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The study of present status of ornamental fish Diversity from a wetland of KusheshwarSthan , Darbhanga.

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ABSTRACT:

Kusheshwarsthan is a popular bird sanctuary of famous migratory and native birds. It is a wetland having international importance. A research work was performed to reveal the status of ornamental fishdiversity of this wetland. This investigation happened in January 2023 to December 2023. Different types of traps and nets and other fishing gears were used. Drag net, Gill net, Cast net,Disco net having different mesh size and designwere used by the experienced fishermen. Some local fishing equipments as Aarsi,Birti,Bari,Kanra, Sahat etc were used to capture the fishes. In thisstudy 43 species of fishes were captured out of which 27 fish species havingornamental potential. They belongs to 08 order,13 families, 15 genera and 27species. Cypriniformes comes out as most diversified and abundant order represented by 04 families, 06 genera and 08 species of fishes. It indicates moderatepiscine diversity.

Keywords: Ornamental fishes,Wetland, Diversity, Kusheshwar sthan.

INTRODUCTION:

Indian rivers preserve a rich variety of fish species which supports to the commercial fisheries (Bilgrami K.S., 1988). Bihar specially north Bihar is blessed with many waterbodies in the form of rivers, lakes, pools, ponds, wetlands, ox-bow lakes,Chaurs, mauns, Canals etc.many of them are still unused. Agriculture, Animal Husbandry and Fisheries are main basis of economy of Bihar.Ornamental fisheriesare a good Commercial factor for aqua business. Ornamental fishes can be defined as attractive colorful fishes of peaceful nature that are kept as pet in confined space in aquarium or a garden pool with the purpose ofenjoying theirbeauty for fun and fancy (Dey ,1996).Aquarium fishes are as visually exciting objects (mills and mills 1990). ornamental fishes are bright and beautiful having unique behaviour and morphology. These are the wonderful creations of nature and often called as living jewels due to attractive colour and pattern: ornamental fishes are the most popularpets in the world (Singh 2005). These fishes possesses socio-economic,nutritional and aesthetic importance and also important role in upkeep of Environment. Indian water possesses a rich diversity of ornamental fishes with over 200 varieties of indigenous species (Swain et al., 2001).

India is second largest producer of fish in the world and contribute 5.43% of global fish production (DAHDF., 2011). Ornamental fishes play an important role in the world trade in fish and fisheries products which is valued about US $ 9.0 billion (FAO, 2000). These Commercially important high export value fishes are captured easily from different types of water bodies. Information about different characteristics as feeding behaviour,habitat, body shape and pattern, population diversity,breeding behaviours of ornamental fishes are not

sufficient that effects the aquabusiness. Due to pollution, population development and climate change, thefreshwaterhabitat has recently become one of the most Fragile habitats in the world (Pacheco et al., 2021). Many studies work performed on ornamental fish diversity as swain et al., 2002, Ghosh et al, 2006, Hazarika et al., 2009, Das et al., 2014, Tejaswiniet al., (2014).

Many precious works done on diversity, culture and conservation of ornamental fishes includes Andrew's Cristopher,(1999) described about ornamental fish trade and conservation efforts. Bhattacharya et al., (2004) Stated about ornamental fish of northeast. Dholakia A.D., (2000) described about theaquarium fish and their maintenance. Ghosh Indrani, (2006) worked on captive breeding of ornamental fishes. Munshi et al., (1988) stated about systematics of freshwater fishes of India. Pandey and Mandal, (2017) described about present status, challenges, and scope of ornamental fish trade of India. Raut et al., (2020) documented 50 species of fish in the flood plain lakes of North Bihar.Swain et al., (2001) worked on captive mass breeding of colisalalia.In last few years several works done on migratory birds of Kusheshwarsthan. There is scarcity of data on fish diversity. The aim of the present study is qualitative and quantitative documentation of ornamental potential of fishes and its diversity.

2. MATERIAL AND METHOD:

2.1Research area:

This study work was carried out in wetland of Kusheshwarsthan in Darbhanga district of North Bihar. Kusheshwarsthen is a significant wetland and also a protected area of birds. It was identified in 1994 under the provision of Indian wildlife protection act 1972. This wetland is divided into northern and southern part supporting rich ichthyofaunal diversity.

kusheshwarsthan (25’47′46″N - 86 ‘17’ 06" E)chaur is located 65 km south-east of Darbhang in GhanshyampurBiraul subdivision. Flood water overflow's the northern part while southern part is comparatively smaller. Fresh water food fish and fish of ornamentalpotential of this area are verypopular.

WETLAND KUSHESHWAR STHAN, DARBHANGA (Fig – 01)

WETLAND KUSHESHWAR STHAN, DARBHANGA (Fig – 02)

2.2 Collection of samples,preservation, Identification&Data collection:

A collection of fishspecies was made from this wetland, the fishes were caught in the morning during research work. Nets, traps and other fishing gears were used during capturing the fish.In deeper area net were used while trap was used in marshy area. Some local fishing gears such as cast net having mesh size 0.5cm, 1 cm , and 2.0 cm ., Drag net mesh Size of 5 cm and 6 cm of length 15 m and 18 m were used. Minor carps were captured by dragnet. Bag net was a common equipment for all the species. Some other fishing gears asThapi net, Arsi, Bari, Birti Kanara and Sahat were used. Arsi is a cubical basket.

The caught sample fish species were photographed and then kept in 10% formalin solution. During selection of sampleornamental fishes not only the colouration and brightness but some other definite characteristics as shape, size, prolongedtail shape of jaws, Unique or Unusual appearance, peculiar nature, ready acceptability of artificial feed, adaptability to live in small, confined areas and peaceful nature were considered and as described by Dey (1996).

The sample fishes were identified by using taxonomic keys (Talwar and Jhingran (1891), (Jayaram 1399,2010), (Nath et al., 2000), (vishwanathet al., 2007).

The IUCN status of fishes provided by IUCN Redlist. CAMP (1998). Interview with local people and fishermen was created for information about fish species diversity.

3. RESULTSAND DISCUSSION:

The result of the study work reveals the presence of 43 species of fishes during research period March 2023 to April 2024. Out of them 27 species of fishes have ornamental potential although they have nutritional value also. They belong to 8 orders, 13 families, 15 genera and 27 species.These 8 orders were Cypriniformes,Channiformes;

Mastacembeliformes,Perciformes, Beloniformes, Symbranchiformes,Clupeiformes and tetradontiformes. Cypriniformes Comes out as dominant order Showing highest diversity accounts for (29%) of the total fish species collected from Kusheshwarsthan wetland. Second most abundant order was Perciformes having 7 species(26%). It was followed by Channiformes (15%) with 4 species, Mastacembeliformes (11%) with 3 species, Clupeiformes(7%) with 2 species. The rest 03 orders Beloniformes, symbranchiformes, tetradontiformes with one species each Constituted (4%) of the total fish separately recorded inthekusheshwarsthan.

Table 1. List of collected fish species with their Scientific name, Common name,Local name & IUCN Status: -----

Ornamental fishes of Kusheshwarsthanwetland.					
Order	**Family**	**Scientific Name**	**Common Name**	**Local Name**	**ISBN Status**
Cypriniformes	Cyprinidae	*Puntius sophore (Hamilton, 1822)*	Spotfin Swamp barb	Pothia	LR-nt
		Puntius chola (Hamilton,1822)	Swamp barb	Sidhari	Vu
		Puntius conchonius (Hamilton, 1822)	Rosy barb	Lal Pothi	LR-nt
		Labeo calbasu (Hamilton & Buchanan1822)	Calbasu	Basari	LR-nt
		Labeo bata (Hamilton,1822)	Bata	Bata	LR-nt
	Cobitidae	*Botiadario (Hamilton, 1822)*	Necktic loach	Baghi	NE
	Heteropneustidae	*Heteropneustesfossilis (Bloch,1785)*	Stinging CatfishSinghi		Vu
	Bagridae	*MystusTengara (Hamilton ,1822)*	Tiger Zebra Catfish	Tengara	Ne
Channiformes	Channidae	*Channa punctatus (Bloch, 1785)*	Spotted Snake head	Garai	LR-nt
		Channa marulius (Hamilton, 1822)	Giant snake head	Shaura	LR-nt
		Channa gachua (Bloch, 1801	Pigmy snake head	Chenga	Vu
		Channa striatus (Bloch,1785)	Kobra snake head	Shaura	LR-lc
Mastacembeliformes	Mastacembelidae	*Mastacembelus*Pancalus (Hamilton,1822	Spiny eel	Katgaichi	NE
		Mastacembelusarmatus (Lacepede,1800)	Long eel	Bami	NE
		Mastacembelus aculeatus(Bloch&Schneider, 1800)	Peacock eel	Pataya	NE
Perciformes	Gobiidae	Glossogobiusgiuris	Tank goby	Bulla	NE

		(Hamilton, 1822)			
	Centropomidae	Chanda nama (Hamilton,1822)	Elongated glass PerchletChanari		NE
		Chanda ranga (Hamilton,1822)	Glass fish	Channa	NE
	Anabantidae	Anabas testudineus (Bloch, 1795)	Climbing perch	Kawai	NE
		Colisa fasciatus (Bloch&Scheider,1801)	Giant gourami	Khesra	LR-nt
		Colisa lalia *(Hamilton, 1822)*	Dwarf gourami	Khalisa	LR-nt
		Colisa sota (Hamilton, 1822)	Honey gourami	Kotra	LR-nt
Beloniformes	Belontiidae	Xenentodoncancila (Hamilton, 1822)	Fresh water gar fish	Kauwa Machhli	LR-nt
Symbranchiformes	Symbranchidae	*Amphipnouscuchia (Hamilton,1822)*	Mud eel	Anhawa	LR-nt
Clupeiformes	Notopteridae	Notopteruschitala (Hamilton &Buchanan ,1822)	Clown feather back	Chitala	En
		Notopterusnotopterus (pallas, 1769)	Knife fish	Bhuna	LR-nt
Tetradontiformes	Tetradontidae	Tetradoncutcutia (Hamilton,1822)	Ocellated pufferfish	Galphulan	LR-nt

Abbreviations: Ve = Vulnerable, LR-nt = Low risk threatened, LR-lc = Low risk least concern, NE = not evaluated (Based on camp report 1998).

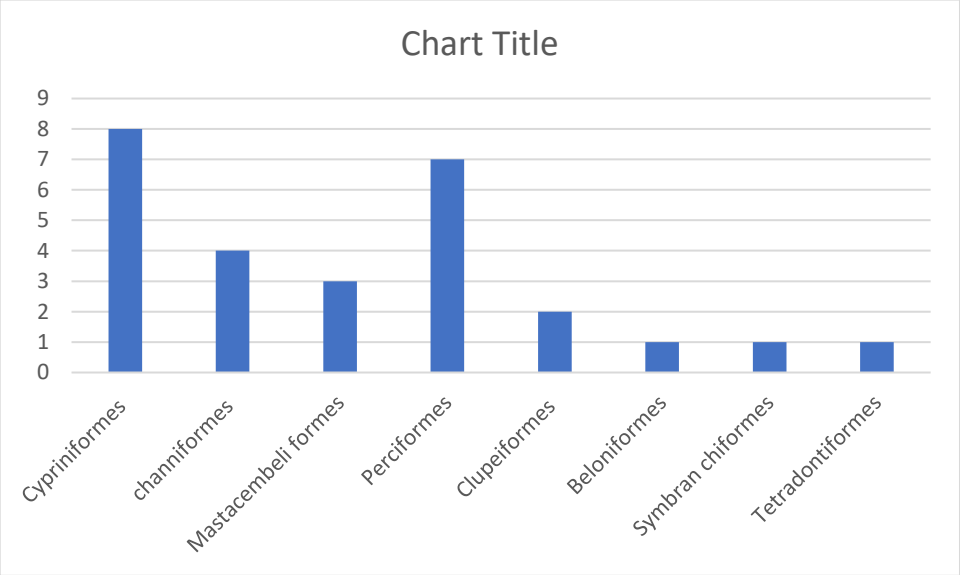

Fig -1 Bar diagram showing the number of species in different orders of fishes. From Kusheshwarsthan.

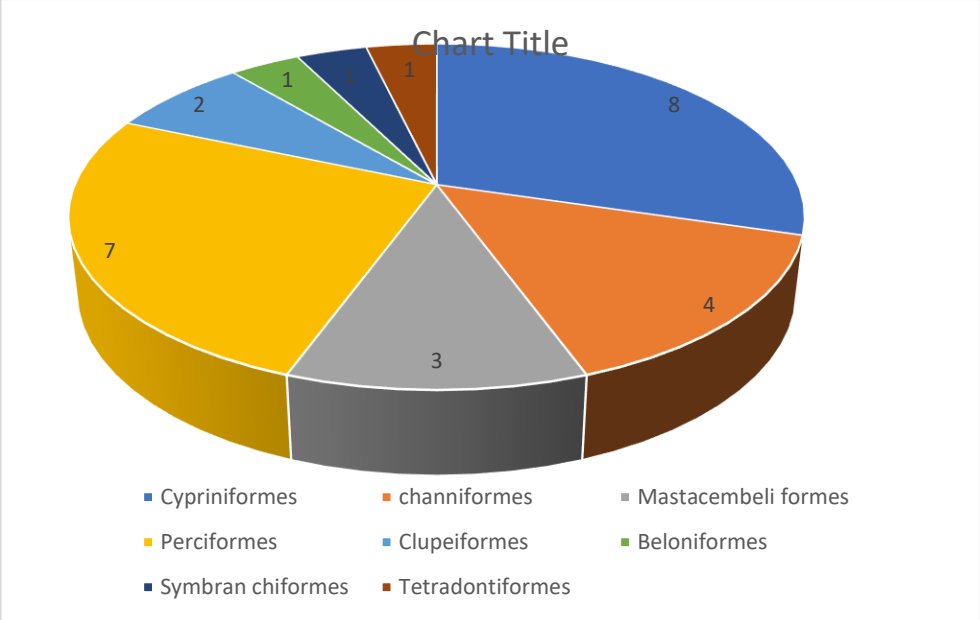

Fig-2 Pie diagram showing the number of species in different order of fishes from KusheshwarSthan.

In a survey workSinha and Jamal (2015) reported 79 fish species of ornamental potential. Anon (2004) described more than 41 species of commercially valuable fishes in a wetland of ofBegusarai in whichCypriniformeswas the abundant order. A study work performed in kusheshwarsthan wetland by Das et al., (2015)36 fish species reported out of which 16 families of class actinopterygii were identified, orders perciformes and cypriniformes comes out as abundant order.These species match with the present findings.

Conclusion: The present research work indicates moderate diversity of fishes of ornamental potential. The growth in fisheries sector andaqua business may be a great support to the fishermenand native people. This study work gives important information about ichthyodiversity. The ornamental fish diversity requires to be explored further for its better utilization in future. Their proper conservation is also essential for sustenance of aqua business and culture of fishes of ornamental potential.

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