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Ichthyofauna of Sangu river (Chandanaish, Anowara & Banskhali regions) with notes on their catch composition, Chittagong, Bangladesh

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Abstract

Finfish and shellfish fauna and fishery of the Sangu River (Chandanaish, Anowara and Banskhali parts) were studied for six months period from June-2011 to November 2011. Thirty three species of finfish belonging to 6 orders, 18 families and 30 genera and 5 species of shellfish belonging to one order, 2 families and 2 genera have been identified from the catch of Set Bag Net (SBN), Gill Net (GN), Scoop Net (SN) and Enclosure Net (EN). Maximum number of species were recorded under the family Cyprinidae (8 species) followed by the family Gobiidae (4 species) and the maximum number of shellfish species were recorded under family Palaemonidae (3 species). Systematic positions with taxonomic nomenclature of the finfish and shellfish species are provided. Percentage composition of finfish and shellfish catch for six months by all the four nets combined showed that the Galda chringri, *Macrobrachium rosenbergii* occupied the first position (10.08%), while *Colisha labiosa* occupied the last position (0.02%).

INTRODUCTION

Bangladesh is endowed with vast open waters in the form of rivers, canals, estuaries, natural and man-made lakes, backwaters, brackish-water impoundments and mangrove wetlands. Potentially, the inland fish resources of Bangladesh are richest in world and in 1983 occupied the 3rd position in inland fish resource production in Asia. Sangu River (21°13'N and 92°37'E) originates in the Arakan Hills of Myanmar and enters Bangladesh near Remarki (Thanchi upazila of Bandarban district). It flows north through Thanchi, Rowangchhari and Bandarban upazilas of Bandarban district. Then it flows west through Satkania, Banskhali and Chandanaish upazilas of Chittagong district to meet the Bay of Bengal near Khankhanabad (Chittagong). The length of the river is 295 km. The major tributaries of the river are Chandkhali River and Dolu khal.

Some remarkable works on fish fauna of Bangladesh were studied by some workers like Hafizuddin *et al.* (1989) recorded fishes of the Kaptai Reservoir, Azadi and Arshad-ul-Alam (2013) recorded fish and shrimp fauna of Halda River. Some works on fishing gears of Bangladesh were done by Ahmed (1954), Alam *et al.* (1997), Rahman *et al.* (1999), Arshadul-ul-Alam (2013). As per literature reviewed, no works were found on the fish and fishery of Sangu River, Chittagong. So, in the present study an attempt was made to investigate fish diversity of the River Sangu and their (IUCN 2000) status (endangered, critically endangered & vulnerable) in the river Sangu and findings will be useful for researchers, planners and biologists.

MATERIALS AND METHODS

Due to high cost involvement and long distance from the Chittagong University campus a reasonable area about 13 km, a highly fishing zone was selected for the present study. Study area lies between Twalardip Bridge on Sangu River under Anwara and Banskhali upazillas to Baitali point under Chandanaish and Satkania upazillas. Fish and fishery of Sangu River were studied over six months period from June-2011 to November-2011. The data were collected on monthly basis. Fish and Shrimps samples were collected directly from fisherman in the field level during fishing. Colour patterns of finfish and shellfish species were noted in fresh condition. Collected specimens were preserved in 10% formalin solution and kept for further study and future reference. After measuring length and weight of different species were preserved in jars. Hand gloves used in sampling method. Photographs were taken in fresh condition in the field. Identification and classification of the finfish species were done with the help of Day (1889), Shafi and Quddus (1982), Talwar and Jingran (1991) and Rahman (2005).

Relative abundance of finfish and shellfish were made on the basis of number of individuals recorded from set bag net (Behundi jal), scoop net (Tengua jal), enclosure net (Ghera jal) and gill net (Ilish jal).

Catch per unit of effort (CPUE) is the average catch rate and estimated by using the following formula:

$$CPUE = \frac{w}{n}$$

Where, CPUE = daily mean catch per unit of effort

w = total weight of fish recorded from the gear sampled;

n = number of gears sampled

CPUE was recorded as kg/gear/day, and Number of fish/gear/day.

RESULTS

A total 38 species collected during the six months study period from June 2011 to November 2011 total 33 finfish species belongs to 6 orders, 18 families and 30 genus and 5 shellfish species under one order, two families and two genus were recorded in the catch of four types of nets. The checklist of the studied fish and shrimps are given below:

Phylum: Chordata

Class: Osteichthyes

Order 1: Clupeiformes

Family 1: Clupeidae

Genus 1: *Corica*

Species 1: *Corica suborna* (Ham-Buchanan)

Genus 2: *Gudusia*

Species 2: *Gudusia chapra* (Ham-Buchanan)

Family 2: Engraulidae

Genus 3: *Setipinna*

Species 3: *Setipinna pasha* (Ham-Buchanan)

Species 4: *Setipinna taty* (Valenciennes)

Genus 4: *Tenualosa* (Cuvier)

Species 5: *Tenualosa ilisha* (Ham-Buchanan)

Order 2: Cyprinaeformes

Family 3: Cyprinidae

Genus 5: *Cirrhinus* (Cuvier)

Species 6: *Cirrhinus mrigala* (Ham-Buchanan)

Genus 6: *Labeo* (Cuvier)

Species 7: *Labeo ariza* (Ham-Buchanan)

Genus 7: *Puntius* (Ham-Buchanan)

Species 8: *Puntius conchonius*

Genus 8: *Chela* (Ham-Buchanan)

Species 9: *Chela laubuca* (Ham-Buchanan)

Genus 9: *Salmostoma* (Swainson)

Species 10: *Salmostoma phulo* (Ham-Buchanan)

Genus 10: *Hypophthalmichthys* (Aristichthys) Bleeker

Species 11: *Aristichthys nobilis* (Richardson)

Genus 11: *Amblypharyngodon* Bleeker

Species 12: *A. mola* (Ham-Buchanan)

Genus 12: *Rasbora* Bleeker

Species 13: *Rasbora rasbora* (Ham-Buchanan)

Order 3: Siluriformes

Family 4: Bagridae

Genus 13: *Myxus* Scopoli

Species 14: *Myxus gulio* (Ham-Buchanan)

Family 5: Schilbeidae

Genus 14: *Eutropiichthys* (Bleeker)

Species 15: *Eutropiichthys vacha* (Ham-Buchanan)

Order 4: Scorpaeniformes

Family 6: Platycephalidae

Genus 15: *Platycephalus* Bloch

Species 16: *P. indicus* (Linnaeus)

Order 5: Cyprinodontiformes

Family 7: Hemiramphidae

Genus 16: *Hyporhamphus* Gill

Species 17: *H. limbatus* (Valenciennes)

Order 6: Perciformes

Family 8: Anabantidae

Genus 17: *Anabas* Cuvier & Cloquet

Species 18: *A. testudineus* (Blotch)

Family 9: Belontiidae

Genus 18: *Colisha* Cuvier

Species 19: *C. faciatus* (Schneider)

Species 20: *C. labiosus* (Day)

Family 10: Channidae

Genus 19: *Channa* (Scopoli)

Species 21: *Channa punctatus* (Blotch)

Species 22: *Channa striatus* (Blotch)

Family 11: Cichlidae

Genus 20: *Tilapia* Gunter

Species 23: *Tilapia niloticus* (Peters)

Family 12: Eleotridae

Genus 21: *Ophieleotris* Aurich

Species 24: *Ophieleotris aporos* (Bleeker)

Family 13: Gerreidae

Genus 22: *Gerres* (Cuvier)

Species 25: *Gerres abbreviatus* (Cuvier)

Family 14: Gobiidae

Genus 23: *Apocryptes* Valenciennes

Species 26: *Apocryptes bato* (Ham-Buchanan)

Genus 24: *Glossogobius* Gill

Species 27: *Glossogobius giuris* (Ham-Buchanan)

Genus 25: *Pseudapocryptes* Bleeker

Species 28: *Pseudapocryptes elongatus*

Genus 26: *Periophthalmodon*

Species 29: *Periophthalmodon schlosseri* (Pallas)

Family 15: Mugilidae

Genus 27: *Sicamugil*

Species 30: *Sicamugil cascasia* (Ham-Buchanan)

Family 16: Polynemidae

Genus 28: *Polynemus*

Species 31: *Polynemus paradiseus* (Linnaeus)

Family 17: Trypauchenidae

Genus 29: *Trypauchen*

Species 31: *Trypauchen vagina* (Blotch & Schneider)

Family 18: Cynoglossidae

Genus 30: *Cynoglossus*

Species 32: *Cynoglossus cynoglossus* (Ham-Buchanan)

Species 2: *Macrobrachium doliodactylus*

Species 3: *Macrobrachium rude*

Family 2: Penaeidae

Genus 2: *Metapenaeus*

Species 4: *Metapenaeus brevicornis*

Species 5: *Metapenaeus monoceros*

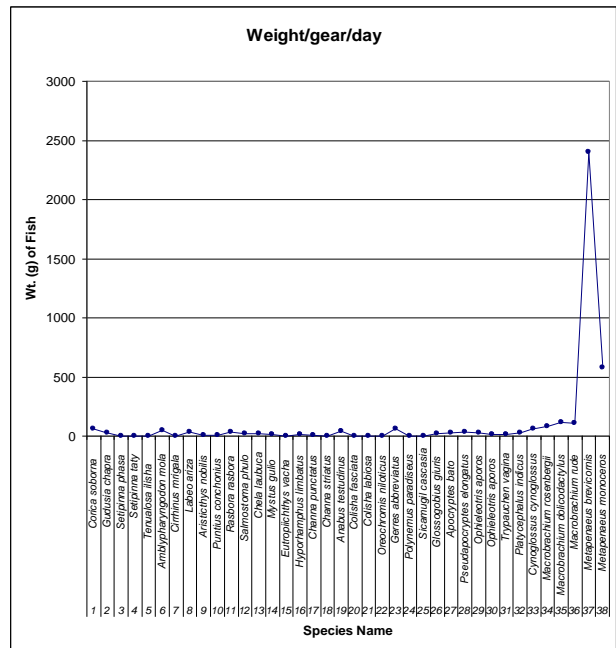


Fig.2: Ave. CPUE of fish catch by weight (Wt./gear/day) in Sangu River

Table 1. The relative abundance of finfish and shellfish species of Sangu River. Abbreviations: A= Abundant, R= Rare, M= Moderate, C= Common, F= Few

Sl.No.	Finfish and shellfish species	Relative abundance
1	<i>Corica soborna</i>	A
2	<i>Gudusia chapra</i>	A
3	<i>Amblypharyngodon mola</i>	A
4	<i>Cirrhinus mrigala</i>	R
5	<i>Labeo ariza</i>	R
6	<i>Aristictithys nobilis</i>	F
7	<i>Puntius conchoniis</i>	R
8	<i>Rasbora rasbora</i>	R
9	<i>Salmostoma phulo</i>	M
10	<i>Mystus gulio</i>	A
11	<i>Hyporhamphus limbatus</i>	R
12	<i>Channa punctatus</i>	R
13	<i>Channa striatus</i>	A
14	<i>Anabus testudinus</i>	A
15	<i>Colisha fasciata</i>	C
16	<i>Colisha labiosa</i>	R
17	<i>Oreochromis niloticus</i>	R
18	<i>Gerres abbreviatus</i>	M
19	<i>Sicamugil cascasia</i>	A
20	<i>Glossogobius giuris</i>	A
21	<i>Apocryptes bato</i>	A
22	<i>Pseudapocryptes elongatus</i>	A
23	<i>Ophieleotris aporos</i>	R
24	<i>Trypauchen vagina</i>	A
25	<i>Platycephalus indicus</i>	R
26	<i>Cynoglossus cynoglossus</i>	A
27	<i>Macrobrachium doliodactylus</i>	A
28	<i>Macrobrachium rosenbergii</i>	A
29	<i>Macrobrachium rude</i>	M
30	<i>Metapenaeus brevicornis</i>	A
31	<i>Metapenaeus monoceros</i>	A
32	<i>Setipinna phasa</i>	A
33	<i>Setipinna taty</i>	A
34	<i>Tenualosa ilisha</i>	R
35	<i>Periophthalmodon schlosseri</i>	A
36	<i>Chela laubuca</i>	A
37	<i>Eutropiichthys vacha</i>	R
38	<i>Polynemus paradiseus</i>	R

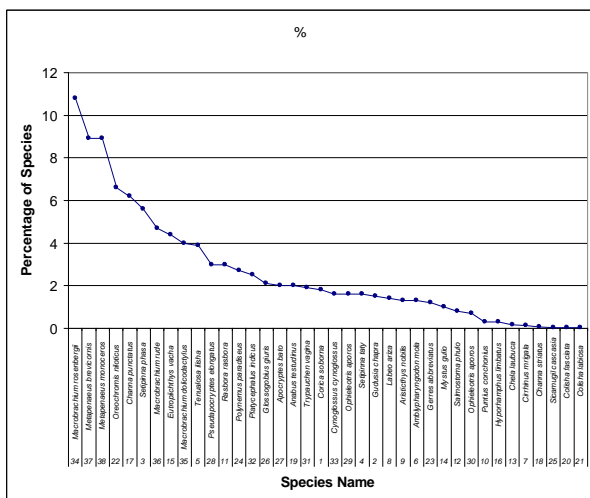


Fig.1. Species composition of Sangu River with percentage

Shellfish species:

Phylum: Arthropoda

Class: Malacostraca

Order 1: Decapoda

Family 1: Palaemonidae

Genus 1: *Macrobrachium*

Species 1: *Macrobrachium rosenbergii*

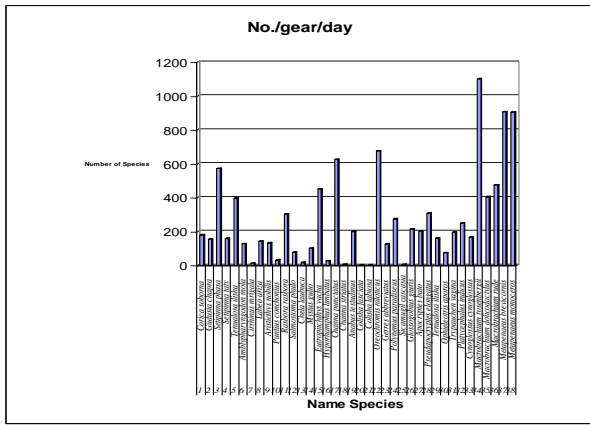


Fig.3: Ave. CPUE of fish catch by number (no./gear/day) in Sangu River.

Table 2. Average CPUE of catch (CPUE gear/day Wt. in g and CPUE of catch (gear/day No. of fish) of Sangu River during six months (June to November) study period.

Sl. No	Species Name	Wt./gear/day of fish (gm)	No./gear/day of fish
1	<i>Corica soborna</i>	64.5	179.7
2	<i>Gudusia chapra</i>	25	155
3	<i>Setipinna phasa</i>	2.75	571.2
4	<i>Setipinna taty</i>	1	158.7
5	<i>Tenualosa ilisha</i>	1	395.5
6	<i>A.mola</i>	44.5	128.5
7	<i>Cirrhinus mrigala</i>	1	12
8	<i>Labeo ariza</i>	31	142
9	<i>Aristichthys nobilis</i>	9	133
10	<i>Puntius conchonius</i>	8	31.5
11	<i>Rasbora rasbora</i>	32.5	302.5
12	<i>Salmostoma phulo</i>	20	77.5
13	<i>Chela laubuca</i>	18.5	17.5
14	<i>Mystus gulio</i>	11	101
15	<i>Eutropiichthys vacha</i>	2	450
16	<i>Hyporhamphus limbatus</i>	15	27.5
17	<i>Channa punctatus</i>	9	625
18	<i>Channa striatus</i>	2.5	6
19	<i>Anabus testudinus</i>	40	200
20	<i>Colisha fasciata</i>	1	3
21	<i>Colisha labiosa</i>	2	2
22	<i>Oreochromis niloticus</i>	3	675
23	<i>Gerres abbreviatus</i>	63	126
24	<i>Polynemus paradiseus</i>	1.5	275
25	<i>Sicamugil cascasia</i>	3	5
26	<i>Glossogobius giuris</i>	18.5	214
27	<i>Apocryptes bato</i>	25.375	201.5
28	<i>P.elongatus</i>	31.5	306.5
29	<i>Tenualosa ilisha</i>	26.5	160
30	<i>Ophieleotris aporos</i>	15	75
31	<i>Trypauchen vagina</i>	10.6666	196
32	<i>Platycephalus indicus</i>	27	250
33	<i>C.cynoglossus</i>	58.3333	166.6
34	<i>M. rosenbergii</i>	83.5	1100
35	<i>M. dollicodactylus</i>	114	404.7
36	<i>Macrobrachium rude</i>	108	475
37	<i>Metapenaeus brevicornis</i>	2400.33	906
38	<i>Metapenaeus monoceros</i>	575.166	903.055
	Grand Total	3906	1015

DISCUSSION

In the present study reveal the the relative abundance of finfish and shellfish of Sangu River found during the six months study period by four nets. Mostly abundant species for finfish were *Corica soborna*, *Amblypharyngodon mola*, *Chela laubuca* and rare species were *Eutropiichthys vacha*, *Polynemus paradiseus*. *Metapenaeus monoceros*, *Macrobrachium rosenbergii* and *Macrobrachium dollicodactylus* abundant and rare species for shellfish. Percentage composition of finfish and shellfish catch for six months by all the four nets combined showed that *Macrobrachium rosenbergii* occupied the first position (10.08%), while *Colisha labiosa* occupied the last position (0.02%). (Fig.1)

CONCLUSION

Sangu River plays a significant role by supplying a considerable amount of finfish and shellfish to the local people as their source of protein. The present study reported 33 species of finfish and 5 species of shellfish with their taxonomic characters and catch composition. If long term study is conducted for the whole river, the fauna of the finfish and shellfish will be increased. So, it is recommended that like other important rivers fishing regulation should be implemented in the studied River to protect and conserve the existing important finfish and shellfish fauna of the Sangu River. Its notable that, during data collection the fisherman did not follow any fishing regulation such as they use net of < 0.5 mm mesh size in enclosure net and < 3 cm mesh size in gill net. If the fishing regulation is not implemented, the fish-fauna will be decreased day by day. So, for sustaining the biodiversity, fishing regulation should be implemented in the Sangu River.

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