

Post impoundment changes in the fish fauna of Kaptai reservoir, Bangladesh

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Abstract

Based on the present investigation and reviewing the published and unpublished documents critically, this communication considers the post impoundment changes in the fish fauna of Kaptai reservoir. Investigation reveals that a total of 73 species of fish belongs to 47 genera, 25 families and 2 species of prawn are present in the reservoir. Of them, 31 are commercially important, 6 exotic and 9 species are newly identified.

Key words: Fish fauna, Post impoundment change, Kaptai reservoir

Introduction

Kaptai reservoir is one of the largest man-made freshwater lake in the world (BLP/IDRC 1980), and the largest in Southeast Asia (Fernando 1980). With a surface area of 68800 ha at full supply level (FSL) (Ali 1985) it offers a wide possibilities for the development of fisheries and the enhancement of annual fish production. Before damming on the course of the river Karnaphuli in 1960-61, no investigation was done of its fish fauna.

The fish population of Kaptai reservoir was primarily dependent on the previous riverine stocks that goes back to 36 years after impoundment, so, the scenario of fish fauna exists in this reservoir shows strong resemblance with those of the rivers, haors, beels system of Bangladesh. Even than, changes in the fish faunastic structure in respect to existence and abundance and shifting habitat have been occurred with time from riverine to lacustrine environment due to the formation of dam. In case of every reservoir created through damming where a common phenomena exist that fish those become captivated either it may be adapted itself to the new ecosystem or endangered or dwindled or become extinct from that environment. These phenomena have probably occurred to the history of Kaptai lake fish fauna. From 80s onward a number of species like Chinese carps, Thai punti has introduced. African magur, a carnivorous as well as highly competitive fish has accidentally introduced in the reservoir recently from the culture ponds as those of tilapia escaped from culture cages during 1985. This tilapia like the Chinese carps already adapted them in the reservoir water and contributes subsequently to the total landing. The African magur which recently escaped from the

culture pond are found in the fisher's catch which may be harmful for many indigenous species due to its carnivorous habit.

On the other hand, some species captivated during the closing of the river Karnafuli, have been adapted themselves successfully to the new ecosystem and now-a-days, contributing substantially to the total landings. Some of the fish might have inhabited within the reservoir but not found frequently to the fisher's catches or in the harbors. As a result, a great controversy arisen regarding few rarely found species according to several author's whether they exists till today or not. The investigation is, therefore, undertaken considering the post impoundment changes in the fish fauna of Kaptai reservoir chronologically.

Materials and methods

The present investigation was made over a period of two years from 1995 to 1997. The fish enlisted here were collected mostly from the fisher's catch at major fishing sites (Kattoli, Burighat, Suvalong and Bilaichhori) in the reservoir. A number of specimens were collected from Bangladesh Fisheries Development Corporation (BFDC) pontoon at Rangamati, the main fish landing center where fish were brought out every far off fishing grounds by carrier boats. Local retail markets were also accounted and a few of the listed specimens were collected from the laboratory of Bangladesh Fisheries Research Institute, Riverine Sub-station, Rangamati. Species enlisted here are preserved in the laboratory of Riverine Sub-station. Identification of fish was done following Day (1958), Talwar and Jhingran (1991), Rahman (1989) and Jayaram (1981).

Results and discussion

In this investigation a total of 73 species of fish belongs to 47 genera, 25 families and 2 species of prawns were recorded, of them, 31 are commercially important, 6 exotic and 9 species are newly identified. Most of the species collected are as illustrated in the Table-1 with their present status within the community. Chookder (1966) in an unpublished report mentioned 54 species of fish inhabiting the reservoir area and added that, before construction of the dam the Karnafuli estuary and its upstream was rich in fish fauna. Sandercock (1966) studied first the fish fauna of Kaptai reservoir and enlisted 27 commercially important species. Ahmed and Hasan (1981) prepared a check list of 27 species of fish but they could not able to include very common, abundant and commercially important species inhabiting in the reservoir those even recorded in the daily landing register. While reporting on behalf of the committee for the evaluation of the fisheries management of Kaptai reservoir, Baily (1982) mentioned that the reservoir harbors 58 species of fish without providing any list. As the same way, Hye (1983) also mentioned 58 species belonging to 25 families of which 28 commercially important but failed to include a complete list of the same. ARG (1986) in their final report gave list comprising 49 indigenous and 5 exotic species, mentioning 31 commercially important.

Hafizuddin *et al.* (1989) enlisted 58 species including 5 exotic ones and considered again the same number of commercially important species. Likewise, Halder *et al.* (1989) encountered 66 indigenous and 5 exotic species belonging to 49 genera, 26 families and 10 orders.

Sandercock (1966), in his pioneer work in the history of Kaptai reservoir fisheries mentioned *Silonia silondia*, *Bagarius bagarius* and *Clupisoma garua* as commercial species and he predicted the future potential of these species in the commercial catches would be hampered as these fish were inhabited in some particular areas of the reservoir and added that among them *S. silondia* was found as rare species during that period. None of the above species was found by the present investigators or by the antecedents (Ahmed and Hasan 1981, ARG 1986, Alamgir *et al.* 1990).

Table 1. Checklist of the fish fauna of Kaptai reservoir

Family/Genus/Species	Vernacular name	Present status
1. SYMBRANCHIDAE		
G- <i>Monopterus</i> McClelland	Kuichcha/Kuchey	C
<i>Monopterus</i> <i>cuchia</i>		
2. F- TETRAODONIDAE		
G- <i>Tetraodon</i> Linneus		
<i>Tetraodon</i> <i>cutcutia</i>	Potka/Tepa	R
3. F-BELONIDAE		
G- <i>Xenontodon</i> Regan		
<i>Xenontodon</i> <i>cancila</i>	Kaikley/Kakila	VC
4. F- HEMIRHAMPHIDAE		
G- <i>Dermogenys</i> Van Hasselt		
<i>Dermogenys</i> <i>pussilus</i>	Ek thuta	VC
5. F- CYPRINODONTIDAE		
G- <i>Aplocheilus</i> McClelland		
<i>Aplocheilus</i> <i>punchax</i>	Tinchoka/Tekuchia	C
6. F- CHANNIDAE		
G- <i>Channa</i> Scopoli		
<i>Channa</i> <i>striatus</i>	Shoil	C
<i>Channa</i> <i>puntatus</i>	Cheng/Taki	VC
<i>Channa</i> <i>marulius</i>	Gozar	VC
<i>Channa</i> <i>orientalis</i>	Okol/Raga	FC
7. F- CYPRINIDAE		
G- <i>Salmostoma</i> Swainson		
<i>Salmostoma</i> <i>phulo</i>	Chela	VC
<i>Salmostoma</i> <i>bacaila</i>	Chela	VC
G- <i>Esomus</i> Swainson		
<i>Esomus</i> <i>danricus</i>	Darkina/ Jhia	FC
G- <i>Amblypharyngodon</i> Bleeker		
<i>Amblypharyngodon</i> <i>mola</i>	Mola/Moia	C
G- <i>Rohtee</i> Sykes		
H- <i>Rohtee</i> <i>cotio</i>	Dhela	C

G-	<i>Labeo Cuvier</i>	Kalbaush/Kali	
	<i>Labeo calbasu</i>	Ghoinna	VC
	<i>Labeo rohita</i>	Rui	C
	<i>Labeo gonius</i>	Sada Ghoinna/Ghonia	C
	<i>Labeo bata</i>	Bata	FC
	<i>Labeo angra</i>	Bhanga Bata	R
G-	<i>Cirrhinus (Oken)Cuvier</i>		
	<i>Cirrhinus mrigala</i>	Mrigala/Mirgi/Mirka	C
	<i>Chirrhinus reba</i>	Lasu/Bata/Raikh	C
G-	<i>Puntius Hamilton</i>		
	<i>Puntius sophore</i>	Punti	C
	<i>Puntius ticto</i>	Tit Punti	VC
G-	<i>Aspidoparia Heckel</i>		
	<i>Aspidoparia jaya</i>	Piali	R
	<i>Aspidoparia morar</i>	Piali	R
8. F-	COBITIDAE		
G-	<i>Lepidocephalus Bleeker</i>		
	<i>Lepidocephalus guntea</i>	Gutum/Gotey	FC
9. F-	CLARIIDAE		
G-	<i>Clarias Scopoli</i>		
	<i>Clarias batrachus</i>	Magur	VC
10. F-	SILURIDAE		
G-	<i>Wallago Bleaker</i>		
	<i>Wallago attu</i>	Boal	C
G-	<i>Ompok Laceped</i>		
	<i>Ompok bimaculatus</i>	Pabda	C
11. F-	HETEROPNEUSTIDAE		
G-	<i>Heteropneustes Muller</i>		
	<i>Heteropneustes fossilis</i>	Shinghi/Jhial	C
12. F-	SCHILBEIDAE		
G-	<i>Ailia Gray</i>		
	<i>Ailia coilia</i>	Baspata/Kajori	C
G-	<i>Pseudeutropius Bleeker</i>		
	<i>Pseudeutropius atherinoides</i>	Batashi	FC
G-	<i>Eutropiichtys Bleeker</i>		
	<i>Eutrophichthys vacha</i>	Bacha	VC
13. F-	BAGRIDAE		
G-	<i>Mystus Scopoli</i>		
	<i>Mystus aor</i>	Ayre	VC
	<i>Mystus cavasius</i>	Gulsha	VC
	<i>Mystus bleekeri</i>	Tengra	FC
	<i>Mystus vittatus</i>	Tengra	FC
14. F-	SISORIDAE		
G-	<i>Gagata Bleeker</i>		
	<i>Gagata youssoufi</i>	Gagtengra	FC
15. F-	NOTOPTERIDAE		
G-	<i>Notopterus Lacepede</i>		
	<i>Notopterus chitala</i>	Chital	VC

	<i>Notopterus notopterus</i>	Foli /Foloi	C
16. F-	ENGRULIDAE		
	G- <i>Setipinna</i> Swainson		
	<i>Setipinna phasa</i>	Phaissha	VC
17. F-	CLUPEIDAE		
	G- <i>Gudusia</i> Fowler		
	<i>Gudusia chapra</i>	Chapila	VC
	G- <i>Corica</i> Hamilton	Katchki/Soborn	
	<i>Corica soborna</i>	Khorika	VC
	G- <i>Gonialosa</i> Regan		
	<i>Gonialosa manminna</i>	Bori chapila/chapila	VC
18. F-	MASTACEMBALIDAE		
	G- <i>Macrognathus</i> Lacepede		
	<i>Macrognathus aculeatus</i>	Tara baim/Tota	FC
	G- <i>Mastacembelus</i> (Gronovius)		
	Scopoli		
	<i>Mastacembelus armatus</i>	Baim/Bara Baim	FC
	<i>Mastacembelus pancalus</i>	Pakal/Guchi	FC
19. F-	MUGILIDAE		
	G- <i>Rhinomugil</i> Gill		
	<i>Rhinomugil corsula</i>	Khorsula	VC
20. F-	ANABANTIDAE		
	G- <i>Colisa</i> Cuvier	Lal Kholisha	
	<i>Colisa lalius</i>	PataKholisha/Bara	VC
	<i>Colisa fasciatus</i>	Kholisha	VC
	G- <i>Anabas</i> Cuvier & Cloquest		
	<i>Anabas testudineus</i>	Koi	FC
21. F-	GOBIIDAE		
	G- <i>Glossogobius</i> Gill		
	<i>Glossogobius guiris</i>	Bele/Baila	VC
22. F-	NANDIDAE		
	G- <i>Nandus</i> Cuvier		
	<i>Nandus nandus</i>	Bheda/Meni	R
23. F-	PRISTOLEPIDAE		
	G- <i>Badis</i> Bleeker		
	<i>Badis badis</i>	Napit Koi	C
24. F-	SCIAENIDAE		
	G- <i>Johnius</i> Bloch		
	<i>Johnius coitor</i>	Poa	C
25. F-	CENTROPOMIDAE		
	G- <i>Chanda</i> Hamilton		
	<i>Chanda ranga</i>	Chanda	FC
	<i>Chanda nama</i>	Chanda	VC

New identification

F- CYPRINIDAE
G- *Danio* Hamilton

<i>Danio sondhii</i>	Bara darkina	FC
G- <i>Crossocheilus</i> Van Hasselt		
<i>Crossocheilus latius</i>	Bara darkina	C
G- <i>Puntius</i> Hamilton		
<i>Puntius jelus</i>	Tit puti	C
<i>Puntius chola</i>	Puti	C
<i>Puntius conchoniis</i>	Kanchon puti	C
F- CENTROPOMIDAE		
G- <i>Chanda</i> Hamilton		
<i>Chanda baculis</i>	Chanda	VC
<i>Chanda lala</i>	Chanda	FC
F- COBITIDAE		
G- <i>Nemachilus</i> Van Hasselt		
<i>Nemachilus zonanternas</i>	Gutum	FC
F- BAGRIDAE		
G- <i>Batasio</i> Blyth		
<i>Batasio tengana</i>	Tengra	R
Species introduced		
F- CYPRINIDAE		
G- <i>Cyprinus</i> Hamilton		
<i>Cyprinus carpio</i>	Carpu	C
G- <i>Puntius</i> Hamilton		
<i>Puntius gonionotus</i>	Thai punti	FC
G- <i>Hypophthalmichthys</i> Bleeker		
<i>Hypophthalmichthys molitrix</i>	Silver carp	FC
G- <i>Ctenopharyngodon</i> Steindachner		
<i>Ctenopharyngodon idella</i>	Grass carp	FC
F- CICHLIDAE		
G- <i>Oreochromis</i> Smith		
<i>Oreochromis nilotica</i>	Tilapia	C
F- CLARIIDAE		
G- <i>Clarias</i> Scopoli		
<i>Clarias gariepinus</i>	African magur	FC
Prawns		
F- PALAEMONDAE		
G- <i>Macrobrachium</i> de Man		
<i>Macrobrachium rosenbergii</i>	Golda Chingri	FC
<i>Macrobrachium lamarri</i>	Kucha Chingri	VC

VC: Very common; C: Common; FC: Fairly common; R: Rare

After Sandercock (1966) nobody except Halder *et al.* (1989) mentioned the *B. bagarius* and there remains strong possibility of erroneous identification of this species

because, in our investigation no single specimen was found. There might have been great possibility of existence of this species before and after the construction of the dam and disappeared afterwards.

A check list made by Ahmed and Hasan (1981) for Kaptai reservoir fisheries is questionable where they could not include four very common abundant and commercially important species (*Notopterus chitala*, *Mystus aor*, *Channa striatus* and *Setipinna phasa*) during their study and also interesting to note that they also failed to cite the pioneer work of Sandercock (1966). Moreover, two enlisted species, viz. *Ailiichthys punctatus* and *Mystus seenghala* are again a matter of question because Sandercock (1966), ARG (1986), Alamgir *et al.* (1990) did not mention about *A. punctatus* in their checklist and only Alamgir *et al.* (1990) collected a few specimen for *M. seenghala*. ARG (1986) corrected the name of *A. punctatus* as *Ailia coilia* and mentioned that such erroneous identification might have been occurred due to similar morphology between the two species. Though Halder *et al.* (1989) reported *Ailia coilia* and *M. seenghala* in their checklist but they did not mention the name of *A. punctatus*. In the present investigation none of the two species (*A. punctatus* and *M. seenghala*) have been found so far. This *A. coilia* is available in the landing during the period of peak water level (November to January).

Hye (1983) and ARG (1986) mentioned the name of *Mystus guleo* and *M. tengra* respectively but Haffizuddin *et al.* (1989) and Halder *et al.* (1989) did not include both of these fish and in this investigation same result is found. The existence of *Ompok bimaculatus* is also controversial according to the works of Sandercock (1966), Ahmed and Hasan (1981), ARG (1986) and Alamgir *et al.* (1990). Because the workers except Sandercock (1966) mentioned *O. bimaculatus* as *Ompok pabda* but in our investigation it was found that *O. bimaculatus* is very common in fishers' catch not *Ompok pabda*. Similar opinion was made by Halder *et al.* (1989) in their checklist for the same reservoir.

Rita rita, described by Halder *et al.* (1989) and Alamgir *et al.* (1990) and *Puntius sarana* (Ahmed and Hasan 1981, ARG 1986 and Alamgir *et al.* 1990) was not found in the present investigation. Halder (1989) reported that *Puntius sarana* was caught in the large numbers at the inception of the reservoir. The species become disappeared from the reservoir and on the other hand, *Puntius gonionotus*, an exotic species introduced here escaping from the research cages accidentally and with the stocked fingerlings, and going to be established within this environment and being found in the normal catch.

At the inception of the reservoir *Tor tor* was found to catch in riffle areas of Karnafuli reservoir at Barkal and of the Kassalong river at Gangaram (Sandercock 1966) but at present, this species found rare in the landings. Meanwhile, the evidence of observing fry and fingerlings of the same through fisher's catch at Barkal immediately after breeding season is claimed by BFRI scientists. This species may be treated as endangered and immediate steps should be taken for the conservation of this highly priced fish by artificial propagation and banning the catch in the reservoir.

Considering the geographical distribution, the *Danio sondhii* and the *Dermogenys pussilus* covers the Kaptai reservoir and south-eastern part of Bangladesh (Talwar and

Jhingran 1991, Rahman 1989), the Kaptai reservoir may be regarded as possible habitat for those rarely found species although they are not still recorded from any other inland waters. From the inception of landing (1965-66) to 1984-85 the contribution of total landing was made by major carps (21%) which have been replaced recently by Clupeids (Kechki+Chapila, 64%). However, adopting proper management techniques and following the conservation measures strictly, can make this reservoir a prominent source for diversified ichthyobiota. Nevertheless, the list of these fish fauna is not exhaustive and it may be believed that there are more species yet to be accounted and identified and those species may be harbored in the remote areas and parts rest in India.

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