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Research Article

First Record of *Batasio Spilurus* Ng from the Siang River of Arunachal Pradesh, Northeastern India (Teleostei: Bagridae)

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Abstract: *Batasio spilurus* Ng 2006 was described from the vicinity of Dibrugarh, Assam (Brahmaputra River) and its distribution to tributaries of the Brahmaputra River is unknown. Recent collections from the Siang River at Pasighat, Arunachal Pradesh included this species, and hereby reported for the first time. With the record of this species, a total of five species of *Batasio* are known from the state. A key to the species of *Batasio* occurring in Arunachal Pradesh has also been provided.

Keywords: New record; *Batasio spilurus*; Siang river; Arunachal Pradesh

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Introduction

Fishes of the genus *Batasio* Blyth, 1860, are small size fresh water bagrid catfishes inhibiting in the hill streams of the upper reaches of large rivers throughout the south and southeast Asia (Ng, 2006). The genus is diagnosed from its confamilials in having numerous large sensory pores on the head, a narrow mental region, anterior part of vomer with a pair of posteriorly-directed processes, entopterygoid bar-like and transversely-elongated, and the metapterygoid free from the hyomandibular but closely contact with the quadrate (Mo, 1991). Additionally, the genus is readily distinguished from other bagrid catfishes (except *Chandramara* Jayaram) by its short minute maxillary barbel which is restricted with in the extend of head, which rarely crossed the posterior rim of the eye.

The Siang River of Arunachal Pradesh, originated from the Angsi glacier on the northern side of the Himalayas in Burang County of Tibet as the Yarlung-Tsangpo River, is the main tributary of Brahmaputra drainage. The ichthyofauna of the Siang River and its tributaries is poorly explored. Collections from the Siang River at Pasighat Arunachal Pradesh included *Batasio spilurus* Ng 2006, a species described from the vicinity of Dibrugarh, Assam (Brahmaputra basin), and hereby reported its first occurrence record in the Siang river drainage in Arunachal Pradesh.

Materials and Methods

Methods of measurements and fin count followed Ng and Kottelat (2001). Measurement was made using a digital caliper taken nearest to the tenth of a millimeter. Fin rays were counted under transmitted light using a Nikon SMZ 800 stereoscopic microscope. Numbers in parentheses following a count were the number of specimens with that count.

The method for clearing and staining of bones follows Hollister (1934). Osteological characters were observed from cleared and stained specimens and nomenclature of bone follows (Mo, 1991). Specimens Collected for this study were deposited Rajiv Gandhi University Museum of Fishes, Doimukh (RGUMF). Abbreviations: SL-Standard Length; HL-Head Length.

Results

Batasio spilurus Ng 2006 **(Figure 1).**

Materials examined

RGUMF 317, 54.8 mm SL, RGUMF 318, 54.1 mm SL; India: Arunachal Pradesh, East Siang District, Siang River at Pasighat; Achom Darshan and Party, 21st February 2015.

Diagnosis

Batasio spilurus differs from all known congeners by its short adipose-fin base (10.0-12.8% vs. 14.5-33.3% SL) and slender caudal peduncle (5.7-6.6% SL vs. 6.7-11.8% SL). It further differs from the congeners occurring in the Brahmaputra drainage, except *B. tengana* (Hamilton) in having a slender body 11.9-14.1% SL (vs.15.8-23.9% SL). *Batasio spilurus* can be easily differentiated from *B. tengana* in having a wider head (14.7-16.5% vs. 12.5-14.5% HL), the presence of a distinct greyish triangular spot at the base of the caudal fin (vs. spot very diffuse or absent), and a more

Figure 1(a, b, c): *Batasio spilurus*, RGUMF 318, 54.1 mm SL. a) Dorsal b) Lateral c) Ventral views.

taper snout when viewed laterally (vs. rounded and bulbous).

Description

Morphometric and meristic data are given in **Table 1**. Body is moderately compressed. Dorsal profile is rising gently from tip of snout to origin of dorsal fin and then gently sloping ventrally towards caudal peduncle. Ventral profiles almost straight to anal fin origin then gently incline towards caudal peduncle. Anus and urogenital openings located at middle of appressed pelvic fin. Lateral line mid laterally and complete. Skin is smooth. Vertebrae 19-20+19=38-39. Brancheostegeal rays 7.

Head is slightly depressed and narrow. Dorsal surface of head covered with thin skin. Median longitudinal groove on head long, originated from slightly ahead of anterior margin of eye and extending to half of occipital spine. Posterior fontanel opening is reaching base of occipital spine. Occipital spine slender, basal half of spine bears a shallow median depression for supporting median longitudinal groove. Occipital spine reaching first nuchal plate of dorsal fin, posterior tip of spine forked to articulate with anteriorly pointed first nuchal plate. Orbit with free margin located on upper

Table 1: Morphometric and meristic data of *Batasio spilurus*. (Holotype and paratype data are from Ng, 2006).

	Holotype ZRC 49133	Paratype ZRC 50201	RGUMF 317	RGUMF 318
Total length	-	-	64.2	62.9
Standard Length in mm	42.0	40.5	54.8	54.12
In % SL				
Predorsal length	38.8	39.5	36.1	38.1
Preanal length	66.7	67.7	68.2	69.1
Prepelvic length	49.5	51.1	47.1	46.9
Prepectoral length	26.7	26.4	22.8	23.7
Length of dorsal-fin base	15.5	15.8	13.8	15.3
Length of dorsal spine	15.5	14.3	10.0	10.5
Length of anal-fin base	17.4	17.0	14.1	16.8
Length of pelvic fin	14.5	17.0	16.2	15.0
Length of pectoral fin	20.0	18.8	15.9	damage
Length of pectoral spine	16.9	16.3	12.2	damage
Length of caudal fin	26.2	26.4	22.1	19.1
Length of adipose-fin base	12.6	12.8	10.0	10.0
Dorsal to adipose distance	20.2	19.5	22.0	21.8
Post-adipose distance	18.3	19.0	20.3	19.5
Length of caudal peduncle	16.4	17.8	14.6	15.8
Depth of caudal peduncle	6.2	5.7	6.5	6.6
Body depth at anus	12.6	13.6	11.9	14.1
Head length (LH)	26.9	28.6	23.4	24.2
Head width	16.4	16.5	14.7	15.5
Head depth	15.7	17.0	15.0	17.2
In % HL				
Snout length	35.4	33.6	38.3	32.2
Interorbital distance	27.4	24.1	21.9	26.3
Eye diameter	25.7	24.1	22.7	28.3
Length of nasal barbel		42.2	35.9	40.6
Length of maxillary barbel	69.0	75.0	82.8	70.7
Length of inner mandibular barbel	22.1	25.9	19.5	20.2
Length of outer mandibular barbel	48.7	51.7	39.1	41.2
Meristic count				
Dorsal fin count	II,7	II,7	II,7	II,7
Pectoral fin count	I, 8	I, 8	I, 8	damage
Pelvic fin count	i,5	i,5	i,5	i,5
Anal fin count	v,8,i	v,10,i	v,11	iv,12
Caudal fin count	i,7+8,i	i,7+8,i	i,7+8,i	i,8+8,i
Gill rakers count	-	-	2+4=6	2+5=7
Vertebrae	19+19=38	20+19=39	-	20+19=39

half of head, not visible from ventral side. Anterior nostril opening is tubular, well separated from posterior nostril. Sensory pores on head large and prominent. Eye is ovoid, horizontal axis longest; located entirely in dorsal half of head.

Gill openings wide, extending from post temporal to beyond isthmus. Gill membranes free from isthmus. Mouth is inferior. Oral teeth are small and villiform, in irregular rows on all tooth-bearing surfaces. Gill opening wide, free from isthmus, membranes separated, extending from post-temporal to beyond isthmus. Gill rakers short with 2+4-5=6-7 rakers on first branchial arch. Premaxillary tooth band rounded and equally width throughout. Dentary tooth band narrower than premaxillary and tapering posterolaterally.

Barbel is four pairs. Maxillary barbel is long, distal tip extending to one diameter ahead of posterior rim of opercle. Nasal barbel is slender, extending almost posterior rim of eye. Outer mandibular barbel not reaching end of lateral head and inner mandibular-barbel short, its length extend only half of outer mandibular barbel.

Dorsal fin with a spinelet, a spine and 7 branched rays, fin origin located at anterior two-fifths of body. Dorsal fin spine is short, slender and slightly backward, smooth on both edges. Ad pressed dorsal fin is not reaching origin of adipose fin. Adipose origin at vertical through second or third simple ray of anal fin, its base shorter than dorsal-fin base, fin margin roughly convex. Pectoral fin with a stout spine and 8 branched rays, spine curved backwards, sharply pointed at distal tip, its posterior margin with 10-15 small serrations along entire length. Pelvic fin with i, 5 rays, tip of adpressed fin not reaching anal-fin origin. Anal fin with 4-5 simple and 8-12 branched rays. Caudal fin deeply forked, with i, 7, 8, i or i, 8, 8, i principal rays; upper lobe slightly longer than lower. Procurrent rays extend slightly anterior to fin base with 17 in upper and 15 in lobe. First upper procurrent rays located between the distal tip of 32 and 33 neural spines, similarly origin of lower procurrent rays also located between the distal tip of 32 and 33 haemal spines.

Colouration

In 70% ethanol: head and body yellowish. Skin over occipital region with dense melanophores, imparting greyish brown colour on posterior portion of head. Mid-dorsal of body posterior to dorsal fin with a distinct greyish brown band, band interrupted at origin and also at posterior end of adipose-fin base. Dorsal half of tympanum (above pectoral fin) having a dark brown semilunate spot. Mid-lateral of body with pale greyish line extending from dorsal margin of tympanum to a greyish triangular spot at caudal fin base, numerous chevron-shaped marks interspersed at regular intervals along mid-lateral line. Anterior half of dorsal fin is dark brown ovoid mark.

Distribution

The species is known from its type locality Dibrugarh, Assam (Brahmaputra River) (Ng, 2006) and presently recorded from the Siang River in Arunachal Pradesh **(Figures 2 and 3)**.

Discussion

Ng (2006) re-described and clarified the identity of *Batasio tengana* based on the specimens collected from the Tista River and original drawing of Hamilton (1822), and he also pointed out that those specimens assigned to *B. tengana* by earlier workers viz. Hora and Law (1941), Jayaram (1977), and Ng and Kottelat (2001) are misidentifications of *Batasio fasciolatus* Ng. Hithertho, four species of *Batasio* are recorded from Arunachal Pradesh viz. *B. fasciolatus* form the Panye River (Subansiri basin) (Bagra et al., 2009), *Batasio merianiensis* (Chaudhuri, 1913) from Sille River, a tributary of Siang River in East Siang district (Tamang and Sinha, 2014), *Batasio tengana* (Hamilton, 1822) from Noadhing River (Nath and Dey, 2000) and *Batasio batasio* (Hamilton, 1822) by Sen (2000) without mentioning the place of its occurrence. Present investigators also encountered *B. batasio* from the Siang, Subanshri, and Dibang Rivers of the state. Further, the present study recorded *Batasio spirulus,* a fifth species*,* from the Siang River of Arunachal Pradesh. It is observed that the specimens of *B. spilurus* slightly differ from the original description in the length of predorsal 36.1-38.1% SL (vs. 40.5-42.0% SL), dorsal-fin base 13.8-15.3 (vs. 15.5-15.8), adipose fin base 10.0% SL (vs. 12.6-12.8), post adipose distance 19.5- 20.3 (vs. 18.3-19.0), depth of

Figure 2 (a, b): Collection site of *Batasio spilurus* in Siang River at Pasighat, Arunachal Pradesh: a) Main river b) Portion of river in southern bank.

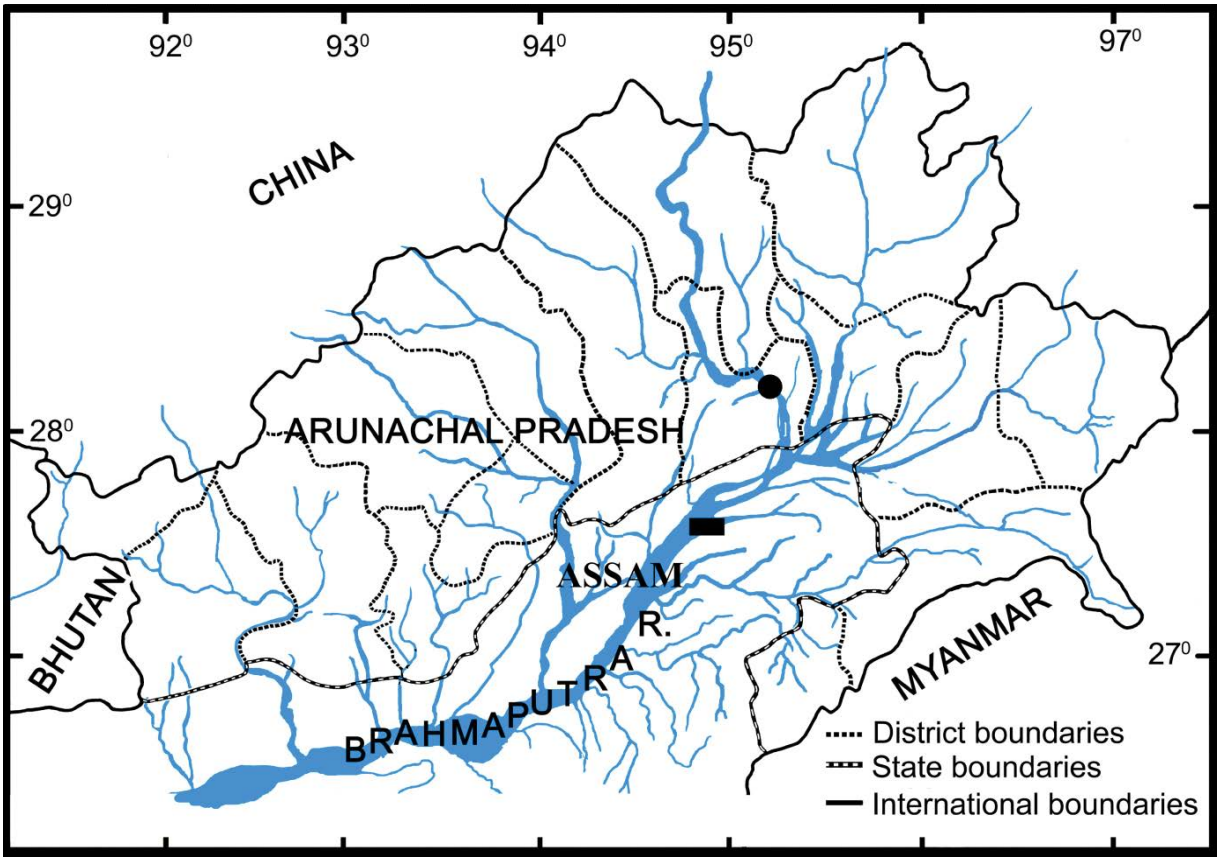

Figure 3: Map showing the collection site of *Batasio spilurus.* (Circle: Siang River at Pasighat, Arunachal Pradesh; Rectangle: Dibrugarh, Assam its type locality). (Map redrawned from Darshan et al., 2016).

caudal peduncle 6.5-6.6 (vs. 5.7-6.2), and head length 23.4-24.2% SL (26.9-28.6); and also lesser anal fin count iv-v, 11-12 (vs. V, 8-19, i). These differences may be due to accessing small sample size (only two specimens) and immature stage fishes (40.5-42.0 mm SL), resulting in failure to accommodate the actual range of morphometric and meristic parameters of the species in the original description. We observed that the species get mature at about 54.1 mm SL (confirmed by observing egg during dissection).

Artificial key for identification of *Batasio* species occurring in Arunachal Pradesh, Brahmaputra basin:

1a. Body with four to six vertical dark brown bars on light brown ground colour..... 2.

1b. Body lacking vertical dark brown bars..... 3.

2a. Adipose fin short with length 16.9-22.2% SL, distal tip of adpressed dorsal fin not reaching the origin of adipose fin..... *Batasio merianiensis*.

2b. Adipose fin long with length 24.5-25.3% SL, addressed dorsal fin overlap on the anterior portion of adipose fin..... .....*Batasio fasciolatus*.

3a. Body with a distinct dark brown elliptical spot on the greyish mid-lateral stripe below dorsal fin, adipose-fin base long with length 24.5-25.3% SL.....*Batasio batasio*.

3b. Spot below dorsal fin absent, adipose fin short with length 10.0-17.5% SL..... 4.

4a. Slender caudal peduncle with depth 5.7-6.6% SL, short adipose base with 10.0-12.8% SL, sharper snout in lateral view.... .....*Batasio spilurus*.

4b. Deeper caudal peduncle with 6.7-8.2% SL, short adipose base with 14.5-17.5% SL, snout rounded and bulbous in lateral vi ew.....*Batasio tengana*.

Comparative materials

Batasio batasio: RGUMF 319 (1), 57.4 mm SL, Siang River at Pasighat, Arunachal Pradesh, India.

Batasio fasciolatus: RGUMF 0102 (7), 43-83 mm SL, Panye River, Arunachal Pradesh, India. RGUMF uncat., (5), 65.1–78.5 mm SL, Dikrong River, Arunachal Pradesh, India.

Batasio merianiensis: ZSI F 7781/1 (1), holotype, 65.7 mm SL; India: Meriani junction, Assam, India. Additional data from Ng (2009).

Batasio tengana: MUMF uncat., (18), 3.6-4.5 mm SL, Ujjan Bazar, Guwahati, Assam, India.

Batasio travancoria: ZSI F 13449/1 (1), holotype, 74.0 mm SL; India: Travancore. ZSI F 13451/1-13452/1 (2), 58.1-66.1 mm

SL, paratype, Travancore, India.

Batasio affinis: MUMF 9028, 79.1 mm SL, India: Khujailok stream, Chandel district, Manipur. MUMF 9033 (5), 78.7-93.1 mm SL, same as above. Addditional from data from Ng and Kottelat (2007).

Batasio dayi: Data from Vinciguerra (1890) and Ng (2008).

Batasio elongatus: Data from Ng (2004).

Batasio feruminatus: Data from Ng and Kottelat (2007).

Batasio fluviatilis: Data from Day (1888) and Ng and Kottelat (2007).

Batasio macronotus: Data from Ng and Edds (2004).

Batasio pakistanicus: Data from Mirza and Jan (1989).

Batasio pocerus: Data from Ng (2008).

Batasio sharavatiensis: Data from Bhatt and Jayaram (2004) and Arunachalam and Muralidharan (2007).

Batasio tigrinus: Data from Ng and Kottelat (2001).

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