SHORT COMMUNICATION

NEW RECORD OF BLUE PERCH *Badis badis* (Anabantiformes: Badidae) FROM GODAVARI RIVER BASIN OF TELANGANA STATE, INDIA

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NEW RECORD OF BLUE PERCH BADIS BADIS (ANABANTIFORMES: BADIDAE) FROM GODAVARI RIVER BASIN OF TELANGANA STATE, INDIA

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Abstract: Badis badis (Hamilton, 1822), a freshwater fish species, has been reported for the first time from the Godavari River basin of Telangana State, India. One specimen of B. badis was collected from a stream near Mubarakpur Village in Sangareddy District (Manjeera sub-basin) and another from a stream near Siripur (T) Town in Asifabad District (Wardha sub-basin), Telangana State, India. This publication provides information about B. badis occurrence in India, a short description of the collected specimen, and a discussion on its habitat and threats.

Keywords: Asifabad, Chameleon Fish, freshwater fish, Manjeera River, Percomorpha, Sangareddy, Wardha River.

Badis badis (Hamilton, 1822) is a freshwater fish which exhibits remarkable colour patterns on its body with blue iridescent marks on the fins. Due to its attractive and colourful pattern, it is used as an ornamental fish species and exploited in the aquarium trade (Gupta et al. 2016). This fish belongs to the family Badidae and is commonly known as Blue Perch or Chameleon Fish. Badidae is distributed in southern Asia, from Pakistan to India, Bhutan, Bangladesh, China, Nepal, Myanmar, and Thailand (Kullander & Britz 2002; Schindler & Linke 2010; Britz & Kullander 2013; Gupta et al. 2015), and Penna (Chembarampakkam Tank) in Tamil Nadu (Knight & Devi 2009). A few records are available regarding the distribution of B. badis in peninsular India, namely in the Godavari River basin of Maharashtra (Day 1878), Chhattisgarh (Karmakar & Datta 1998), and Madhya Pradesh (Yadav 2005, 2006), the Mahanadi River basin in Odisha (Menon 1999; Jayaram 2010), Godavari in Chhattisgarh (Karmakar & Datta 1998) and Madhya Pradesh (Yadav 2005, 2006), Tunga (Britz & Ali 2015) and Sharavathi in Karnataka (Dahanukar et al. 2015), and Penna (Chembarampakkam Tank) in Tamil Nadu (Knight & Devi 2009).

In India, members of Badidae are distributed in the river basins of the Ganges in Uttar Pradesh and West Bengal, Yamuna in Himachal Pradesh, Brahmaputra in Assam and Arunachal Pradesh (Menon 1999; Geetakumari & Kadu 2011; Valdesalici & van der Voort 2015), Meghna in Meghalaya (Britz & Kullander 2013), Tuivai in Manipur (Vishwanath & Shanta 2004), Mahanadi in Odisha (Menon 1999; Jayaram 2010), Godavari in Chhattisgarh (Karmakar & Datta 1998) and Madhya Pradesh (Yadav 2005, 2006), Tunga (Britz & Ali 2015) and Sharavathi in Karnataka (Dahanukar et al. 2015), and Penna (Chembarampakkam Tank) in Tamil Nadu (Knight & Devi 2009).
Eastern Ghats, but the exact location is not known. In this paper, we report the occurrence of *B. badis* for the first time in the Manjeera and Wardha sub-basins of the Godavari River basin in Telangana State, India.

**MATERIAL AND METHODS**

We followed random sampling during the surveys conducted in the streams across the Sangareddy and Asifabad districts, Telangana, to study fish diversity. Fish were collected using cast nets with the help of fishermen. Collected specimens were photographed, labelled, and preserved in 4% formalin. Meristic and morphometric measurements were taken following Jayaram (2010) and Armbruster (2012). Morphometric measurements were taken point to point to the nearest 0.1mm using Mitutoyo digital callipers. Morphometric values, except the total, standard, and head length, were expressed in percentage of the standard length of the fish. Additionally, subunits of the head were expressed as percentage of head length. Identification of the fishes was done based on Kullander & Britz (2002), Jayaram (2010), and Froese & Pauly (2018).

Specimens (NHM.OU.F-26-2015 and NHM.OU.F-01-2017) were deposited in the Natural History Museum, Osmania University, Hyderabad, India.

**RESULT**

We collected two specimens of *B. badis* from Telangana, India (Fig. 1).

**Genus Badis Bleecker, 1853**

**Badis badis** (Hamilton, 1822)

Materials examined: Telangana State, India: NHM.OU.F-26-2015, 13.x.2015, stream near Sirpur-(T) Town, Wardha sub-basin, Asifabad District, 19.484°N & 79.594°E, 161m, coll. Kante Krishna Prasad, Gundena Devender & Gandla Chethan Kumar; NHM.OU.F-01-2017, 28.iv.2017, stream near Mubarakpur Village, Manjeera sub-basin, Sangareddy District, 17.639°N & 78.023°E, 508m, coll. Kante Krishna Prasad & Hyderabadon Lakman.

**Distinguishing characters:** *Badis badis* is distinguished from its other congeners in the combination of the following characters: body moderately elongated in shape, compressed on the lateral sides; vertical bars on lateral side; abdomen rounded. Head large, laterally compressed; snout blunt. Specific dark blotch on superficial part of cleithrum; operculum with one sharp spine; a small blue spot rounded by a black ring on each shoulder; base of the scales shine silver. Scales of moderate size, ctenoid. Lateral line incomplete; lateral line runs unto the posterior of dorsal fin; lateral line row scales 28. Dorsal fin with 16–18 hard spines and 7–8 branched rays, prominent black blotches along dorsal fin base, and middle with narrow white edge. Pectoral fins with one soft ray and 10 branched rays; pelvic fin with one hard ray and five branched rays. Anal fin with three spines and six branched rays. Caudal fin rounded. Detailed morphometric measurements, ratios, and meristic counts are presented in Table 1.

**Habitat:** At Sirpur, a lone specimen of *B. badis* (Image 1A) was collected in a stream consisting of submerged boulders and small pebbles with sand silt as substratum. The riparian vegetation on both sides of the stream was dominated by Pink Morning Glory *Ipomoea* sp. and Lesser Cattail *Typha* sp. The stream was polluted with organic waste dumped through sewer lines from a nearby village. The species was collected from a ditch in the streambed with Water Thyme *Hydrilla* sp. and Tape Grass *Vallisneria* sp. The place where the species was captured was in the shadow of riparian vegetation. In the stream, *Laubuka laubuca* (Hamilton, 1822), *Pethia ticto* (Hamilton, 1822), *Puntius chola* (Hamilton, 1822), and *Systomus sarana* (Hamilton, 1822) were observed.

At Mubarakpur, another lone specimen of *B. badis* (Image 1B) was collected in a stream with sand silt as substratum and dominated by emergent vegetation of Water Thyme *Hydrilla* sp., Water Lily *Nymphaea* sp., Lotus *Nelumbo* sp., Water Cabbage *Pistia*, Dense Flower Knotweed *Polygonum* sp., and Tape Grass *Vallisneria* sp. The riparian vegetation included Babool *Acacia* sp., Pink Morning Glory *Ipomoea* sp., Algaroba *Prosopis* sp., and Lesser Cattail *Typha* sp. on both the banks. This species shared its habitat with *Esomus danrica* (Hamilton, 1822), *Pethia ticto* (Hamilton, 1822), *Pseudambassis lala* (Hamilton, 1822), *Puntius chola* (Hamilton, 1822), and *P. sopore* (Hamilton, 1822).

Habitat loss due to sand mining and pollution due to organic wastes from sewers were the major threats to *B. badis* at Sirpur, Wardha sub-basin; no threat was observed at Mubarakpur of Manjeera sub-basin.

**DISCUSSION**

*Badis badis* originally described as *Labrus badis* from the lowlands of the Ganges and Brahmaputra drainages in northeastern India by Hamilton (1822). Later, it was reported by Day (1878) from Bombay and Madras presidencies (which also includes the states of Andhra Pradesh, Karnataka, Kerala, Orissa, and Tamil Nadu) without proper location information. Although *B. badis* was recorded in peninsular India (Karmakar & Datta 1998; Menon 1999; Devi & Indra 2003; Yadav 2005, 2006; Knight & Devi 2009; Dahanukar et al. 2015), the exact localities were not provided by most workers. The Telugu vernacular name ‘Kundala’ or ‘Kasu-dara’ for this fish was first provided by Day (1878) in his works from Bombay and Madras presidencies. Until now,
the exact locality record of *B. badis* in erstwhile Andhra Pradesh is lacking. This fish was not reported by earlier workers, though Barman (1993) opined that this may occur in the Telangana region of Andhra Pradesh. This may have been due to its solitary nature and behaviour of hiding in aquatic vegetation. Knight & Devi (2009) also expressed the same opinion about this fish in Tamil Nadu. We too noticed this behaviour in both areas.

We noticed the colour variation of this species in both clear water and polluted water (Image 1). The fish captured in the stream polluted with organic waste at Wardha River sub-basin (Image 1A) showed dirty red and black coloured vertical bands amalgamated on the lateral side of the body. Its overall appearance was black with blue iridescence on the fins. On the other hand, the fish captured in the stream with clear water at Manjeera River sub-basin (Image 1B) showed a bright red-coloured body with six black vertical bands alternatively on the lateral sides. Earlier, Day (1878) too reported a similar colour variation in the species in clear and dirty waters. The specimens from Telangana differed from the earlier report from southern India, particularly from Tamil Nadu, with respect to the circumpeduncular scale count (16 vs. 19–20; Knight & Devi 2009).

The occurrence of *B. badis* in the Manjeera and Wardha sub-basins of the Godavari River reveals that this species could be more widespread than currently known. There is a need for the study of the distribution and population trend of this species (Chaudhry 2010) to enrich scientific knowledge and to understand its threat status.
Table 1. Morphometric characters and meristic counts of *Badis badis* from Wardha and Manjeera sub-basins, Telangana State, India.

| Morphometric characters | Specimen voucher NHM.OU.F-26-2015 | Specimen voucher NHM.OU.F-01-2017 |
|-------------------------|----------------------------------|----------------------------------|
| Total length (mm)       | 34.3                             | 36.3                             |
| Standard length (SL, mm) | 27.9                             | 28.9                             |
| Head length (HL, mm)    | 7.6                              | 8.0                              |
| % of SL                 |                                  |                                  |
| Body depth              | 31.2                             | 35.3                             |
| Head length             | 27.5                             | 27.7                             |
| Head depth              | 22.4                             | 24.6                             |
| Head width              | 13.7                             | 14.6                             |
| Eye diameter            | 11.2                             | 9.8                              |
| Snout length            | 4.5                              | 5.0                              |
| Inter orbital width     | 8.0                              | 7.9                              |
| Dorsal fin base length or dorsal fin width | 57.4 | 56.6 |
| Pelvic fin length       | 29.9                             | 31.5                             |
| Dorsal fin length at branched rays | 17.0 | 18.3 |
| Dorsal fin spine length | 11.7                             | 18.9                             |
| Dorsal fin origin to hypural distance | 70.2 | 70.8 |
| Pectoral fin length     | 23.7                             | 23.6                             |
| Pelvic fin length       | 24.8                             | 26.2                             |
| Caudal peduncle length | 18.6                             | 16.3                             |
| Caudal peduncle depth  | 14.9                             | 16.5                             |
| Pre pelvic distance     | 33.4                             | 34.2                             |
| Pre anal distance       | 66.2                             | 68.8                             |
| Anal fin base length    | 17.8                             | 19.7                             |
| Anal fin length         | 30.1                             | 34.5                             |
| % of HL                 |                                  |                                  |
| Head depth              | 81.6                             | 89.0                             |
| Head width              | 50.1                             | 52.9                             |
| Eye diameter            | 40.7                             | 35.4                             |
| Snout length            | 16.5                             | 18.1                             |
| Inter orbital width     | 29.1                             | 28.7                             |
| Meristic counts         |                                  |                                  |
| Lateral line row scales | 28                               | 28                               |
| Between lateral line and dorsal fin scales | 3 | 3 |
| Between lateral line and ventral fin scales | 8 | 7 |
| Between lateral line and anal fin scales | 7 | 7 |
| Transverse scale rows   | 11                               | 10                               |
| Predorsal scales        | 8                                | 7                                |
| Pre pelvic scales       | 7                                | 6                                |
| Preanal scales          | 21                               | 20                               |
| Dorsal fin rays         | XVI+8                            | XVII+7                           |
| Pectoral fin rays       | i+10                             | i+10                             |
| Pelvic fin rays         | i+5                              | i+5                              |
| Anal fin rays           | III+6                            | III+6                            |
| Caudal fin rayshift (principal) | 14 | 14 |
| Caudal fin rays (procurent) | 6 | 6 |
| Circumpeduncular scales | 16                               | 16                               |

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