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### ICHTHYOFAUNAL DIVERSITY IN KELEGHAI RIVER, WEST BENGAL, INDIA

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**Abstract:** Keleghai river has a rich and unique fish diversity with 55 species. Cyprinidae is the most common family with 18 species. Present study brings into the light existence of *Nandus menis* which is first report from India. Two species viz., *Mylopharyngodon piceus* and *Lepidocephalichthys thermalis* have been recorded for the first time from West Bengal. *Puntius sophore* and *Amblypharyngodon mola* are found to be the Eudominant fish in this riverine system. The river harbours one Endangered (*Clarius magur*) and one vulnerable species (*Cyprinus carpio*) besides four Near Threatened species.

**Keywords:** Biodiversity, Threatened Fish, River Keleghai, *Nandus menis*



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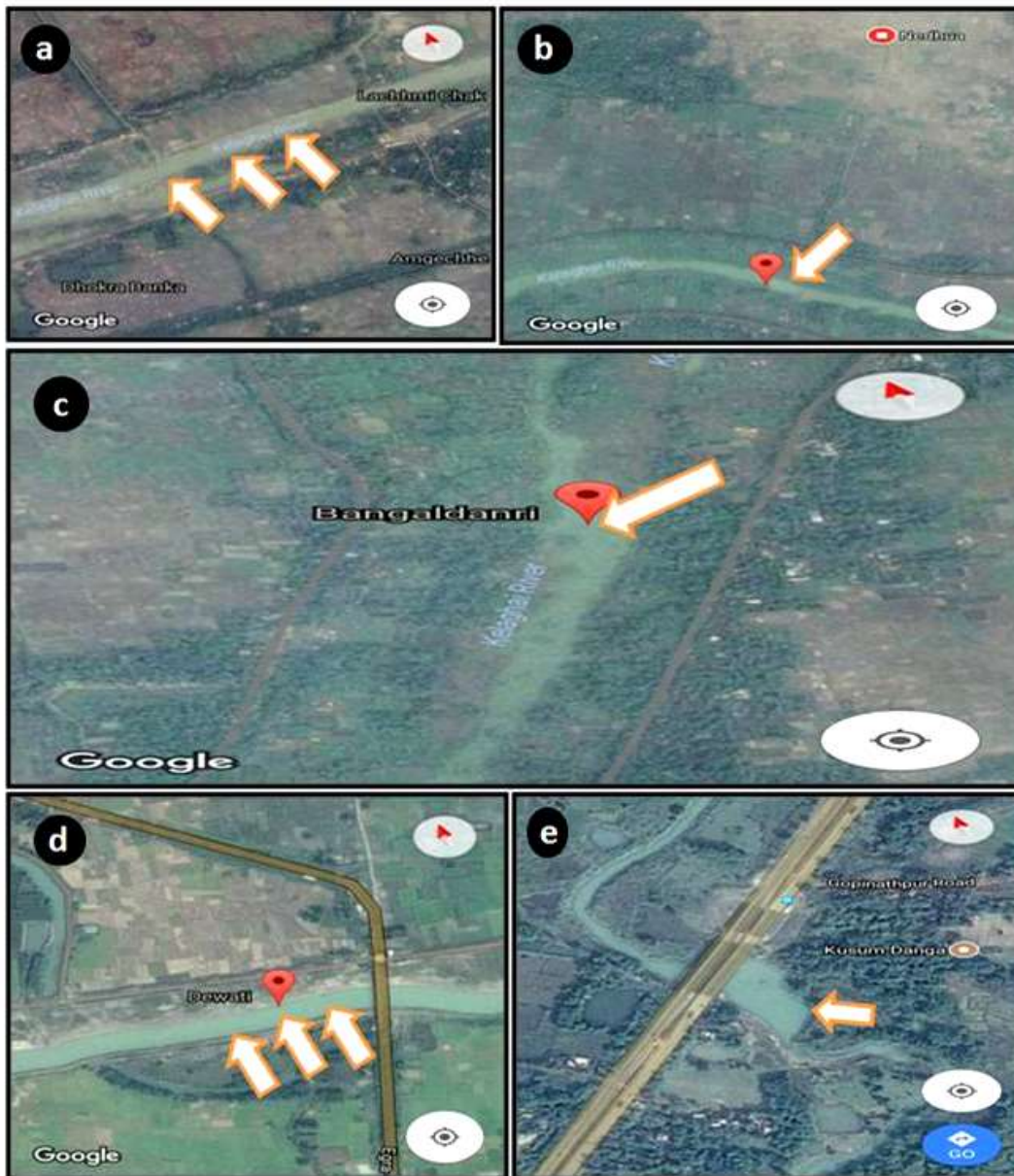
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## INTRODUCTION

Freshwater biodiversity constitutes a vitally important component of the planet as compared to the species richness of both terrestrial and marine ecosystems (Gleick, 1996). It is estimated that freshwater habitats are among the world's most threatened ecosystems with about 25% of the global vertebrate diversity (Groombridge, 1992). River Keleghai (length: 121km.) is a freshwater lotic system which originates at Baminigram, Jhargram district of West Bengal, India (22 19 10.4 N, 87 08 22.8 E / 22 09 56.3 N, 87 47 19.1 E). It flows through laterite plateau, causes flood in rainy season and is rich in indigenous commercially important fishes. The capture fishery practice in this river plays an important role in socio economic condition of the local economically backward people. Scientific information on the Ichthyofauna of this river is rather scant and is through the works of Mishra *et al.* (2003) and Jana *et al.* (2015). The present study is aimed at ascertaining the fish faunal diversity of the river and to analyze their dominance status and threat category.

## MATERIALS AND METHODS:

This extensive survey and sampling of fish fauna were conducted in 5 stations (Fig.1) of Keleghai River from December, 2015 to November, 2016. Live fish samples were collected with the help of local fisherman using various crafts and gears. Samples were brought to the laboratory of PG Department of Zoology, Tamralipta Mahavidyalaya, Tamluk, Purba Medinipur, West Bengal, were acclimatized in the laboratory conditions and the digital data were recorded by Camera [Sony: DSC-HX200V]. The specimens were fixed in 4% formaldehyde solution and examined under Binocular Microscope [Magnüs: MS13/MS24] operated at 220V. For taxonomic purpose, the collected samples were identified with the help of published literatures like Day (1878), Talwar and Jhingran (1991) and Sen (1992). Total numbers of individuals were counted for each species and their dominance status was ascertained on the basis of relative abundance as per scale followed by Skubala (1999).



**Fig.1:** Satellite images of the location of the study sites. **a:** Dhokra Banka (22°06'01.3"N and 87°37'29.6"E.); **b:** Nedhua (22°05'51.4"N and 87°34'53.8"E.); **c:** Bangaldari (22°05'25.0"N and 87°33'33.0"E); **d:** Dewati (22°5'25.5"N and 87°29'42.0"E); **e:** Kusum danga (22°07'43.1"N and 87°22'45.4"E).

## RESULTS AND DISCUSSION:

In the present study 55 species of freshwater fishes have been recorded from Keleghai River belonging to 9 orders and 21 families [Table 1]. Among these, *Nandus menis* is recorded for the first time from India and *Mylopharyngodon piceus* and *Lepidocephalichthys thermalis* are

reported for the first time from West Bengal [Table 1]. Eleven species viz., *Hypophthalmichthys molitrix*, *Barbonymus gonionotus*, *Ctenopharyngodon idella*, *Amblypharyngodon microlepis*, *Lepidocephalichthys berdmorei*, *Ambasis nalua*, *Oreochromis niloticus*, *Colisa lalia*. *Scatophagus argus*, *Mystus tengara* and *Clarias magur* are noted for the first time from East Medinipur, West Medinipur and Jhargram district. Previously, Jana *et al.*, (2015) reported only 20 species as such of the present study which is a significant contribution in the study of Ichthyofauna of Medinipur districts. This survey shows that Order Cypriniformes is the most common Order representing 70% of the total individuals. This is followed by Perciformes (13%), Siluriformes (6%), Clupeiformes (5%) and Synbranchiformes (2%), respectively. Jana *et al.*, (2015) on the contrary found Perciformes to be the most dominant order in the Keleghai river. Species wise also the most common order is Cypriniformes (18 species) and is followed by Perciformes (14 species) and Siluriformes (9 species). Cyprinidae with 18 species is the most common family in terms of species richness. Remaining 20 families are represented by only 1 to 3 species. Analysis based on relative abundance revealed that out of 55 species only 2 species can be designated as Eudominant (*Puntius sophore* and *Amblypharyngodon mola*) and 4 species (*Labeo bata*, *Lates calcarifer*, *Barbonymus gonionotus* and *Setipinna phasa*) as Sub Dominant. Remaining 49 species are Recedent and Sub Recedent in nature. Of the 55 species of Keleghai river, according to the National Bureau of Fish Genetic Resources (NBFGR) (2010), 2 species (*Chagunius chagunio* and *Chitala chitala*) are Endangered and 7 species (*Puntius sarana*, *Badis badis*, *Ompok pabda*, *Sperata aor*, *Heteropneustes fossilis*, *Pangasius pangasius*, *Tenualosa ilisha*) belong to Vulnerable category. However as per IUCN Red List Category Version 3.1 *Ompok pabda* and *Chitala chitala* are Near Threatened and remaining 7 species belong to Least Concern category but *Clarias magur* is endangered and *Cyprinus carpio* is Vulnerable. In addition to these 4 species is Near Threatened. 3 species belonged to Data Deficient category and 4 species have not been evaluated. Remaining 42 species are Least Concerned.

#### CONCLUSION:

Keleghai River appears to be quite rich in fish diversity particularly those belonging to Cyprinidae. It has atleast one species each belonging to threat categories Endangered and Vulnerable besides lodging 4 Near Threatened, 3 Data Deficient species and 4 Not Evaluated species. As such the river is important from conservation point of view. Numerically *Puntius sophore* and *Amblypharyngodon mola* enjoy a eudominant status. This unique fish faunal diversity may significantly influence the livelihood of local marginal people who can get their food source particularly protein diet from this riverine system.

**Table 1: List of Ichthyofauna showing their Dominance and Threat status of River Keleghai.  
 [EU- EUDOMINANT, SR- SUBRECEDENT, SD- SUB DOMINANT, RE- RECEDENT]**

Order	Family	SPECIES	NO OF INDIVIDUAL (N)	Relative Abundance (RA)	Domina nce status	IUC N	REMARK
I. OSTEOGLOSSIFORMES	I. NOTOPTERIDAE	1. <i>Notopterus notopterus</i>	3	0.55	SR	LC	
		2. <i>Chitala chitala</i>	2	0.36	SR	NT	
II. CLUPIFORMES	I. ENGRALUDAE	1.. <i>Setipinna phasa</i>	13	2.38	SD	LC	
	II. CLUPEIDAE	1. <i>Sardinella longiceps</i>	8	1.46	RE	LC	
		2.. <i>Gudusia chapra</i>	5	0.91	SR	LC	
		3. <i>Tenualosa ilisha</i>	2	0.36	SR	LC	
III. CYPRINIFORMES	I. CYPRINIDAE	1. <i>Amblypharyngodon mola</i>	165	14.12	EU*	LC	
		2. <i>Cirrhinus mrigala</i>	8	0.91	SR*	LC	
		3. <i>Cyprinus carpio</i>	6	0.55	SR	VU	
		4. <i>Catla catla</i>	3	1.28	RE*	LC	
		5. <i>Hypophthalmichthys molitrix</i>	7	1.28	RE	NT	East&West Midnapur and Jhargram district (1 <sup>st</sup> time noted)
		6. <i>Labeo rohita</i>	4	0.73	SR	LC	
		7. <i>Labeo bata</i>	77	2.38	SD*	LC	
		8. <i>Puntius sophore</i>	5	30.27	EU	LC	
		9. <i>Puntius sarana</i>	3	1.46	RE	LC	
		10. <i>Salmophasia phulo</i>	7	1.10	RE	LC	
		11. <i>Rohtee cotio</i>	13	0.55	SR	LC	
		12. <i>Barbonymus gonionotus</i>	12	2.20	SD	LC	East&West Midnapur and Jhargram

							district (1 <sup>st</sup> time noted)
		13. <i>Labeo calbasu</i>	20	3.66	SD	LC	
		14. <i>Ctenopharyngodon idella</i>	3	0.55	SR	NE	East&West Midnapur and Jhargram district (1 <sup>st</sup> time noted)
		15. <i>Mylopharyngodon piceus</i>	4	0.73	SR	DD	West Bengal (1 <sup>st</sup> time recorded)
		16. <i>Amblypharyngodon microlepis</i>	5	0.91	SR	LC	East&West Midnapur and Jhargram district (1 <sup>st</sup> time noted)
		17. <i>Chagunius chagunio</i>	8	1.46	RE	LC	
		18. <i>Esomus daricus</i>	13	2.38	SR	LC	
	<b>II. COBITIDAE</b>	1. <i>Lepidocephalichthys thermalis</i>	11	2.01	RE	LC	West Bengal (1 <sup>st</sup> time recorded)
		2. <i>Lepidocephalichthys berdmorei</i>	7	1.28	RE	LC	East&West Midnapur and Jhargram district (1 <sup>st</sup> time noted)
<b>IV. SILURIFORMES</b>	<b>I. SILURIDAE</b>	1. <i>Ompok pabda</i>	2	0.36	SR	NT	
		2. <i>Wallago attu</i>	4	0.73	SR	NT	
	<b>II. CLARIDAE</b>	1. <i>Clarias batrachus</i>	4	0.73	SR	LC	
		2. <i>Clarias magur</i>	2	0.36	SR	EN	East&W

							est Midnap ur and Jhargra m district (1 <sup>st</sup> time noted)
	<b>III.HETEROPNEUSTIDAE</b>	<i>1.Heteropneustes fossilis</i>	3	0.55	SR	LC	
	<b>IV.PANGASSIDAE</b>	<i>1.Pangasius pangasius</i>	3	0.55	SR	LC	
	<b>V.BAGRIDAE</b>	<i>1..Mystus gulio</i>	3	0.55	SR	LC	
		<i>2. Mystus tengara</i>	5	0.91	SR	LC	East&W est Midnap ur and Jhargra m district (1 <sup>st</sup> time noted)
		<i>3.Sperata aor</i>	4	0.73	SR	LC	
<b>V.MUGILIFORMES</b>	<b>I.MUGILIDAE</b>	<i>1 Liza Persia</i>	7	1.28	RE	DD	
<b>VI.BELONIFORMES</b>	<b>I. BELONOIDAE</b>	<i>1 . Xenonthodon cancella</i>	3	0.55	SR	LC	
<b>VII.SYNBRANCHIFORMES</b>	<b>I.MASTACEMBELIDAE</b>	<i>1.Mastacembelus armatus</i>	4	0.73	SR	LC	
		<i>2.Mastacembelus pancalus</i>	7	1.28	RE	LC	
<b>VIII.PERCIFORMES</b>	<b>I.AMBASSIDAE</b>	<i>1. Chanda nama</i>	11	2.01	RE	LC	
		<i>2. Parambasis ranga</i>	4	0.73	SR	LC	
		<i>3.Ambasis nalua</i>	6	1.10	RE	LC	East&W est Midnap ur and Jhargra m district (1 <sup>st</sup> time noted)
	<b>II.LATIDAE</b>	<i>1. Lates calcarifer</i>	3	0.55	SR	NE	

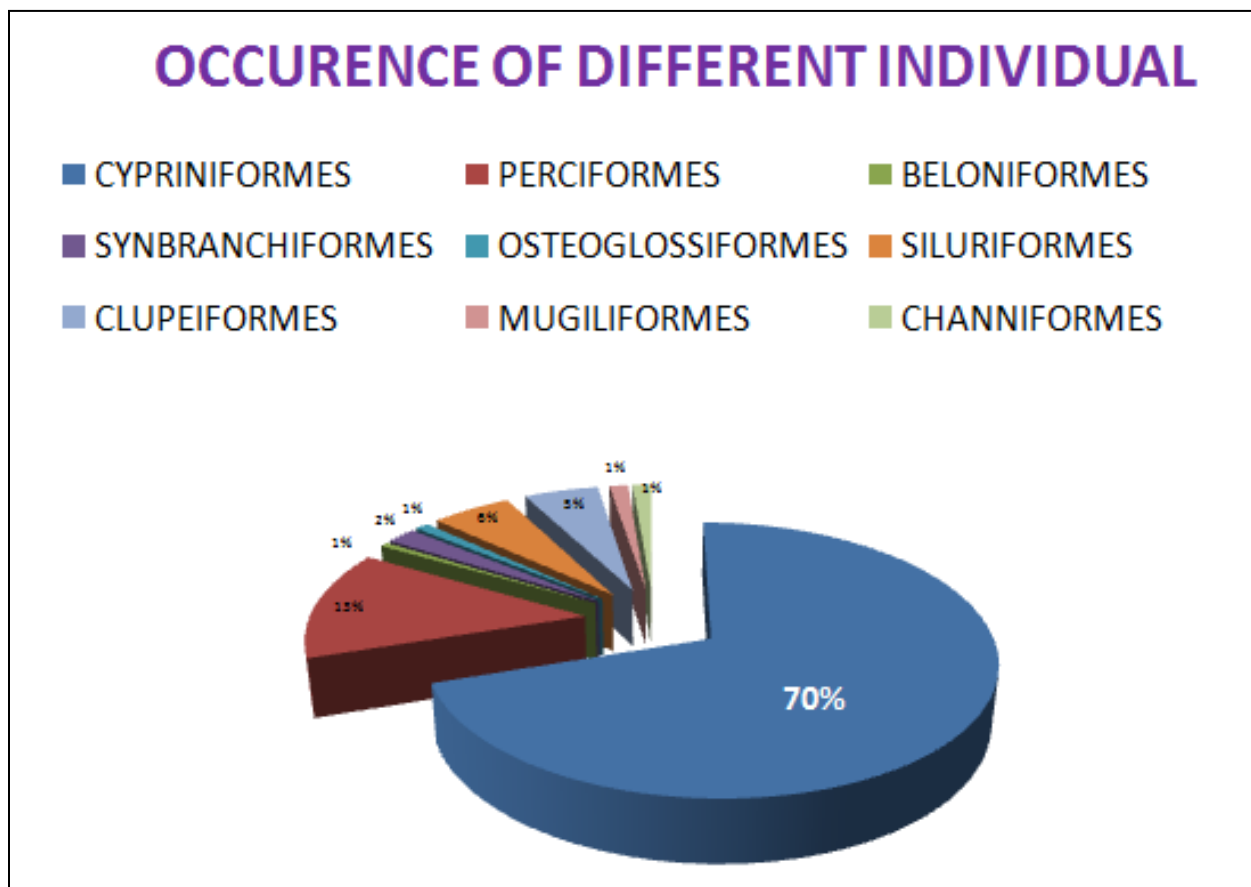
	III.NANDIDAE	1. <i>Nandus meni</i>	8	1.46	RE	NE	India (1 <sup>st</sup> time recorded)
		2. <i>Nandus nandus</i>	3	0.55	SR	LC	
	IV. BADIDAE	1. <i>Badis badis</i>	4	0.73	SR	LC	
	V. ANABANTIDAE	1. <i>Anabas testudineus</i>	6	1.10	RE	DD	
	VI.OSPHRONEMIDAE	1. <i>Polycanthus fasciatus</i>	4	0.73	SR	LC	
		2. <i>Colisa laila</i>	3	0.55	SR	LC	East&West Midnapur and Jhargram district (1 <sup>st</sup> time noted)
	VII.CICHLIDAE	1. <i>Oreochromis niloticus</i>	3	0.55	SR	NE	East&West Midnapur and Jhargram district (1 <sup>st</sup> time noted)
	VIII.GOBIIDAE	1. <i>Glossogobius guiris</i>	7	1.28	RE	LC	
		2. <i>Pseudapocryptes lanceolatus</i>	8	1.46	RE	LC	
	IX.SCATOPHGIDAE	1. <i>Scatophagus argus</i>	3	0.55	SR	LC	East&West Midnapur and Jhargram district (1 <sup>st</sup> time noted)



IX.CHANNIFORMES	I.CHANNIDAE	1. <i>Channa punctata</i>	4	0.73	SR	LC
		2. <i>Channa striata</i>	3	0.55	SR	LC

[EU\*-EUDOMINANT,SR\*-SUBRECEDENT,SD\*-SUB DOMINANT,RE\*-RECEDENT.]

Fig. II: Percentage occurrence of individuals under order.



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