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**MORPHOMETRIC AND MERISTIC CHARACTERS OF POOL BARB, *PUNTIUS  
SOPHORE* (HAMILTON, 1822) FROM MEGHADRIGEDDA RESERVOIR,  
VISAKHAPATNAM, ANDHRA PRADESH, INDIA**

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**ABSTRACT**

*Puntius sophore* is a freshwater cyprinid of Indian sub-continent which has high demand as a food fish due to its high nutritional value. It is also used as an aquarium fish. It is classified as small indigenous species of fish (SIS). Body is moderately compressed, silvery colour, barbels absent, lateral line complete. It feeds on diatoms, algae, insects, crustaceans, rotifers, fish remains, and higher plants. It shows breeding in monsoon season. Morphometric characters have been commonly used in fisheries biology as powerful tools for measuring discreteness and relationships among various taxonomic categories (Quilang et al., 2007). In the present study 25 fish samples of *puntius sophore* of variable sizes ranging from 7.5- 10.5mm in total length (TL) were sampled from Meghadrigedda Reservoir, Visakhapatnam. These specimens were allowed to measure various morphometric and meristic characters. The minimum and maximum range, mean, standard deviation, percentage of various parameters in total length were estimated.

**Keywords: Morphometric, meristic characters, *puntius sophore* , Meghadrigedda  
Reservoir, Visakhapatnam**

## INTRODUCTION

Pool barb, *Puntius sophore* (Hamilton 1822) is a small indigenous fish of India member of the family Cyprinidae. This species is widely distributed throughout the Indian sub-continent including India, Bangladesh, Bhutan, Nepal and Pakistan (Menon 1999; Petr 1999; Rahman 1989; Talwar & Jhingran 1991). This fish is also reported from Afghanistan (Petr 1999), China (Talwar & Jhingran 1991) and Myanmar (Oo 2002). As *P. sophore* (Figure: 1) inhabits rivers, streams, ponds, beels, floodplains, *baors*, *haors* in plains and sub-montane regions dominantly (Craig et al. 2004; Menon 1999), it is an important target species for small scale fishers (Rahman 2005; Shafi & Quddus 1982), who use a variety of traditional fishing gears (Kibria & Ahmed 2005). However, *P. sophore* is declining rapidly due to heavy fishing pressure and in recent studies from the Indian waters, it is categorized as lower risk near threatened in the Western Ghat (Balasundaram et al. 2000) and in Harike wetland, a Ramsar site (Dua & Parkash 2009). This fish is a major source of animal protein and micronutrients in the diet of rural small-scale farmers (Roos et al. 2007). In addition, it is an important small indigenous fish species of India and very much famous food fish item (Rahman 2005)

and can also be used as aquarium fish (Froese & Pauly 2011).

Morphometric and meristic characters are helpful in easy & correct identification of fish species in laboratory as well as at natural places (Jayaram, 1999). It is common to use morphometric measurements to identify and classify fishes (Begenal and Tesch, 1978). Morphometric study is a powerful tool for characterizing strains / stocks of the same species, which involves detection of subtle variation of shape, independent of size. The complete set of measurements used to describe a form is a morphometric character set (Strauss and Bond, 1990). The studies of morphological and meristic characters of a fish give substantial information with regard to exact identification key of the species (Dhanya et al., 2004) and such identification is prerequisite for cytogenetic and molecular investigations.

## SYSTEMATIC POSITION OF POOL BARB

**Kingdom** : Animalia  
**Phylum** : Chordata  
**Class** : Actinopterygii  
**Order** : Cypriniformes  
**Family** : Cyprinidae  
**Genus** : *Puntius*  
**Species** : *Puntius sophore* (Hamilton, 1822)  
**Common name** : Pool barb.

## MATERIALS AND METHODS

Meghadrigedda Reservoir is a major drinking water source of Visakhapatnam city, a perennial freshwater stream located 15 Km. south of Visakhapatnam. The study area covers 374 km<sup>2</sup> and it is located in between 17<sup>0</sup> 47<sup>1</sup> 29<sup>11</sup> and 17<sup>0</sup> 56<sup>1</sup> 47<sup>11</sup> Northern Latitudes and 83<sup>0</sup> 2<sup>1</sup> 7<sup>11</sup> and 83<sup>0</sup> 16<sup>1</sup> 25<sup>11</sup> Eastern Longitudes. (Figures: 2&3). Specimens of *Puntius sophore* were caught by the traditional fishing gears including *jhaki jal* (cast net), *tar jal* (square lift net) and *dughair* (conical trap) (Kibria & Ahmed 2005) from Meghadrigedda Reservoir. Samples were immediately preserved with ice in the fish landed area and fixed with 5% formalin on arrival at the laboratory. The methods of Dwivedi and Menezes (1974), and Jayaram (1981, 2002) were followed for morphometric measurements and meristic counts. For precision of measurement, divider and measuring board having graduation in mm was used. In the present study, 18- morphometric and 9-meristic characters were taken to study. The minimum and maximum range, mean, standard deviation, percentage of various parameters in total length were estimated.

**Morphometric characters** refer to measureable structures such as total length,

standard length, fork length, head length, snout length, eye diameter, etc... were counted.

**Meristic characters** include countable structures such as dorsal fin rays, anal fin rays, caudal fin rays; lateral line scales, scales above lateral line, etc... were counted.

## RESULTS AND DISCUSSION

Body of *Puntius sophore* is elongated, deep and compressed. Mouth terminal. Jaws toothless. Barbels absent. Dark brown dorsally and on upper half of flanks; ventral half of flanks and belly silvery, operculum golden brown. A round black patch, enclosing 20<sup>th</sup> to 23<sup>rd</sup> scales of lateral line on caudal peduncle. A black blotch at base of dorsal fin between 3<sup>rd</sup> and 5<sup>th</sup> branched rays; margin dark. Pelvics and anal orange to yellow, the later with dark margin; caudal dark. A longitudinal red band from gill opening to base of caudal fin in maturing and mature adults of both sexes during March to June. This band is absent in adults of the same size range in other months. A total of 25 specimens ranging from 7.5-10.5mm TL (Total length) was used for the studies of morphometric and meristic characteristics. The main morphometric and meristic data are reported in Table 1 and 2, respectively.



Figure: 2) Google map of Meghadrigedda Reservoir

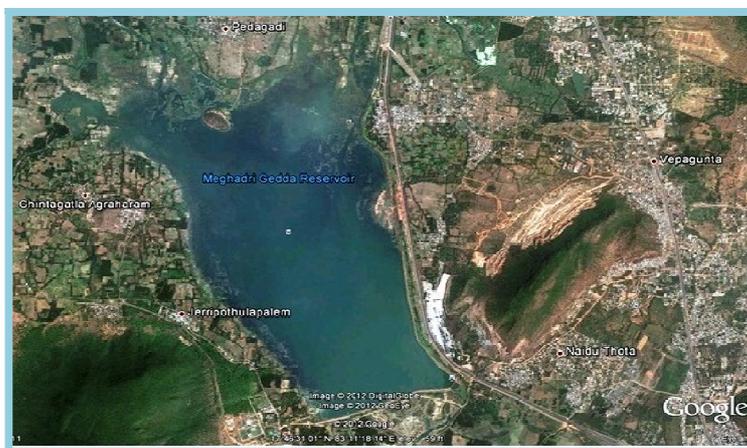


Figure: 3) Meghadrigedda Reservoir

TABLE: 1) Morphometric measurements of the *Puntius sophore* (Hamilton, 1822) specimens (n=25) captured from Meghadrigedda Reservoir, Visakhapatnam.

Measurements (cm)	Min	Max	Mean ± SD	TL (%)
	Mean			
Total length (TL)	7.5	10.5	9.38±0.75	
Standard length (SL)	5.6	8.0	7.01±0.57	74.73% TL
Fork length (FL)	5.8	8.3	7.27±0.58	77.50% TL
Pre-dorsal length (PL)	2.7	4.4	3.62±0.39	38.58% TL
Post-dorsal length (PDL)	2.8	4.0	3.46±0.31	36.88% TL
Head length (HL)	1.4	2.1	1.75±0.16	18.65% TL
Snout length (SnL)	0.3	0.5	0.38±0.04	4.05% TL
Eye diameter (ED)	0.5	0.6	0.51±0.03	5.43% TL
Inter orbital width (IOW)	0.5	0.9	0.71±0.08	7.56% TL
Mouth length (ML)	0.3	0.5	0.43±0.05	4.58% TL
Dorsal fin length (DFL)	0.8	1.4	1.15±0.13	12.26% TL
Anal fin length (AFL)	0.4	0.8	0.65±0.08	6.92% TL
Pectoral fin length (PFL)	0.4	0.5	0.42±0.04	4.47% TL
Pelvic fin length (PFL)	0.3	0.5	0.40±0.07	4.26% TL
Caudal fin length (CFL)	0.5	1.4	1.09±0.16	11.62% TL
Caudal peduncle length (CPL)	0.8	1.4	1.01±0.13	10.76% TL
Caudal peduncle depth (CPD)	0.7	1.2	0.96±0.10	10.23% TL
Height of the body	2.0	3.4	2.81±0.31	29.95% TL

TABLE: 2) Meristic counts of the *Puntius sophore* (Hamilton, 1822) specimens (n=25) captured from Meghadrigedda Reservoir, Visakhapatnam.

Meristic data	Number
Dorsal fin rays	9
Anal fin rays	8
Pectoral fin rays	15
Pelvic fin rays	9
Caudal fin rays	19
Scales along lateral line	25
Scales above lateral line	5
Scales below lateral line	4
Scales before dorsal fin	9



Figure:1) Pool barb (*Puntius sophore*)

## CONCLUSION

Based on available information *p.sophore* is a small indigenous fish species. This is a low cost food fish and ornamental fish. Due to its high nutritional value essential in preventing malnutrition in rural communities particularly of vulnerable groups such as poor women and children. Biometric characters are important for identifying fish species and their habitat as well as ecological criteria in any stream, lake or sea. The above reported morphometric measurements and meristic counts are useful to identify *puntius sophore* and this is the first report from

Meghadrigedda Reservoir, Visakhapatnam, Andhra Pradesh, India.

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