

PRELIMINARY STUDY OF FISH FAUNA FOUND IN BRAHMAPUTRA RIVER AND ITS TRIBUTARIES IN ASSAM

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The mighty Brahmaputra River and its innumerable tributaries together with favourable ecological conditions of the state bear immense scope for commercial production of fish and also conservation of important fish fauna. With this background, a preliminary survey was carried out to determine the status of the fish fauna in the Brahmaputra River and its major tributaries. The Fish samples were collected through random sampling from different sources like local markets, fishing sites (river banks, ponds), and local fishermen in and around the study area during the month of April and May 2010. The collected fish species were preserved in 10% formaldehyde solution for further study. They were identified based on morphological feature. Information on local name, economic value was obtained from fishermen as well as by contacting resource persons. Eighteen species of fish were identified, comprising 15 genera and 10 families. Most of the species collected during the field survey have economic value as food, medicinal, recreation and aesthetic purposes. In spite of having a huge fishery development potential Assam is lagging behind in respect of commercial production of fish. Under such a situation, the findings of the present investigation might be helpful in planning fishery development programme. This would not only boost up the economy of the nation but also save fish genetic resources from verge of extinction.

INTRODUCTION

Fish constitutes almost half the total number of vertebrates. Of the 39,000 species of vertebrates recognised the world over, 21723 are fish species of which 8411 species are freshwater, while 11650 are marine. India has 2500 freshwater and 1570 marine species. In terms of habitat diversity, fishes live in almost every conceivable aquatic habitat. In Assam, the total riverine length is 4,500 km; while the total area covered by 'Beel' is 1 lac hectare. The Brahmaputra is the major river of Assam, flows from East to West and runs through a distance of 730 Kms, having 42 tributaries of which 27 are in the North bank and 15 on the south bank. It links all the plain districts excepting Cachar district. The river system of the Brahmaputra Valley brings enough fresh water to almost all over the state through innumerable tributaries.

The ecological condition of the state is also quite favourable for pisciculture alongwith its subtropical humidity and coolness of climate. Considering this background a preliminary survey was carried out to determine the fish fauna of the Brahmaputra River and its major tributaries.

REVIEW OF LITERATURE

Random amplification of polymorphic DNA (RAPD) was done by Manoj P. Brahmane; Krishne Mitra; sudhanshu S. Mishra to generate species-specific diagnostic fragment patterns for the molecular identification of the ornamental aquarium fish species *Badis badis* and *Dario dario*. The size of the amplified products was in the range 340 bp to 2170 bp. Intraspecies genetic similarity was 0.879 ± 0.023 for *B. badis* and 0.840 ± 0.014

for *D. dario* while interspecies genetic similarity was 0.602 ± 0.017 , with cluster analysis displaying separate taxonomic and evolutionary status for these fish. The results show that RAPD was useful for the molecular identification of aquarium fish species, with morphological traits also being important.

Subhasis Mandal, B. K. Mahapatra, A. K. Tripathi, Med Ram Verma K. K. Datta and S. V. Ngachan's studies shows that North-Eastern states are endowed with vast aquatic resources with great diversity of ornamental fishes. The ornamental fishes are diversified over 37 families, 114 genera and 10 orders. Out of the total 274 fish species reported from this region, around 250 species (91 per cent) possess ornamental value. From the view point of exploring the agribusiness opportunities in ornamental fisheries, the rearing of exotic ornamental fishes is likely to fetch higher and steady returns than collection of fishes from wild catch due to their better quality and lower risk of mortality during transportation. Also, raising and supplying of exotic ornamental fishes under captive breeding would reduce the pressure on volume of wild catch and therefore, would complement the conservation efforts of native ornamental fish species. North-Eastern states remain untapped mainly due to lack of systematic marketing, poor infrastructure (essential for transportation of vulnerable live fishes) and lack of access to market information. It was also learnt that some deliberate and biased practices were being followed by traders, such as accepting fish from selected fish farmers or collectors only. The marketing system was highly unorganized and no direct export was being done. Indiscriminate collection of native ornamental fishes would lead to extinction of many fishes and thereby, industry would lose the business opportunities. Therefore, while collecting the native ornamental fish species, knowledge about their conservation status is essential.

Rajdeep Dutta and Birendra Kr Bhattacharjya researched on traditional fishing methods and found that raw meat of duck was used to attract catfish. Small piece of duck meat was squeezed with finger at a depth of about 1 foot below water surface for 10-15 mins. Small catfishes gradually assemble in the pool. The fishes appear to be excited with the smell of meat. The knowledge of fish behaviour by practical observation and experience often results in a development of specific fishing methods. The behaviour of the fished has been effectively used by the local fishers to catch them with simple implements and little drudgery. Such innovative fishing methods ensured good catch where fishing with conventional fishing net is difficult and ineffective. Stimulating the senses of smell and taste is a part of development of fishing methods by traditional fishers all over the world.

In a study carried out by Devashish Kar, A.V. Nagarathna, T.V. Ramachandra and S.C.Dey revealed the occurrence of 69 species of fishes in the tectonic lake Sone(3458.12 ha) in Assam belonging to 49 genera, 24 families and 11 orders. Of these fishes, 84.2% belonged to the primary freshwater group (cyprinids 35.39%), while the rest to the peripheral class. Attempts have been made to portray the fish diversity of the lake zoogeographically and emphasise the value of conserving the biodiversity. Further, results of linear regression revealed significant correlations between fish yield and soil organic carbon, soil potassium, water pH, alkalinity, and conductivity, and aquatic macrophytic biomass.

MATERIALS AND METHODS

The fish samples were collected through random sampling from different sources fishing sites (river banks, ponds), and local fishermen in and around Tezpur, Assam during the month of April and May 2010. The collected fish species were preserved in 10% formaldehyde solution for further study. They were identified by

Dr K. Barkakaty, Head Department of Zoology, Darrang College, Tezpur, Assam. Information on local name, economic value and behaviour pattern was obtained from fishermen.

RESULTS

Eighteen species of fish were identified, comprising 15 genera and 10 families. Most of the species collected during the field survey have economic value as food, medicinal, recreation and aesthetic purposes. The lists of the collected fish fauna, their scientific names, local name and family are presented in Table-1.

Table 1 Fish species recorded from during the survey period (April-May 2010)

SI No	Scientific Name	Local Name (Assam)	Family
1.	<i>Labeo gonius</i>	Kurhi	Cyprinidae
2.	<i>Labeo boga</i>	Bhangon	Cyprinidae
3.	<i>Labeo rohita</i>	Rou	Cyprinidae
4.	<i>Aspidoparia morar</i>	Boliora	Cyprinidae
5.	<i>Puntinus sophore</i>	Puthi	Cyprinidae
6.	<i>Channa punctatus</i>	Goroi	Channidae
7.	<i>Channa gachua</i>	Chengeli	Channidae
8.	<i>Anabus testudineous</i>	Kawoi	Anabantidae
9.	<i>Colisa fasciatus</i>	Kholihona	Anabantidae
10.	<i>Mastacembelus puncalus</i>	Tora (Spiny eel)	Mastacembelidae
11.	<i>Mystus vittatus</i>	Singora	Bagridae

12.	<i>Rita rita</i>	Ritha	Bagridae
13.	<i>Gagata cenia</i>	-	Sisoridae
14.	<i>Glypathorax sps</i>	-	Sisoridae
15.	<i>Nemacheilus botia</i>	Botia	Cobitidae
16.	<i>Nandus nandus</i>	Mati Kawoi	Nandidae
17.	<i>Ambassis ranga</i>	Chanda	Ambassidae
18.	<i>Clupisoma garua</i>	Gorua	Schibeidae

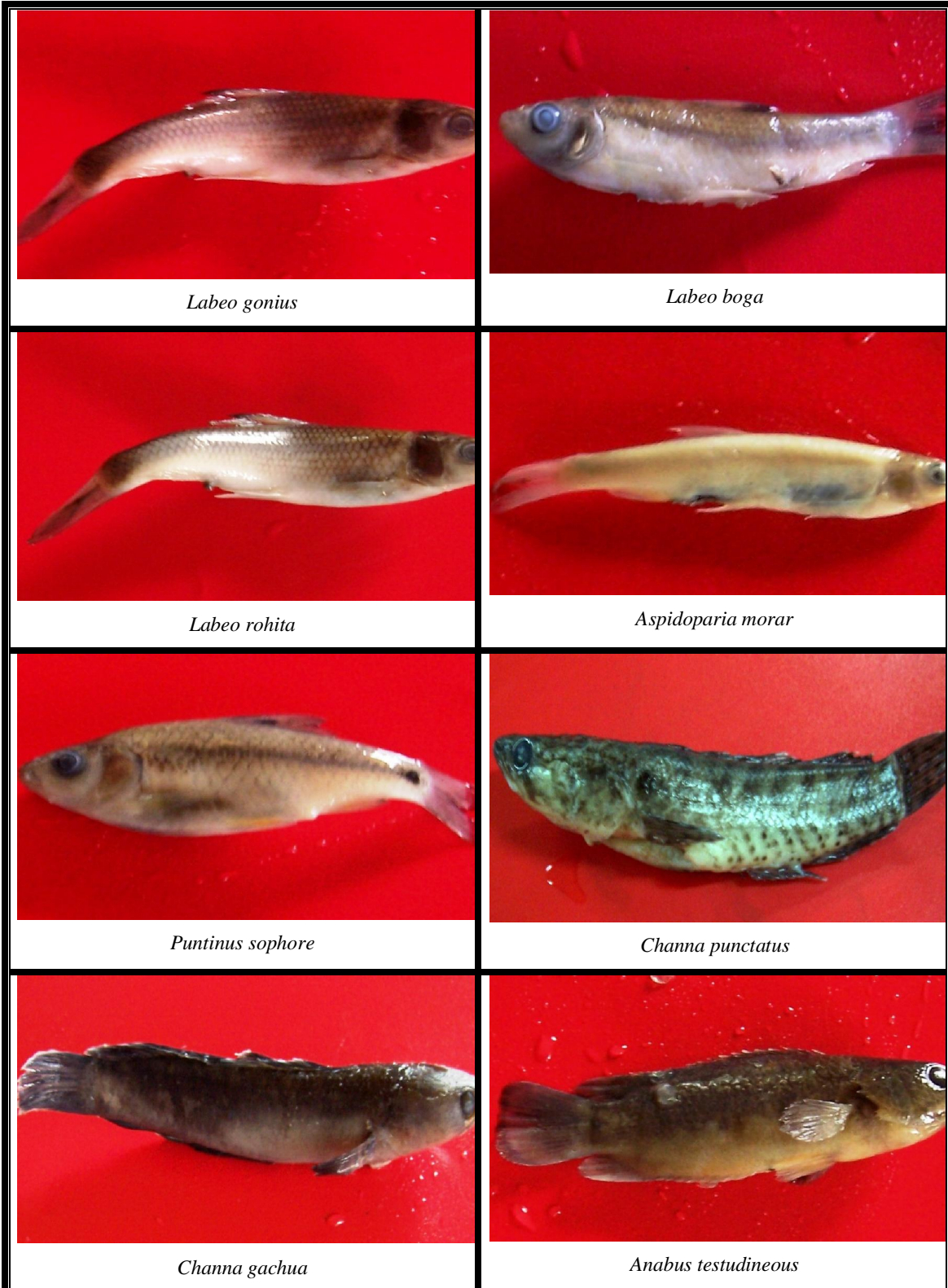
Systematic classification

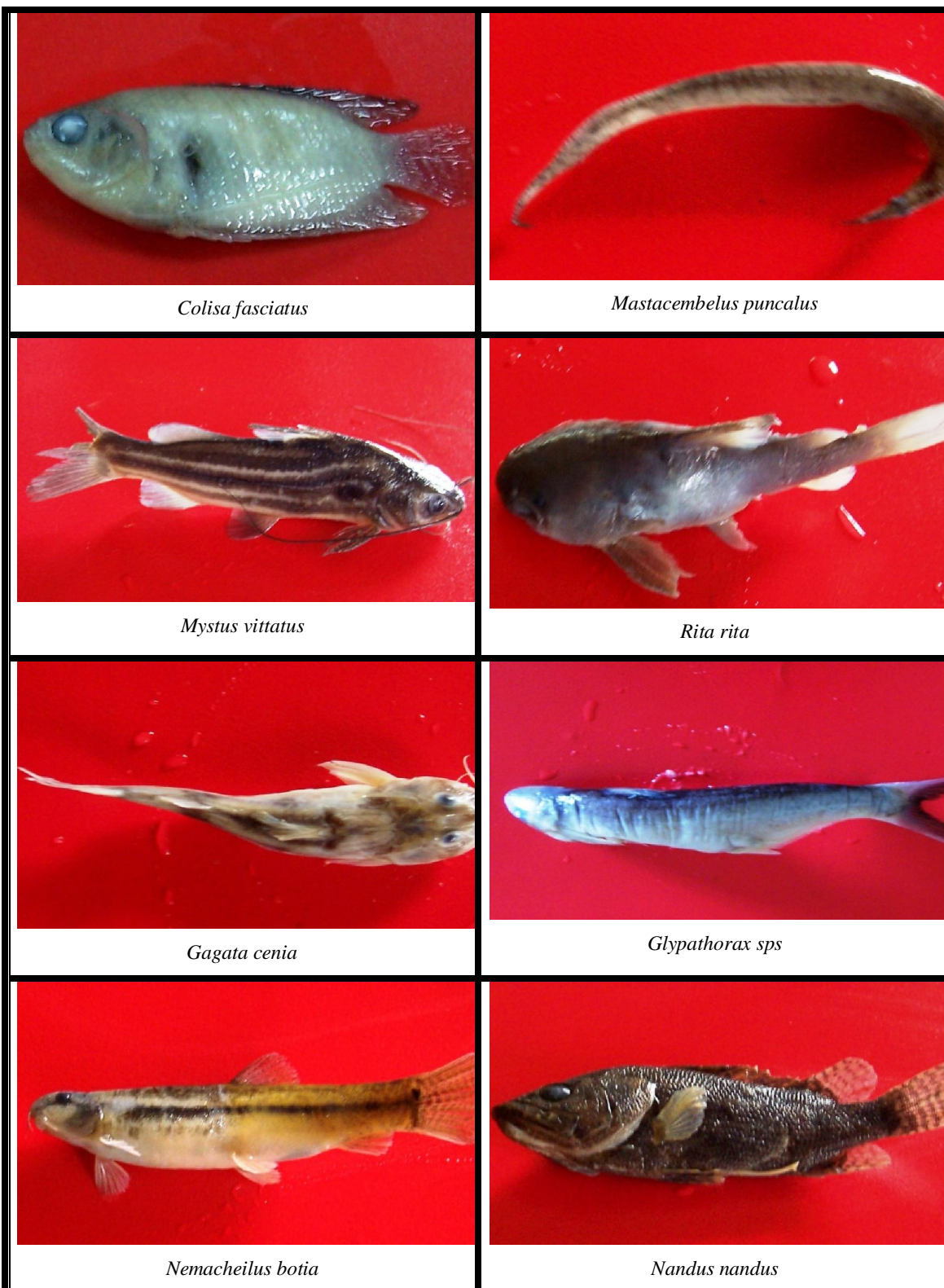
The fishes belonging to the families:

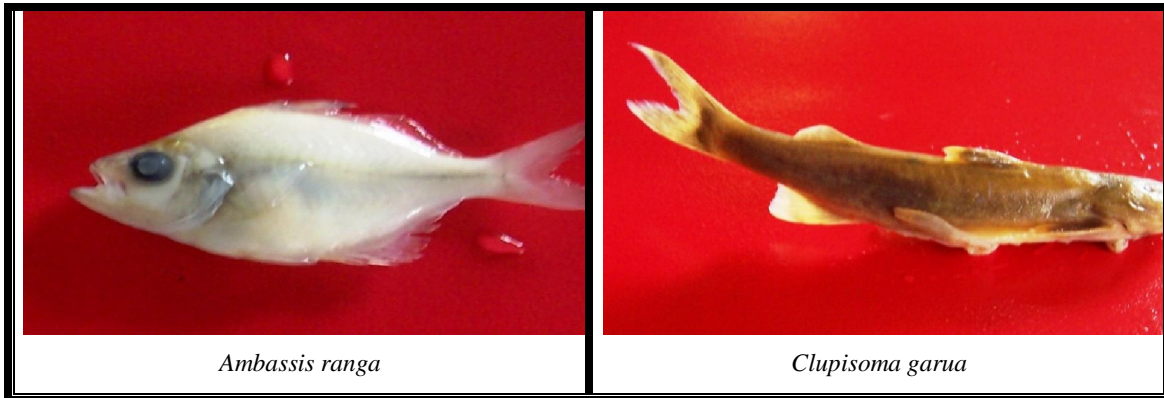
- Ø Cyprinidae
- Ø Channidae
- Ø Anabantidae
- Ø Mastacembelidae
- Ø Bagridae
- Ø Sisoridae
- Ø Cobitidae
- Ø Nandidae
- Ø Ambassidae
- Ø Schibeidae

Of the Order: Cypriniformes and Siluriformes were identified.

Fish fauna







The truly freshwater fishes have unique significance in zoogeographical interpretations because they are as closely bound to land masses as are any terrestrial animals and are almost confined to their own drainage Systems. Generally, they can pass from one isolated drainage system to another only through the slow physiographic change of the land. They possess a physiological inability to survive in the seawater and hence their dispersal over the globe is slow. As such, they are most likely to preserve old distribution patterns (Darlington, 1957). The range of distribution of torrential fishes is much more limited and in view of their limited power of migration, torrential fishes afford better evidence of zoogeographical relationships (Hora, 1944). As such, many fish groups are important in explaining their regional and local distribution patterns.

Fish is water born resources. The people in Assam are fond of fishes and a considerable proportion of rural people are meeting their own requirement of fish by own catch. Basically fishing here is a tradition rather than commerce, as 90% fish products are imported. Although fishery is quite popular in Assam, it is not developed upto the desired level. The mighty river Brahmaputra and its tributaries and also about 1000 numbers no. of ponds provide huge scope of fish production. But still, the fishery resources in Assam remains totally neglected in spite of having a huge potential for its development.

CONCLUSION

In spite of having a huge fishery development potential the state is lagging behind compared to some other states in respect of production of fish. Under such a situation, the concerned authorities as well as public should take adequate steps to modernise the fishery sector by adopting scientific practice, which would not only boost up the economy of the nation but also save fish genetic resources from verge of extinction.

REFERENCE

[Http://en.wikipedia.org/wiki/Fish](http://en.wikipedia.org/wiki/Fish) and its associated links.

Brahmane Manoj P.; Krishna Mitra; Sudhanshu S. Mishra. RAPD fingerprinting of the ornamental fish *Badis badis* (Hamilton 1822) and *Dario dario* (Kullander and Britz 2002) (Perciformes, Badidae) from West Bengal, India.

Mandal Subhasis, B. K. Mahapatra, A. K. Tripathi, Med Ram Verma, K. K. Datta and S. V. Ngachan, Agribusiness Opportunities of Ornamental Fisheries in North-Eastern Region of India. *Agricultural Economics Research Review* Vol. 20 (Conference Issue) 2007 pp 471-488

Dutta Rajdeep and Birendra Kr Bhattacharjya. A traditional fishing method of Assam for catfishes by using duck meat as an attractant.. *Indian Journal of Traditional knowledge* Vol.8(2), April 2009, pp.234-236

Kar Devashish, A.V. Nagarathna, T.V. Ramachandra and S.C.Dey(2006). Fish diversity and conservation aspects in an aquatic ecosystem in northeast India. *Zoos' print journal* 21(7): 2308-2315

Kar Devashish , S.C. Dev, Manabendra Mandal, Boni Amin Laskar and Lal Searnleana. Preliminary survey of the fish genetic resources of the rivers in barak drainage, mizoram and tripura,).

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