

A NEW FISH SPECIES OF THE INDO-BURMESE GENUS *BADIS* BLEEKER (TELEOSTEI: PERCIFORMES) FROM MANIPUR, INDIA

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web supplement

ABSTRACT

A new species of genus *Badis* is described from the tributaries of Barak in Manipur. The species has a conspicuous black blotch covering the superficial part of the cleithrum above pectoral fin base, a black blotch between 3rd and 4th dorsal spine, a mid basal rounded black spot on caudal fin; 20 circumpeduncular scales, 31 vertebrae; 26-32 scales in lateral row. The species differs from *Badis kanabos* and *B. badis* by its narrower interorbital width and shallower body. It also differs from *B. kanabos* in having more circumpeduncular scales and from *B. badis* and *B. chittagongis* in having more vertebrae.

KEYWORDS

Badis tuivaiei sp. nov., fish, India, Manipur

Hamilton (1822) described *Labrus badis* from Gangetic provinces and distinguished it from *Labrus dario* of northern parts of Bihar and Bengal in having 17 vs. 14 dorsal spines and a lateral line vs. without lateral line. Bleeker (1854) established genus *Badis* for *Labrus badis* under family Nandidae. He distinguished the new genus from genus *Nandus* in having a smooth and serrated preopercular margin and edentulous and toothed tongue. Kullander and Britz (2002) made a thorough revision of the genus and defined the genus with the characteristics: tubed lateral line scales, 2-4 dentary foramina, hypobranchial 3-toothed, males with short pelvic fin not reaching the first dorsal spine, males with short dorsal fin lappets and rounded caudal fin, black stripe along middle of dorsal fin, dark bars on trunk modified in adults each displaying as two narrow vertical lines, dark pigment on caudal fin base differentiated into three vertically aligned blotches. The revision recognizes twelve species (distributed from Indus in the west to Mekong in the east), including eight new species, i.e., one from Ganges deltaic region, two from Brahmaputra basin, four from Chindwin-Irrawady basin and one from Mae Nam Khwai Noi basin. The authors also mentioned that no material of *Badis* was available from the region between Bangladesh and Myanmar through adjacent Indian states which may be due to insufficient collecting. Vishwanath et al (1998) reported *Badis* sp. from Chatric and Lokchao rivers, both from Chindwin basin, however, did not mention species name.

A few fish collection trips were conducted along the tributaries of the Barak in Manipur. The river flows out of Manipur finally to enter Bangladesh and join the Meghna, a tributary of the Ganges. The collections included 26 specimens of *Badis* which do not fit into hitherto described species. The fish is described herein as new species.

MATERIALS AND METHODS

Measurements and counts followed Kullander & Britz (2002). Dial caliper with sharp tips was used for measurements up to the nearest 0.1mm and expressed as percentages of standard length (SL). All counts were done using a stereo zoom microscope. Type specimens were deposited in the Manipur University Museum of Fishes (MUMF).

Badis tuivaiei sp. nov.

(Fig. 1)

Materials examined

Holotype: 9.viii.2000, Tuivai River, Churachandpur District, Manipur, 34.6mm SL, coll. K. Shanta, MUMF 5124

Paratypes: 20 exs., data as holotype, 26.4-54.0mm SL, MUMF 5115/20; 2 exs., 25.vii.2000, both from Tuivai River, Churachandpur District, Manipur, coll. Juliana L., MUMF 5116 (49.00mm SL), MUMF 5118 (30.2mm SL); 3 exs., 3.ii.2004, Irang R. Tamenglong District, Manipur, 53.5-59.4mm SL, coll. L. Shakuntala, MUMF 5125-5127.

Etymology

The species is named after the Tuivai River from which the holotype was collected.

Diagnosis

A *Badis* species with the following combination of characters: a conspicuous black blotch covering the superficial part of the cleithrum above pectoral fin base, a black blotch between 3rd and 4th dorsal spine, a mid basal rounded black spot on caudal fin; 20 circumpeduncular scales, 31 vertebrae; 26-32 scales in lateral row and interorbital width, and body depth respectively 5.6-6.6% and 25.9-29.2% of SL.

Description

General aspect is in Figure 1 (see also colour Image 1^w). Morphometric data as in Table 1 frequency distribution of meristic characters in Table 2 and comparison with related species in Tables 3. Body elongate, moderately compressed. Predorsal contour straight in small specimens, sloping at some angle as prepelvic contour in some larger specimens, more strongly as the size increases. Orbit situated in anterior half of head and at about mid axis of body. Jaws almost equal anteriorly, lower jaw slightly projecting, maxilla reaching to 1/3 of orbit. Opercular spine slender with a simple sharp tip. Palatine, vomer and parasphenoid toothed. Dental pores 3; anguloarticular pores 2; preopercular pores 6; nasal pores 2; supraorbital pores 3;

^w see Image 1 of the fish in the web supplement at www.zoosprint.org

Table 1. Proportional measurements and counts of *Badis tuivaiei* sp. nov. in percentage of standard length except standard length. In case of counts of paratypes, model number, maximum and minimum numbers are given. Model number is the maximum number after frequency distribution analysis.

Proportional Measurements	Holotype	Mean	Paratypes		
			Min.	Max.	S.D.
Standard length (mm)	34.6	26.4	59.4		
Head length	10.4	28.2	26.0	31.4	1.7
Snout length	2.4	7.0	6.1	7.6	0.4
Orbital diameter	3.0	7.5	6.1	9.4	1.0
Interorbital width	2.3	6.4	5.6	7.2	0.5
Upper jaw length	2.5	8.9	8.5	10.4	0.7
Lower jaw length	4.3	13.9	10.9	16.4	1.5
Body depth	9.7	27.7	25.9	29.2	0.9
Pelvic fin length	8.6	23.8	20.9	25.8	1.4
Pelvic to anal fin distance	10.8	32.9	29.8	36.7	2.4

Counts	Model No	Min.	Max.
D	18/9	18/9	16/9
P	13	13	13
A	iii, 7	7-8	6
Lateral scale rows	30	30	26
Lateral line count	23/4	24/4	20/2
Lateral transverse scales	1½/1/7	1½/1/7	1½/1/7
Circumpeduncular scales	20	20	16
Gill rakers	6	6	6
Vertebrae	31		8

Table 2. Frequency distribution of meristic characters

a. Dorsal fin counts (spines/soft rays)

Counts	16/9	16/10	17/8	18/8	18/9
Specimens	1	1	4	2	18

b. Anal fin counts

Counts	6	7	8	9	10
Specimens	3	12	6	4	1

c. Pectoral fin counts

Counts	13	14
Specimens	22	4

d. Lateral scale rows

Counts	26	27	28	29	30	31	32
Specimens	3	-	2	5	10	4	2

e. Lateral line scale counts (upper/lower scales)

Counts	20/2	20/5	21/5	22/4	23/0	23/4	23/6	24/4	24/5	24/7	25/4
Specimens	1	2	1	1	4	2	2	8	1	2	2

f. Gill raker

Counts	6	7	8
Specimens	3	2	2

g. Vertebrae number

Counts	16/14	16/15
Specimens	2	5

extrascapular pores 2; supracleithral pores 2; posttemporal pores 2; coronalis pore 1; lachrymal pores 3; row of free neuromasts extending across gap between lachrymal and anteriormost infraorbital; infraorbital pores 3-4.

Scales on sides strongly ctenoid. Scales on top of head cycloid. Predorsal scales 4-5 anterior to coronalis pore, posteriorly 8-9; 3-4 scales on cheek, mostly ctenoid, a few anterior scales cycloid. Circumpeduncular scale rows 9 above, 9 below lateral lines, totaling 20. Scales in vertical row 1½ above, 7 below lateral lines.

Soft dorsal and anal fins with rounded tips, reaching to almost about 1/3 or 1/4 of caudal fin. Caudal fin rounded. Pectoral fin rounded, extending about 2/3 distance to anal fin origin. Pelvic fin pointed, inner branch of second soft ray the longest, not reaching to vent.

Colour

In formaline: pale brownish to yellowish with brown to black markings. Preorbital stripe dark grey continued across chin. Postorbital stripe blackish, formed by a single blotch close to orbit; dark pigment also on one scale posterior to that blotch. No supraorbital stripe. Brownish suborbital stripe, continued fainter across underside of head. No opercular blotch. Prominent, dark brown cleithral blotch. Ventral and underside of head notably dusky, otherwise ventral aspect lighter than sides.

Dorsal fin dusky. A black blotch at base between 3rd and 5th spine is present in specimens measuring 25mm SL and more. It may be absent in some. Bars on body usually end in two black blotches on scaly basal cover of dorsal fin. Dorsal fin lappets white along distal margin, bordered by blackish submarginal stripe. In larger specimens, soft dorsal and anal fins and caudal fin uniformly brown; in small specimens, soft fins hyaline. Caudal fin with a small rounded brownish blotch at middle of base, also covering last lateral scale on body, usually also a brown vertical bar covering fin base, occasionally absorbing caudal base spot entirely. Anal fin dusky basally, soft part hyaline or dark throughout in large specimens. Pelvic fin dusky in small specimens; dark brown in large specimens.

Geographical distribution

Tuivai and Irang rivers, both tributaries of the Barak in Manipur. Inhabits clear water montane streams.

Discussion

Badis tuivaiei is similar to *B. kanabos* Kullander & Britz (2002), *B. chittagongis* Kullander & Britz (2002) and *B. badis* (Hamilton-Buchanan, 1822) in their colour patterns, particularly the horizontal lines on sides and blotch on caudal peduncle. The new species, however differs from *B. kanabos* by its narrower interorbital width (5.6-6.6 vs. 7.3-8.6), shallower body (25.9-29.2 vs. 29.0-35.0), more lateral scale rows (26-32 vs. 25-26), more circumpeduncular scales (20 vs. 16-17), more vertebrae (30-31 vs. 26-28) and more dorsal fin rays (xviii, 9 vs. xvi, 9).

It is also distinguished from *Badis badis* in its narrower

Table 3. Comparison of proportional measurements in percentage of standard length and counts of *Badis tuivaiei* sp. nov. with related species

Proportions	<i>B. tuivaiei</i> sp. nov.	<i>B. chittagongis</i>	<i>B. badis</i>	<i>B. kanabos</i>
Body depth	25.9-29.2	29-34	30.7-38.9	29-35
Interorbital width	5.6-6.6	5.5-6.7	6.5-8.3	7.3-8.6
Counts				
Dorsal fin rays	18/9(16/9-18/9)	17/9(16/9-18-9)	16/9(15/9-18/9)	16/9(15/9-17/9)
Pectoral fin rays	13(13-14)	13(12-14)	12(11-14)	12(11-13)
Anal fin rays	7(6-10)	7(6-9)	7(6-8)	7(6-8)
Lateral scale rows	30(26-32)	27(27-29)	26(25-28)	26(25-26)
Lateral line scales (upper/lower)	24/4(20/2-25/4)	21/4(20/3-24/6)	21/4(17/1-24/4)	22/4(20/3-22/4)
Circumpeduncular scales	20(16-20)	20	19-20	16-17
Gill rakers	6(6-8)	9(8-11)	7(5-9)	6-7
Vertebrae	31(30-31)	28(28-29)	27(26-28)	27(26-28)

interorbital width (5.6-6.6 vs. 6.5-8.3) more pectoral fin rays (13 vs. 12), more lateral row scales (26-32 vs. 25-27), and more vertebrae (31 vs. 27).

It is also distinguished from *Badis chittagongis* in having more lateral scale rows (26-32 vs. 27-29) and more vertebrae (31 vs. 28). It also differs from *B. ferrarisi* (Kullander & Britz, 2002) in presence of distal extrascapular.

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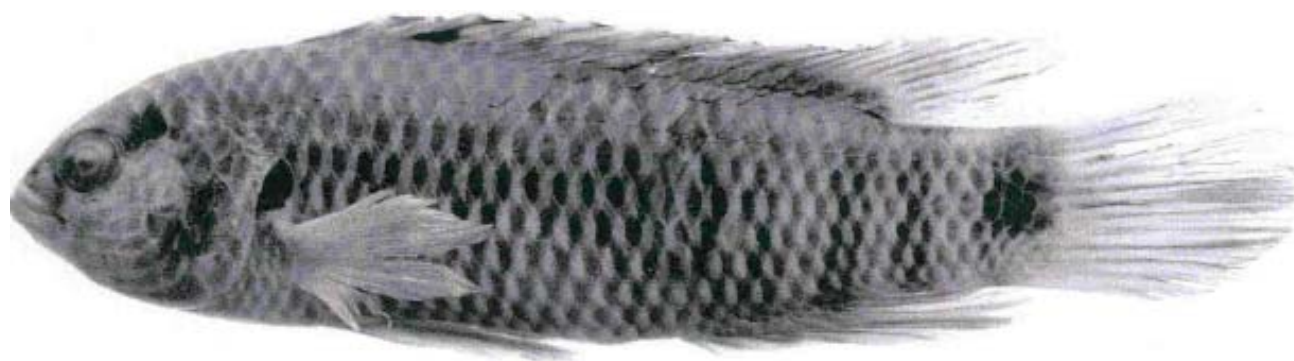


Figure 1. *Badis tuivaiei* sp. nov.

