Jahangirnagar University J. Biol. Sci. **4**(1): 19-25, 2015 (June)

Ichthyodiversity of the Bangshi river, Savar, Dhaka

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Abstract

Fish diversity of Bangshi river, Savar, Dhaka was studied over a period of two consecutive years (July, 2010 to June, 2012). A total of 48 fish species belonging to 39 genera, 18 families and 8 orders were recorded. Siluriformes was the most dominant order comprising 33.33% of all the number of species recorded, followed by the Cypriniformes (31.25%), Perciformes (14.58%), Clupiformes (6.25%), Channiformes (6.25%), Osteoglossiformes (4.16%), Synbranchiformes (2.08%) and Beloniformes (2.08%). The most dominated species of this study were *Ailia punctata, Mystus tengra* and *Puntius sophore* and rare species was *Bagarius yarrellii*. During the study 29 sp. (40.42%) fish species were found to be locally rare, whereas, only 3sp. (6.25%) were very common and 16 sp. (33.33%) were common in occurrence. Among the fishes, 52.08% was threatened in which vulnerable, endangered and critically endangered were 20%, 36% and 44% respectively.

Key words: Fish diversity, Bangshi river, Dhaka

INTRODUCTION

Fish biodiversity of a river essentially represents the fish faunal status and their abundance. River conserves and supports comparatively varieties of fish species which in turn supports commercial fishery. Once upon a time, rivers of Bangladesh were rich in fish diversity but, gradually number of fishes was decreasing toward threatened status. According to a report of the International Union for Conservation of Nature (IUCN) in 2000, Bangladesh was a home of 266 freshwater fish species of which, 54 were classified as "threatened" and grouped under the 'Red List' species. Bangladesh being rapidly developing country of the south-east Asia, currently holds 1176 industries that discharge about 0.4 millions m^3 of untreated wastes either directly or indirectly in to the rivers in a day (Rabbani & Sharif, 2005). This increasing industrialization and consequent agricultural revolution have already brought negative impact on the water quality (BCAS, 2004). The Bangshi river, located at Savar of Dhaka district is one of the important rivers in central Bangladesh. Once, the river was the prime habitat for many diversified fresh water fishes. But, now it lost all of the riverine characters including its fish resources. The thing becomes more worsen with the industrial effluents mainly from Dhaka Export Processing Zone (DEPZ) as well as river grabbing, siltation and many more anthropogenic factors. Therefore, present research was aimed to carry out to obtain present status of fish diversity in the Banghsi river, Savar, Dhaka.

MATERIALS AND METHODS

Fish samples were collected and recorded from June to October over a period of two consecutive years from July, 2010 to June, 2012. For this research, four sampling sites

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namely, St.1 (23°55′32″N, 090°13′32E), St. 2 (23°54′35″N and 090°13′51E), St. 3 (23°53′45″N and 090°13′56E) and St. 4 (23°52′54″N and 090°13′59E) were selected for getting almost complete record about the available fish species (Fig.1). From each of these sampling sites, fishes were harvested by local fisherman using different types of nets namely, gill nets, cast nets, lift net (dharma jal) and dragnets were collected. As soon as a new fish species was found, photographs were taken and then preserved in 8-10% formaldehyde. The fishes were brought to the laboratory and preserved finally with fresh formaldehyde in separate jars. Smaller fishes were directly placed in the formalin solution while, larger fishes were given an incision and labeled properly on the abdomen before they were fixed. Identification was done based on keys used by Bhuiyan (1964), Talwar & Jhingaran (1991), Shafi & Quddus (2001), Rahman (2005) and finally recorded in the museum of the Department of Zoology, Jahangirnagar University.

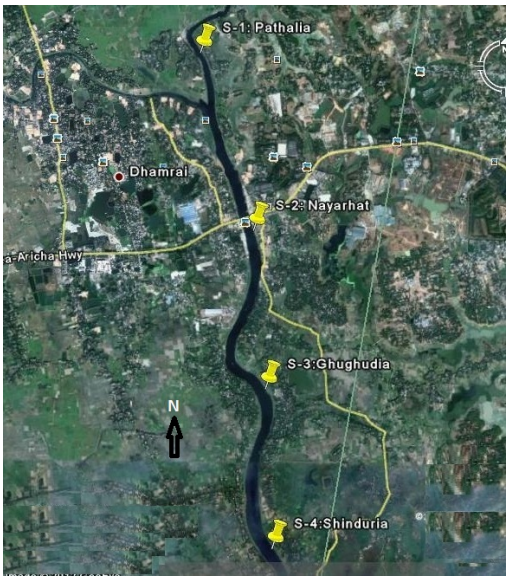

Fig. 1. Satellite image of the Bangshi river, Savar, Dhaka, showing the four sampling sites

All collected data were then used to calculate "Relative Abundance" of a particular fish species" by following the method of Jadhav *et al*. (2011) with slight modification i.e., the relative abundance of the fish was classified into three categories namely Very common (67-100%), Common (34-66%), and Rare (1-33%) on the basis of their availability in total catch. Consequently, the statuses of recorded fishes were determined following IUCN Bangladesh (2000).

RESULTS AND DISCUSSION

A total of 48 species of fresh water fishes belonging to 39 genera, 18 families and 8 orders were recorded (Table 1).

Table 1. Fish species recorded from the Banghi river during July 2010 to June 2012

Order	Family	Species	Common name	Local name	Relative abundance	Status
Osteoglossiformes	Notopteridae	*Notopterus chitala*	Humped Featherback	Chital	+	EN
		Notopterus notopterus	Grey Featherback	Foli	++	VU
Clupiformes	Clupeidae	*Gonialosa manmina*	Ganges river Gizzard Shad	Chapila	++	NO
		Anodontosoma chacunda	Chacunda Gizzard-shad	Koi puti	+	NO
		Corica soborna	Gang River sprat	Kachki	+	NO
Channiformes	Channidae	*Channa marulius*	Giant snakehead	Gajar	+	EN
		Channa punctatus	Spotted Snakehead	Taki	+	NO
		Channa striatus	Striped Snakehead	Shol	++	NO
Cypriniformes	Cobitidae	*Lepidocephalus guntea*	Guntea Loach	Gutum	++	NO
		Botia dorio	Nechtie Loach	Rani	+	EN
	Cyprinidae	*Amblypharyngodon mola*	Pale Carplet	Mola	+	NO
		Salmostoma acinaces	Silver Razorbelly Minnow	Chela	+	DD
		Catla catla	Catla	Katla	+	NO
		Cirrhinus mrigala	Mrigal	Mrigel	+	NO
		Labeo bata	Bata Labeo	Bata	+	EN
		Cirrhinus reba	Reba carp	Tatkini	+	VU
		Danio devario	Devario danio	Bashpata	++	NO
		Labeo calbasu	kalbaus	kalibasu	++	EN
		Labeo rohita	Rohu	Rui	+	NO
		Osteobrama cotio	Coti	Dhela	+	EN
		Puntius ticto	Ticto Barb	Tit Punti	+	VU
		Puntius sophore	Spotfin Swamp Barb	vadi punti	+++	NO
		Barilius tileo	Tileo Baril	Patharchata	+	DD
Siluriformes	Pangasiidae	*Pangasius pangasius*	Pungas	Pungus	+	CR
	Plotosidae	*Plotosus canius*	Canine Catfish-eel	Gang-Magur	+	VU
	Schilbeidae	*Clupisoma garua*	Garua Bacha	Ghaura	++	CR
		Eutropiichthys vacha	Batchwa Bacha	Bacha	+	CR
		Silonia silondia	Silondia	Shillong	+	EN
		Ailia punctata	Jamuna Ailia	kajuli	+++	VU
	Siluridae	*Ompok pabda*	Pabdah catfish	Pabda	+	EN
		Wallago attu	Freshwater shark	Boal	++	NO
		Bagarius yarrellii	Gangetic Goonch	Baghair	++	CR
		Glypothorax telchitta	Copper catfish	Teli/Telchitta	+	DD

Cont.

	Heteropneustidae	*Hetropneustes fossilis*	Stinging Catfish	Singi	++	NO
	Bagridae	*Aorichthys aor*	Long whiskered Catfish	Ayre	+	VU
		Mystus vittatus	Striffed Dwarf Catfish	Tengra	++	NO
		Mystus cavasius	Gangetic mystus	Golsha	++	VU
		Mystus tengra	Tengra Mystus	Ghuitta-tengra	+++	NO
		Rita rita	Rita	Rita	+	CR
Synbranchiformes	Synbranchidae	*Monopterus cuchia*	Gangetic Mudeel	kuicha	+	VU
Perciformes	Ambassidae	*Chanda nama*	Elongate Glass-perchlet	chanda	++	VU
	Anabantidae	*Anabas testudineus*	Climbing Perch	koi	+	NO
	Gobiidae	*Glossogobius giuris*	Tank Goby	Bele	+	NO
	Osphronemidae	*Colisa fasciatus*	Stripled Gourami	khailsha	++	NO
	Mastacembelidae	*Macrognathus pancalus*	Striped Spinyeel	Guchi	+	VU
		Mastacembalus armatus	Tire-track Spinyeel	Baim	+	EN
		Macrognathus aral	One-stripe Spinyeel	Tara Baim	++	VU
Beloniformes	Belonidae	*Xenentodon cancila*	Freshwater Garfish	kakila	++	NO

+=Rare, ++=common, +++=very common,
CR= Critically Endangered, EN= Endangered, VU- Vulnerable, LR- Lower Risk, NO- Not Threatened, DD- Data Deficient

However, there is no previous study on fish fauna of the Bangshi river, but, obviously it seems very poor condition compared to other rivers in Bangladesh. Hossain & Haque (2005), Mohsin & Haque (2009), Joardder (2009), De *at al.* (2011), Rahman *et al.* (2012), Galib *et al*. (2013), Flowra *et al.* (2013), Alam *et al*. (2013), Paul *et al.* (2014) and Mohshin *et al.* (2014) reported 135 species under 33 families, 56 species under 20 families, 78 species under 19 families, 59 fin fishes under 19 families, 80 species under 24 families, 63 species under 23 families, 60 species under 20 families, 63 species under 24 families, and 53 species under 28 families from the river Padma, Mahananda, Atrai, Bangali, Padma, Choto Jamuna, Baral, Halda, and the Andharmanik river respectively. The only variation found in Titas river was 35 species of fish (Ahmed & Akter, 2008), which is fewer than the present findings in the Banghsi river.

The percentage distribution of fish species under respective orders suggest that the Siluriformes was the most dominant order comprising 33.33% of all the number of species recorded followed by the Cypriniformes (31.25%), Perciformes (14.58%), Clupiformes (6.25%), Channiformes (6.25%), Osteoglossiformes (4.16%), Synbranchiformes and Beloniformes of each 2.08% (Fig. 2). On the otherhand, among the recorded 18 families, Siluriformes comprises 6 families followed by Perciformes (5), Cypriniformes (2), Clupiformes, Channiformes, Osteoglossiformes, Synbranchiformes and Beloniformes of each containing 1 family and their relative percentage were 33.33%, 27.77%, 11.11%, 5.55%, 5.55%, 5.55%, 5.55% and 5.55% respectively. whereas, Joarder (2009), Rahman *et al.* (2012), Galib *et al.* (2013), Flowra *et al.* (2013), Alam *et al.* (2013) reported Cypriniformes most dominated order as followed by Siluriformes and perciformes in the Atrai, Padma, Choto Jamuna, Baral and Halda river respectively. But, Moshin & Haque (2009) recorded Siluriformes as a dominated family followed by Cypriniformes and Perciformes in the Mahananda river and Mohshin *et al.* (2014) reported Perciformes followed by Siluriformes and Cypriniformes in the Andharmanik river.

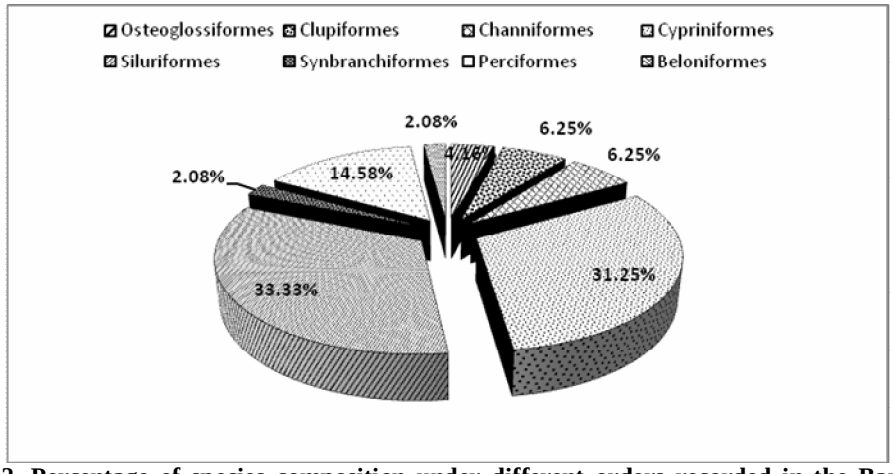

Fig. 2. Percentage of species composition under different orders recorded in the Bangshi river during July 2010 to June 2012

Among the fishes, the representative of family Cyprinidae was most dominant and 13 species of fishes were recorded under this family. The number of species recorded under the family Bagridae were 5, Schilbeidae and Siluridae were 4, Clupeidae, Chanidae and Mastacembelidae were 3, Notopteridae and Cobitidae were 2, and Pangasiidae, Plotosidae, Heteropneustidae, Synbranchidae, Ambassidae, Anabantidae, Gobiidae, Osphronemidae and Belonidae were 1. The highest number of fish species under the family Cyprinidae might be due to congenial river bottom which they prefer most. Similar observation was also reported by Mohshin & Haque (2009), De *et al*. (2011), Joadder (2012), Rahman *et al*. (2012), Alam *et. al.* (2013), Galib *et al.* (2013), Flowra *et al.* (2013) in the Mahananda, Bangali, Atrai, Padma, Halda, Choto Jamuna, Baral river, respectively, whereas, Mohshin *et al.* (2014) reported Clupeidae as a dominated family in the Andhermanik river.

Again, among the identified fishes, *Ailia punctata, Mystus tengra* and *Puntius sophore* were dominated species while, *Bagarius yarrellii* was rare species. Among the recorded fishes, maximum 29 (60.42%) species were rare, whereas, only 3 (6.25%) were very common and 16 (33.33%) were common. Among the recorded 48 species of fish, 25 (52.08%) were threatened. Again, among the threatened fish species Vulnerable, Endangered, Critically Endangered species were 05 (20%), 09 (36%) and 11 (44%), respectively (Fig. 3). However, abundance of 52.08% threatened species among the total recorded fish species reflecting its potentiality to be an excellent site for natural conservation. The comparatively low species diversity and abundance suggested the presence of stress-inducing factors in this river.

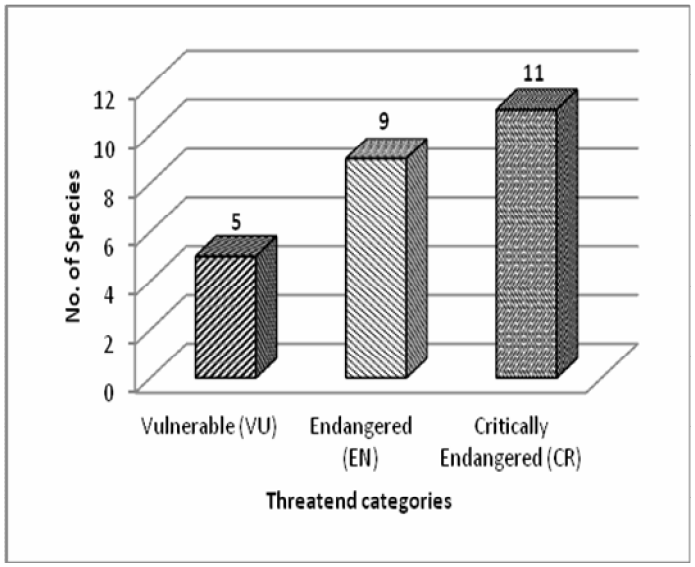

Fig. 3. Status of recorded threatened fish species in the Bangshi river during July 2010 to June 2012

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