

# Streams and Fish diversity of South Kamrup District of Assam, India

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## Abstract :

The hilly terrains of Southern part of the Kamrup District of Assam shares interstate borders with Meghalaya. These streams offer diverse types of habitat gradient such as head water, riffles, puddles etc (Power et al., 1988). A study has been carried out on the ichthyofauna in a few selected hill streams namely viz. Ranikhama, Saloka Dare and Rani Kopili from June 2017 to December 2017 and has revealed 58 species belonging to 41 genera, 23 families and 08 orders. From the above study it was found that the order Cypriniformes represented highest diversity followed by Perciformes. These streams and riparian zones need systematic investigation as lotic ecology has significant effect on the biota.

Key words: Streams, Hill Stream, ichthyodiversity, Southern Kamrup, Assam

## Introduction :

Assam, one of the North Eastern state have diverse landforms in the form of hills, floodplains, swamps, plateaus etc. In this diverse habitat and varied ecological conditions provide opportunities for diversification of freshwater fish diversity. The North Eastern region of India is considered to be one of the hotspots of freshwater fish diversity in the world (Kottelat and Whitten, 1996, Ramanujam *et al.*, 2010).

The hilly terrains of Southern part of the Kamrup District of Assam shares interstate borders with Meghalaya. This hilly terrain is an important biogeographic zone and contains a number of stream (small and large), creeks, water falls, pools, lakes etc. These streams offer diverse types of habitat gradient such as head water, riffles, puddles etc. (Power et al., 1988). At upper reaches the streams are with strong water current that becomes a crucial factor for fish species abundance.

Hill Stream are fast flowing shallow water bodies in which a significant variation in diurnal as well as seasonal water temperature is very common (Biswas and Boruah, 2000). Streams offer a wide array of ecological conditions like torrential water light intensity, high dissolve oxygen, fluctuating temperature and availability of food in the form of algal filaments, microbes, insect larva and invertebrate organisms specially benthos. Stream fishes have different structural modification which makes their life more adaptive to the habitat. Typically stream at its upper reaches have less fish fauna compare to lower reaches such as pools below the water fall, puddles or in the muddy bottom of the stream bed or below the rocks. Usually the numbers of fishes are more at the confluence of streams and rivers. Fishes of the upper reaches of the stream are specially modified having suckers of diverse types used for scooping mud as well as cleansing stones. Streams may be snow fed or may originate from the hills.

Many of the hill stream fishes also has ornamental value as well as they are also the good indicators of stream habitat. Small fish like *Badis badis*, *Ctenop nobalis* also has ecological importance in regulating carbon flux and taking part in the regulation of food web dynamics. Different studies were carried out regarding the freshwater fish diversity of the South Kamrup district.

The ichthyodiversity of the Kamrup district of Assam has been studied by many workers in different aquatic habitat types such as rivers, wetlands etc. There is scanty of literature available regarding the ichthyodiversity of different streams of South Kamrup District. Islam et al., (2013) a total of 57 fish species from the Kulsi river. Again from the Chandubi lake of the region Nath and Deka

(2012) have reported 63 ichthyospecies. The present study has been carried out to ensure the ichthyodiversity of a few selected streams of South Kamrup District of Assam.

## **Materials and Methods:**

Southern part of the Kamrup of Assam shares interstate borders with Meghalaya. The hilly terrain of this area comprises many small streams originating from the Meghalaya Hills flowing downhill to the South Kamrup district. The present study was carried out on three streams namely Ranikhama (25°50'25'' N, 91°21'31''E), Saloka Dare (25°50'59''N, 91°22'55'' E) and Rani Kopili (26°01'25''N, 91°36'90''E) from June 2017 to December 2017. Sample of fishes were collected with the of fishing nets like scoop net, dip net and cast net with the help of trained fisherman. Fish samples were preserved in 5% formalin and brought to laboratory for identification and morphometric analysis. During the field investigation basic field data were collected. For identification of fishes were done following Talwar and Jhingran (1991), Jayaram 1999, Sen (1985), Nath and Dey (2000), Vishwanath et al. (2014) and online facilities.

## **Result and Discussion:**

The present study has been carried out in a few selected streams of South Kamrup district of Assam and recorded a total of 58 species of fishes belonging to 41 genera, 23 families and 08 orders. The fish diversity is dominated by Cypriniformes followed by Perciformes and Siluriformes. The taxonomic diversity of fishes is listed in Table – I.

The present investigation conducted on a few selected streams of viz. Ranikhama, Rani Kopili, Saloka Dare located on the southern part of Kamrup district of Assam have heterogeneity of habitat including pools, slow moving and confluence with the small rivers . A total of 58 species is identified from the streams. Among the fishes Barbs (Cyprinidae) accounted for the highest number of species in the entire habitat mentioned above. Loaches of the genus Cobitidae and Balitoridae are common in all type of hill stream habitats, usually found in the bottom of the stream beds by the side of the rocks. Catfishes belonging to the order Siluriformes are also predominant and were collected from the habitats having sands, gravels and muddy bottom. Some of the fishes found in the streams are also common in flood plains wetlands and small rivers. From the study it was seen that the fishes are more abundant at the confluence of stream-rivers. The diversity of fishes is less in upper altitudes because of the temperature of water and strong water current.

The diagnostic features of few stream fishes are given below:

### *Botia dario :*

Diagnostic characters: Laterally compressed body, back mouse like, sharply arched from dorsal fin towards the mouth, with short downward pointed four pairs of barbels, a strong bifid backwardly curved spine below the eye, minute scales, caudal deeply forked. 7 or more dark brown and oblique bands separated by yellowish ones, more or less 3 broken dark on the caudal fin.

### *Lepidocephalichthys guntea:*

Diagnostic characters : Upper and lower portion of body parallel but body depressed in front of dorsal fin, a large erectile bifid spine countersunk below the eye, head partly scaled, 3 pairs of barbels. Dark brown on the dorsal side and the rest being yellowish white with mixed blackish specs to form a pattern of darker and lighter longitudinal bands, a dark wide line composed of black dots along the middle of the body stretching from gill to caudal fin base.

*Paracanthocobitis botia* : Body short dorsal profile more convex than ventral. Head of moderate size, snout somewhat pointed. Mouth small, sub-terminal, barbell six, two pairs maxillary and one pair rostral, the maxillary pair as long as eye. Insertion of dorsal fin midway between pectoral and ventral, caudal slightly emarginate. Scales very minute. Colour light greyish with irregular dark bands above and 10 -12 bars along the lateral line.

*Canthophrys gongota* : Body elongated and cylindrical, abdomen rounded. Head broad eyes small, with sub-orbital spine below it. Snout obtusely rounded with tubercles. Mouth small, inferior, lip fleshy, upper protruding over the lower lip. Barbels three pairs, two pair rostral and one pair maxillary longer than orbit. Ventral fin ahead of dorsal. Caudal fin rounded. Scales small, lateral line complete. Colour yellowish with undulated black bands along its side and caudal fins with four bands.

*Macrognathus pancalus* : Snout trilobed at its extremity. Jaws subequal toothed. Pre- opercle with 3-5 denticulations. Second dorsal and anal fin not confluent with caudal. Anal fin with two spines, ventral fin absent. Caudal fin short and rounded. Colour brownish with yellowish tinge and numerous white spots present in the body.

### **Conclusion:**

Fishes represent visible measure of stream ecosystem structure and functions (Aruanchalam, 2003). Stream fishes of the study area found in different habitat gradients are plays important role in the stream ecology as the assemblage of it helps in monitoring the steam quality. Many of this fishes have ornamental value and good bioindicators.

The stream fishes need immediate attention as many species are yet discovery. Anthropogenic landscape disturbances such as sand and boulder mining, deforestation, row crop agriculture and grazing, shifts the structural. Thus there is a need of immediate inventorization of ichthyodiversity these hill streams so that necessary measures could be taken for their conservation otherwise, these germplasm will be lost in near future.

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	<b>Order</b>	<b>Family</b>	<b>Name</b>
1	Cypriniformes	Cyprinidae	<i>Labeo rohita</i>
2			<i>Labeo gonius</i>
3			<i>Labeo calbasu</i>
4			<i>Labeo bata</i>
5			<i>Labeo catla</i>
6			<i>Cirrhinus mrigala</i>
7			<i>Cirrhinus reba</i>
8			<i>Amblypharyngodon mola</i>
9			<i>Barilius bendelisis</i>
10			<i>Barilius barna</i>
11			<i>Cabdio morar</i>
12			<i>Devario aequipinnatus</i>
13			<i>Devario devario</i>
14			<i>Esomus danricus</i>
15			<i>Puntius sophore</i>
16			<i>Puntius chola</i>
17			<i>Pethia conchonius</i>
18			<i>Pethia ticto</i>
19			<i>Salmostoma bacaila</i>
20			<i>Salmophasia phulo</i>
21			<i>Osteobrama cotio</i>
22			<i>Botia dario</i>
23		Cobitidae	<i>Lepidocephalichthys guntea</i>
24			<i>Canthophrys gongota</i>
25		Balitoridae	<i>Paracanthocobitis botia</i>
26		Psilorhynchidae	<i>Psilorhynchus sucatio</i>
27	Clupeiformes	Clupeidae	<i>Guduchia chapra</i>
28	Siluriformes	Bagridae	<i>Mystus cavasius</i>
29			<i>Mystus tengra</i>
30			<i>Mystus vittatus</i>
31		Schilbeidae	<i>Alia coila</i>
32			<i>Eutropichthys vacha</i>
33			<i>Pachypterus atherinoides</i>

34			<i>Ompok pabda</i>
35		Sisoridae	<i>Gagata cenia</i>
36		Clariidae	<i>Clarius magur</i>
37		Heteropneustidae	<i>Heteropneustes fossilis</i>
38	Perciformes	Ambassidae	<i>Chanda nama</i>
39			<i>Parambassis ranga</i>
40			<i>Parambassis lala</i>
41		Anabantidae	<i>Anabas testudineus</i>
42		Badidae	<i>Badis badis</i>
43		Nandidae	<i>Nandus nandus</i>
44		Mastacembelidae	<i>Mastacembelus armatus</i>
45			<i>Macrogathus pancalus</i>
46			<i>Macrogathus aral</i>
47		Synbranchidae	<i>Monopterusuchia</i>
48		Gobiidae	<i>Glossogobius giuris</i>
49		Osphronemidae	<i>Trichogaster fasciata</i>
50			<i>Trichogaster lalia</i>
51		Channidae	<i>Channa gochua</i>
52			<i>Channa punctata</i>
53			<i>Channa striata</i>
54			<i>Channa marulius</i>
55	Beloniformes	Belonidae	<i>Xenentodon cancila</i>
56	Tetraodontiformes	Tetraodontidae	<i>Leiodon cutcutia</i>
57	Cyprinodontiformes	Aplocheilidae	<i>Aplocheilus panchax</i>
58	Osteoglossiformes	Notopteridae	<i>Notopterus notopterus</i>

Table – I Fish faunal diversity of a few selected streams of South Kamrup district.

