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A Study on Small Indigenous Freshwater Fish under Family Ambassidae Klunzinger, 1870, from Paschim Medinipur and Jhargram District of West Bengal, India **Angsuman Chanda**

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ABSTRACT

Present study reveals the existence of four species of small, indigenous fish belonging from genus Chanda and Parambassis of family Ambassidae and order Perciformes in freshwater aquatic systems of Paschim Medinipur and Jhargram district of West Bengal. It is the first time study on the group from the study area. Taxonomy of the species as well as their geographical distribution and diversity is the prime interest of the work. A comprehensive zoogeography of the species in different revenue blocks of the districts has been recorded in details. Hence, the work is a documentation of macro faunal diversity at regional level for freshwater ecosystem of the study area.

Key Words: Regional, Diversity, Small, Fish and Ambassidae.

INTRODUCTION

Small indigenous freshwater fish are often an important ingredient in the diet of village people who live in the proximity of freshwater bodies. Word 'Indigenous' means the originating in and characteristic of a particular region or country and native area. Small indigenous freshwater fish species (SIF) are defined as fishes which grow to the size of 25-30 cm in mature or adult stage of their life cycle (Felts et al, 1996). They inhabit in rivers, tributaries, flood plains, ponds, tanks, lakes, beels, streams, lowland areas, wetlands and paddy fields. These fish can live in a harsh environmental condition and able to reproduce and grow rapidly in favourable condition. These species are not only a source of vital protein to the rural poor but also a valuable source of micro-nutrients such as calcium, zinc, iron & fatty acids (Roos et al., 2007; Halwart 2008). Research has proved that the bioavailability of calcium from these small indigenous freshwater fish species is at par with that derived from milk (Ross et al., 2007). These species also can provide a source of supplementary income to rural households. Given the local demand for small indigenous fish species of freshwater origin, the FAO (1999) has also indicated the possibility of integrating such indigenous species into freshwater culture systems. Small scale aquaculture along with Indian major carps of Amblypharyngodon mola, Puntius sophore, Osteobrama cotio, Cirrihinus reba, Labeo bata, Gudusia chapra have been reported (Ayyappan and Jena 2003, Roos et al 2003, Jena et al., 2008). In the Indian region out of 2500 species, 930 are freshwater inhabitants and 1570 are marine (Jayaram 2010). ZSI has recorded 2641 Pisces in 2012. A lot of works has been done in Northern region

followed by southern region of India. Recent paper of Goswami et al., (2012) enlisted 422 fish species from north east India, belonging to 133 genera and 38 families. Rema and Indra (2009) have reported 667 species under 149 Genera of 35 families in southern region. Indian freshwater represents 950 species of fishes as per data available from Fishbase (ver.10/2015). Very few works has been reported from freshwater system of West Bengal.

In West Bengal 171 freshwater fish species was reported by Sen, 1992. After few years there were a wide change in number of fish species has been reported. Barman, R.P. 2007 recorded 239 freshwater species belonging to 147 genera, 49 families and 15 orders from West Bengal. Basu et al. (2012) reported 70 indigenous ornamental fish species belonging to 45 genera, 30 families and 9 orders from West Bengal. All of these works are mostly based on indigenous ornamental freshwater fishes. But works on small indigenous freshwater fishes, other than ornamentals are scanty. So, the record of freshwater fish fauna of Paschim Medinipur and Jhargram Districts are nil. Therefore, present work is the first attempt towards the recording of small indigenous freshwater fish fauna of the study area. The results presented here provide an insight to the regional macro-faunal diversity of the study area, and have established a baseline for future studies. Present paper is restricted only on the family Ambassidae Klunzinger, 1870 and recorded four species under two genera namely *Chanda nama* Hamilton, 1822, *Parambassis baculis* (Hamilton, 1822), *Parambassis lala* (Hamilton, 1822) and *Parambassis ranga* (Hamilton, 1822) under order Perciformes Bleeker, 1859 from the site studied.

MATERIALS AND METHODS

Present study is mainly based on the specimen collected from different river, pond and bills applying different commercial fishing method throughout all the blocks of undivided Paschim Medinipur (22° 25'N 87° 19'E) during May 2013 to November 2015. Collection of fish fauna was done at early morning and specimens were immediately preserved in 2-4% formaldehyde and were brought to laboratory in preserved condition. Then fish specimen were washed and finally preserved in 4-6% formaldehyde. Body parts of all the specimen have been dissected and studied for identification under stereoscopic binocular microscope. In some cases additional important diagnostic characters are included. Identification of specimens has done on the basis of literature like Talwer and Jhingran (1991), K. C. Jayaram (2010) and Fishbas (2013). The detailed synonymies have been furnished to the genera and species and also their diagnosis, distribution, taxonomic remarks have been furnished. In addition an attempt has been made to include a comprehensive coverage of the references in reference section. For all citations of taxon author's name and year of publication has been given.

RESULTS

Systematic Accounts

Fishes under study are belonging to the class Actinopterygii. A brief account of its systematic position has been given bellow:

Kingdom : Animalia (Linnaeus, 1758)

Phylum : Chordata (Haeckel, 1874)

Class : Actinopterygii (Klein, 1885)

Order : Perciformes Bleeker, 1859.

Family Ambassidae Klunzinger, 1870

The family Ambassidae was created by Klunzinger in 1870. Family Ambassidae has 8 genera. In India family Ambassidae represents three genera. In undivided Paschim Medinipur District 2 genera has been recorded.

Diagnosis of the Family: Body oblong and compressed. Membranus flap present in the end of operculum. Mouth is moderate to large, slightly protrusible. Teeth are generally villiform. Dorsal fin deeply divided between last spine and soft rays. Dorsal fin has 7-8 spines and 8-12 soft rays. Anal fin has 3 spines and 8-17 soft rays. Pelvic fin has one spine and five soft rays. Lateral line is complete or interrupted.

Key to Genera

No canine teeth present on lower jaw, mouth moderate, lower jaw not prominent, scales are moderate; number of scale on lateral line is 30-90...... *Parambassis*.

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Genus Chanda Hamilton, 1822

F. Hamilton (1822) created the genus based on the *Chanda nama* Hamilton, 1822 as type species for the genus. 1 species of Genus *Chanda* has been found in the world and 1 species found in India. A brief history of the genus with special reference to Indian contribution has been given below.

1972 Chanda Talwar, Bull. Zool. Nomencl., 23(3/4): 140.

Type species: Chanda nama Hamilton, 1822, Fishes of Ganges: 109, 371, pl. 39, fig. 37.

Type locality: Ponds throughout Bengal.

Diagnosis of the Genus: Body small, ovate and transperant. Mouth is large, teeth villiform on jaws. Three canine teeth present on the two side of lower jaw. Scales are minute in size. Lateral line indistinct with 100-107 scales. Cheek has 7 rows of transverse scales.

Remark: Only one species *Chanda nama* has been recorded from the study area.

Chanda nama Hamilton, 1822

Chanda nama was originally described as *Chanda nama* Hamilton, 1822 from ponds throughout Bengal. A brief history of the species with special reference to Indian contributions has been given below.

1875 *Ambassis nama* Day, *Fishes of India*: 50, pl. 14, fig. 5; Day, 1889, *Fauna Br. India*, Fishes, **1**:484, fig. 149. **Type species:** *Chanda nama* Hamilton, 1822, *Fishes of Ganges:* 109, 371, pl. 39, fig. 37.

Type locality: Ponds throughout Bengal.

Materials Examined: 10 female (3.1cm – 5.6 cm), 7 male (2.9cm- 4.7cm), Gopiballavpur I (Gopiballavpur), Paschim Medinipur, West Bengal, 07.03.2014, A. Chanda; 8 female (2.3cm – 5.7 cm), 7 male (2.5cm- 5.3cm), Gopiballavpur II (Tapsia, Andharia), Paschim Medinipur, West Bengal, 29.10.2013, A. Chanda; 5 female (3.8cm-5.4cm), 3 male (2.7cm- 4.5cm), Keshiary (Bhasra), Paschim Medinipur, West Bengal, 26.10.2013, A. Chanda; 9 female (2.4cm-5.2cm), 11 male (2.3cm- 5.3cm), Jhargram (Lodhasuli, Sardhia), Paschim Medinipur, West Bengal, 09.09.2013, A. Chanda; 5 female (2.3cm- 3.2 cm), 3 male (2.7cm- 3.4cm), Sabong (Mohar), Paschim Medinipur, 21.05.2013, A. Chanda; 9 female (2.9cm -4.9 cm), 5 male (2.1cm- 4.2cm), Pingla (, Gobordhanpur), Paschim Medinipur, West Benal, 28.05.2013, A. Chanda; 10 female (3.6cm-4.9 cm), 5 male (2.8cm- 4.7cm), Debra (Patna, Panchgeria), Paschim Medinipur, West Bengal, 23.05.2013, A. Chanda; 5 female (3.2cm-5.1 cm), 3 male (3.1cm- 4.7cm), Narayangarh (Murakata), Paschim Medinipur, West Bengal, 20.05.2013, A. Chanda; 4 female (2.8cm-4.2 cm), 5 male (2.4cm- 4.1cm), Binpur I (Lalgarh), Paschim Medinipur, West Bengal, 14.09.2013, A. Chanda.

Diagnosis of the species (Fig. 5): Body small, ovate and transparent. Mouth is large, teeth villiform on jaws. Scales are minute in size. Lateral line indistinct with 100-107 scales. Cheek has7 rows of transverse scales. Fin formula- D VII+I 15-17; P ii 11-12; V I 5; A III 15-17.



Figure 1. Chanda nama Hamilton, 1822.

Distribution: India: It has been found in India (Maharashtra, Orissa, Uttar Pradesh, Bihar and West Bengal). **Paschim Medinipur:** During the present study the species has been found in all blocks of Paschim Medinipur. **Elsewhere:** Nepal; Pakistan; Bangladesh.

IUCN status: Least Concern ver 3.1

Genus Parambassis Bleeker, 1874

Bleeker (1874) created the genus based on the *Ambassis apogonoides* Bleeker, 1851 as type species for the genus. 18 species of Genus *Parambassis* has been found in the world and 7 species has been reported from India. A brief history of the genus with special reference to Indian contribution has been given below.

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1975 Parambassis Guha and Talwar, J. Inland Fish. Soc. India, 8:76.

Type species: *Ambassis apogonoides* Bleeker, 1851, *Natuurkundig Tijdschrift voor Nederlandsch Indië* v. 2 (no. 2): 193-208.

Type locality: Bandjarmasin, Borneo, Indonesia.

Diagnosis of the Genus: Body elongate and compressed. Snout pointed. Villiform teeth present in jaw. Among the jaws, outer row of jaw is slightly enlarged. Supraorbital edge smooth, with 1-2 spine present posteriorly. Posterior portion of interoperculum is denticulate. Present of large scale. Lateral line has 30 scales. Cheek has 6 rows of transverse scale.

Key to the species

1. Gill rakers on lower limb of first arch 12-18..... 2

Gill rakers on lower limb of first arch 21-25, body depth 41.7-43.4% SL Parambassis ranga

2. Body with three longitudinal bands along side, second spine of dorsal fin is very elongated *Parambassis lala*

Body with only a silvery lateral band on side, second spine of dorsal fin is not so elongated Parambassis baculis

Remark: Three species *Parambassis baculis, Parambassis lala* and *Parambassis* ranga has been recorded from the study area. *Parambassis baculis* is known as glass fish due to its body transparency and also used as ornamental fish in aquarium fish keeping.

Parambassis baculis (Hamilton, 1822)

Parambassis baculis was originally described as Chanda baculis Hamilton, 1822 from North- eastern part of Bengal. A brief history of the species with special reference to Indian contributions has been given below.
1875 Ambassis baculis Day, Fishes of India: 51, pl. 15, fig. 1; Day, 1889, Fauna Br. India, Fishes, 1:485.
Type species: Chanda baculis Hamilton-Buchanan, 1822, Fish Ganges, pp. 112, pl. 22, fig. 7.
Type locality: North-eastern parts of Bengal.

Materials Examined: 5 female (2.3cm– 3.2 cm), 2 male (2.4cm- 3.0cm), Sabong (Mohar), Paschim Medinipur, West Bengal, 21.05.2013, A. Chanda.



Figure 2. Parambassis baculis (Hamilton, 1822).

Diagnosis of the species (Fig.2): Body small and compressed. Mouth oblique, lower jaw intruded when mouth closed. On the lower arm of first arch of gillrakers are about 11. Scales are small. Lateral line has 90 scales. Cheek has 7 rows of transverse scale. Fin formula- D VI+I 12-13; P i 11-12; V I 5; A III 12-13.

Distribution: India: It has been found in India (Arunachal Pradesh, Assam, Bihar, Karnataka, Tripura, Uttar Pradesh and West Bengal).

Paschim Medinipur: During the present study the species has been found in Sabong block of Paschim Medinipur.

Elsewhere: Myanmar; Bangladesh.

IUCN status: Least Concern ver 3.1

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Parambassis lala (Hamilton, 1822)

Parambassis lala was originally described as *Chanda lala* Hamilton, 1822 from Gangetic provinces. A brief history of the species with special reference to Indian contributions has been given below.

1875 Ambassis ranga Day, Fishes of India: 51; Day, 1889, Fauna Br. India, Fishes, 1: 485.

1935 Ambassis lala Innes, Exotic Aquarium Fishes: 445.

Type species: Chanda lala, Hamilton, 1822, Fishes of Ganges: 114, Pl. 21, fig. 39.

Type locality: Gangetic provinces.

Materials Examined: 16 female (2.1cm – 3.6 cm), 9 male (2.4cm- 3.8cm), Gopiballavpur I (Gopiballavpur), Paschim Medinipur, West Bengal, 07.03.2014, A. Chanda; 8 female (2.3cm – 3.7 cm), 6 male (2.4cm- 3.6cm), Gopiballavpur II (Tapsia, Andharia), Paschim Medinipur, West Bengal, 29.10.2013, A. Chanda; 12 female (2.8cm-4.0cm), 7 male (2.3cm- 3.9cm), Keshiary (Bhasra), Paschim Medinipur, West Bengal, 26.10.2013, A. Chanda; 9 female (2.4cm-3.2cm), 4 male (2.1cm- 3.7cm), Jhargram (Lodhasuli, Sardhia), Paschim Medinipur, West Bengal, 09.09.2013, A. Chanda; 9 female (2.8cm-3.8 cm), 10 male (2.0cm- 3.9cm), Binpur I (Lalgarh), Paschim Medinipur, West Bengal, 14.09.2013, A. Chanda.



Figure 3. Parambassis lala (Hamilton, 1822).

Diagnosis of the species (Fig. 3): Body small and almost rounded. Mouth is oblique. On the lower arm of first arch number of gillrakers are 16. Second spine of dorsal fin very elongated. Scales is minute, Lateral line with 85-90 scales. Cheek has 7 rows transverse scale. Body is orangish-yellow with three longitudinal bands extending dorsoventrally. Fin formula- D VII+I 11; P i 10; V I 5; A III 13.

Distribution: India: It has been found in India (Assam, Bihar, Orissa, Tripura and West Bengal).

Paschim Medinipur: During the present study the species has been found in Chandrakona II, Keshiary, Jhargram, Gopiballavpur I, Gopiballavpur II, Garbrta III, Binpur II blocks of Paschim Medinipur.

Elsewhere: Myanmar. **IUCN status:** Near Threatened ver 3.1

Remarks: Lateral line absent in some specimen. Lateral line scale vary from 85 -90. A spot present on the base of caudal fin. Caudal fin directed downwards.

Parambassis ranga (Hamilton, 1822)

Parambassis ranga was originally described as *Chanda ranga* Hamilton, 1822 from freshwater of all parts of Gangetic provinces. A brief history of the species with special reference to Indian contributions has been given below.

1875 Ambassis ranga Day (Pratim) Fishes of India: 51, Pl. 14, fig. 6; Day (Pratim), 1889, Fauna Br. India, Fishes, **1**: 485.

Type species: Chanda ranga Hamilton, 1822, Fishes of Ganges: 113, 371, pl. 16, fig. 38.

Type locality: India: fresh waters of all parts of the Gangetic provinces.

Materials Examined: 8 female (2.1cm – 3.6 cm), 3 male (2.3cm- 3.4cm), Gopiballavpur I (Gopiballavpur), Paschim Medinipur, West Bengal, 07.03.2014, A. Chanda; 7 female (2.3cm – 3.7 cm), 6 male (2.3cm- 3.9cm), Gopiballavpur II (Tapsia, Andharia), Paschim Medinipur, West Bengal, 29.10.2013, A. Chanda; 7 female (2.9cm -4.9 cm), 5 male (2.7cm- 3.6cm), Pingla (Gobordhanpur), Paschim Medinipur, West Bengal, 28.05.2013, A. Chanda.

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Figure 4. Parambassis ranga (Hamilton, 1822).

Diagnosis of the species (Fig. 1): Body stout, deep and compressed. One or two serration found at the angle of pre-opercular hinge region. Mouth is oblique. 21-25 gill rankers found in lower arm of first arch. Scales are small. Lateral line with 47-63 scales. Cheek with 7 rows transverse scale. A broad lateral silvery stripe present on the body. A dusky spot present on shoulder. Fin formula- D VII+I 11-14; P i 11-12; V I 5; A III 13-15.

Distribution: India: It has been found in India (Bihar, Jharkhand, Madhya Pradesh, Maharashtra, Orissa and West Bengal).

Paschim Medinipur: During the present study the species has been found in Gopiballavpur I, Gopiballavpur II, Pingla blocks of Paschim Medinipur.

Elsewhere: Malaysia; Myanmar; Nepal; Pakistan; Bangladesh; Cambodia.

IUCN status: Least Concern ver 3.1

Conclusion: These four indigenous fishes under study are regarded as food fish (locally called Chuno mach). Present author is suggesting *Parambassis lala* and *Parambassis baculis* as ornamental fish for their shiny body colour and shape. *Parambassis lala* is a near threatened category and remaining three are least concern category as per IUCN (2010 ver. 3.1). It is difficult to estimate the population density of such fishes as these are not commercially marketed. Local survey reveals that the population is rapidly depleted. Research on the group is urgently needed to rescue these valuable natural resources. Captive breeding is being suggested as an effective measure for sustainability of these species.

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