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## First report of *Paracanthocobitis botia* (Hamilton 1822) from Bihar with a note on variation

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and Kosygin Laishram**

### Abstract

*Paracanthocobitis botia* Hamilton, 1822 is reported for the first time from Balmiki Tiger Reserve, Bihar India. The species is distinguished from other members of the genus *Paracanthocobitis* in having a complete lateral line, axillary pelvic lobe absent and body colouration comprised of small dorsal saddles and 8–10 dark blotches. Distribution and morphological variations of the species are discussed.

**Keywords:** Nemacheilidae, zipper loaches, Ganga drainage

### Introduction

The Nemacheilines, commonly known as stone loaches shows greatest species diversity in the South East Asia. Kottelat (1989, 1990) <sup>[7, 8]</sup> recognized *Acanthocobitis* as a genus and included *Nemacheilus botia*, *N. rubidipinnis*, and *N. zonalternans*. Grant (2007, 2008) <sup>[2, 3]</sup> established that *Acanthocobitis longipinnis* is different from *A. botia* and remarked that the former is distinguished from *A. botia* and all other species of *Acanthocobitis* thereby erecting new subgenus *Paracanthocobitis*. Kottelat referenced Grant (2007, 2008) <sup>[2, 3]</sup>, but did not recognize the validity of the subgenus *Paracanthocobitis*. Singer & Page (2015) <sup>[10]</sup> recognized *Paracanthocobitis* as a distinct genus.

The Zipper stone loach genus *Paracanthocobitis* is a geographically widespread and species-rich group of Nemacheilid fish in South East Asia. The genus is distinguished from all other genera of the family Nemacheilidae by the combination of lower lip with a large papillated pad on either side of a medial interruption, upper lip with 2–5 rows of papillae and continuous with lower lip, conspicuous black spot with ocellus on upper half of caudal-fin base (Kottelat 2012, Singer & Page 2015) <sup>[9, 10]</sup>. Currently 20 species of the genus are valid, of which 8 are distributed in India.

During a recent survey in the Balmiki Tiger Reserve, five specimens of *Paracanthocobitis botia* (Hamilton, 1822) <sup>[4]</sup> were collected and reported here for the first time from the Bihar state, India.

### Materials and Methods

Measurements were made on the left side of the specimens point to point with digital calipers to the nearest 0.1 mm. Methods of counts, measurements and description followed Kottelat (1990) <sup>[8]</sup>. Fin rays and number of scales were counted under a stereo-zoom light microscope. Measurements are given as proportions of standard length (SL) and head length (HL). The specimens are deposited in the Zoological Survey of India (ZSI), Kolkata.

### *Paracanthocobitis botia* Hamilton, 1822

(Figure 1 and Table)

Common name: Mottled Zipper Loach, Mottled Loach, Sand Loach, Striped Loach

Material examined. ZSI FF 8254, 5, 35–42 mm SL; India, Bihar, West Champaran District, Balmiki Tiger Reserve, Manguraha Range, collected by S. Rath, 04 March 2018.

### Description

Morphometric data is presented in Table 1. Body elongate, dorsal profile rising evenly from tip of the snout to head, slowly increasing from head to dorsal-fin origin, then sloping gently

towards caudal peduncle. Body cylindrical anteriorly to dorsal-fin origin then compressed posteriorly thereafter. Head slightly depressed, snout rounded. Eyes large, near top of head, slightly nearer to tip of snout than end of opercle, not visible from ventral view. Branched dorsal-fin rays 10½–11; branched pectoral-fin rays 10–12; pelvic-fin rays 8; anal-fin rays 6; branched caudal-fin rays 8+8; transverse rows of spots in dorsal fin 4–5; dark bands in caudal fin 5; axillary pelvic lobe absent; lateral line complete with 84–92 pores.

#### Coloration

Body with 10 dark spots alongside just below lateral line. Head covered in medium to large brown spots with a dark patch on opercle. Dorsal fin with 4–5 transverse scale rows. Small dorsal saddles wider than, or equal to, interspaces not extending to lateral line. Irregular pigmentation present between saddles and lateral line. Caudal fin with five V-shaped bands. An ocellus and caudal spot present on dorsal extreme and middle of caudal-fin base.

**Distribution:** *Paracanthocobitis botia* is distributed in India, Bangladesh, Nepal, Myanmar, Pakistan, Bhutan, Thailand and China; the species is reported from the Indus basin in Pakistan to Yangtze River basin in China; through the Ganges, Chindwin, Irrawaddy, Salween, Mae Khlong and Sitang basins (Devi & Boguskaya, 2009). In India, it is known from the tributaries of the Brahmaputra River in Assam, Dolong River tributary of Mansai River, West Bengal and Manguraha Ranges of Balmiki Tiger Reserve of Bihar, India.

#### Discussion

*Paracanthocobitis botia* has been the most commonly used name species of genus *Paracanthocobitis*. The original description by Hamilton (1822)<sup>[4]</sup> mentioned that the species was in northeastern Bengal. However, Hamilton has not

deposited any type material at any repository. The original description is brief and inadequate. However, Hora (1929 & 1935)<sup>[5, 6]</sup> gave the type locality Brahmaputra River, Goalpara in Assam, India. Accordingly, Singer & Page (2015)<sup>[10]</sup> designated a neotype based on a single specimen from Assam, India, which is housed in the British Museum of Natural History (BMNH 1889.2.1.1562–1571). The neotype has a complete lateral line, no axillary pelvic lobe, and body with ten dark blotches along the lateral line, 10½ dorsal-fin rays and 12 pectoral-fin rays.

*Paracanthocobitis botia* is known from the mainstream, and possibly tributaries of the Brahmaputra River, in Assam, India. The original description of *Cobitis botia* by Hamilton (1822)<sup>[4]</sup> states that it was found in rivers of northeastern Bengal. After a review of a map of “The British Indian Empire” from the Imperial Gazetteer of India (1909) and a map of “The Bengal Presidency at its fullest extent in 1858,” it can be said with confidence that “northeastern Bengal” is located in what is modern-day Assam, India, in the Brahmaputra basin, leading to the designation of neotype (Singer & Page (2015)<sup>[10]</sup>).

Devi & Boguskaya (2009)<sup>[11]</sup> assessed the status of the species as Least Concern, although there are some reports of a large decline in suitable habitat in Pakistan, as it will not decline in population on a global scale, which would qualify for a Threatened or Near Threatened Category. However, they remarked that it might be most likely a species complex. The present study agrees with the revised description of *Paracanthocobitis botia* except for few body morphometric characters like head length, pre-anal distance and lengths of fin rays (Table 1). The probable reasons for differences could be owing to the distributional range and genetic variations. It is evident from the present study that the range of distribution of *Paracanthocobitis botia* extends to the state of Bihar, India.

**Table 1:** Morphometric data of *Paracanthocobitis botia* (Hamilton, 1822).

Morphometric characters	<i>P. botia</i> ZSI FF 8254	Mean	SD	<i>P. botia</i> after Singer & Page (2015)
	Range			Range
Standard length (SL) (mm)	35.0–42.0			37.1–57.7
In % of Standard length (SL)				
Pre-dorsal length	48.5–51.4	50.2	1.1	45.7–50.7
Head length	24.3–26.3	25.4	0.9	18.7–21.0
Snout length	08.5–10.5	09.5	0.9	07.8–09.0
Pre-pelvic length	51.0–54.8	53.0	1.4	48.6–56.4
Pre-anal length	81.0–85.0	82.4	1.6	76.0–80.7
Body depth	16.7–18.6	17.6	0.9	12.6–18.4
Caudal-peduncle depth	12.1–27.4	15.9	6.5	10.5–12.5
Caudal-peduncle length	12.6–25.7	16.2	5.5	10.5–12.5
Pectoral-fin length	24.5–26.3	25.5	0.8	16.5–24.3
Pelvic-fin length	17.9–21.4	19.9	1.5	14.5–16.6
In % Head length (HL)				
Eye diameter	18.0–27.3	05.5	1.0	28.1–35.3
Inter-orbital width	20.0–27.3	06.0	0.8	23.2–31.1



**Fig 1:** *Paracanthocobitis botia*, ZSI FF 8254, 42 mm SL, lateral view

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