



PRESENT STATUS OF ORNAMENTAL FISH DIVERSITY OF BARALIA RIVER FLOWS THROUGH BAKSA AND KAMRU(R) DISTRICT (ASSAM),INDIA

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ABSTRACT:

The objective of the current investigation is to examine the status of ornamental fish diversity in Baralia river, which flows through Baksa & Kamrup(R) district of Assam, India. Surveys were conducted from April 2023 to March 2024. Fish specimens were collected by using standard methods and were subsequently preserved and identified for further study. A total of 38 fish species belonging to 7 orders, 17 families and 28 genera were recorded. The ornamental fishes of Baralia river belong to following orders: Osteoglosiformes (5.1%), Clupeiformes (2.6%), Cypriniformes (25.6%), Siluriformes (25.6%), Belontiiformes (2.6%), Symbranchiiformes (10.3%), Perciformes (28.2%). Cyprinidae was the dominant family with 9 species followed by Bagridae 5 species and Channidae with 4 species. Two Endangered, Three vulnerable, three near threatened and 30 species under the least concern category were identified based on IUCN status. Natural and Anthropogenic threats may affect the fish population in this river. Unorganised fish collection, Pesticide pollution, garbage disposal are the major cause for the destruction of natural ecosystem in this river.

Keywords: Ornamental fish, Baralia River, Baksa, Kamrup(R), Natural & anthropogenic threats.

INTRODUCTION:

About 30% of the North Eastern region is made up of Assam state, which is home to Brahmaputra and Barak river systems and their numerous tributaries (combined length 4820 km), a large number of flood plain wet lands (Beel) and swamps (1.12 lakh ha.). The North East India is considered as one of the hot spots of fresh water fish biodiversity in the world. A total of 185 species under 98 genera have already been discovered in Assam. There are still a lot of fish species that are yet to be recorded. (Bhattacharya et al., 2000).

The Brahmaputra and Barak river systems hold a wide variety of ichthyofauna, which account for roughly 33.13% of the total Indian freshwater fish (Sen, 2000). Subsequently, 267 fish species belonging to 114 genera under 38 families and 10 orders have already been reported from the region (Dutta et al., 2018). The region has already been reported to the occurrence of 267 fish species that belong to 114 genera in 38

families and 10 orders (Dutta et al., 2018).

Ornamental fishes are found in varied forms and have a fascinating beauty. They are one of the essential components of fisheries having some specific colour patterns. Ornamental fishes are mainly kept in the aquarium, which has become a significant income source for many people's (Chetia et al., 2018). In India, the Western Ghats and the north-eastern region are considered as the hotspot for indigenous ornamental fishes (Ayyappan et al., 2017). There are 274 fish species have been recorded, out of which 250 species have ornamental value (Mahapatra et al., 2004). So far, 150 fish species has excellent ornamental value out of recorded 217 fish species (Bhattacharjya et al., 2003). A total of 28 fish species with 17 families and 24 genera has been recorded from North Guwahati, of which 16 species were categorized having "excellent ornamental value" and nine species falls under "high ornamental fish" (Rahman et al., 2014). Sharma et al., (2008) recorded 61 ornamental fish species from central Brahmaputra valley zone. whereas Das and Biswas (2008) reported a number of 62 ornamental fish species in the flood plain wetlands of upper Brahmaputra basin.

The present paper focuses on the Baralia river, a sub tributary of Brahmaputra river in Assam, India which is mainly originating near Nagrijuli Tea Estate where some small channels from Bhutan hills find their ways as an underground water source that drains into the low-lying area. The current investigation aims to assess the present status and prevailing threats to ornamental fish species inhabiting in this riverine environment.

STUDY SITES:

The river Baralia originates from Bherberri Bhumuk near Nagrijuli tea estate where some small channels from Bhutan hills find their ways as underground flow into low lying area there. This river covers a length of 75 Km before it joins Pagladiya near Dusutimukh on its left bank. The river in its entire length drains an area of 270 Sq. Km. The river has formed meanders in its entire length. The river Baralia flows to the west of river Puthimari and runs almost parallel to it up to R.G. Railway line and finally falls in the river pagladiya near Dusutimikh. The river is bounded by Puthimari in the east and Nona and Mutunga in the west. In the upper reach spill from river Balti joins it on the right bank just about 2.4 Km below Nagrijuli tea garden. The Baralia river is meandering in nature with attitude to change its course frequently due to silt deposition in the river bed. The length of river approximately 20 Km under Rangia Sub-division from Dwarkuchi to Chamukha Bathan and length of embkt. is 21 Km in both banks (Baishya & Shaharia, 2017)

SAMPLING METHODS:

A Survey was conducted throughout pre monsoon, monsoon and post monsoon seasons spanning from April 2023 to March 2024. Four distinct locations were chosen for study, situated along the banks of the river, namely Nagrijuli, Katribari (Tamulpur), Murara (Rangia) and Bullut (Nalbari), Fig:1 shows All the location of study sites. Local fishermen were involved in netting and collection of fish samples.

For the collection of species different fishing gears are used. Fishing gears like fish nets of different mesh sizes were used such as gill nets, caste nets, drag nets, scoop nets, as well as different types of bamboo traps including hooks and lines. Specimens were instantly fixed in 4% formalin solution. A good quality photographs were taken for the study of the specimens and the site of the area. Additional Information were collected from the local markets situated along the river banks. The relevant secondary data were collected from some current bulletin and some published research papers.

The fish specimens were identified following Talwar and Jhingran (1991); Vishwanath (2002) and Jayaram (2010). Current conservation status of each species was verified using the website: www.iucnredlist.org (IUCN, 2023). Nomenclature and classification of all the recorded species were validated using the website:

www.fishbase.org (Froese and Pauly, 2019), www.calacademy.org/research/ichthyology and www.iucnredlist.org.

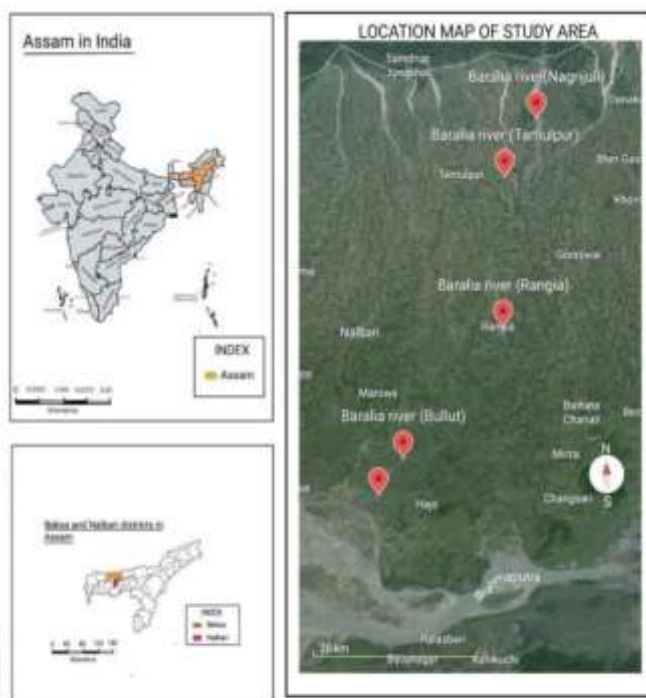


fig 1 : Location map of Baralia river (source: Google Earth imagery)

ORDER	FAMILY	SPECIES	LOCAL NAME	ECONOMIC VALUE	IUCN STATUS
OSTEOGLOSSIFORMES	NOTOPTERIDAE	Chitalachitala (Ham-Buch, 1822)	Chital	FF, OR	NT
		Notopterusnotopterus (Pallas, 1769)	Kanduli	FF, OR	LC
CLUPEIFORMES	CLUPEIDAE	Gudusiachapra (Ham. 1822)	Koroti	FF, OR	VU
CYPRINIFORMES	CYPRINIDAE	Amblypharyngodonmola (Ham-Buch, 1822)	Moa	FF, OR	VU
		Cirrhinusmrigala (Ham-Buch, 1822)	Mirika	FF, OR	LC
		Esomusdanricus (Ham-Buch, 1822)	Dorikona	FF, OR	LC
		Labeocalbasu (Ham-Buch, 1822)	Bhakua	FF, OR	LC
		Puntius sophore (Ham-Buch, 1822)	Puthi	FF, OR	LC
		Puntiusjuvanicus (Bleeker, 1855)	Puthi	FF, OR	LC

		puntius ticto (Ham-Buch,1822)	Puthi	FF,OR	LC
		Salmostoma bacaila(Ham- Buch,1822)	Chelko ni	FF,OR	LC

ORDER	FAMILY	SPECIES	LOCAL NAME	ECONOM IC VALUE	IUCN STATU S
	COBITIDAE	Lepidocephalicht hysguntea (Ham- Buch,1822)	Botia	FF, OR	LC
SILURIFORMES	BAGRIDAE	Mystus cavasius (Ham- Buch,1822)	Singora	FF,OR	LC
		Mystus tengara (Ham. 1822)	Tengara	FF,OR	LC
		Mystus vittatus (Bl. 1794)	Singora	FF,OR	LC
		Seperata aor (Ham- Buch,1822)	Ari	FF,OR	LC
		Seperata seenghala (Sykes,1839)	Ari	FF,OR	LC
	SILURIDAE	Ompak bimaculatus (Bl. 1794)	Pava	FF, OR	EN
		Ompak pabo (Ham. 1822)	Pava	FF,OR	NT
	SCHILBEIDAE	Ailia coila (Ham. 1822)	Kajoli	FF,OR	NT
	CLARIDAE	Clarias batrachus (Linn. 1758)	Magur	FF,OR	EN
	HETEROPNEOSTI DAE	Heteropneostis fossilis	Singi	FF,OR	LC
BELONIFORMES	BELONIDAE	Xenentodon concilla (Ham. 1822)	Kokila	FF,OR	LC
SYMBRANCHIFOR MES	MASTACEMBALI DAE	Macrognathus aral (Bl.&Schn. 1801)	Tora/Turi	FF,OR	LC
		Macrognathus pancalus (Ham. 1822)	Tora/Turi	FF,OR	LC
		Mastacembelus armatus (Lecepede,18 00)	Bami/Gos hi	FF,OR	LC
	SYNBRANCHIDAE	Monopterus cuchia (Ham- Buch,1822)	Cuchia	FF,OR	LC

ORDER	FAMILY	SPECIES	LOCAL NAME	ECONOMIC VALUE	IUCN STATUSES
PERCIFORMES	AMBASSIDAE	Chandanama (Ham-Buch,1822)	Chanda	FF, OR	LC
		Parambassisrang a (Ham-Buch,1822)	Chanda	FF, OR	LC
	NANDIDAE	Nandusnandus (Ham-Buch,1822)	Bhetki/ Bhehri	FF, OR	LC
	GOBIDAE	Glossogobiusgiur is (Ham-Buch,1822)	Panimutur a	FF, OR	LC
	ANABANTIDAE	Anabas testudineus (Bloch,1792).	Kawoi	FF, OR	LC
	OSPHRONEMIDAE	Trichogasterfasci atus (Bl.-Schn,1801)	Kholihon a	FF, OR	LC
		Trichogasterlali us(Ham. 1822)	Beshel i/ Besa	FF, OR	LC
	CHANNIDAE	Channagachua (Bl.-Schn. 1822)	Cheng	FF, OR	LC
		Channagachua (Bl.-Schn. 1822)	Goroi	FF, OR	LC
		Channastriatus (Bl. 1793)	Sol	FF, OR	LC
		Channastewarti (Playfair,1867)	Chenar	FF, OR	LC

N.B: LC - Least concern, EN - Endangered, VU - Vulnerable, NT-Near

Threatened FF- Food Fish,OR - Ornamental, EX - Exotic species

RESULTS AND DISCUSSION:

A total no of 38 species belonging to 17 family , 7 order and 28 genera were recorded from river Baralia . Cyprinidae was found to be the dominant family with a total of 9 species followed by Bagridae (5 species), Channidae (4 species), Mastasimalidae(3 species), Siluridae(2 species) ,Ambassidae (2 species) ,Osphronemidae (2 species) Notopteridae (1species) ,Claridae (1species),Clupidae (1 species), Cobitidae(1 species), Schilbeidae(1 species), Heteropneustidae (1 species) , Belonidae (1 species) , Synbranchidae (1species) , nandidae (1 species) ,Gobidae (1species) ,Anabantidae (1 species).

During survey it was found that Out of total of 38 species , all species have both food and ornamental value. Almost all fishes holds Commercial significance with none being abundant; rather 35 are moderately abundant and 6 species are least abundant

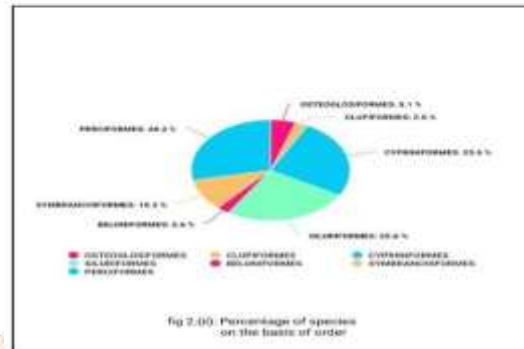
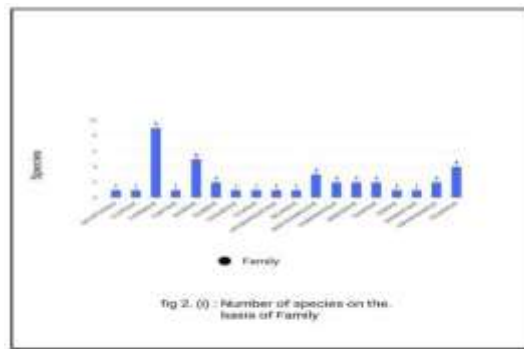
.Clariusbatracus and Ompok bimaculatus which have high market value included in endangered category,.3 species are Nearly threatened , while 3 are Vulnerable, however 30 species fall under the category of least concern.Allcataagorizations were done based on IUCN Red list of threatened species 2023.

A total of 23 registered ornamental fish production units in Assam, out of which only one comes under government. During 2017- 18, 2.5 to 3 lakh nos. of ornamental fish has been exported outside the state which worth 10 lakh rupees (ANON, 2018b). The exported ornamental fish species are Botia, Chital, Chanda, Colisa, Puntius, Channa etc.However Unorganised fish collection is the major cause for the depletion of fish population in North East India.

In the whole Baralia river shifting takes place in both the banks during the period 1977-2016 due to sedimentation of the river bed, tectonic activities and human interference in the upper catchment. River is meandering in nature and erosion and deposition are common geomorphic processes.

There is a series of man-made or anthropogenic hazards which directly affect the fish population. The discharge of a large quantity of xenobiotics, pesticides, weedicides etc in various agricultural programmes, and in the tea industry constitute a sizeable amount of the in both soil and water. There is continuous use of plant poisons for fishing in some regions of Meghalaya and Arunachal Pradesh (Goswami et al., 2012). It has been found that there are oil spills in the upper reaches of the Brahmaputra basin. This is because of the different activities of oil explorations and direct contact of the crude oil, slugs with water and soil.

The unplanned construction of embankments for preventing floods causes the loss of habitat, breeding ground and migration of fish.Destruction of natural ecosystems like using nylon net for fishing,blasting and deforestation have been frequently done in all major natural water bodies. The river is facing the Same problem. Construction of embankment, contamination of pesticides from tea garden, industrial effluents and home for garbage disposal. This may cause severe threat to the growth of fish population in this river.



CONCLUSION

The current investigation is only being conducted for a limited period. There is a lot of scope for further discoveries. During the survey it is observed that there is a drastic fall of fish population in this river, this is because humans interfere with the natural ecosystem. As the river faces various anthropogenic impacts, its fish population is declining and experiencing fluctuations. There are many laws and regulations formulated by the government for the purpose of fish conservation yet the current scenario of overexploitation remains unchanged.

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