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Additional record of *Batasio merianiensis* (Chaudhuri 1913), a catfish (Teleostei: Bagridae) in upper Brahmaputra River drainage in Arunachal Pradesh, India

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Abstract: This paper communicates the extension of the distribution range of *Batasio merianiensis* in Sille River in the upper Brahmaputra drainage, East Siang District, Arunachal Pradesh. Detailed examinations of the specimens revealed existence of few morphological variations against those reported by Heok Hee Ng in 2009 on the following characteristics: by having a longer preanal (70.4–73.4 vs. 66.3–68.2% SL); a longer prepectoral (25.1–29.3 vs. 21.4–25.7% SL); a longer adipose-fin base (22.0–27.6 vs. 16.9–22.2% SL); a shorter post-adipose distance (11.6–13.4 vs.13.4–15.5% SL); a deeper body at anus (depth 18.3–20.8 vs.15.2–18.4% SL) and broader head (width 17.6–20.0 vs.13.5–16.2 % HL). Few additional characters of the fish are included along with brief information on its habitat. The LIPUM, the semi-traditional method of fishing in the river is identified as a major threat to this species.

Keywords: *Batasio merianiensis*, habitat, possible threat, range extension, Sille River.

Bagrid catfishes of the genus *Batasio* Blyth, 1860 are species with small head, laterally compressed body that generally inhabit fast-flowing hill streams and large rivers throughout South and mainland Southeast Asia. The genus is characterized by the head with large sensory pores, a pair of prominent posterior processes present on the anterior part of the vomer, transversely elongated bar-like entopterygoid and the metapterygoid which are in close contact with the quadrate but free from the hyomandibular (Mo 1991). They are found in the sub-Himalayan region ranging from the Indus River drainage to the west, coastal rivers draining the eastern face of the Annam Cordilleras to the east, and the Perak River drainage to the south (Ng 2009). With the inclusion of one more species namely *B. convexirostrum* (Darshan et al. 2011), the total number of valid species now increased to 17 from the earlier 16 species reported by Ng (2008).

Batasio merianiensis, a poorly known species was originally described by Chaudhuri (1913) from a pond at Mariani Junction, Brahmaputra River drainage in Assam, northeastern India. The original description is exclusively based on the holotype and the taxonomic analysis exhibits old fashioned method of measurement without morphometric data, which is generally difficult to compare with other congeners. It was after a prolonged period of about nine decades, Ng (2009) could obtain fresh material from 16km northwest of Kokrajhar, in the vicinity of Kumapara, Assam. He rediagnosed, redescribed and revalidated its species status. As information on the natural history of this species such as range of distribution, population size and trend, biology and potential impacts of anthropogenic threats remain poorly understood, Ng (2010) retained

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it under the Data Deficient Category in the IUCN List of Threatened Species.

Until now five species of *Batasio* are recognized from the Brahmaputra River drainage, viz.: *B. batasio, B. fasciolatus, B. spilurus, B. tengana* and *B. merianiensis* (Ng 2006, 2009). *Batasio merianiensis* is easily distinguishable from the others except *B. fasciolatus* in having dark vertical bars on the head and body. This important character is also conspicuous in the present specimens. The important generic character of *Batasio* is the presence of prominent sensory pores on the head, description of which was missing in Ng (2009). We have added this here along with other additional characters.

Ichthyological survey in the upper Brahmaputra River basin revealed existence of undiscovered populations of *Batasio* in Sille River, which was later identified as *B. merianiensis*. There is no report of this poorly known species, its habitat or the anthropogenic threats it faces in this region, hence the present study serves to document this information.

Materials and Methods

Surveys were conducted during October 2012 in Sille River, East Siang District, Arunachal Pradesh. Fish samples were collected from the heap of stones stored by local people. The collected specimens were preserved in 10% formalin and later transferred to 70% ethanol for preservation. The fish were identified following Ng (2009) and have been deposited in the Zoological Survey of India (ZSI), Arunachal Pradesh Regional Centre, Itanagar, Arunachal Pradesh. Measurements using digital calipers (Mitutoyo Corporation, Japan) to the nearest 0.1 mm and expressed as percentage of standard length (SL) or head length (HL). Counts and measurements were made on the left side of the specimens following (Ng & Kottelat 2001). The number written in parentheses after a specific fin ray count indicates the number of specimens examined.

Batasio merianiensis (Chaudhuri, 1913) (Images 1 & 2)

Macrones merianiensis Chaudhuri, 1913: 253, Pl. 9 (Figs. 1, 1a-b) [type locality: pond at Mariani Junction, Assam, India, holotype, ZSI F7781/1].

Material examined: ZSI/V/APFS/P-602, 26–27.x.2012,

Image 1. *Batasio merianiensis*, ZSI/V/APFS/P-602, 57.8mm SL; Male; dorsal, lateral and ventral views.

Image 2. Reproduced from Ng (2009): *Batasio merianiensis*, UMMZ 248780, 75.7mm SL; dorsal, lateral and ventral views

six specimens, 43.4–57.8 mm SL, Sille River, about 1km upstream from RCC bridge over Sille River, about 10km from Ruksin, East Siang District, Arunachal Pradesh, India, 27^{0}52'38"N & 95^{0}18'18"E; coll. Lakpa Tamang.

Description

Head is V-shaped when viewed dorsally and laterally (Image 1), it is longer than its width and depth, with 4–5 small sensory pores on dorsum region. Five distinct large sensory pores present immediately on the posterior region of lower lip (two pores situated in between the lower lip margin and the origin of mandibular barbel and one pore at mid line). Two rows of pores (four in each) along the side of mental region (Fig. 1). Maxillary barbels are reaching or slightly exceeding posterior orbital margin. Dorsal spine smooth, no serrations on its anterior or posterior margin. Pectoral fin with 8 (3); 7,i (2) and 7 (1) rays. Tip of adpressed pelvic fin reaching anterior margin of external genitalia, but not reaching anal-fin origin. Anal fin with iv,10 (1); iii,9 (1); iv,8 (2); iv,7,i (1) and iii,7 (1) rays. Caudal fin with i,7,10,i (4) and i,7,9,i (2) rays. A long slender genital papilla found in two specimens out of six, extending nearer to base of anal fin, which is a feature present in males. One male was found to be larger (57.8 mm SL) among all.

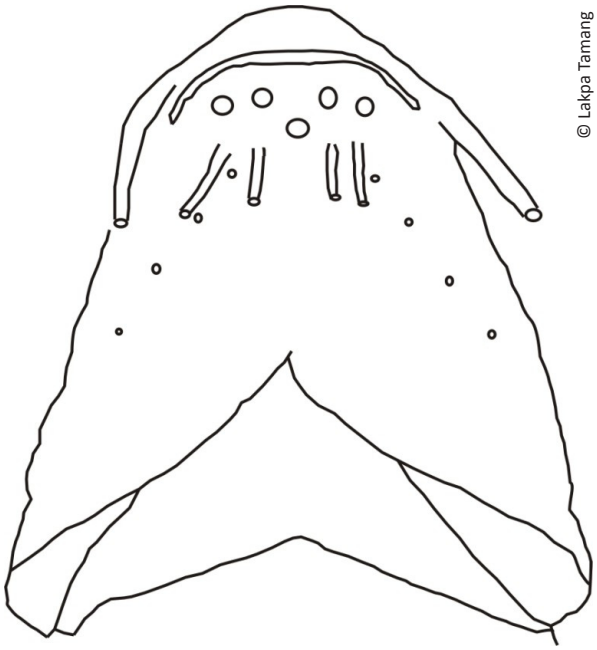

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Figure 1. Schematic diagram of mental region of *B. merianiensis* showing the sensory pores.

Distance between pectoral-fin and pelvic-fin origin and between dorsal-fin and pelvic-fin origin is equal. Eye

diameter almost equals internarial distance. Pectoral fin slightly shorter than dorsal fin. Dorsal-fin base equals to anal-fin base.

Coloration in preservative: Body and head faint brownish, darker at snout and occipital region. The Ventral surface is creamy. Eyes are grayish-white. Minute dark brown spots almost uniformly distributed all over the body and head.

Ecological notes: *Batasio merianiensis* were found to live in the bottom of clear shallow running water, the river comprised of pebbles, cobbles of variable colors and sand particles. The fish were found to dwell preferably inside the gaps under the heap of stones in stagnant water of depth about (20–40 cm) in the winter. River bank vegetation consists of grasses, bushes and trees. Following fishes were also captured along with *B. merianiensis*: *Aborichthys elongatus*, *Acanthocobitis botia*, *Amblyceps mangois*, *Badis singenensis*, *Chanda nama, Garra annandalei, G. gotyla, Mastacembelus armatus, Pangio pangia, Pseudolaguvia viriosa, Pseudolaguvia* sp., *Schistura savona.* Other species caught from adjacent area were *Balitora brucei, Barilius barna*, *B. bendelisis*, *Botia rostrata*, *Crossocheilus latius*, *Neolissochilus hexagonolepis*, *Psilorhynchus balitora*, *Pethia ticto*, and *Tor tor*.

Catching method: In the present study, we found that some local fishermen and farmers were fishing using semi-traditional fishing technique locally known as "LIPUM" in the study site. On inquiry, we learnt that this operation is carried out during the winter season (October–January) mostly. Medium size stones are deposited nearby river bank in a cylindrical pattern (ca. 15–20 inches high), which is generally left undisturbed for 3–4 weeks so as to allow fishes to enter inside. A modified mosquito net (cylindrical shape, top and bottom open) is used to cover the "LIPUM" completely and the stones are removed from inside the net and fishes are caught. In the study site, 10 LIPUMS or fishing spots were observed during our survey and found 90% catch frequency of *B. merianiensis* which indicates a normal population distribution of *Batasio merianiensis* in the study site.

Distribution

Known from the Brahmaputra River drainage in Arunachal Pradesh and Assam, northeastern India (Fig. 2). The Sille River is one of the tributaries of Siang River, which joins the Brahmaputra River in Assam.

Discussion

Among the other five species of *Batasio* reported from the Brahmaputra River drainage only *B. merianiensis* and *B. fasciolatus* have dark vertical bars on the head. The present specimens from upper Brahmaputra River

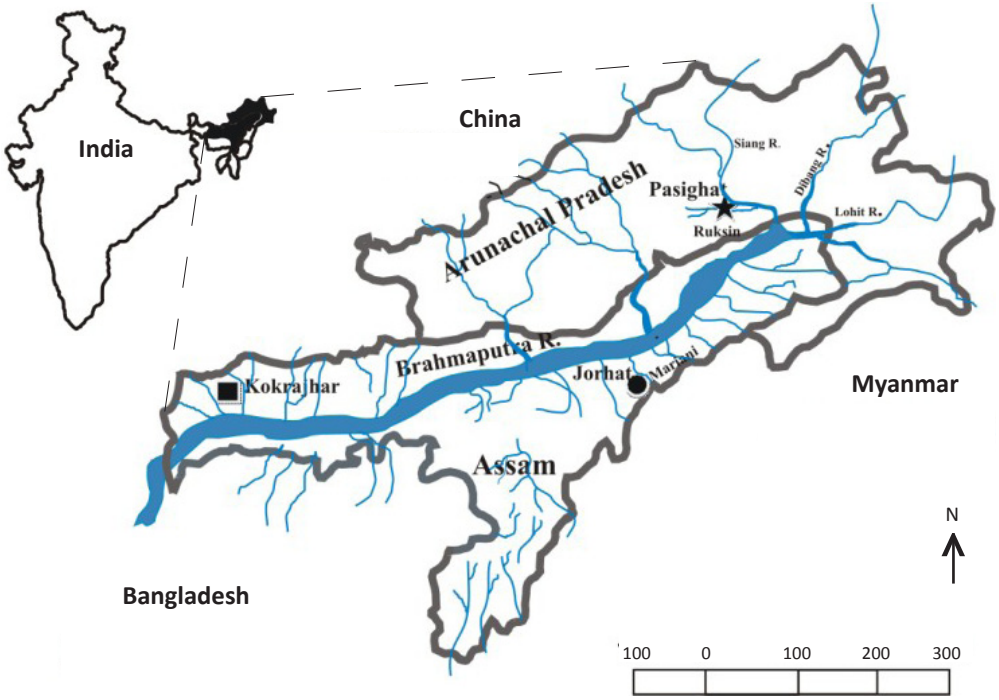

Figure 2. The distribution of *Batasio merianiensis* indicated by star (present collection), circle (Chaudhuri 1913) and square (Ng 2009).

basin fully shares this important character however, can be easily distinguished from *B. fasciolatus* in having the adpressed dorsal fin not reaching (vs. overlapping) the anterior adipose-fin origin and in having larger eye (diameter 20.7–23.3 % HL vs. 16.5–18.8). The dark brown subdistal ovoid patch on dorsal fin in the present specimens has close similarities with the original illustration of the holotype by Chaudhuri (1913: Pl. 9, Fig. 1).

The present specimens shares most of the characters provided in the Table 1 which are closely related or overlapping particularly on the length of the predorsal, prepelvic, dorsal-fin base, dorsal-spine, anal-fin base, pectoral-fin, pectoral-spine, pelvic-fin, caudal-fin, head, snout, caudal peduncle, nasal-, maxillary-, inner-, and outer mandibular barbel with *B. merianiensis.* Other characters include caudal peduncle and head depth, dorsal to adipose- and interorbital distance, and eye diameter. In addition, the meristic feature in case of dorsal-, pelvic-fin rays and number of serrae on posterior margin of pectoral spine is exactly the same with negligible variations seen in pectoral-, anal- and caudal-fin rays (Table 2).

However, few morphological variations were

Table 1. Morphometric data of *B. merianiensis.*

Character	Present specimens (n=6)		Data from Ng (2009) (n=21)		
	Range	Mean±SD	Holotype (ZSI F7781/1)	Range	Mean±SD
Standard length	43.4–57.8				
%SL					
Predorsal length	37.3–38.4	37.9±0.5	38.8	36.6–40.5	37.7±1.31
Preanal length	70.4–73.4	72.0±1.3	67.9	66.3–68.2	67.4±0.60
Prepelvic length	49.8–55.3	53.1±2.4	50.2	47.6–51.3	49.9±1.13
Prepectoral length	25.1–29.3	26.7±1.8	22.5	21.4–25.7	23.1±1.25
Length of dorsal-fin base	13.6–16.4	15.4±1.1	14.8	14.8–17.3	16.2±0.78
Dorsal-spine length	12.8–16.8	15.5±1.4	16.6	13.5–16.7	15.2±0.93
Length of anal-fin base	13.6–16.5	15.2±1.0	13.5	13.0–18.0	15.2±1.29
Pelvic-fin length	14.6–19.7	16.1±1.8	16.9	12.3–16.9	13.9±1.35
Pectoral-fin length	17.7–22.5	20.1±1.7	19.1	15.4–19.1	17.2±1.10
Pectoral-spine length	14.8–18.6	15.8±1.5	16.3	12.2–16.3	13.9±1.07
Caudal-fin length	20.2–25.7	23.8±1.9	damaged	21.2–25.0	22.6±1.06
Length of adipose-fin base	22.0–27.6	23.6±2.1	22.2	16.9–22.2	19.7±1.55
Dorsal to adipose distance	10.7–15.7	13.8±1.7	13.9	13.9–17.4	15.9±1.00
Post-adipose distance	11.6–13.4	12.4±0.9	14.3	13.4–15.5	14.3±0.69
Caudal peduncle length	12.2–17.2	15.3±1.7	17.7	16.4–19.5	17.5±0.85
Caudal peduncle depth	10.7–11.9	11.1±0.4	10.5	9.7–11.9	10.7±0.65
Body depth at anus	18.3–20.8	19.5±0.8	17.4	15.2–18.4	16.8±1.05
Head length	25.1–27.8	26.6±1.0	24.0	24.0–26.5	25.6±0.63
Head width	17.6–20.0	19.0±1.0	15.2	13.5–16.2	15.2±0.77
Head depth	17.3–19.5	18.2±0.8	17.2	16.3–19.3	17.3±0.96
%HL					
Snout length	37.2–42.2	39.3±1.9	39.2	36.7–40.9	38.5±1.22
Interorbital distance	29.2–34.1	32.1±1.7	25.9	25.9–31.5	29.1±1.58
Eye diameter	20.7–23.3	21.9±1.1	25.9	18.3–25.9	21.5±1.52
Nasal barbel length	15.5–20.7	18.0±1.7	25.9	9.4–25.9	16.2±4.12
Maxillary barbel length	24.4–48.7	35.3±11.3	52.5	36.8–54.5	46.4±5.74
Inner mandibular barbel length	7.3–13.4	11.4±2.2	10.8	8.4–13.3	11.4±1.68
Outer mandibular barbel length	16.7–22.1	20.2±2.0	14.6	14.3–23.2	18.5±2.88

Table 2. Meristic data of *B. merianiensis*.

	Present specimens (n-6)	Data from Ng (2009) (n=21)
Dorsal fin rays	7	7
pectoral fin rays	7; 7,i; 8	7; 8
pelvic fin rays	i,5	i,5
anal fin rays	iii,7; iv,7i ; iv,8; iii,9; iv,10	iv,8; v,8; iii,9; iv,9; iv,10
caudal fin rays	i,7,9,i ; i,7,10,i	i,7; 8,i
Serrae on posterior margin of pectoral spine	6-7	6-7

observed on the following characters: by having a longer preanal (70.4–73.4 vs. 66.3–68.2 % SL); a longer prepectoral (25.1–29.3 vs. 21.4–25.7 % SL); a longer adipose-fin base (22.0–27.6 vs. 16.9–22.2 % SL); a shorter post-adipose distance (11.6–13.4 vs.13.4–15.5% SL); a deeper body at anus (depth 18.3–20.8 vs.15.2–18.4% SL) and a broader head (width 17.6–20.0 vs.13.5–16.2 % HL).

Conclusion

The extensive use of the semi-traditional fishing technique would obviously affect the population of *Batasio merianiensis* in the study site. Besides, mosquito nets are more hazardous as it holds up almost all sizes of fishes because of minute meshes. Thus such technique employed would obviously affect the natural growth of the population of the fish. As far as the preferred microhabitat of the fish is concerned, the situation would be worsened if non-conventional method of fishing such as the use of chemicals and electricity are employed as previously reported by Tamang & Chaudhry (2012). Keeping in mind the moderate population size of the fish, its preferred micro habitats and excessive usage of the semi-traditional fishing method, there is an urgency to take necessary measures for the conservation of this poorly known species, continuous practicing of this fishing technique otherwise may eventually wipeout the species from the present study area.

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