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The Ornamental fish diversity in the Kanwar Lake Begusarai

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Abstract

Kanwar Lake is Asia's largest fresh water ox-bow lake. It lies in Manjhau sub-division of Begusarai district in North Bihar. It is the only Ramsar site in Bihar. Due to rich biodiversity and socio-economic value Kanwar Lake deserve its international importance. The Kanwar Lake is situated at 25° 55' N latitude 86° 10' E longitude. A collection of species of ornamental fishes was made from the Kanwar Lake. The present investigation work highlight the Kanwar tal's ornamental fish diversity. The study was carried out during the year 2021-22. Different types of nets, traps and other fishing gears were used by the fishermen during study period. The maximum number of sample ornamental fishes were caught mainly from the eastern and southern part during pre-monsoon and post-monsoon period from the Kanwar Lake. The 26 species belonging to 14 different families of class actinopterygii were identified having order cypriniformes and others. Main aim to perform the study is to highlight the awareness of identification and culture of indigenous ornamental fishes of Kabar Lake.

Keywords: Kanwar Lake, diversity, ornamental fish, cyprinids

1. Introduction

The Kanwar Lake is multifunctional ecosystem supporting rich biodiversity. Kanwartal locally called Kanwarjheel is a large protected area and winter capital of migratory birds. It is located 22 km north west of Begusarai town in Manjhau subdivision. Begusarai district lies between latitude 25° 15' N and 25° 44' N and Longitude 85° 45' E and 86° 45' E in North part of Bihar. Kanwar Lake is residual ox-bow lake formed due to meandering of river Gandak. It covers 2620 hectares area of Indo-Gangetic plains in Begusarai district. In Kanwar Lake Flood water comes from the nearby rivers Gandak, Bia and Kareh that overflows the lake rises the level of water. It is formed due to depression between river Burhi Gandak and palaeo channel of Bagmati. Kanwar Tal connects 17 related water bodies to form a large area spreading to approx 6700 hectare during monsoon. With retreat of monsoon the inundation shrinks nearly 600 ha and it forms two small patches mahalaya and kochalaya. The Directory of Asian wetlands refers kanwar lake extend to be around 7400 ha but does not provide corresponding spatial boundaries. Area under inundation reported to be shrunk to 6043 ha (Ghosh, *et al.* 2004) ^[10] and 4100 ha by 2010. In 17 village's 15000 household lives in and around kanwar used to harvest fish and aquatic plants for food and fodder. The island of Jaimanglagarh is located in the southern part of Kanwar Tal. So, the lake has religious, cultural and archaeological significance also. The Kanwar is identified as "Kanwar lake Bird Sanctuary" since in 1989 under provision of Indian wildlife protection Act 1972. Kanwar contains embedded areas of land forms including open water plantations, marshes and agricultural field. The entire area gets inundated upto depth of approx. 1.5 m.

The eastern part maintains open water and marsh area all over the year and rest area are cultivated. Fisheries have been of the important economic activity of sahni community around kanwar. Fresh water food fish and ornamental fishes of this lake are also very popular. Wild life Institute of India has supported research on social and Economic considerations. Assessment of CIFRI (2007, 2011) reported presence of 54 species from river Gandak out of which 50 species reported in Kanwar.

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Out of them 26 species mainly belongs to Cypriniformes, Siluriformes, Beloniformes, Channiformes, Symbranchiformes and Mastacembeliformes. Presence of 35 Fish species recorded throughout the year and also extra 15 species when river connects to wetland in rainy season. A gradual increase in air breathing fish species as *clarias batrachus*, *Heteropneustes fossilis*, *Anabas testudineus* was recorded by CIFRI (Chandra *et al.* 2021) [6]. Interviews with local fishermen confirmed the presence of *wallago attu* in Mahalaya land kochalaya. The enhancement of the fisheries sector by including Ornamental fish culture and its trade could be a big support to local fishermen. These fishes can easily kept in aquarium. Fresh water shining barb variety has been released for ornamental fish culture (Swain, *et al.* 2016) [20].

Ornamental fishes are typically small sized, attractive and bizarre shaped in appearance. The beautiful and bright colour and unique pattern attracts everyone. Ornamental fishes are the most popular pets in the world. These are nature's wonderful creations and also called as living jewels. Ornamental fishes are usually kept in glass aquarium so popularly called as aquarium fishes. Aquarium keeping developed as second most popular hobby in recent year next to photography Chapman (1977). Ornamental fish keeping in aquarium is becoming popular as an easy and stress relieving hobby. Ornamental fish farming is an important primary industry. These fishes are very important commercial factor for aquaculture. Ornamental fishes have socio economic, aesthetic and nutritional value and also good for the up keep of environment. Requirement of comparatively less area or attention to other pets is also the cause of developing interest in this aqua business. Fisheries is an important option for livelihood of rural youth and women. Presence of rich bio diversity of ornamental species favourable climatic condition and availability of labour in cheap rate makes the area suitable for ornamental fisheries. The specimen ornamental fishes in the Kanwar lake area comprises some important ornamental fishes as *puntius*, *channa*, *mystus*, *colisa* species and others. Kanwar lake is important aquatic resource of the district Begusarai having rich biodiversity of fishes. Although Bihar is less developed and land locked area but this state is blessed with rich flora and fauna many water bodies are still un-used here. In present scenario Bihar state is unable to fulfill its demand of fresh water ornamental fish supply. It depends on other state for this. In a survey work done by Archana Sinha and Akhtar Jamal 79 ornamental fishes were reported from entire Bihar. These fishes are commercially valuable having

high export value. These fishes are caught easily from chours, mauns, ox-bow lakes, canals and rivers.

2. Material and Methods

Kabartal is residual ox-bow lake. During summer to rainy season its open water area varies from 600 ha to 6700 ha nearly. In summer the area forms two small patches mahalaya and kochalaya. In the eastern part of Kanwar, water flows throughout the year. Channels of Burhi Gandak and old Bagmati mark the southern and eastern margins. The maximum no. of fishes captured from eastern and southern part of the lake during study. The capturing of fish during investigation work has performed in the morning time. Net fishing was used in deeper area while trap was used in the marsh area located in the margin. The sample fishes were caught by the skilled fishermen at the time period of two weeks interval. Different types of fish capturing equipment were used as Dragnet (chattijal) for capturing minor carps, gillnet were used for small fishes of all kinds, castnet (Bikhrajal) used for chela species, *puntius* sp. and *mystus* sps. Bag net was common for capturing all type of species. Some other fishing gears like (thapinet arsi, Bari, Birti, Kanra and Sahat) was used. Arsi is a cubical basket and was used for *Pontius* species.

Kanara and sahat was used for capturing *Notopterus* sp. The caught ornamental fishes were separated while selecting ornamental fishes not only the coloration of the species but certain other unusual morphological characteristics such as bizarre shape, prolonged tail, shape of jaws etc were also considered. The specimen ornamental fishes caught during study period were carried to laboratory in the big basket through aerator. After adjusting the environment the healthy sample ornamental fishes were transferred in the aquarium for study of their behaviour and identification. The sample ornamental fishes were identified following Munshi and Srivastava (1988) [14].

3. Result and Discussion

The results of the present investigation indicate that during the study period 26 species of fishes of ornamental potential belonging to 07 order 14 families and 15 genera were reported in Kanwar Lake. Cypriniformes comes out as abundant order. Specimen fishes belongs to the family Notopteridae, Cobitidae, Siluridae, Bagridae, Belonidae, Mastacembelidae, Heteropneustidae, anabantidae, belontidae, cyprinidae, Channidae, Gobiidae, Centropomidae and Symbranchidae.

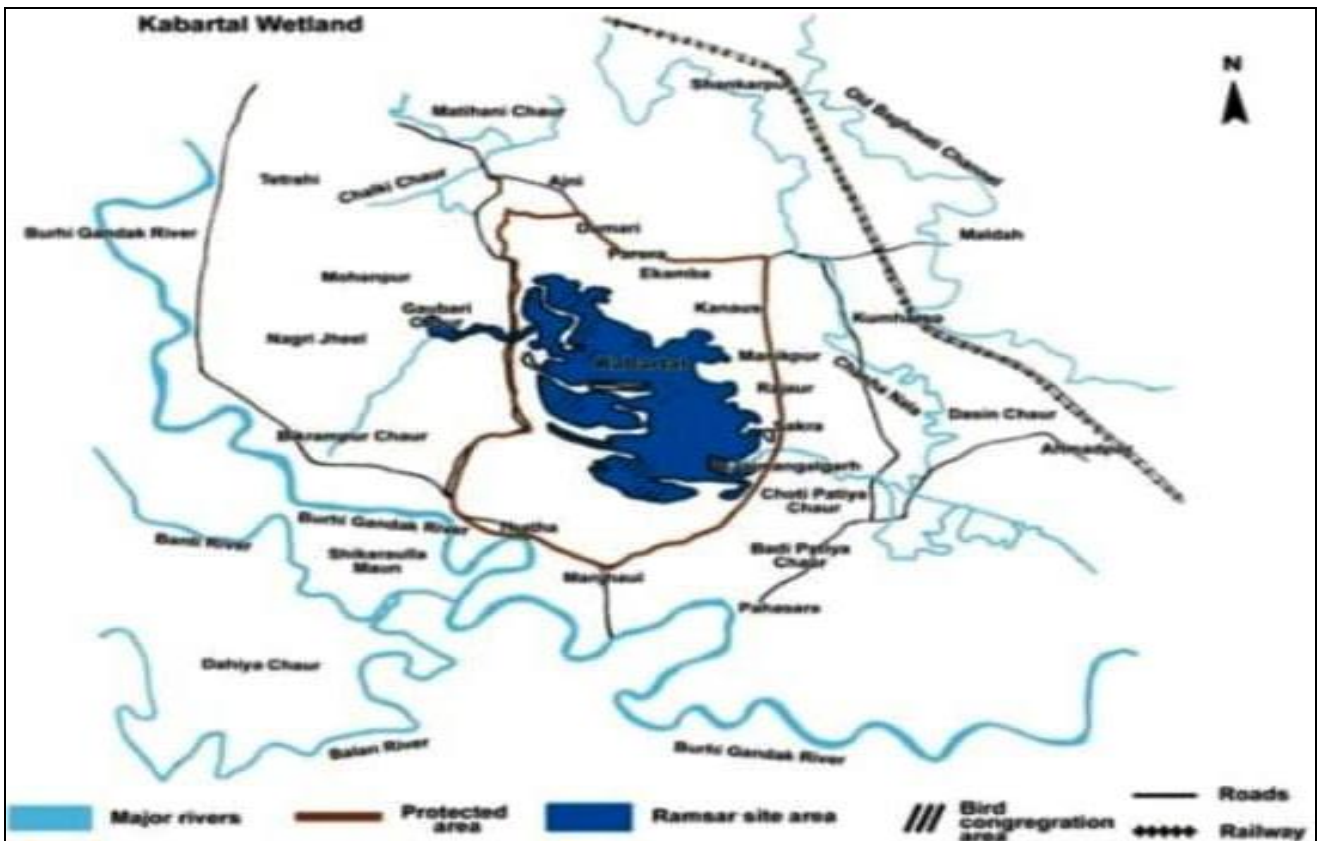
Table 1: Show Ornamental fishes of Kanwar Lake

Ornamental fishes of Kanwar Lake.				
Order	Family	Scientific Name	Common Name	Local Name
Cypriniformes	Cyprinidae	<i>Puntius sophore</i>	Spotfin Swamp barb	Pothia
		<i>Puntius chola</i>	Swamp barb	Sidhari
		<i>Puntius conchonius</i>	Rosy barb	Lal Pothi
		<i>Labeo calbasu</i>	Calbasu	Basari
		<i>Labeo bata</i>	Bata	Bata
			Cobitidae	<i>Botia dario</i>
	Siluridae	<i>Wallago attu</i>	Fresh Water Shark	Boari
	Heteropneustidae	<i>Heteropneustes fossilis</i>	Stinging Cat fish	Singhi
	Bagridae	<i>Mystus tengara</i>	Tiger Zebra Catfish	Tengara
Channiformes	Channidae	<i>Channa punctatus</i>	Spotted Snake head	Garai
		<i>Channa marulius</i>	Giant snake head	Shaura
		<i>Channa gachua</i>	Pigmy snake head	chenga
		<i>Channa striatus</i>	Kobra snake head	Shaura
Mastacembe-	Mastacem-	<i>Mastacembelus pancalus</i>	Spiny eel	Katgaichi

liformes	belidae	<i>Mastacembelus armatus</i>	Long eel	Bami
		<i>Mastacembelus aculeatus</i>	peacock eel	Pataya
Perciformes	Gobiidae	<i>Glossogobius giuris</i>	Tank goby	Bulla
	Centropomidae	<i>Chanda nama</i>	Elongated glass perchlet	Chanari
		<i>Chanda ranga</i>	Glass fish	Chana
	Anabantidae	<i>Anabas testudineus</i>	Climbing perch	Kawai
		<i>Colisa fasciatus</i>	Giant gourami	Khesra
		<i>Colisa lalia</i>	Dwarf gourami	Khalisa
Beloniformes	Belontiidae	<i>Xenentodon cancila</i>	Fresh water gar fish	Kauwa Machhli
Symbranchiformes	Symbranchidae	<i>Amphipnous cuchia</i>	Mud eel	Anhawa
Clupeiformes	Notopteridae	<i>Notopterus chitala</i>	Clown feather back	Chitala
		<i>Notopterus notopterus</i>	Knife fish	Bhuna

In a survey work by Archana Sinha and Akhtar Jamal (2015) 79 species of ornamental fishes were reported from Bihar. Anon (2004)^[2] stated more than 41 species of commercially valuable fishes have been recorded in the Kanwar lake. These

species matches with the present findings. Assessment of vas *et al.* (2010), wetland International south Asia Feb (2016)^[12] and Chandra, *et al.* (2021)^[6] supports the presents findings.



Map of Kanwar Lake



Fish Colleciton from Kanwar Lake



Board showing Location of Kanwar Lake



Collection of Information from area



Net used in fish Capture



Arsi arranged in row for fish capture

4. Acknowledgement

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