

*The present study on ichthyofaunal biodiversity of an ox-bow lake i.e. Turkaulia lake of East Champaran was carried out from June 2011 to July 2012, for a period of one year. Fishes are very important from the biodiversity point of view. Therefore, during the present investigation, fishes were collected and identified. The aim of this study was to reveal the faunistic diversity of fish species in this lake. The various fishes collected from this lake are found to be very common in respect of other lentic and lotic water bodies of Champaran-belt and are represented by 9 orders, 18 families, 27 genera and 40 species. The family Cyprinidae was observed as the most abundant of all, consisting 14 species. Although, 40 species were recorded, genus *puntius* was the dominant, followed by carps and cat fishes.*

Keywords: Ichthyofauna, biodiversity, turkaulia lake, ox-bow, east-champaran.

Introduction

India is one of the 17 mega biodiversity hot spots contributing 60-70 % of the world's biological resources. Being home for about 11.72% of total global fish biodiversity, the country ranks third in the world in total fish production¹. The East-Champaran district (Headquarter: Motihari) is located between 26°15' to 27°01' N latitudes and 84°28' E to 85°18' E longitudes. The total area of the district is 4155 sq. km. A very hot and dry summer, southwest and northeast monsoon season characterize the climate of the district².

The North Bihar and especially the East-Champaran district has large inland fisheries and adequate fresh water resources in the form of rivers and their tributaries, ox-bow lakes (Mauns), ponds, tanks, wetlands (Chauras), and canals. There are lots of ox-bow lakes and cut off meanders in this district. Among these Turkaulia ox-bow lake naturally deserves a leading position because this lake is one of the prime aquatic resources of this district supporting a rich aquatic biodiversity. Figure-1 and 2 depicts the map and actual view of Turkaulia Lake respectively. Turkaulia lake (26° 36' 55" N to 84° 51' 02" E) is situated at about 6.5 km west of Motihari town (MSL 66.141 m) in Turkaulia block. This lake is natural and perennial water body having an area of about 100 ha. Its depth is maximum 8-9 m in the middle while the minimum being in the marginal area i.e. 1-2 meters. The width of the lake varies 500 to 600 foot at different places. The main source of water is rain in the catchment area. The whole Champaran district including the Turkaulia Lake comes under Himalayan range³. However, its one point is still periodically connected with river Dhanauti through a sluice gate at Ghoraghat as depicted in figure-1 and 3. Fishes are one of the best indicators of quality of any aquatic ecosystem and occupy a remarkable position from socio-

economic point of view. A large population of this area and the district is suffering from nutritional hazards mainly from malnutrition and protein deficiency³. The fishes are very rich source of protein as well as vitamins and other minerals. This lake is used for culture of fishes by local fishermen communities. Survey of fish fauna of river Narmada was also carried out by different workers^{4, 5}. Some other workers also worked on the ichthyofauna and limnology of various water bodies of the country⁶⁻¹⁰.

Material and Methods

The entire study was undertaken mostly in morning hours. The samples were captured at intervals with the help of local skilled fishermen. Drag net, caste net, scoop net, basket trap, hooks etc. were used for capturing fish samples. The fishes collected from Turkaulia Lake were treated with 8% formalin for 48 hours. After that the fishes were transferred in 5% formalin and preserved for further study in the laboratory of P. G. Department of Zoology, M. S. College, Motihari. Preserved specimens were identified to genus and species level using taxonomic keys and Standard literatures^{11, 12, 13, 14 6}.

Results and Discussion

During the entire study period, 40 species belonging to 18 families, 27 genera and 9 orders were collected and identified. The details of these fishes are listed in table-1 and figure 4-7.

The order Cypriniformes was observed as the most abundant including two families i.e. Cyprinidae (14 species) and Cobitidae (1 species). Among Cyprinidae *Labeo rohita*, *L. gonius*, *L. calbasu*, *Puntius ticto*, *P. sarana*, *P. sophore*, *P. chola*, *Cirrhina mrigala*, *Cirrhina reba*, *Catla catla*, *Oxygaster bacaila*, *A. mola*, *A. morar*, *B. barilius* were recorded while *Nemacheilus*

botia was only representative of family Cobitidae. Genus Puntius, represented by 4 species (P. ticto, P. sophore, P. chola and P. sarana) was the dominant of all followed by major carps (L. rohita, L. calbasu, C. mrigala, C. reba, C. catla) and cat fishes (Wallago attu, O. bimaculatus, Mystus aor, M. vittatus, M. grassius, H. fossilis, C. batrachus). The above discussed fish species were the major composition of ichthyofaunal biodiversity of this lake. Other species such as A. coilia, A. testudineus, C. punctatus, C. gachua, C. marulius, M. aria, A. ranga, A. nama, G. giuris, S. coitor, etc. were also found. Heteropneustes fossilis, Mystus vittatus and Macrognathus aria are economically important but these fish species are illegally exploited by the people of this area. Several workers have survey works in various lentic and lotic water bodies regarding the abundance and distribution of fishes¹⁵⁻²².

Conclusion

The result of this study shows that Turkaulia Lake is very rich in fish diversity and sustains high productivity but only a small part of this lake is utilized for fish culture. Scientific methods of fish culture and proper care are needed to upgrade this lake. It will not only be profitable but also be an easier process to fulfil the protein requirement of malnourished and unprivileged population of East Champaran. Pisciculture has the potential to fulfil the nutritive food supply and can also enhance the food security and income generation of fishermen communities of this area.

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References

1. Lakra, W.S. and Sarkar, U.K., Conservation and management of aquatic genetic resources of India. 22nd All India Congress of Zoology, CIFE, Mumbai, 28-36 (2009)
2. National Wetland Atlas: Bihar, Ministry of Environment and Forest, Government of India, Space Application Centre, ISRO, Ahmadabad (2010)
3. Kumar Niraj and Singh N.P., Studies on physico-chemical characteristics of Turkaulia Lake, a natural ox-bow lake of East-Champaran in relation to growth of zooplankton and fish culture. 20th All India Congress of Zoology, CIFE, Mumbai, 140 (2009)
4. Hora S.L. and Nair, K.K., Fishes of Satpura range, Hoshangabad District, Central Province, *Res. Indian Mus.*, **43(3)**, 361-373 (1941)
5. Balapure S., Comparative study of fish biodiversity in Narmada and Tapti river. Dissertation Report, Department of Limnology, Bhopal University, Bhopal (2001)
6. Jayram K.C., The freshwater fishes of India, Pakistan, Burma and Srilanka. Handbook of Zoological Survey of India, **2**, XII+475 (1991)
7. Jayram K.C., The freshwater fishes of the Indian region, Narendra Publishing House, Delhi (1999)
8. Mishra K.S., An aid to the identification of the common commercial fishes of India and Pakistan, *Res. Indian Mus.* **57 (1-4)**, 320 (1962)
9. Barbhuiya Anjam Hussain, Mahseer fishes of River Barak, Jatinga, Dholeswari and Ganol in North East India, *Rec. J. Recent. Sci.* **1(ISC 2011)**, 7-16 (2011)
10. Rao L.M., Hydrobiology and ichthyofauna of Mahendrigeda Stream, Visakhapatnam (AP), *J. Aqua. Biol.* **13(1and2)**, 25-28 (1999)
11. Hamilton F., An account of the fishes found in the river Ganges and its branches. Archibald Constable and Co. London, 1-39 (1822)
12. Day F., The fauna of British India including Ceylon and Burma, Fishes, **1** (1889)
13. Shrivastava G., Fishes of U.P. and Bihar. 7th Edition, Vishwavidyalaya Prakashan, Varanasi, India (1998)
14. Jhingran V.G., Fish and fisheries of India. 3rd Edition, Hindustan Publication House, New Delhi (1991)
15. Tamboli R.K. and Jha Y.N., Status of cat fish diversity of river Kelo and Mand in Raigarh District, CG, India, *ISCA J. Biol. Sci.* **1(1)**, 71-73 (2012)
16. Bhalerao S.N., Study of fish diversity and water quality at Kasar Sai Dam, Hinjewadi, Pune MS, India, *I. Res. J. Biol. Sci.* **1(4)**, 51-55 (2012)
17. Sarma D., Das J., Bhattacharya R.C. and Dutta A., Ichthyofaunal diversity of lower reaches of the Brahmaputra River, Assam, *Int. J. Applied Biol. Pharmaceutical Technology*, **3(2)**, 126-130 (2012)
18. Kumar P., Sonallah, F. and Wanganeo A., A preliminary limnological study on Shershah Suri Pond, Sasaram, Bihar, *Asian J. Exp. Sci.* **24(2)**, 219-226 (2012)
19. Khan A.M., Shakir H.A., Khan M.N. and Mirza M.R., Ichthyofaunal survey of some freshwater reservoirs in Punjab, *J. Anim. Pl. Sci.* **18(4)**, 151-154 (2008)
20. Parikh Ankita N. and Mankodi, P.C., Limnology of Sama Pond, Vadodara City, Gujarat, *Res. J. Recent Sci.* **1(1)**, 16-21 (2012)
21. Patil Shilpa G., Chonde Sonal G., Jadhav Aasawari S and Raut Prakash D., Impact of physico-chemical characteristics of Shivaji University lakes on phytoplankton communities, *Res. J. Recent Sci.*, **1(2)**, 56-60 (2012)
22. Seyed Ahmad Reza Hashemi, Gholamreza Eskandary and Hoshang Ansary, Biomass of fish species in the Shadegan wetland, Iran, *Res. J. Recent. Sci.* **1(1)**, 66-68 (2012)

Table-1
Details of Collected Fishes of Turkaulia Lake (June 2011-May 2012)

ORDER	FAMILY	SCIENTIFIC NAME	LOCAL NAME
Cypriniformes	Cyprinidae	1. <i>Labeo rohita</i>	Rohu
		2. <i>Labeo calbasu</i>	Basrahi
		3. <i>Labeo gonius</i>	Kursa
		4. <i>Puntius ticto</i>	Sidhari/Pothia
		5. <i>Puntius sophore</i>	Pothia
		6. <i>Puntius Sarana</i>	Darahi
		7. <i>Puntius chola</i>	Pothia
		8. <i>Cirrhina mrigala</i>	Naini
		9. <i>Cirrhina reba</i>	Rewa
		10. <i>Catla catla</i>	Bhakura/Catla
		11. <i>Oxygaster bacaila</i>	Challhawa
		12. <i>Amblypharyngodon mola</i>	Dhawahi
		13. <i>Aspidoparia morar</i>	Chilwa
		14. <i>Barilius barilius</i>	Bhola
		15. <i>Nemacheilus botia</i>	Natwa
Siluriformes	Siluridae	16. <i>Wallago attu</i>	Boyari
	Bagridae	17. <i>Ompak bimaculatus</i>	Jalkapoor
		18. <i>Mystus aor</i>	Tengra
		19. <i>Mystus vittatus</i>	Tengra
	Schilbeidae	20. <i>Mystus grassius</i>	Palwa
		21. <i>Ailia coilia</i>	Patasi
	Heteropneustidae	22. <i>Heteropneustes fossilis</i>	Singhi
	Claridae	23. <i>Clarias batrachus</i>	Mangur
		24. <i>Channa punctatus</i>	Garai
Channiformes	Channidae	25. <i>Channa striatus</i>	Sauri
		26. <i>Channa gachua</i>	Chanaga
		27. <i>Channa marulius</i>	Saur
		28. <i>Macrognathus arai</i>	Pateya
Perciformes	Anabantidae	29. <i>Anabas testudineus</i>	Kawai
	Centropomidae	30. <i>Colisa fasciatus</i>	Kotra
		31. <i>Ambassis nama</i>	Chamwa
		32. <i>Ambassis ranga</i>	Chanari
	Gobiidae	33. <i>Glossogobius giuris</i>	Bulla
	Sciaenidae	34. <i>Sciaena coitor</i>	Pattharchatti
		35. <i>Gudusia chapra</i>	Suhia
Clupeiformes	Clupeidae	36. <i>Notopterus notopterus</i>	Bhuna/Patra
	Notopteridae	37. <i>Notopterus chitala</i>	Moya
		38. <i>Tetraodon cutcutia</i>	Galphulani
Tetraodontiformes	Tetraodontidae	39. <i>Xenentodon Cancila</i>	Kauwa
Beloniformes	Belonidae	40. <i>Amphipnous cuchia</i>	Bami

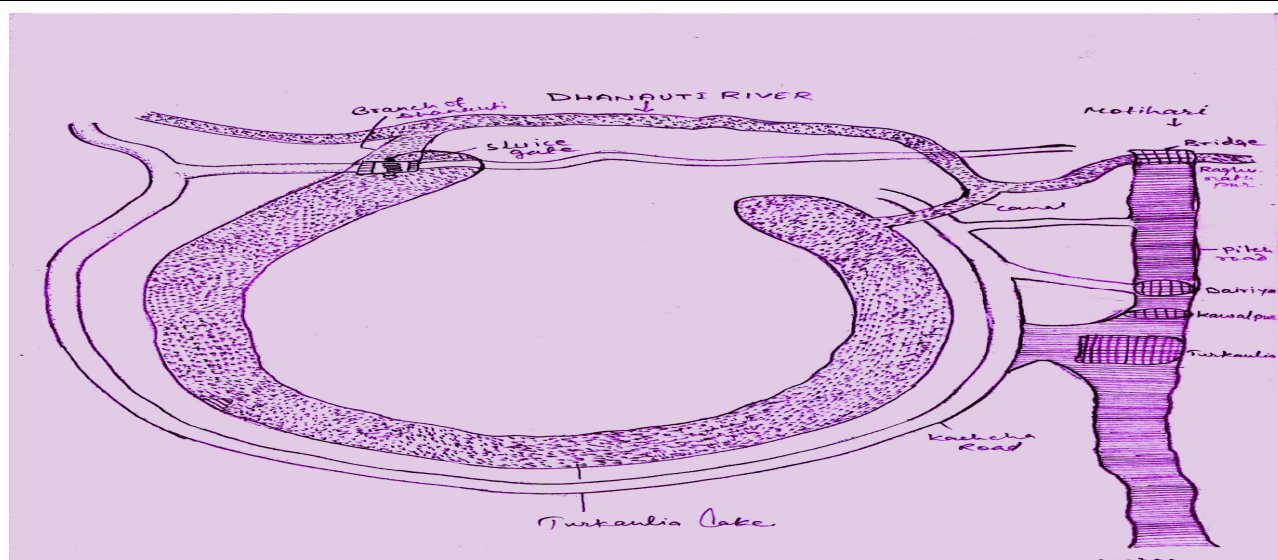


Figure-1
Diagrammatic view of Turkaulia Lake



Figure-2
Actual View of Turkaulia Lake



Figure-5
Colisa fasciatus



Figure-3
Sluice Gate at Ghoraghat



Figure-6
Heteropneustes fossilis



Figure-4
Tetradon cutcutia

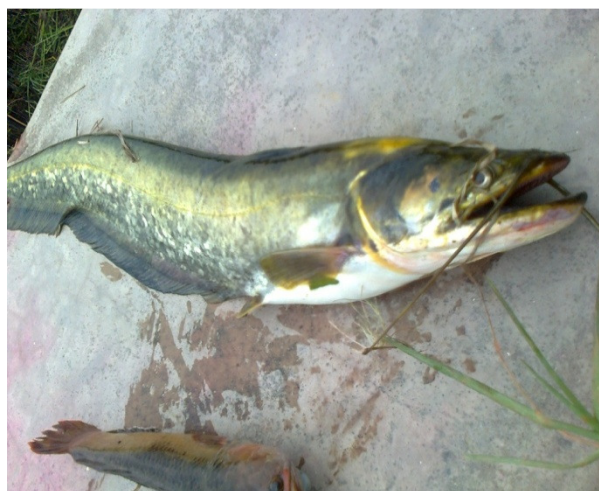


Figure-7
Wallago attu