

## *Kapuasia*, a genus name for ‘*Nemacheilus*’ *maculiceps* (Teleostei: Nemacheilidae)

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**Abstract.** *Kapuasia*, new genus, is created to accommodate ‘*Nemacheilus*’ *maculiceps*, from the Kapuas drainage on Borneo. It is distinguished by the presence of a large suprapectoral flap above the pectoral fin, and its unique lip morphology. The lower lip has a continuous anterior edge, and its median part has 8–10 ridges on each side, radiating at the anterior extremity, across the whole lip, resulting in a crenulated inner edge of the lip.

**Key words.** Cobitoidei, Nemacheilidae, *Schistura*, Borneo, stone loach

### INTRODUCTION

Nemacheilid loaches typically occur in fast-flowing waters of small streams and less often in other habitats such as large rivers and caves. The family has its greatest diversity in Southeast Asia, from where about 290 valid species are recognised (Kottelat, 2012a, 2013, unpublished data); most species from Sundaland are described and figured in Kottelat (1984, 1990a), Hadiaty & Kottelat (2009, 2010), Hadiaty & Siebert (2001), Tan & Kottelat (2009), and Hadiaty & Yamahira (2014). Additionally, new genera of Nemacheilidae are still being discovered or recognised (e.g., Kottelat, 1990a–b, 2012a–b, 2017, 2018, 2019; Freyhof & Serov, 2001; Bohlen & Šlechtová, 2011; Kottelat & Grego, 2020; Conway & Kottelat, 2023).

Roberts (1989) described *Nemacheilus maculiceps* (Figs. 1–3), from the Kapuas drainage in Borneo. Roberts did not comment on the generic position of the species. The Sundaic *Nemacheilus* of that time have since been distributed into *Nemacheilus*, *Sundoreonectes*, *Schistura*, and *Speonectes*. With its distinctive shape and colour pattern, the placement of *N. maculiceps* was doubtful. It does not fit *Nemacheilus* as rediagnosed by Kottelat (1990a). Kottelat et al. (1993) tentatively placed it in *Schistura*. Finally, Kottelat (2012a), in a catalogue of loaches of the world, listed it under *Schistura*, commenting that it apparently represents a distinct, unnamed genus. It is not mentioned in Hadiaty & Yamahira’s (2014) review of *Nemacheilus* of the Sunda Islands. The species

is apparently restricted to river stretches with a fast current over stone or rocky bottoms (Roberts, 1990: 17, 19) and has apparently not been obtained by later samplings in the Kapuas drainage (e.g., Kottelat & Widjanarti, 2005).

A few specimens have recently become available for examination, which allows us to show that the species indeed represents a distinct genus, which is diagnosed and named herein.

### MATERIAL AND METHODS

Measurements and counts follow Kottelat (1990a) and Kottelat & Freyhof (2007). The last dorsal and anal-fin ray articulating on the same pterygiophore as the preceding ray is noted as “½”. Abbreviations used: BMNH, Natural History Museum, London, U.K.; MZB, Museum Zoologicum Bogoriense, Cibinong, Indonesia; RMNH, Nationaal Natuurhistorisch Museum, Leiden, The Netherlands; and ZRC, Zoological Reference Collection, Lee Kong Chian Natural History Museum, Singapore. Comparative data are from the works mentioned in the Introduction.

### TAXONOMY

#### *Kapuasia*, new genus

**Type species.** *Nemacheilus maculiceps* Roberts, 1989.

**Etymology.** Name derived from the Kapuas River in West Kalimantan, where the type species was first collected. Gender feminine.

**Diagnosis.** *Kapuasia* is distinguished from all other genera of Nemacheilidae in the morphology of the mouth. The mouth is strongly arched, U-shaped (Fig. 4a). The upper lip is swollen and smooth, the posterior edge is entire, without

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Fig. 1. *Kapuasia maculiceps*, Borneo: Kapuas drainage. ZRC 61464, 56.2 mm SL.

median incision, with a deep groove between the lip and the rostral cap. The edge of the rostral cap between the anterior rostral barbels is slightly crenulated. The processus dentiformis is present. The lower lip is swollen, with a deep groove (postlabial) along the lateral parts; its anterior edge is continuous, with a narrow shallow median longitudinal groove (mental) extending from the mental area to the anterior edge of the lip. The median part of the lower lip has 8–10 ridges on each side of the mental groove (Fig. 4b), radiating from the anterior extremity of the postlabial groove, across the whole lip, resulting in a crenulated inner edge of the lip; in some specimens, there is a longitudinal row of black pigments along most ridges.

*Kapuasia* is also distinguished from all nemacheilid loaches known to us by the presence of a conspicuous suprapectoral flap above the pectoral fin (Fig. 5). Additional characters useful to distinguish the genus (but none unique to it) are: a well-developed pelvic axillary lobe, extending along the complete base of the fin; a small ridge along both dorsal and ventral midlines on the posterior part of the caudal peduncle; the anus about midway between the base of the pelvic fin and the origin of the anal fin; the pelvic fin with 1 unbranched and 7 branched rays; the pectoral fin with

1 unbranched and 9 or 10 branched rays [Roberts, 1990: 108 reported 10–12 branched rays]; the anal fin with 3 unbranched and 5½ branched rays; the dorsal fin with 4 unbranched and 8½ branched rays, its distal margin straight to slightly concave; the caudal fin deeply forked, the tip of the lobes slightly rounded, with 9+8 branched rays; the body entirely covered by scales, including on the predorsal area and the throat; the scales are very small, embedded; the lateral line is complete, with the pored scales difficult to count, estimated around 120–130; the cephalic lateral line canals have 5 (or 3 ?) supratemporal, 6 supraorbital, 11+3 infraorbital, and 8–10 preoperculo-mandibular pores; the anterior nostril is on the anterior side of a flap-like tube; there are no enlarged scales along the caudal peduncle; the eye protrudes slightly above the dorsal profile of the head; and the interorbital area is concave.

There is no black spot at the base of the anterior dorsal-fin rays or on their lower part, no ocellus at the upper extremity of the base of the caudal fin. There is a large, roughly triangular, black mark at the base of each lobe of the caudal fin.

The examined specimens have features for which sexual dimorphism has been documented in various nemacheilid



Fig. 2. *Kapuasia maculiceps*, Borneo: Kapuas drainage. ZRC 61464, 64.3 mm SL.

genera. The pectoral-fin rays are hard and rigid, not curled. The unbranched and the three anterior branched rays are thicker than the remaining rays. The first branched pectoral-fin ray is branched only once, the branches are thick and the space between them narrow. In the second and third branched rays, the anterior branch is unbranched and thicker than the posterior one, with a membrane between the two branches; the posterior branch is branched and these sub-branches are adjacent, without or with only very narrow membrane in between. In the remaining branched rays, both branches are branched and there are membranes between the sub-branches. In the 64.3 mm SL specimen, there is a short row of short, small tubercles on the dorsal side of each branch of the first branched ray (Fig. 6) and much less developed tubercles on the second branched ray. There are no tubercles in the other specimens. No suborbital flap is present.

**Remarks.** In a number of nemacheilid genera, the presence of tubercles on the dorsal side of the anterior pectoral-fin rays of the males, the pattern of their distribution, their size etc. are diagnostic features (e.g., see Kottelat, 2018, 2019; Conway & Kottelat, 2023). However, in males of some species their presence and development apparently

vary with age, season, and sexual activity (MK, pers. obs.). Therefore, at this stage, we do not want to use the presence and shape of tubercles in a single specimen of *Kapuasia* as a character usable to diagnose the genus. Also, sex has not been confirmed by dissection. In all nemacheilid genera in which the morphology of the pectoral fin has been observed or reported with enough details, in the female, all branched rays are similarly slender and the branches of branched rays are all separated by membranes. This was not observed in the examined specimens.

**Material examined.** *Kapuasia maculiceps*: All from Indonesia: Borneo: Kalimantan Barat: Kapuas drainage: ZRC 56404, 1, 69.7 mm SL; Bengkayang area (0°49'N 109°29'E); aquarium-fish trade. — ZRC 61464, 2, 56.2–64.3 mm SL; Kec. Banyuke, Ulu Landak, Lokasi Desa Kampet, Kampet River (flowing into Mempawah R.), near Mt. Marabukatan. — ZRC 65285, 1, 86.6 mm SL; Putussibau. — MZB 3543, holotype, 78.9 mm SL (photograph only); BMNH 1982.3.29.135, 1 paratype, 72.0 mm SL (photograph only); RMNH 28878, 1, 79.0 mm SL (photograph only); rocky channel in mainstream of Sungai Pinoh, 37 km south of Nangapinoh, 0°39.5'S 111°40'E; T. R. Roberts, 24 July 1976.



Fig. 3. *Kapuasia maculiceps*, Borneo: Kapuas drainage. ZRC 56404, 69.7 mm SL. Note that nostril condition (fused nares) is anomalous.



Fig. 4. *Kapuasia maculiceps*; a, ZRC 61464, 64.3 mm SL; mouth; b, ZRC 65285, 86.6 mm SL; close up of anterior part of lower lip. Arrow: mental groove.



Fig. 5. *Kapuasia maculiceps*, ZRC 61464, 64.3 mm SL; head, pectoral fin and suprapectoral flap (arrow).



Fig. 6. *Kapuasia maculiceps*, ZRC 61464, 56.2 mm SL; pectoral fin, dorsal view; note tubercles near tip of first and second branched rays.

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