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# CHECKLIST, STATUS AND ROLE OF FISH DIVERSITY AS A MEASURE OF ALTERNATIVE LIVELIHOOD IN DIHING RIVER BASIN, ASSAM

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**ABSTRACT:** River Dihing, a tributary of mighty River Brahmaputra is serving as a potential fish habitat. Present investigation was done to identify the ichthyofaunal diversity and its utilization as alternative livelihood. A total 45 species belonging to 7 orders, 17 families and 29 genera were recorded. Among all these Cypriniformes had the majority occupying 40% and were recorded as dominated order. According to IUCN red list of threatened species 2013 (ver. 3.1), it was recorded that 35 were least concern, 5 were near threatened, 1 was vulnerable and 1 was endangered. Most of the people of Dihing River basin had been fruitful from the diversity of fish by fishing and adopting fish culture as an alternative livelihood. Different types of fishing techniques were studied along with the ichthyofaunal diversity.

Keywords: Dihing, Ichthyofaunal diversity, Cypriniformes, alternative livelihood

#### INTRODUCTION

Fishes are cold blooded vertebrate found in almost all type of water bodies. They have great a value to human being. They are the staple item in the diet of most of the people. They form an important economy of many nations and give incalculable ornamental, recreational and psychological value. Diversity richness has the potential to generate employment opportunity in rural areas. Dihing river is a snow-fed large tributary of mighty River Brahmaputra in upper Assam. The river originates from the Patkai mountain range in Arunachal Pradesh and flows through Tinsukia and Dibrugarh district in Assam to its confluence with Brahmaputra at Dihingmukh (Wikipedia). The river has number of oxbow lakes that serving as a potential fish habitat.

#### MATERIALS AND METHODS

**Study area:** The fish samples were collected through random sampling from different fish landing sites of Dihing River and local fish markets.

**Data collection and analysis:** Fish samples were collected through experimental fishing by using caste nets of various sizes, gill nets (vertical height 1.0 m- 1.5 m; length 30 m -100 m), drag nets (vertical height 2.0 m), fish hooks of various sizes and a variety of gears like *polo*, *juluki*, *sepa*, *posa*, *jakoi*, *ghana* etc by local fisherman. The documentation of present study was carried out with the help of local fishermen, having more than 25 years of experience in fishing technologies. Collected fish species were preserved in 10% formaldehyde in the field itself and live ones were carried to the department of Life Sciences of Dibrugarh University and kept in aquarium. Fish species have been identified following the literature of Talwar & Jhingran (1991) and Vishwanath (2002). Status assessments of the documented species have been evaluated by IUCN Red list of threatened species (2013).

## **RESULTS AND DISSCUSION**

### Checklist and IUCN status of fish diversity in the river:

Order	Family	Common name	Scientific name	IUCN status
Beloniformes	Belonidae	Kokila	Xenentodon cancila (HamBuch.)	LC
Cypriniformes	Balitoridae	Botia	Acanthocobitis botia (HamBuch.)	LC
	Cobitidae	Gethu	Botia dario (HamBuch.)	LC
_		Botia	Lepidocephalichthyes guntea (HamBuch.)	LC
	Cyprinidae	Mowa	Ambylopharyngodon mola (HamBuch.)	LC
		Boriola	Aspidoparia jaya (HamBuch.)	LC
		Boriola	Aspidoparia morar (HamBuch.)	L C
		Bahu	Catla catla (HamBuch.)	VU
		Lasim	Cirrhinus reba (HamBuch.)	LC
		Mirika	Cirrhinus mrigala (HamBuch.)	LC
			Esomus danricus (HamBuch.)	LC
		Bhangon	Labeo bata (HamBuch.)	LC
		Mali	Labeo calbasu (HamBuch.)	LC
		Kuri	Labeo gonius (HamBuch.)	LC
		Rohu	Labeo rohita (HamBuch.)	LC
		Puthi	Puntius conchonius (HamBuch.)	LC
		Seniputhi	Puntius sarana (HamBuch.)	LC
		Puthi	Puntius sophore (HamBuch.)	LC
		Kaniputhi	Puntius ticto (HamBuch.)	L C
Osteoglossiformes	Notopteridae	Kanduli	Notopterus notopterus (HamBuch.)	LC
		Chital	Chitala chitala (Pallas)	NT
Perciformes	Anabantidae	Kawoi	Anabas testudineus (Bloch)	DD
	Belontiidae	Kholihona	Tricogaster labiosus (HamBuch.)	NE
	~	Vecheli	Tricogaster sota (HamBuch.)	NE
	Channidae	Goroi	Channa punctatus (Bloch)	
		Sol	Channa striatus (Bloch)	NE
	C1 1' 1	Sal	Channa marulius (HamBuch.)	
	Chandidae	Chanda	Chanda nama (HamBuch.)	
C'1	Gobiidae	Patimutura	Glossogobius giuris (HamBuch.)	
Shurnormes	Dagridae	Konga singora	Mystus lengara (Ham. Buch.)	
		Cuti singora	Mystus dibruggransis (Choudburi)	
		Singora	Mystus vittatus (Bloch)	
	Claridae	Magur	Clarias magur (Linnaeus)	FN
	Heteropneustidae	Singi	Heteronneustes fossilis (Bloch)	
	Schilbeidae	Bahpotia	Ailia coila (Ham -Buch )	NT
	Siluridae	Pavo	Ompok bimaculatus (Bloch)	NT
		Borali	Wallago attu (Schneider)	NT
		Pavo	<i>Ompok pabo</i> (HamBuch)	NT
Synbranchiformes	Mastacembelidae	Bami	Mastacembelus armatus (Lacepede)	LC
		Tura	Macrognathus pancalus (HamBuch.)	LC
	Synbranchidae	Cuchia	Monopterus cuchia (HamBuch.)	LC
Tetradontiformes	Tetradontidae	Gongatop	Tetradon cutcutia	LC

LC= Least concern; NT= near threatened; VU= Vulnerable; EN= Endangered; DD= Data deficit; NE= Not evaluated

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#### Bhenila Bailung and Biswas

In this investigation, total 45 numbers of species were recorded belonging to 29 genera of 18 families under 7 different orders. Among all these Cypriniformes had the majority occupying 40% and were recorded as dominated order. Siluriformes, Perciformes, Synbranchiformes, Osteoglossiformes, Tetradontidae and Belontidae were 22.2%, 17.7%, 11.1%, 4.4%, 2.2% and 2.2% respectively. According to IUCN Red list of threatened species (2013), 35 are least concern, 5 are near threatened, 1 is vulnerable and 1 is endangered. Line diagram of fish diversity and pie diagram IUCN status of fish diversity in percentage are shown in fig-1 and2.



Fig 1- Graphical representation of percentage of fish diversity order wise



Fig 2- Graphical representation of status of fish species according to IUCN

## Role of fish diversity as alternative livelihood:

Due to the richness of diversity they have potential value to generate employment opportunities in rural areas. Moreover unemployed as well as employed people also adopt fishing as livelihood. During the period of investigation it was observed that fishermen mainly went to catch fish in the evening and continued till dawn by using different fishing gears. In the morning mahaldar took all those fishes from the fisherman in auction i.e called daak. After that fishmongers purchase those fishes from the mahaldar, and eventually, the fishes were made available to the local fish markets of Dibrugarh and Tinsukia. Fishes has high nutritional value, and hence it is a staple food item in the diet of most of the people. Moreover, they have a great aesthetic value which increases its demand in national and international markets. Local fishes are always in demand among people as a food item. So, fish culture is very much beneficial to all, especially for unemployed people. By selecting it as an alternative livelihood it not only benefits fishermen but also keeps the diversity and population of species rich. Assam is struggling to build its economy through efficient resource utilization (Baruah et. al, 2000). People belonging to rural areas, inhabitant in the bank of river mainly adopts fish culture as livelihood. Different types of fish culture were seen in this river such as fish culture by using water hyacinth, katal fishing, pan culture etc. In winter season of each year, farmers encircled an area with nets in the river mainly in the meanders and threw bamboo sticks called jang, woody bushes etc. Fishes within that area naturally grow, matured, breed and new batch arises. At post monsoon jangs were removed and fishes were collected.

#### Bhenila Bailung and Biswas

This technique also helps to get rid of fish theft. Fish culture practice by using water hyacinth (*Eichhornia*) also provides great success. Here water hyacinths were grown at periphery of river and fishes were culture therein. In the monsoon season fishes were harvested in which fishermen first surrounded the water hyacinth by net and then by dragging the net up to the shore fishes were collected. Both *katal* and water hyacinth fishing were found common used technique. In pan culture bamboo boxes are made in the river and fishes are culture in those boxes. This method is costlier than other two methods. Hence, it was found that fishermen generally prefer the earlier two techniques of fish culture.

## CONCLUSION

From this present investigation it can be concluded that River Dihing has diverse kind of ichthyofauna. Diversity richness is a measure that people can adopt it as alternative livelihood by providing supply to national and international markets, different institutions, hotels etc through proper channel. Proper scientific technique of fishing and fish culture will upgrade the status of fisherman's life and also keeps the diversity rich.

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