

# Diversity of Small Indigenous Freshwater Ornamental Fish under Genus *Puntius* from Purba Medinipur, Paschim Medinipur and Jhargram Districts of West Bengal, India

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**Abstract** The main objective of the present study is the investigation of small indigenous freshwater ornamental fish diversity of Purba Medinipur, Paschim Medinipur and Jhargram districts of West Bengal, India and emphasis has been given to their ornamental value and local abundance. Present study is restricted only on the fish species belonging to the genus *Puntius*. During the study, small freshwater fish species has been surveyed covering all blocks of the three districts under study. Specimens have been collected from different freshwater ecosystems like rivers, ponds, beels etc. and are preserved and identified. It has been observed that the study area represents the existence of nine species of indigenous freshwater small fishes under genus *Puntius*. Among the recorded nine species, two species, namely *Puntius guganio* (Hamilton-Buchanan, 1822) and *Puntius gelius* (Hamilton-Buchanan, 1822) are being found for the first time from the study site. All the nine species are potential to be regarded as ornamental fish. A detail distributional data has been provided for all the species of the genus from the study area. Therefore, present study will highlight the local macro-faunal diversity of the freshwater fish species under genus *Puntius* as well as ability to become ornamental fish for aquarium keeping. Record of two small fish species from the freshwater ecosystem of the study area is the new addition to the local fish faunal diversity.

**Keywords** *Puntius*, Record, Ornamental, Fish

## 1. Introduction

The genus *Puntius* Hamilton-Buchanan (1822) is a large group of small fishes. It is a complex genus, which

exhibit high degree of variability in colour pattern, size and habitat such as ditches, pond, rivers and hill stream. The status of *Puntius* is controversial; the delimitation and nomenclature validity of the genus have remained unsettled (Hora & Mukerjee, 1934; Smith, 1945; Mayers, 1960). The genus *Puntius* has long been recognized as a “catchall” genus for a variety of small tropical Asian cyprinids whose inter-relationships (Kottelat, 1999). They have a good food and ornamental value due to presence of definite amount of carbohydrate, protein, minerals, etc., and different color, spot, band and behavior are attracted aquarist.

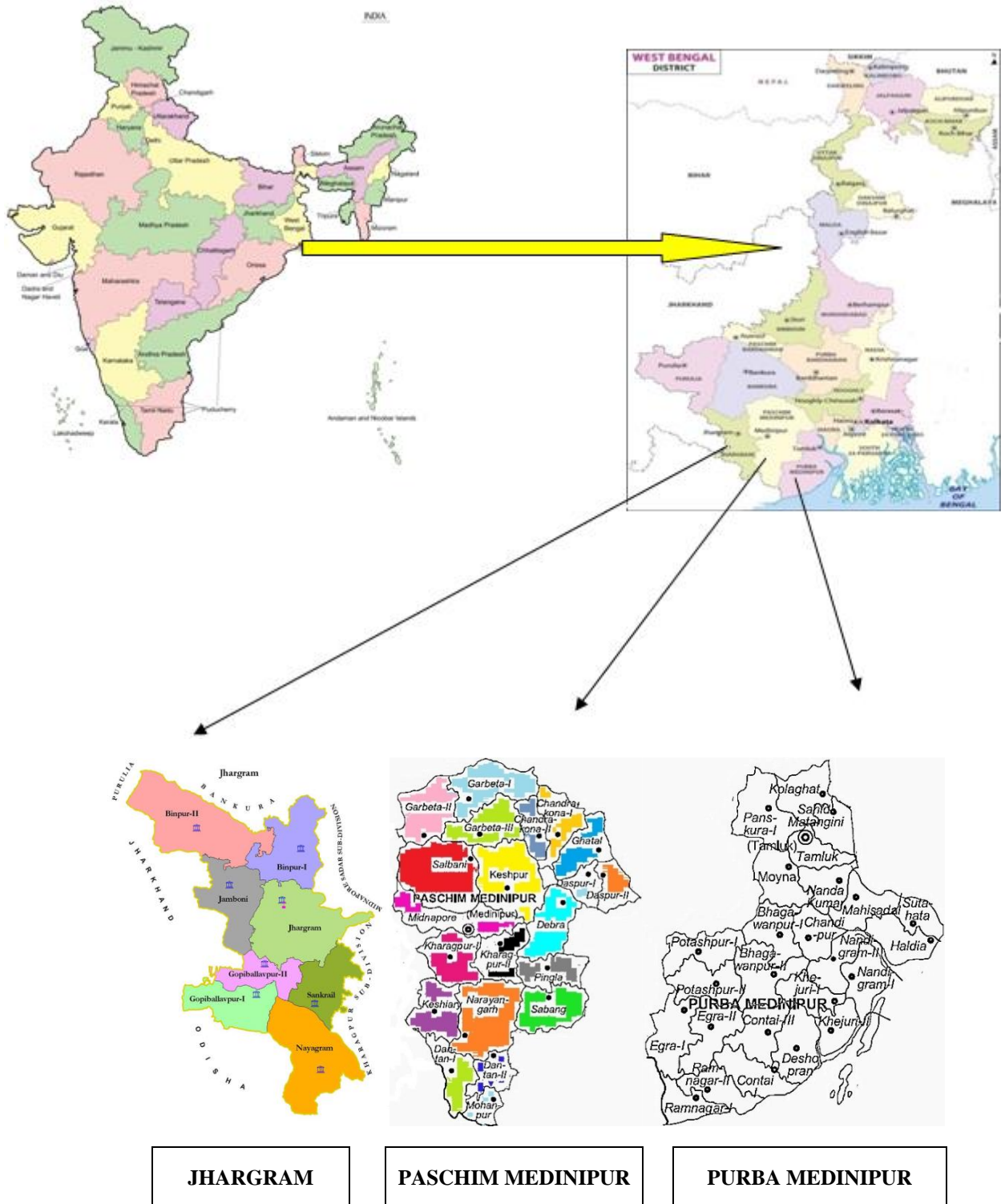
The genus *Puntius* is represented by a large number of species in the Asian tropics (Hamilton, Buchanan, 1822). The cyprinids species *Puntius* are small indigenous species (SIS) used to be abundantly available in rivers, streams, ponds, beels, ditches, and floodplains in the past in the South Asian countries (Shanta kumar and Viswanath, 2006). Abundant diversity of *Puntius* having 53 species is distributed throughout India, Nepal, Bangladesh, Srilanka, Myanmar, Thailand, Malaya Archipelago and Southern China (Jayaram, 1991).

Moglekar, et al, (2017), enlisted 6 species of genus *Puntius*, namely *Puntius ticto* (Hamilton, 1822), *Puntius chola* (Hamilton, 1822), *Puntius sophore* (Hamilton, 1822), *Puntius puntio* (Hamilton, 1822), *Puntius terio* (Hamilton, 1822), *Puntiu svitatus* (Day, 1865) by the help of previous existing fish species checklist (2003-2015) from different districts and rivers of West Bengal. Paul and Chanda (2017), and Kisku et al., (2017) enlisted 3 species of genus *Puntius*, namely *Puntius ticto* (Hamilton, 1822), *Puntius chola* (Hamilton, 1822), *Puntius sophore* (Hamilton, 1822) from Paschim Medinipur district. Different scientists reported different fish diversity from the study area but none reported the species of the genus *Puntius* separately from the study area. Therefore, the

present report is an attempt towards the comprehensive study of *Puntius* species diversity of Purba Medinipur, paschim Medinipur & Jhargram district of West Bengal, India.

The study sites are Jhargram ( $21^{\circ} 52' - 22^{\circ} 48' N$ ;  $86^{\circ} 34' - 87^{\circ} 20' E$ ), Paschim Medinipur ( $21^{\circ} 45' - 22^{\circ} 57' N$ ;  $87^{\circ} 03' - 87^{\circ} 53' E$ ) and Purba Medinipur ( $21^{\circ} 38' - 22^{\circ} 31' N$ ;  $87^{\circ} 17' - 88^{\circ} 12' E$ ) districts are located in the laterite belt of West Bengal. Climatic conditions under the influence of South-West and North-East monsoon.

## 2. Study Site



**Table 1.** Block wise distribution of different species under genus *Puntius* found in study area. Abbreviations: LC = Least Concern; NE = Not Evaluated; VU = Vulnerable; High = Found in maximum blocks (> 15 blocks); Very low = Found only in one or two blocks; Medium = Found more than 2 but less than 15 blocks.

Sl. No.	Species Name	Distribution (block wise)	IUCN status	Abundance In study area
1	<i>Puntius chola</i> (Hamilton-Buchanan, 1822)	<b>Jhargram:</b> Binpur-I, Jamboni, Gopi-I&II, Sankrail, Jhargram <b>PaschimMedinipur:</b> Daspur-I, Debra, Garbeta-II&III, Sabang, Pingla, Salboni, Keshpur <b>PurbaMedinipur:</b> Egra-I&II, Bhawanpur-I & II, Contai-I&III, Mahisadal, Moyna, Nandigram-I, Panskura, Potaspur-I, Potaspur-II, Tamluk	LC	High
2	<i>Puntius conchonius</i> (Hamilton-Buchanan, 1822)	<b>Jhargram:</b> Binpur-II, Gopi-I <b>PaschimMedinipur:</b> Daspur-I, Chandrakona-I, Sabang, Midnapore <b>PurbaMedinipur:</b> Bhawanpur-I, Mahisadal, Moyna, Nandigram-I	LC	Medium
3	<i>Puntius ticto</i> (Hamilton-Buchanan, 1822)	<b>Jhargram:</b> Binpur-I, Gopi-I&II <b>PaschimMedinipur:</b> Ghatal, Debra, Sabang <b>PurbaMedinipur:</b> Mahisadal, Moyna	LC	Medium
4	<i>Puntius terio</i> (Hamilton-Buchanan, 1822)	<b>Jhargram:</b> Gopi-I <b>PaschimMedinipur:</b> Midnapore	LC	Very low
5	<i>Puntius gelius</i> (Hamilton-Buchanan, 1822)	<b>PurbaMedinipur:</b> Nandigram-I	LC	Very low
6	<i>Puntius guganio</i> (Hamilton-Buchanan, 1822)	<b>Jhargram:</b> Gopiballavpur-I	NE	Very low
7	<i>Puntius phutunio</i> (Hamilton-Buchanan, 1822)	<b>Jhargram:</b> Gopi-I&II, Binpur-II, Sankrail, Nayagram <b>PaschimMedinipur:</b> Daspur-I, Ghatal, Chandrakona-I <b>PurbaMedinipur:</b> Mahisadal, Nandigram-I, Bhawanpur-I & II, Tamluk	LC	Medium
8	<i>Puntius sarana</i> (Hamilton-Buchanan, 1822)	<b>PaschimMedinipur:</b> Ghatal <b>Jhargram:</b> Gopi-I	VU	Very low
9	<i>Puntius sophore</i> (Hamilton-Buchanan, 1822)	<b>Jhargram:</b> Binpur-I&II, Gopi-I, Sankrail <b>PaschimMedinipur:</b> Midnapore, Sabang, Garbeta -I & III, Salboni, Keshpur, Daspur-I, Khargpur-I&II, Keshiari, Narayangarh, Mohanpur <b>PurbaMedinipur:</b> Egra-I&II, Contai-I&III, Mahisadal, Moyna, Nandigram-I, Panskura, Potaspur-I, Potaspur-II, Bhawanpur-I & II, Tamluk	LC	High

### 3. Methods

The specimens were collected from different rivers, ponds, beels, markets of different blocks of Purba Medinipur, Paschim Medinipur and Jhargram district of West Bengal from July 2019 to January 2020. After collection, the specimens have immediately preserved by 4% formaldehyde and brought to laboratory of the department of Zoology (UG & PG) of Raja N. L. Khan Women's College (Autonomous). Finally, specimens were washed and preserved 6% formaldehyde in a labelling container. The specimens were studied morphologically such as size, color, band, fin number, fin shape, fin rays, scale number etc. All measurement of fish was made in metric system followed by Talwar and Jhingran, (1991); Jayaram, (1999), Jayagram, (2010) & www. Fishbase.org. Distribution of the species has been recorded (Table- 1).

### 4. Results

#### Genus *Puntius* Hamilton-Buchanan, 1822

Hamilton (1822) created the genus based on the *Cyprinus sophore* as type species for the genus. 57 species of Genus *Puntius* have been found in the world and 35 species were found in India. A brief history of the genus with special reference to Indian contribution has been given below.

1999 *Puntius* Menon, *Records of the Zoological Survey of India, Occasional Paper No. 175*: i-xxix + 1-366; Vishwanath & Laisram, 2004, *Journal of the Bombay Natural History Society*. **101** (pt 1): 138-140; S. Mirza, 2003, *Pakistan J. Zool. Supplm. Series No. 3*.

**Type species:** *Cyprinus sophore* Hamilton, 1822, Edinburgh & London, i-vii + 1-405.

**Type locality:** Pond and rivers in Gangetic provinces.

**Diagnosis of the Genus:**

Body is short, deep & compressed. Head short and abdomen rounded. Mouth is anterior or inferior. Upper jaw sometime protractile, lips are thin. Jaw without any knob at the symphysis. Barbells when present are four or two in number. Dorsal fin inserted nearly opposite of pelvic fin with 9-13 rays. Caudal fin forked. Lateral line complete or incomplete with 20-47 scales.

**Species 1: *Puntius chola* (Hamilton-Buchanan, 1822)**

*Puntius chola* was originally described as *Cyprinus chola* (Hamilton-Buchanan, 1822) from north-eastern parts of Bengal. A brief history of the species with special reference to Indian contributions has been given below.

1822 *Cyprinus titius* Hamilton, *An account of the fishes found in the river Ganges and its branches*. Edinburgh & London. I-vii + 1-405, Pls. 1-39.

1878 *Barbus chola* Day, *Fishes of India*: 571, pl.142, fig. 4; Day, 1889, *Fauna Br. India*, Fishes, 1:317.

1878 *Barbus tetrarupagus* (McClelland) Day, *Fishes of India*: 572, pl.142, fig. 6; Day, 1889, *Fauna Br. India*, Fishes, 1:318.

1999 *Puntius chola* Menon, *Records of the Zoological Survey of India, Occasional Paper No.175*: i-xxix + 1-366.

**Type species:** *Cyprinus chola* Hamilton-Buchanan, 1822, *Fishes of Ganges*: 312, 289.

**Type locality:** North-eastern parts of Bengal.



**Figure 1.** *Puntius chola* (Hamilton-Buchanan, 1822)

**Diagnosis of Species (Fig-1):** Body deep and compressed. The head is small, and narrower than the body. At each corner of the mouth is a tendril. The mouth is small, and descends obliquely. Maxillary barbells are one pair. Lateral line is complete with a slight curve from the shoulder with 24-28 scales, Pre-dorsal scales 10 to 12, circumpeduncular scales 14, pre-pelvic scales 11, pre-anal scales 19; total length: 5-12cm.

Fin formula- D iii 8; P i 14; V i 8; A ii 5.

**Ornamental Value:** *P. chola* can be considered as

ornamental fish because of its silvery body color with a large black blotch at the base of caudal peduncle; another black blotch at the base of dorsal fin, operculum with a golden to reddish golden spot and some specimen possess a light red mark started behind from operculum to caudal peduncle which makes the fish more attractive and popular.

**Species 2: *Puntius conchoni* (Hamilton-Buchanan, 1822)**

*Puntius conchoni* was originally described as *Cyprinus conchoni* (Hamilton-Buchanan, 1822) from fishes of Ganges. A brief history of the species with special reference to Indian contributions has been given below.

1822 *Cyprinus conchoni* Hamilton-Buchanan, *Fishes of Ganges*:317,389

1878 *Barbus conchoni* Day, *Fishes of India*: 576, pl.143, fig.7; Day, 1889, *Fauna Br. India*, Fishes, 1:325; Sterba, 1967, *Freshwater Fishes of the World*: 284, fig.320.

1982 *Puntius conchoni* Jayaram et al., *Rec. zool. Suru. India Occ. Paper*, (36):54, fig. 10

1988 *Puntius conchoni* khagariansis Srivastava and Munshi, *Natural History of Fishes and Systematics of Freshwater Fishes of India*:186

**Type species:** *Cyprinus conchoni*, Hamilton-Buchanan, 1822, *Fishes of Ganges*: 317,389

**Type locality:** Ponds of northeast Bengal; Kosi River and Ami River, Bihar.



**Figure 2.** *Puntius conchoni* (Hamilton-Buchanan, 1822)

**Diagnosis of Species (Fig-2):** Body deep and compressed, its depth 2.2 to 2.5 times in standard length. Head is 4.1 to 4.5 times in standard length. Mouth is moderate; no barbless. Dorsal fin inserted equidistant between tip of snout and base of caudal fin; its last unbranched ray osseous, moderately strong and serrated. Scales medium; lateral line incomplete, ceases after 10<sup>th</sup> to 13<sup>th</sup> scales, 24 to 26 scales in longitudinal series, total length: 5.5-9cm.

**Ornamental Value:** It has shiny olive-green back, silvery flanks and belly, tinged with reddish color and a black golden yellow bordered. Blotch present at the caudal peduncle easily eye catching; therefore, it can be considered as Ornamental fish.

### Species 3: *Puntius ticto* (Hamilton-Buchanan, 1822)

*Puntius ticto* was originally described as *Cyprinus ticto* Hamilton-Buchanan (1822). A brief history of the species with special reference to Indian contributions has been given below.

- 1822 *Cyprinus ticto* Hamilton-Buchanan, *Fishes of Ganges*: 314, 398, pl. 8, fig. 87; Murthy, 1977, *Proc. Indian acad. Sci.*, 85B (3):130
- 1865 *Puntius punctatus* Day, *Proc. Zool. Soc. Lond.*:302; Hora, Misra and Malik, 1939, *Rec. Indian Mus.*, 41(3): 263.
- 1878 *Barbus ticto* Day, *Fishes of India*: 576, pl.144, fig. 7; Day, 1889, *Fauna Br. India*, *Fishes*, 1:325.; Hora and Misra, 1938, *J. Bombay nat. Hist. Soc.*, 40(1): 28, fig. 3.
- 2012 *Pethia ticto* Pethiyagoda et al., *Ichthyol. Explor. Freshwaters*, Vol. 23, Nr. 1, Seiten 69-95.

**Type species:** 1822. *Cyprinus ticto* Hamilton-Buchanan, *Fishes of Ganges*, 314, 398, pl. 8, fig. 87.

**Type locality:** South eastern parts of Bengal.



Figure 3. *Puntius ticto* (Hamilton-Buchanan, 1822)

### Diagnosis of Species (Fig-3):

Mouth is small and terminal, barbells are absent. Dorsal fin inserted slightly posterior to the origin of pelvic fin. Lateral line generally incomplete with 23-25 scales in longitudinal series. A long transverse blotch is present in the above of pectoral fin and second blotch present in the above of anal fin end; total length: 5-6cm.

Fin formula- D iii-iv 8; P 13-15; V i 8; A ii-iii 5.

**Ornamental Value:** *P. ticto* possess translucent shining silvery to greenish-gray body, a small black humeral spot present in the above of pectoral fin and second one present with anterior golden edged in the above of anal fin end, can made the fish very popular in aquarium.

### Species 4: *Puntius terio* (Hamilton-Buchanan, 1822)

*Puntius terio* was originally described as *Cyprinus terio* (Hamilton-Buchanan, 1822) from north –east Bengal. A brief history of the species with special reference to Indian contributions has been given below.

- 1822 *Cyprinus terio* Hamilton-Buchanan, *Fishes of Ganges*: 313, 389.
- 1878 *Barbus terio* Day, *Fishes of India*:580, pl.144, fig. 3; Day, 1889, *Fauna Br. India*, *Fishes*, 1:330.
- 2003 *Cyprinus terio* Aatur Rahman, *Zoological Society of Bangladesh*, Dhaka. i-xviii + 1-394.

**Type species:** *Cyprinus terio* Hamilton, 1822, *Fishes of Ganges*, 313, 389.

**Type locality:** North-eastern Bengal.



Figure4. *Puntius terio* (Hamilton-Buchanan, 1822)

**Diagnosis of Species (Fig-4):** Body elongate, deep and compressed. Body depth is 2.4 times in standard length. Head length is 3.3-3.8 times in standard length. Eye diameter is 2.75- 3 times of head length. Barbells are absent. Lateral line incomplete with 22-23 scales in longitudinal series. Over anal fin a large blotch present. Dorsal fin has numerous dark spots and streaks. Body color in dorsal side is metallic green and in ventral side is whitish with light reddish, total length: 5-8cm.

Fin formula- D iii 8; P 14-15; V 9; A 7-8.

**Ornamental Value:** *P. terio* has greenish-silvery body with a large round golden-edged black blotch over anal fin, dorsal fin sometimes with dark spot, has considered the fish as ornamental.

### Species 5: *Puntius gelius* (Hamilton-Buchanan, 1822)

*Puntius gelius* was originally described as *Cyprinus gelius* (Hamilton-Buchanan, 1822) from north –east Bengal. A brief history of the species with special reference to Indian contributions has been given below.

- 1822 *Cyprinus gelius* Hamilton-Buchanan, *Fishes of Ganges*: 320, 390, Pl. 145, fig. 3
- 1878 *Barbus gelius* Day, *Fishes of India*: 577, pl. 145, fig. 3; day, 1889, *Fauna Br. India*, *Fishes*, 1: 327





Figure 5. *Puntius gelius* (Hamilton-Buchanan, 1822)

**Type species:** *Cyprinus gelius* Hamilton-Buchanan, 1822, Fishes of Ganges: 320, 390, Pl. 145, fig. 3

**Type locality:** Ponds of north-east Bengal

#### Diagnosis of Species (Fig-5):

Elongate body moderately compressed. Mouth small, slightly oblique with no barbells and upper jaw slightly longer. Last unbranched ray of dorsal fin is osseous and serrated. Dorsal fin originates nearer to snout tip than the caudal base. Pelvic fins originate below that of dorsal and pectoral as long as head excluding snout. Scales are fairly small and lateral line incomplete, total length: 2.5-4cm.

Fin formula: D ii-iii 8; P i 14; V i 8; A iii 5

**Ornamental Value:** *P. gelius* can be considered as ornamental fish because of its body color which appears as golden along with a dark band over the tail anterior to the caudal fin another dark band present at the caudal peduncle, dorsal fin yellowish with a black spot at the base.

#### Species 6: *Puntius guganio* (Hamilton-Buchanan, 1822)

*Puntius guganio* was originally described as *Cyprinus guganio* (Hamilton-Buchanan, 1822) from Brahmaputra and Yamuna River, India. A brief history of the species with special reference to Indian contributions has been given below.

1822 *Cyprinus guganio* Hamilton-Buchanan, Fishes of Ganges: 38, 392

1868 *Barbus ambassis* Day, Proc. Zool. Soc. Lond.: 583; Day, 1878, Fishes of India: 576, pl. 135, 1; day, 1889, Fauna Br. India, Fishes, 1: 324

1878 *Barbus guganio* Day, Fishes of India: 579; Day, 1889, fauna Br. India, Fishes, 1: 328

**Type species:** *Cyprinus guganio* Hamilton-Buchanan, 1822, Fishes of Ganges: 38, 392

**Type locality:** Brahmaputra and Yamuna River, India



Figure 6. *Puntius guganio* (Hamilton-Buchanan, 1822)

**Diagnosis of Species (Fig-6):** Body elongate, eyes large, mouth terminal, no barbells, scale small. Lateral line is incomplete, 34-36 scales in longitudinal series. Body light greenish with a silvery band, a small black spot at base of anterior dorsal fin rays, total length: 4-6cm.

Fin formula: D iii 8; P i 10; V i 8; A ii 5

**Ornamental Value:** *P. guganio* has transparent body, along with silver band starting behind the operculum which has extended to the base of caudal fin, a black blotch present at the base of caudal fin another one present at the base of dorsal fin which is extended as a black stripe at the frontal part of dorsal fin; made the fish very attractive; so it can be kept as ornamental fish.

#### Species 7: *Puntius phutunio* (Hamilton-Buchanan, 1822)

*Puntius phutunio* was originally described as *Cyprinus phutunio* (Hamilton-Buchanan, 1822) from north-east Bengal, India. A brief history of the species with special reference to Indian contributions has been given below.

1822 *Cyprinus phutunio* Hamilton-Buchanan, Fishes of Ganges: 319, 390.

1878 *Barbus phutunio* Day, Fishes of India: 578, pl. 145, fig. 4.

**Type species:** *Cyprinus phutunio* Hamilton-Buchanan, 1822, Fishes of Ganges: 319, 390.

**Type locality:** Ponds of north-east Bengal

**Diagnosis of Species (Fig-7):** Body somewhat deep, eyes large, mouth small, no barbells. Scale large, lateral line incomplete, 18 to 24 scales in longitudinal series. Presence of three black blotches, one is behind gill-cover, second above anal fin and third as a spot on caudal peduncle, total length: 2.5-4cm.

Fin formula- D ii-iii 8; P i 14; V i 8; A iii 5



Figure 7. *Puntius phutunio* (Hamilton-Buchanan, 1822)

**Ornamental Value:** *Puntius phutunio* possess silvery body along with 2 black stripes appear vertically up its body which consider as ornamentally valuable. The black band is also variable number and positioning of dependent on geographical areas. Their colorful body and peaceful and interest behavior make a welcome addiction any larger community aquarium.

#### Species 8: *Puntius sarana* (Hamilton-Buchanan, 1822)

*Puntius sarana* was originally described as *Cyprinus sarana* (Hamilton-Buchanan, 1822) from west Bengal. A brief history of the species with special reference to Indian contributions has been given below.

1822 *Cyprinus sarana* Hamilton-Buchanan, *Fishes of Ganges*: 307, 388

1878 *Barbus sarana* Day, *Fishes of india*: 560, pl. 136, fig. 2; Day, 1889, *Fauna Br, India, fishes*, 1: 300

1981 *Puntius saberi* Datta and Karmakar, 1981, *Bull. Zool. Surv. India*, 3(3): 179, fig. 1

**Type species:** *Cyprinus sarana* Hamilton-Buchanan, 1822 *Fishes of Ganges*: 307, 388

**Type locality:** Ponds & rivers of West Bengal

**Diagnosis of Species (Fig-8):** Body elongate, eyes moderate, mouth moderate, two pairs of barbells. Scale medium, lateral line complete with 29 to 34 scales. Body color is black olive silvery without any black spot, total length: 8-15cm.

Fin formula: D iii-iv 8; A iii 5; P i 14-17; v i 8



Figure 8. *Puntius sarana* (Hamilton-Buchanan, 1822)

**Ornamental Value:** The body color of *Puntius sarana* is olive-green to silvery with its active nature can made the species highly valuable as ornamental fish.

#### Species 9: *Puntius sophore* (Hamilton-Buchanan, 1822)

*Puntius sophore* was originally described as *Cyprinus sophore* (Hamilton-Buchanan, 1822) from pond and rivers in Gangetic provinces. A brief history of the species with special reference to Indian contributions has been given below.

1878 *Barbus chrysopterus* (McClelland) Day, *Fishes of India*: 579, pl.143, fig. 6; Day, 1889, *Fauna Br. India, Fishes*, 1:329.; Mirza, 1971, *Biologia*, 17(1): 49.

1924 *Barbus annandalei* Fowler, *Proc. Acad. Nat. Sci. Phil.*, 76:87, fig. 6.

1924 *Barbus carletoni* Fowler, *Proc. Acad. Nat. Sci. Phil.*, 76:89, fig. 7.

1974 *Puntius sophore* Menon, *Special Publication No. 1. Inland Fisheries Soc.*, p:136.

**Type species:** *Cyprinus sophore* Hamilton, 1822, *Edinburgh & London*, i-vii + 1-405.

**Type locality:** Pond and rivers in Gangetic provinces.



Figure 9. *Puntius sophore* (Hamilton-Buchanan, 1822)

**Diagnosis of Species (Fig-9):** Body deep and moderately compressed. Dorsal portion is more convex than ventral portion. Mouth is small and terminal. Upper jaw is slightly longer than lower jaw. Barbells are absent. Pelvic fin originated behind the origin of dorsal fin. Lateral line complete with 22- 27 scales, total length: 7-13cm.

Fin formula- D iii-iv 8-9; P i 14-17; V i 7-8; A iii 5.

**Ornamental Value:** It can consider as ornamental fish due to silvery-golden body color along with a reddish orange bands appear on the lateral side of the body. Besides these two black spots one on caudal peduncle another on the base of dorsal fin. The orange color on anal and pelvic fin and orange spot on operculum makes it really attractive and popular.

## 5. Discussion

Study on the distribution of fishes in particular

biosphere is very important to understand the ecological significance of the species. Many factors such as altitude, water temperature, habitat type, food availability, predator and ecological barrier etc. are the determining factors for distribution of species in aqua-habitats. During the study period, we identified 9 species of the genus *Puntius* such as *Puntius chola* (Hamilton- Buchanan, 1822), *Puntius ticto* (Hamilton- Buchanan, 1822), *Puntius terio* (Hamilton- Buchanan, 1822), *Puntius gelius* (Hamilton- Buchanan, 1822), *Puntius guganio* (Hamilton- Buchanan, 1822), *Puntius phutunio* (Hamilton- Buchanan, 1822), *Puntius sarana* (Hamilton- Buchanan, 1822), *Puntius sophore* (Hamilton- Buchanan, 1822), *Puntius conchonius* (Hamilton- Buchanan, 1822) from different blocks of Purba Medinipur, Paschim Medinipur & Jhargram district of West Bengal. *Puntius gelius* (Hamilton-Buchanan, 1822) and *Puntius guganio* (Hamilton-Buchanan, 1822) has been recorded first time from the study area. All the species listed here has potentiality to be established as ornamental fish because of their body color, spot, band and attractive behavior. As per IUCN conservational status one species, namely *Puntius sarana* (Hamilton-Buchanan, 1822) is vulnerable and *Puntius guganio* (Hamilton-Buchanan, 1822) is so far regarded as not evaluated and the remaining seven species are least concern. Present study reveals that *Puntius chola* (Hamilton- Buchanan, 1822) and *Puntius sophore* (Hamilton-Buchanan, 1822) shows high abundance in the study area. *Puntius terio* (Hamilton- Buchanan, 1822), *Puntius gelius* (Hamilton- Buchanan, 1822), *Puntius guganio* (Hamilton- Buchanan, 1822) and *Puntius sarana* (Hamilton- Buchanan, 1822) shows very low abundance and needed immediate conservation or these species will be locally extinct. Therefore, present study will certainly be a land mark for future researchers and policy planners to study on the group from the study area.

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