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New Record of *Schistura rubrimaculata* Bohlen & Šlechtová 2013 (Cypriniformes: Nemacheilidae) from Chindwin Basin, Manipur, Northeast India

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ABSTRACT

Schistura rubrimaculata Bohlen & Šlechtová 2013[1] is reported for the first time from the Taret River, Chindwin Basin in Manipur, India. It was first described from two streams of Myanmar which drains into the Irrawaddy River, on the eastern slope of the Rakhine Range. The occurrence of the species in the tributaries of the Chindwin Basin in North eastern India has not been recorded till date. *S.rubrimaculata* is diagnosed in having a white or cream ventral side of the body and head below the prominent black midlateral stripe; six dark brown saddles on the dorsum, interspaces broader than saddle; dark grey snout on the dorsal side; and the anus located close to the anal-fin origin and hereby the species is reported as a new occurrence record for the first time from the Chindwin Basin in Manipur, India. To validate the species conformity, morphometric data and meristic counts of the examined species have been compared with the original description.

KEYWORDS: *Schistura rubrimaculata*, new record, Chindwin Basin, Manipur

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INTRODUCTION

The nemacheilid loaches of the genus *Schistura* McClelland 1838[2] are small size fishes with attractive colouration inhabiting benthic zone of fresh and well oxygenated running hill streams waters of Asia, Europe and Ethiopia[3]. Maximum species diversity of this genus occurs in South East Asia. Manipur, a state in the North eastern region of India lies in the Freshwater Biodiversity Hotspot[4]. The state is drained by two important river basins, viz., the Chindwin and the Barak-Surma-Meghna Rivers Basins. Chaudhuri, 1912[5] first published the scientific report of the fishes of Manipur. He described *Schistura manipurensis* from the Chindwin Basin in Manipur. Later Hora, 1921[6] described *S. sikmaiensis* and *S. kangjupkhulensis* from the Chindwin Basin. Hora, 1937[7] reported *S. vinciguerrae* from Namya River (Chindwin Basin) in Ukhrul district. Menon, 1987[8] first described *S. nagaensis* from Tizu River (Chindwin Basin), Nagaland, India. Vishwanath & Laisram, 2001[9] reported the occurrence of *S. nagaensis* in Manipur (Chindwin Basin). Vishwanath & Nebeshwar, 2004[10] described *S. reticulata*, Vishwanath & Shanta, 2004a[11]& b[12] described *S. khugae* and Shangningam, Lokeshwor & Vishwanath, 2014[13] described *S. phamhringi* from the Chindwin Basin in Manipur.

A recent collection of fishes from the Taret River, Chindwin Basin, Manipur included an unrecorded species from the state so far. The Taret River is one of the major tributaries of the Yu River which in turn is an important tributary of the Chindwin River Basin. It originates from the Sita hills of Tengnoupal District, Southeast of Manipur. Thus, this study for the first time reports the occurrence of *Schistura rubrimaculata* from the Chindwin Basin of Manipur, India.

MATERIALS AND METHODS

Counts and measurements follow Kottelat, 1990[3]. Measurements were made on the left side of the specimens, with digital callipers to the nearest 0.1 mm. Measurements are presented as proportions of standard length (SL). Fin rays and pores on lateral line and cephalic lateralis system were counted under a stereo-zoom microscope using transmitted light. The specimens are deposited in the Manipur University Museum of Fishes (MUMF).

RESULT

Schistura rubrimaculata Bohlen & Šlechtová 2013[1]

Figure 1. Lateral view of *Schistura rubrimaculata*, MUMF 18003, 30.4 mm SL, Taret River, Chindwin Basin, Tengnoupal District, Manipur, India.

Material examined

MUMF 18001-18006, 6, 29.4-32.01 mm SL; India: Manipur, Tengnoupal District, Taret River, Chindwin Basin; 24°30.456" N 94°22.393"E; Y. Chinglemba & party, March 2018.

Diagnosis

Morphometric measurements and counts are provided in Table No. 1 and 2 respectively. *Schistura rubrimaculata* is distinguished from its congeners by the following set of characters: Body greatly elongated, small size and slender. Ventral half of head and body whitish or cream colour in 10% formalin preserved specimen (Fig. 1). A red blotch near the caudal fin base above the bilateral line is not visible in preserved specimen. Head depressed, dorsal half of head with black pigments. Six dark brown saddles on the dorsum, interspaces broader than saddle; dark grey snout on the dorsal side; and the anus located close to the anal-fin origin. A prominent black stripe along the midlateral line. Laterally compressed caudal peduncle. Axillary pelvic lobe present. Adipose crest on dorsal and ventral midline of caudal peduncle very small.Dorsal fin with 4 unbranched and 7 ½ (1) or 8 ½ (5) branched rays. Anal fin with 3 unbranched and 5 ½ branched rays, not reaching caudal base. Pectoral fins with 10 (3) or 11 (3) rays. Pelvic fins with 7(1) or 8(5) rays. Caudal fin forked or emarginate with 9 + 8branched rays, lower lobe slightly longer than upper lobe. A black blotch on base of caudal fin continuous with black midlateral stripe. Lateral line complete. Cephalic lateral line system with 5 supraorbital, 4+10 infraorbital, 9 preoperculo mandibular and 3 supratemporal pores. Processus dentiformis present, broad.3 pairs of barbels, inner rostral barbel reaching corner of mouth.

Table No. 1: Morphometric data of *Schistura rubrimaculata* (n=6)

	MUMF 18001-18006		Bohlen & Šlechtová (2013)
	Range	**Mean ± SD**	**Range**
Standard length (mm)	29.4 – 32.01		19.0 – 27.8
In percents of standard length			
Total length	124.1 - 127.7	126.0 ± 1.1	113.3 - 128.9
Body depth at dorsal fin-origin	10.2 - 13.4	11.4 ± 1.1	12.9 - 14.7
Head depth at nape	9.7 - 12.7	11.2 ± 1.1	11.4 - 16.1
Head depth at eye	9.5 - 11.8	10.5 ± 0.9	9.1 - 10.8
Lateral-head length	22.0 - 24.0	23.0 ± 0.7	20.4 - 26.3
Dorsal-head length	20.9 - 21.9	21.7 ± 0.5	19.3 - 24.2
Caudal-peduncle length	13.7 - 15.8	14.8 ± 1.2	11.7 - 15.1
Caudal-peduncle depth	8.9 - 9.8	9.0 ± 0.8	8.7 - 10.9
Pre-dorsal length	52.7 - 55.4	53.9 ± 1.0	50.4 - 54.2
Pre-pelvic length	51.2 - 53.6	52.3 ± 0.9	48.1 - 53.2
Pre-anus length	71.9 - 76.8	73.6 ± 1.8	68.1 - 74.8
Pre-anal length	77.8 - 81.0	79.5 ± 1.0	73.0 - 78.4
Dorsal-fin height	17.5 - 21.4	19.7 ± 1.5	17.3 - 21.7
Length of upper caudal-fin lobe	21.1 - 22.5	22.0 ± 0.6	21.6 - 25.3
Length of lower caudal-fin lobe	22.4 - 23.5	22.8 ± 0.4	22.5 - 26.1
Pectoral-fin length	21.2 - 24.0	22.2 ± 1.0	20.5 - 26.3
Pelvic-fin length	17.5 - 19.8	18.7 ± 1.0	16.2 - 24.2
Head width at nares	7.7 - 9.3	8.5 ± 0.6	6.5 - 8.4
Maximum head width at cheek	11.6 - 13.1	12.4 ± 0.5	12.6 - 14.2
Body width at anal-fin origin	7.4 - 7.8	7.7 ± 0.1	5.7 - 7.6
Body width at dorsal-fin origin	9.8 - 10.3	9.6 ± 0.4	9.8 - 11.8
Snout length	8.2 - 10.5	9.4 ± 0.9	7.2 - 9.4
Eye diameter	4.3 - 5.2	4.7 ± 0.4	4.2 - 6.0
Interorbital distance	5.2 - 7.0	5.9 ± 0.7	5.3 - 6.9

Table No. 2: Meristic count of *Schistura rubrimaculata* (n=6)

	MUMF 18001-18006	Bohlen & Šlechtová (2013)
Dorsal-fin count	iv + 7½ (1), iv + 8½ (5)	iv + 7½ or iv + 8½
Anal-fin count	iii + 5½ (6)	iii + 5½
Pectoral-fin count	10 (3), 11 (3)	10
Pelvic-fin count	7 (1), 8 (5)	8
Caudal fin count	9 + 8 (6)	9 + 8

Habitat and distribution

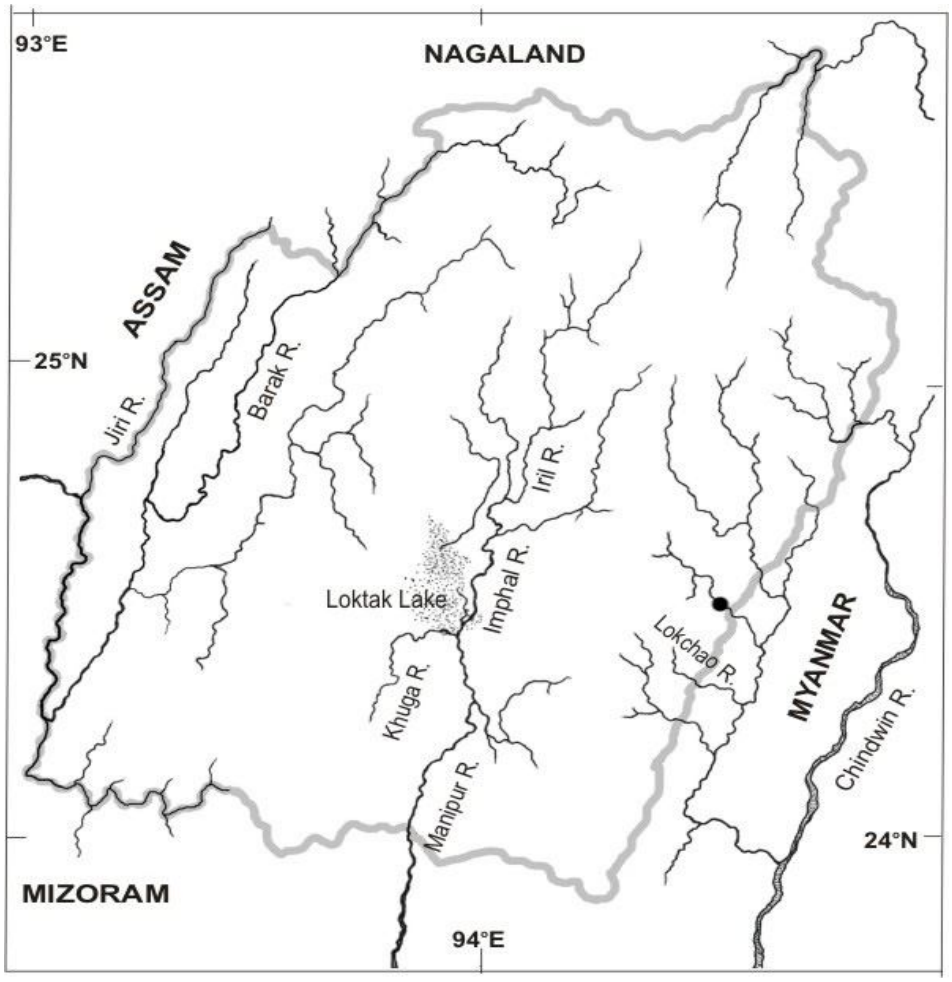

Figure 2. Map showing the type locality of *Schistura rubrimaculata*

Schistura rubrimaculata is herein reported from Taret River, Chindwin basin, Tengnoupal District, Manipur, India near Indo-Myanmar border (Fig. 2). All the specimens were collected from shallow clear water of depth 50-70 cm (Fig. 3). The species inhabits swiftly flowing water with gravel bottom covered in lush green algal growth. Bohlen & Šlechtová 2013[1] lists Man Chuang and Shwe Chuang systems, two tributaries of Irrawaddy River located on the eastern slope of Rakhine

Range as the natural occurrence range of the species. The occurrence of the species in the Taret River, a tributary of Yu River which drains into the Chindwin River, extends the natural occurrence range of *S. rubrimaculata* towards North into Manipur, India.

Figure 3.Taret River, collection site of *Schistura rubrimaculata*

DISCUSSION

A total of eight species of the genus *Schistura* are known to occur in the Chindwin Basin in Manipur, viz., *S. kangjupkhulenis* (Hora, 1921)[6], *S. khugae* Vishwanath & Shanta 2004a[11]& b[12], *S. manipurensis* (Chaudhuri, 1912)[5], *S. nagaensis* (Menon, 1987)[9], *S. phamringi* Shangningam, Lokeshwor & Vishwanath 2014[13], *S.reticulata* Vishwanath & Nebeshwar 2004[10], *S. sikmaiensis* (Hora, 1921)[6], and *S. vinciguerrae* (Hora, 1937)[7]. *S. rubrimaculata* has not been reported so far from Chindwin Basin, India.

Schistura rubrimaculata is readily distinguishes from all its congeners in the Chindwin basin in having a prominent midlateral black stripe in continuous with the black blotch on the base of caudal fin and a white or cream ventral part of head and body. The morphometric and meristic characters of the examined species are under the range given in the original description[1]. However, a little deviation is observed in terms of standard length 29.4–32.01 mm SL (vs. 19.0–27.8 mm SL), body depth at dorsal-fin origin 10.2–13.4% SL (vs. 12.9–14.7), head depth at nape 9.7–12.7% SL (vs. 11.4–16.1), pre-anus length 71.9–76.8 % SL (vs. 68.1–74.8), pre-anal length 77.8–81.0% SL (vs.

73.0–78.4), maximum head width at cheek 11.6–13.1% SL (vs. 12.6–14.2 % SL) and snout length 8.2–10.5 % SL (vs. 7.2–9.4). The number of branched dorsal fin ray is 7½ in one of the examined species. The number of pectoral and pelvic fin slightly differs from the original description in some of the examined species. In 3 of the examined species, pectoral fin is having 11 rays (vs. 10). Pelvic fin is also having 7 rays (vs. 8) in one of the examined species. These differences in morphological features may be due to data generated from immature stage. It may also be due to examination of small sample size and limited coverage of population in the original description.

CONCLUSION

The present study for the first time recorded the occurrence of *Schistura rubrimaculata* in the Chindwin Basin of Manipur, India. Therefore, the confirmed occurrence of *S. rubrimaculata* in Manipur fills a zoogeographical gap.

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REFERENCES

1. Bohlen J & Šlechtová V. Two new species of *Schistura* from Myanmar (Teleostei: Nemacheilidae). Ichthyol. Explor. Freshwaters. 2013; 24: 21-30.
2. McClelland J. Observations on six new species of cyprinid, with an outline of a new classification of the Family. J. Proc. Asiat. Soc. Bengal.1838; 7: 941-948, 55-56 pls.
3. Kottelat M. Indochinese nemacheilines, A revision of nemacheiline loaches (Pisces: Cypriniformes) of Thailand, Burma, Laos, Cambodia and Southern Vietnam. Verlag Dr.Friedrich Pfiel: Munchen; 1990.
4. Kottelat M & Whitten T. Freshwater Biodiversity in Asia with Special Reference to Fish: World Bank Technical Paper No. 343.The World Bank: Washington DC; 1996; 59.
5. Chaudhuri BL. Descriptions of some new species of freshwater fishes from north India. Rec. Indian Mus. 1912; 7: 437-444.
6. Hora SL. Fish and fisheries of Manipur with some observations on those of the Naga Hills. Rec. Indian Mus. 1921; 22: 165-214.
7. Hora SL. Game fishes of India. Part III. J. Bombay Nat. Hist. Soc.: Bombay; 1937; 39: 659-678.
8. Menon AGK. The fauna of India and the adjacent countries. Pisces, Teleostei: Cobitoidea, Part I, Homalopteridae. Zool. Sur. India: Calcutta; 1987; 4

9. Vishwanath W & Laisram J. Fishes of the subfamily Nemacheilinae Regan (Cypriniformes: Balitoridae) from Manipur. J. Bombay Nat. Hist. Soc. 2001; 98: 197-216.
10. Vishwanath W & Nebeshwar Sharma K. *Schistura reticulata*, a new species of balitorid loach from Manipur, India with redescription of *S. chindwinica*. Ichthyol.Explor. Freshwaters. 2004; 15: 323-330.
11. Vishwanath W & Shanta K. A new nemacheiline fish of the genus *Schistura* McClelland (Cypriniformes: Balitoridae) from Manipur, India.J. Bombay Nat. Hist. Soc. 2004; 101: 138-140.
12. Vishwanath W & Shanta K. *Schistura khugae*, a new replacement name for *S. macrocephalus* Vishwanath & Shanta 2004 (Teleosti: Balitoridae). Ichthyol.Explor. Freshwaters. 2004; 15: 323-330.
13. Shangningam BD, Lokeshwor Y & Vishwanath W. *Schistura phamhringi*, a new stone loach from Chindwin Basin in Manipur, India (Cypriniformes: Nemacheilidae). Zootaxa. 2014; 3786: 181-191.