



Diversity of small indigenous Fishes (SIF) of Nabaganga and Kaliganga rivers of Jhenidah, South western part of Bangladesh

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Abstract

Small indigenous fishes were very much important in socioeconomic, nutritional and biodiversity aspects. Bangladesh is a riverine country which plays a nursery ground for small indigenous fishes. But the open water system is reclaimed by anthropogenic interference of humans. The river receives large amounts of discharge materials from industries, households and pesticides and fertilizers from agricultural practices by the riverside areas, which alter the physicochemical properties of water. Due to the contamination of water in the river, a number of fishes are declining, affecting the livelihood of the rural people. Thus it is of prime importance to construct a fish diversity structure of water bodies.

Keywords: Small indigenous species, diversity, river, ecology, anthropogenic activities.

Introduction

Jhenidah is an important district of Bangladesh because of its wonderful geographical locations adjacent to Indian territory, crossed by many rivers, Nabaganga and Kaliganga are important rivers which are considered as the tributaries of the Ganga-Padma river system. They play a significant role in business, communications, livelihood of the rural people. In addition, it helps in agriculture and a good number of fish diversity which is the main source of protein for the rural mass.

Nabaganga and Kaliganga are the two main rivers which contribute the prime open water resources in the south western part of Bangladesh. Most of the people of these areas are farmers and depend largely on the productivity of these water bodies for fish, livestock grazing, irrigation, washing, cooking, bathing and urban set up. With the high intensity of population and farm practices, the productivity of aquatic bodies is declining as a result, loss of biodiversity occurs.¹

Fish is a renewable natural resource of the earth and most of the protein intake was coming from the fishery resources²⁻⁵. The fisheries sector contributes not only to national GDP but also to earning foreign exchange⁶. Water bodies are wonderful gifts of nature and they provide a lot of benefits with the smallest amount of care and awareness and also provide a habitat for different fauna and flora⁴. Bangladesh has wonderful geographical situations with numerous water bodies in the form of rivers, lakes, ponds, canals, haor, baor (oxbow lakes) and beels (depressions). The open water resources were estimated at 4395966 hectares of which rivers and canals were 479737 hectares⁷. More than four hundred rivers were present in the past of which 43 rivers are international⁷.

Small indigenous fishes were considered those whose length attained 25 cm or 9 inches⁸. But there are some deviations of small indigenous fishes and those considered longer than 25 cm are treated as SIS fishes⁹. Over 260 fresh water fishes were present of which 154 are considered as SIS species¹⁰. Fish is the main dietary source of protein, covering 38% of the total protein intake. SIS fishes contain certain vitamins, proteins and minerals¹¹⁻¹⁴. The flesh of SIS fishes is very soft, tasty and easily digestible. It helps to eliminate malnutrition and night blindness. Our aim was to assess the present status of SIF fishes which help as baseline information for the concerned authorities and researchers because no previous work has been done on the diversity structure of these rivers.

Methodology

Study was carried out from September 2009 to August 2010. Six sites were selected for investigation of SIS fishes.

Table-1

List of sampling stations are shown

Sampling sites	locations
Mirzapur	Kaliganga river, sailkupa
Sseikhpara	Kaliganga river, sailkupa
Harinarayanpur	Kaliganga river, Kushtia
Jhenidah sadar	Nabaganga river, jhenidah
Mathurapur	Nabaganga river, harinakundu
Mohiskundi sasan	Nabaganga river, jhenidah

Table-2
The identified fishes were tabulated

Common name	Scientific name	availability			
Bata	<i>Labeo bata</i> (Hamilton)	+++	Darika	<i>Rajbora daniconius</i>	+
Tit puti	<i>Puntius ticto</i> (Hamilton)	+++	kakle	<i>Xenotodon cancella</i> (Hamilton)	++
Shar puti	<i>Puntius sarena</i> (Hamilton)	+	Chuto kholshe	<i>Colisa labiosa</i> (Dey)	++
Jat puti	<i>Puntius sophore</i> (Hamilton)	++	Telchita	<i>Glypothorax telchitta</i>	++
Tangra	<i>Mystus vitatus</i> (Bloch)	+++	Silong	<i>Silonia silondia</i> (Hamilton)	+
Tangra	<i>Mystus cavasius</i> (Hamilton)	+++	Rayek	<i>Cirrihnus reba</i> (Hamilton)	+
Golsha tangra	<i>Mystus bleekeri</i> (Dey)	+++	Bheda/roina/meni	<i>Nandus nandus</i> (Hamilton)	+
Tapa	<i>Tetrodon cutcutia</i> (Hamilton)	++	koi	<i>Anabus tesudineus</i> (Bloch)	++
kholshe	<i>Colisa fasciatus</i> (Bloch and Schneider)	+++	rani	<i>Botia Dario</i> (Hora)	++
Kholshe ranga	<i>Colisa lalia</i> (Hamilton)	++	Mola	<i>Amblypharyngodon mola</i>	++
Chuno kholshe	<i>Colisa sota</i> (Hamilton)	++	piale	<i>Aspidoporia jaya</i> (Hamilton)	++
Bele	<i>Glossogobius guiris</i> (Hamilton)	+++	Gonia	<i>Labeo gonius</i> (Hamilton)	+
Chuto tangra	<i>Mystus tengra</i> (Hamilton)	+++	Bhangon bata	<i>Labeo boga</i> (Hamilton)	+
Pankal	<i>Macrognathus pancalus</i> (Hamilton)	++	Chep chela	<i>Chela laubuca</i> (Hamilton)	++
Tara baim	<i>Macrognathus armatus</i> (Lecepede)	++	Pabda	<i>Ompok pabda</i> (Hamilton)	++
Taki	<i>Channa punctatus</i> (Bloch and Schneider)	+++	Kani pabda	<i>Ompok bimaculatus</i> (Bloch)	++
Cheng	<i>Channa orientalis</i> (Bloch and Schneider)	+++	Gharu	<i>Clupisoma garua</i> (Hamilton)	+
Shing	<i>Heteropneustus fossilis</i> (Bloch)	+++	Bacha	<i>Eutropichthyes vacha</i> (Hamilton)	+
Magur	<i>Clarius batrachus</i> (Linnaeus)	++	Potka	<i>Tetrodon patoca</i> (Hamilton)	+
Foli	<i>Notopterus notopterus</i> (Pallas)	++	Chela	<i>Salmostoma bacaila</i> (Hamilton)	++
Chanda	<i>Chanda nema</i> (Hamilton)	+++	Phul chela	<i>Salmostoma phulo</i> (Hamilton)	++
Chanda	<i>Chanda ranga</i> (Hamilton)	+++	Ghora chela	<i>Securicola gora</i> (Hamilton)	++
Chanda kata	<i>Chanda baculis</i> (Hamilton)	+++	Ranga Darika	<i>Danio reno</i> (Hamilton)	++
Ghuntea	<i>Lepidocephalus guntea</i>	+++	Kanchan puti	<i>Puntius conchoniis</i> (Hamilton)	++
Darkana	<i>Esomus danricus</i> (Hamilton)	++	Phasa	<i>Setipinna phasa</i> (Hamilton)	+
chapila	<i>Gudusia chapra</i> (Hamilton)	++	Dhela	<i>Osteobrama cotio</i> (Hamilton)	+
Khorka	<i>Nemachilus savona</i> (Hamilton)	++	panchchoka	<i>Apocheilux punchax</i>	++

Note: +++ abundance, ++ less abundance, + rare.

The fishes were collected from the fishermen and local people of different selected sites of the river by using traditional nets and gears. Local fish markets were also regularly visited at regular intervals. Common fishes were easily identified on the spot according to the taxonomic keys and released immediately to the water. That fish which were difficult to identify, preserved in 10% formalin and brought to the laboratory. Identification was done with the help of key¹⁵ and several books¹⁶⁻¹⁸. Interviews were taken from age old people of different locations adjacent to riverside areas to realize the condition of productivity of the rivers past and present scenario. Besides these, in formations were collected from focus group discussions to justify the condition of the river as well as the socioeconomic profile.

Results and Discussion

54 species of SIS fishes were identified during the period study of which some were a found in a critical situation. Once the rivers are the store house of 260 species of fishes but at present only few percentages of fishes were available. Various causes for fish kills or degradation of fish production were identified. The main reasons for the loss of connection of big river was lost during dry season, the river was almost dry up in summer. Habitat loss, unplanned and uncontrolled developmental works along the bank of the river, water abstraction for drinking, industrial and agricultural purposes, huge siltation, overfishing, domestic and industrial sewage were responsible for declining fish production^{19, 20, 21, 22}. The structure and function of an ecosystem depends on physical and chemical nature of the environment²³. Pure water was the basis for all life forms for their existing. Physiological process of fishes depends on depth of water, water pressure, water current, and water volume. With the absence of these ecological phenomena, the growth, distribution and fecundity of fishes were disturbed. Some valuable species were either totally eliminated or locally extinct with the adverse effect of environmental degradation²⁴. But it is essential to remember that all species are important for successful maintenance of ecological aspects²⁵. Some suggestions were put forward to overcome the horrible situation of the rivers to save the biodiversity and human existence²⁶⁻³².

Dredging of the river should be done immediately to return back the navigability of the river. Tree plantation along the bank of the river in order to save soil erosion and management of ecosystem. Sources of pollution should be controlled and monitored. Endangered species should be preserved and fish sanctuary should be established. Overfishing must be stopped. Agricultural practices by the riverside areas must be carefully handled. Government and nongovernment organizations come forward to provide financial support among the poor. Ex-situ and in-situ conservation policy should be implemented immediately.

Conclusion

The production of small indigenous fishes was declining day by day due to anthropogenic activities. The components of the river ecosystem did not functioning properly so that fish and other aquatic biota felt environmental stress. Awareness should be create among people of all sectors to come forward and save biodiversity for the future existence of human.

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