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RESEARCH ARTICLE

ICHTHYOFAUNA OF SUBANSIRI RIVER IN ASSAM AND ARUNACHAL PRADESH, INDIA

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ABSTRACT

The unique topography of North-East India and watershed pattern is an attractive field for Icthyological studies. This region has already recognized as a global spot of freshwater fish diversity. A great numbers of species have been reported from most of the North-Eastern region states. Subansiri River is the one of the major river of both Assam and Arunachal Pradesh. The present study on Icthyofaunal diversity of Subansiri River in Assam and Arunachal Pradesh was carried out from January 2011 to December 2011. Fishes are very important from the biodiversity point of view. The fishes are collected from the different parts of the river and the collected fishes were identified. A total 87 different fishes were collected under 55 genera; they are classified into 9 orders and 22 families. Cypriniformes dominates the whole river and found in higher numbers and Beloniformes and Tetradontiformes are found in less numbers. The River Subansiri is good potential of fish fauna.

INTRODUCTION

Fishes are in variable living components of water bodies. These organisms are important food resource and good indicators of the ecological health of the waters they inhabit. However, the rich biodiversity of the freshwater fish of the Indian region has been rapidly dwindling because of increasing degradation of inland water. Out of a total of 2500 species of fish in India, 930 are in freshwaters and belong to 326 genera, 99 families and 20 orders (Talwar and Jhingran 1991). India is one of the 12 mega biodiversity hot spots contributing 60-70% of the world's biological resources. India has about 11.72% of total global fish biodiversity. A great number of fish species have been reported from the North - Easter region. The riparian zone of the Subansiri River was widely varied – from waste barren land to woody forested area. Subansiri River originates from the Himalayas beyond the Great Himalayan range at an altitude of 5340m.

Location of present Study Site:
Down Stream: 91º33′04″ - 94º01′48″ E, 28º29′38″ - 28º21′32″ N.
Near Dam: 94º15′30″ - 94º15′01″ E, 27º33′15″ - 27º27′14″ N.

The river takes its southerly course emerging out of the Himalayas and enters the Brahmaputra river valley near Gerukamukh. In upper reaches, the river is known as Tsari Chu. The total length of the river in the mountainous terrain is 208km. Its length is 126km from the dam site to the confluence with the Brahmaputra. Total drainage area up to the confluence with the Brahmaputra is 35,771 sq. km. as measured from SRTM (Shuttle Radar Topographic Mission). The river banks from the foothills to Chauldhoaghat are composed mostly of sand, gravel and silt, beyond which they are composed almost exclusively of alluvial silt. Various important studies have been conducted on the fish diversity. Ghosh and Lipton (1982) had reported 172 species with reference to their economic importance from the Assam. Talwar and Jhingran (1991) represented 267 fish species belonging to 114 genera under 38 families 10 orders from the northeastern region. Sinha (1994) compiled a list of 230 species from the northeastern region. Nath and Dey (1997) recorded 131 species of fishes from the drainages in Arunachal Pradesh. Sen (2000) reported 806 ichthyospecies inhabiting the freshwaters of India. Kar *et al.* (2006) studied the fish diversity and conservation aspects in an aquatic ecosystems in northeastern India, this work is being done on the biggest freshwater tectonic lake Sone (area 3458.12 ha. at LSL) in Assam, India. Kar and Sen (2007) worked on the systematic list and distribution of fish biodiversity in Mizoram, Tripura, and Barak Drainages in North- East India. Biswas *et al.* (2008) studied fish diversity of Brahmaputra River in Assam; they continue their work from 1987 to 2000. The diversity of fishes from the upstream to downstream of the Subansiri river

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Table 1. List of Fish species of Subansiri River in Assam and Arunachal Pradesh

Sl. No.	Name of Fishes	Order	Family
1	*Notopterus notopterus* (Pallas)	Osteoglossiformes	Notopteridae
2	*Chitala chitala* (Hamilton-Buchanan)	Osteoglossiformes	Notopteridae
3	*Amblypharyngodon mola* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
4	*Aspidoparia jaya* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
5	*Aspidaparia morar* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
6	*Barilius barila* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
7	*Barilius barana* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
8	*Bengala elenga* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
9	*Brachydanio aceticephala* (Hora)	Cypriniformes	Cyprinidae
10	*Cirrhinus mrigala* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
11	*Cirrhinus reba* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
12	*Danio acquipinnatus* (McClelland)	Cypriniformes	Cyprinidae
13	*Danio dangila* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
14	*Devario devario* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
15	*Labeo bata* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
16	*Labeo calbasu* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
17	*Labeo gonius* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
18	*Labeo pangusia* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
19	*Labeo rohita* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
20	*Osteobroma cotio cotio* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
21	*Puntius chola* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
22	*Puntius sophore* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
23	*Puntius ticto ticto* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
24	*Puntius conchonius* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
25	*Puntius sarana sarana* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
26	*Puntius gelius* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
27	*Puntius rasbora* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
28	*Raimas bola* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
29	*Salmostoma bacila* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
30	*Semipolotus semipolotus* (McClelland)	Cypriniformes	Cyprinidae
31	*Tor progenies* (McClelland)	Cypriniformes	Cyprinidae
32	*Tor putitora* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
33	*Tor tor* (Hamilton-Buchanan)	Cypriniformes	Cyprinidae
34	*Acanthocobitis botia* (Hamilton-Buchanan)	Cypriniformes	Balitoridae
35	*Acanthocobitis kempi* (Chadhuri)	Cypriniformes	Balitoridae
36	*Balitora brucei*	Cypriniformes	Balitoridae
37	*Botia berdmorei* Gray	Cypriniformes	Cobitidae
38	*Botia Dario* (Hamilton-Buchanan)	Cypriniformes	Cobitidae
39	*Botia rostrata* (Gunther)	Cypriniformes	Cobitidae
40	*Lepidocehlichthys berdmorrei* (Blyth)	Cypriniformes	Cobitidae
41	*Lepidocephalus guntea* (Hamilton-Buchanan)	Cypriniformes	Cobitidae
42	*Hemibagrus monoda* (Hamilton-Buchanan)	Siluriformes	Bagridae
43	*Mystus bleekari* (Day)	Siluriformes	Bagridae
44	*Mystus tengara* (Hamilton-Buchanan)	Siluriformes	Bagridae
45	*Mystus cavasius* (Hamilton-Buchanan)	Siluriformes	Bagridae
46	*Mystus vittatus* (Hamilton-Buchanan)	Siluriformes	Bagridae
47	*Rita rita* (Hamilton-Buchanan)	Siluriformes	Bagridae
48	*Sperata aor* (Hamilton-Buchanan)	Siluriformes	Bagridae
49	*Batasio batasio* (Hamilton-Buchanan)	Siluriformes	Bagridae
50	*Batasio tengana*(Hamilton-Buchanan)	Siluriformes	Bagridae
51	*Ompok bimaculatus* (Bloch)	Siluriformes	Siluridae
52	*Ompok pabda* (Hamilton-Buchanan)	Siluriformes	Siluridae
53	*Wallogo attu* Scheidner	Siluriformes	Siluridae
54	*Ailia coila* (Hamilton-Buchanan)	Siluriformes	Schilbeidae
55	*Clupisoma garua* (Hamilton-Buchanan)	Siluriformes	Schilbeidae
56	*Eutropiichthys vacha* (Hamilton-Buchanan)	Siluriformes	Schilbeidae
57	*Pseudeutropius atherinodes* (Bloch)	Siluriformes	Schilbeidae
58	*Silonia silondia* (Hamilton-Buchanan)	Siluriformes	Schilbeidae
59	*Amblyceps apangi* (Nath and Day)	Siluriformes	Schilbeidae
60	*Amblyceps mangois* (Hamilton-Buchanan)	Siluriformes	Amblycipitidae
61	*Bagarius bagarius* (Hamilton-Buchanan)	Siluriformes	Sisoridae
62	*Erethistes pussilis* (Mullar and Troscell)	Siluriformes	Sisoridae
63	*Gangata cenia* (Hamilton-Buchanan)	Siluriformes	Sisoridae
64	*Gagata gagata* (Hamilton-Buchanan)	Siluriformes	Sisoridae
65	*Heteropneustes fossilis* (Bloch)	Siluriformes	Heteroneustidae

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66	*Chaca chaca* (Hamilton-Buchanan)	Siluriformes	Chacidae
67	*Monopterus cuchia* (Hamilton-Buchanan)	Siluriformes	Synbrachidae
68	*Chanda nama* (Hamilton-Buchanan)	Perciformes	Channidae
69	*Channa gachua* (Bloch and Schneider)	Perciformes	Channidae
70	*Channa punctate* (Bloch)	Perciformes	Channidae
71	*Channa stewartii* (Playfair)	Perciformes	Channidae
72	*Channa striata* (Bloch)	Perciformes	Channidae
73	*Polyacanthus labiosus* (Day)	Perciformes	Belonidae
74	*Polyacanthus fasciatus* (Schneider)	Perciformes	Belonidae
75	*Polyacanthus lalia* (Hamilton-Buchanan)	Perciformes	Belonidae
76	*Polyacanthus sota* (Hamilton-Buchanan)	Perciformes	Belonidae
77	*Rhinomugil corsula* (Hamilton-Buchanan)	Perciformes	Mugilidae
78	*Nandus nandus* (Hamilton-Buchanan)	Perciformes	Nandidae
79	*Badis assamensis* Ahl	Perciformes	Nanidae
80	*Badis badis* (Hamilton-Buchanan)	Perciformes	Nanidae
81	*Glossogobius giuris* (Hamilton-Buchanan)	Perciformes	Gobidae
82	*Anabus testudineus* (Bloch)	Perciformes	Anabantidae
83	*Tetradon cutcutia* (Hamilton-Buchanan)	Perciformes	Tetradontidae
84	*Xenentodon cancilla* (Hamilton-Buchanan)	Beloniformes	Belonidae
85	*Mastacembelus pancalus* (Hamilton-Buchanan)	Synbranchiformes	Mastacembelidae
86	*Mastacembelus armatus* (Lacpede)	Synbranchiformes	Mastacembelidae
87	*Macrognatus aral* (Bloch and Schneider)	Synbranchiformes	Mastacembelidae

described by Sharma *et al.* (2008), (*commonly known as Expert Group of IIT, G.U. and D.U.*); they found there 137 fish species which of them are belonging to the different 7 types of order. Das *et al.* (2011) studied on Habitat Mapping, Spatial analysis of Fish diversity of River Subansiri during winter season in Assam and Arunachal Pradesh (India), they reported 48 species of fishes belonging to 15 families under 7 different orders. Acharjee *et al.* (2012) studied Icthyofaunal diversity of Dhansiri River, Dimapur, Nagaland, India they found there 34 fish species belonging to 5 orders and 13 families and 24 genera. Das *et al.* (2012) studied Icthyological survey and review of the checklist of Fish fauna of Arunachal Pradesh, India; they had reported 213 species for the state of Arunachal Pradesh.

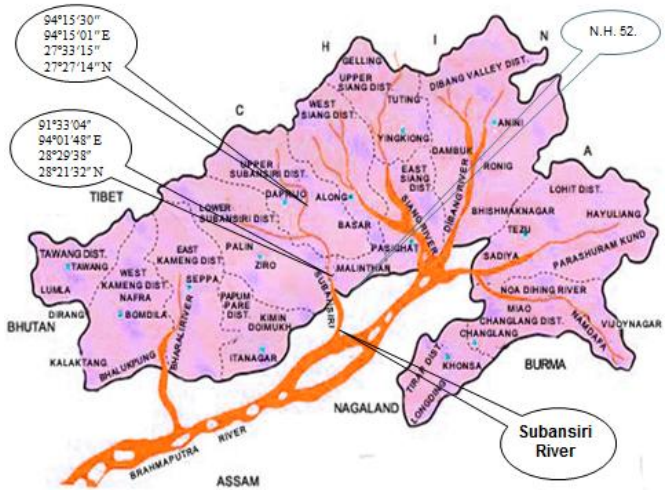

Figure 1: Map indicating the site of Collection in Subansiri River

MATERIALS AND METHODS

Fish samples were collected from Subansiri River during January 2011 to December 2011 through experimental fishing; using cast nets (dia.3.7 m and 1.0 m), gill nets (vertical height 1.0 m- 1.5 m; length 100 m -150 m), drag nets (vertical height 2.0 m), triangular scoop nets (vertical height 1.0 m) and a variety of traps and also by hooks and lines. Local people were involved in the netting and also in the fish collection. Fish samples sites were chosen in the survey area based on habitat types, water quality, soil quality and the depth of the river. Fish species have been preserved at first in concentrated (100%) formaldehyde in the field. After that the fishes are transferred to into 10% formaldehyde glass container to preservations purpose. In the laboratory the fish species have been identified after standard literature by following Jayaram (1999), Kar (2007) and Vishwanath (2002).

RESULTS

The details of fish species recorded from the present study site are given in Table 1. The fish nomenclature is based on Fishbase.org and Jayaram (2010). The present survey of river Subansiri reveals the presence of 87 (Eighty Seven) species of fishes belonging to 9 (Nine) orders, 22 (Twenty) families and 55 (Fifty five) genera. Cypriniformes dominates the whole river and found in higher numbers and Beloniformes and Tetradontiformes are found in less number. Construction of the dam the river water was regulated and the natural flow of water was changed, which is the cause irreparable damage to the terrestrial ecosystem. The regular flow of water was diminished to a very minimum level which causes the lowering of the ground water level resulting to loss of vegetation due to scarcity of soil water. The drying up of the river will initiate human activities on the river. The existing fish community comprising of terrestrial as well as aquatic and other organism will face the problems of loss of habitat, feeding sites and breeding grounds as a result of change of vegetation pattern due to change of normal water regime of the river.

DISCUSSION

Species richness in a region is governed by a number of factors which operate at different spatial and temporal scales. Biotic as well as abiotic factors act together in regulating the local species richness. Stream fishes have been used extensively to examine the relative influences of local and regional factors on local species diversity. Regional diversity is said to be more influenced by biogeography processes, thus more recent works

seem to emphasize to the importance of scale in determining species diversity. Diversity of fish species in higher that the Das *et al.* (2011); 48 fish species. Diversity of fish species is found in this present study lower than the study of Sharma *et al.* (2008); 138 fish species, lower diversity of the fish species found in the present study may be due to the smaller duration of survey, seasonal effect and also ongoing Hydro Electric Power (Dam) project on the Subansiri River.

REFERENCES

Acharjee B. K., Das M., Borah P. and J. Purakayastha. 2012. Icthyofaunal Diversity of Dhansiri River, Dimapur, Nagaland, India. *Check List,* 8 (6): 1163-1165.

Biswas B. K. and Sugnan V. G. 2008. Fish Diversity of Brahmaputra river system in Assam, India. *Journal of Inland Fish Sco. India.* 40 (1): 23-31.

Das, B. K. and Kar D. 2011. Habitat Mapping, Spatial Analysis of Fish Diversity of River Subansiri during winter season in Assam and Arunachal Pradesh (India). *Environment and Ecology,* 29 (4A): 1948-1951.

Das B. K., Kar S. and Kar D. 2012. Studies on Intensity of Cestodes Parasite Infecting *Monopterus cuchia* in Cachar District, Assam, *Biological Forum – An International Journal,* 4 (2): 71-74.

Ghosh S. K. and Lipton A. P. 1982. Icthyofauna of the NEH Region with special reference to their economic importance, ICAR Research Complex, NEH Region, Shillong. *Spl. Bulletin* 1: 119-126.

Jayaram K. C. 1999. *The freshwater fishes of the Indian region,* Narendra Publishing House, Delhi, India. 551 p.

Kar D., Nagarathna A. V., Ramachandra T. V. and Dey S. C. 2006. Fish diversity and conservation aspects in an aquatic ecosystem in northeastern India. *Zoos Print J.* 21: 2308-2315.

Kar, D. 2007. Fundamentals of Limnology and Aquaculture Biotechnology. Daya Publishing House. New Delhi. India. xvi + 609 p.

Kar D. and Sen. N. 2007. Systematic list and distribution of fish biodiversity in Mizoram, Tripura and Barak drainage in North East India. *Zoos print Journal* 22 (3): 2599-2607.

Nath P. and Dey S. C. 1997. *Fish and Fisheries of North Eastern India*. Volume I: Arunachal Pradesh: 140p.

Sen N. 2000. Occurrence, Distribution and Status of Diversified Fish Fauna of Northeastern India, pp 31-48. In: Ponniah A.G.; Sarker U.K. *Fish Biodiversity of North-East India*. NATP Publication No 2. NBFGR, Lucknow: 228p.

Sharma A. K., Mahanta C., Kalita J., Bhagwati A. K., Kalita S., Duarah B. P., Biswas S. P. and Sharma J. N. 2008. Downstream Impact Study of the ongoing Subansiri Lower Hydroelectric Power Project. *National Hydro Electric Power Corporation Limited.* VI: 1-10.

Sinha M. 1994. Threatened Coldwater Fishes of North-Eastern Region of India, pp 173-176. In: *Threatened Fishes of India*. Natcon Publication No 4, UP, India.

Talwar P. K. and Jhingran A. G. 1991. *Inland Fishes or India and Adjacent Countries, Vol I and Vol II.* Oxford and IBH Co, Pvt. Ltd, New Delhi, India. 1158p.

Vishwanath W. (2002). *Fishes of North East India: A field guide to species Identification.* Mamipur: National Agricultural Technology Project. Manipur University. 198p.

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