

Kapuasias falaris, a new species of nemacheilid loach from Borneo (Teleostei: Nemacheilidae)

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Abstract. *Kapuasias falaris*, new species, is described from the Barito drainage on Borneo. It is distinguished from its only congener *K. maculiceps* in having a conspicuous colour pattern of 3–7 regular black bars on the flank, on a white background; in males, presence of a suborbital flap and vertical skin flanges on the dorsal surface of the pectoral fin between the branched rays; in males, pectoral axillary lobe cylindrical, with pointed posterior extremity, usually separate from skin of flank by a deep groove, often with a second similar lobe above the groove. The shape of this lobe is apparently unique among Southeast Asian species of nemacheilids, as well as the shape of the suborbital flap (globulous, at some distance below the eye, with a deep vertical groove from the flap to the eye). The strongly upwards curled pectoral fin, appearing with an almost vertical orientation in life, is apparently unique among Southeast Asian nemacheilids.

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 251 valid species are presently recognised (count of 3 October 2024; Kottelat, 2012a, 2013, updated); most species from Sundaland are described and figured in Kottelat (1984, 1990a), Hadiaty & Kottelat (2009, 2010), Hadiaty & Siebert (2001), Tan & Kottelat (2009), Hadiaty & Yamahira (2014), and Kottelat & Tan (2024). Additionally, new genera of Nemacheilidae are still being discovered or recognised (e.g., Kottelat, 1990, 2012a, b, 2018, 2019; Freyhof & Serov, 2001; Bohlen & Šlechtová, 2011; Kottelat & Grego, 2020; Kottelat & Tan, 2024).

Roberts (1989) described *Nemacheilus maculiceps* from the Kapuas drainage in Borneo. He 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* (Kottelat, 1990a, 2012a; Kottelat et al., 1993), and *N. maculiceps* has been

placed into a separate genus, *Kapuasias*, by Kottelat & Tan (2024).

Specimens of a loach with a distinctive and striking colour pattern have recently been collected in the Barito drainage of Borneo. These specimens share several characters with *K. maculiceps*, but also have their own peculiarities and represent an undescribed species. It is described here and its position is discussed.

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”. Vertebrae were counted following Roberts (1989: 22), in which the first caudal vertebra is that with its hemal spine posterior to the anteriormost anal-fin pterygiophore; all vertebrae anterior to this are abdominal vertebrae; vertebrae of the Weberian complex are counted as four and included in the count of abdominal vertebrae. Abbreviations used: MZB, Museum Zoologicum Bogoriense, Cibinong, Indonesia; ZRC, Zoological Reference Collection, Lee Kong Chian Natural History Museum, Singapore; and CMK, collection of the first author. Comparative data are from the works mentioned in the Introduction.

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Fig. 1. *Kapuasias falaris*, holotype, MZB 17245, 51.9 mm SL; Borneo: Barito drainage.

TAXONOMY

Kapuasias falaris, new species (Figs. 1–3)

Holotype. MZB 17245, male, 51.9 mm SL; Indonesia: Borneo: Kalimantan Selatan: Barito basin, kabupaten Tapin, kecamatan Piani: desa Pipitak Jaya [about 2°57'13"S 115°19'38"E]; Noor Aminin, 3 January 2024.

Paratypes. ZRC 65844, 8, 43.0–66.0 mm SL; CMK 29184, 5, 43.2–56.6 mm SL; same data as holotype. — ZRC 65998, 12, 37.0–59.2 mm SL; same location data as holotype; 4 March 2024.

Non-type material. ZRC 65915, 46, 42.7–57.4 mm SL; same location data as holotype; 14 February 2024 [specimens all dead on arrival].

Diagnosis. *Kapuasias falaris* is distinguished from *K. maculiceps* by the following combination of characters: colour pattern made of 3–7 regular black bars, wider than interspaces and extending across back, of constant width and reaching ventral midline (vs. irregular bars or mostly triangular saddles reaching downward about to lateral line, often alternating or connected with blotches in lower half of

body); head black, except for white dorsal side of the snout, a bar behind eye and a bar across the nape and along hind margin of opercle (vs. top of head and cheek spotted); in males, presence of a suborbital flap (Fig. 4; vs. absence); in males, vertical skin flanges on the dorsal surface of the pectoral fin, between the branched rays (Fig. 5; vs. absence); no large flat pectoral axillary lobe (presence), but instead a cylindrical lobe, with pointed posterior extremity, usually separate from skin of flank by a deep groove, often with a second similar lobe above the groove (Fig. 6). The shape of this lobe is apparently unique among Southeast Asian species of nemacheilids. *Kapuasias falaris* is further distinguished from all nemacheilids from Southeast Asia by the shape of the suborbital flap: globulous, at some distance below the eye, and with a deep vertical groove from the flap to the eye; and the strongly upwards curled pectoral fin, appearing with an almost vertical orientation in life (Fig. 3), is apparently unique among Southeast Asian nemacheilids.

Description. See Figs. 1–3 for general appearance and Table 1 for morphometric data of holotype and 9 paratypes. An elongate nemacheilid with body depth gradually increasing up to dorsal-fin origin. Behind dorsal fin, body depth almost uniform until caudal-fin base. Dorsal profile continuous between head and body. Head slightly depressed; body slightly compressed anteriorly, gradually more compressed

Table 1. Morphometric data of type material of *Kapuasias falaris* (n=10). Ranges and means include holotype data.

	Holotype	Range	Mean
Standard length (mm)	51.9	48.6–66.0	
Total length (mm)	64.4	59.7–83.4	
In percent of standard length			
Total length	124.0	120.5–126.5	123.0
Head length (dorsal)	21.9	18.5–21.9	20.3
Head length (lateral)	24.5	22.4–25.4	23.9
Predorsal length	53.1	51.8–54.8	53.3
Prepelvic length	48.4	48.0–51.5	50.0
Pre-anus length	67.4	67.4–73.2	69.2
Pre-anal length	74.7	73.1–78.1	75.4
Head depth	10.7	10.0–11.4	10.7
Body depth at dorsal-fin origin	13.8	12.6–15.5	13.6
Depth of caudal peduncle	12.0	10.6–12.0	11.3
Length of caudal peduncle	17.5	15.3–17.5	16.2
Head width	14.3	13.5–15.4	14.3
Body width at dorsal-fin origin	9.8	8.8–11.9	10.2
Snout length	8.4	7.7–9.8	9.1
Eye diameter	2.9	2.5–3.3	3.0
Interorbital width	5.8	5.2–6.2	5.9
Length of dorsal fin	16.5	16.0–19.9	17.5
Length of upper caudal-fin lobe	23.4	19.5–23.6	22.1
Length of median caudal-fin rays	17.3	12.6–17.9	14.9
Length of lower caudal-fin lobe	23.4	20.3–25.4	23.0
Length of anal fin	16.4	16.2–18.7	17.3
Length of pelvic fin	15.9	15.7–18.0	16.4
Length of pectoral fin	19.1	16.4–19.1	18.3
In percent of dorsal head length			
Snout length	38	38–50	45
Eye diameter	13	13–16	15
Interorbital width	27	27–33	29
In percent of lateral head length			
Snout length	34	34–42	38
Eye diameter	12	11–14	13
Interorbital width	24	22–26	25

posteriorly. Interorbital area flat. In lateral view, eye protruding over dorsal profile of head. Cheeks not swollen. Snout pointed but not acute. Depth of caudal peduncle 1.3–1.5 times in its length, depth uniform. No dorsal crest or keel on post-dorsal area. No ventral crest or keel on caudal peduncle. Vertebrae 18–20+13–14=32–34 (modally 19+14=33). Largest recorded size 57.5 mm SL in male, 66.0 mm SL in female.

Dorsal fin with 4 unbranched and 7½ (1), 8½ (12) or 9½ (1*) branched rays; distal margin slightly concave. Usually, second branched ray longest. Pectoral fin curled and slanted, with 1 unbranched and 9 branched rays (including small last ray, usually unbranched), rounded, reaching ½ to ⅔ of distance to pelvic-fin base; rays without filamentous extensions. Axillary pectoral lobe present, cylindrical, posteriorly pointed, usually separated from skin of flank by a deep groove; groove often margined above by a second pointed lobe (Fig. 6), more or

less regularly shaped, more or less distinct. Pelvic fin with 1 unbranched and 6 (2), 7 (11*) or 8 (1) branched rays (including small last ray, usually unbranched); reaching almost to anus (⅔ of distance to anal-fin origin; triangular to rounded; posterior margin straight; origin below base of unbranched dorsal-fin rays 1–3; axillary lobe present, entirely free, longer than fin base, high, rounded. Anus situated 1.5–2.5 eye diameter in front of anal-fin origin, distance between anus and anal-fin origin about ½ of distance between anus and pelvic-fin base. Anal fin with 3 unbranched and 5½ branched rays; distal margin slightly concave, first branched ray longest. Caudal fin with 9+8 (11*) or 8+7 (1) branched rays; forked (upper lobe 1.3–1.6 times longer than median rays), lobes rounded, subequal, lower lobe slightly longer than upper one (1.0–1.1 times).

Especially visible in life, inner pectoral-fin rays curled upwards and slightly forwards, against body, so that fin may

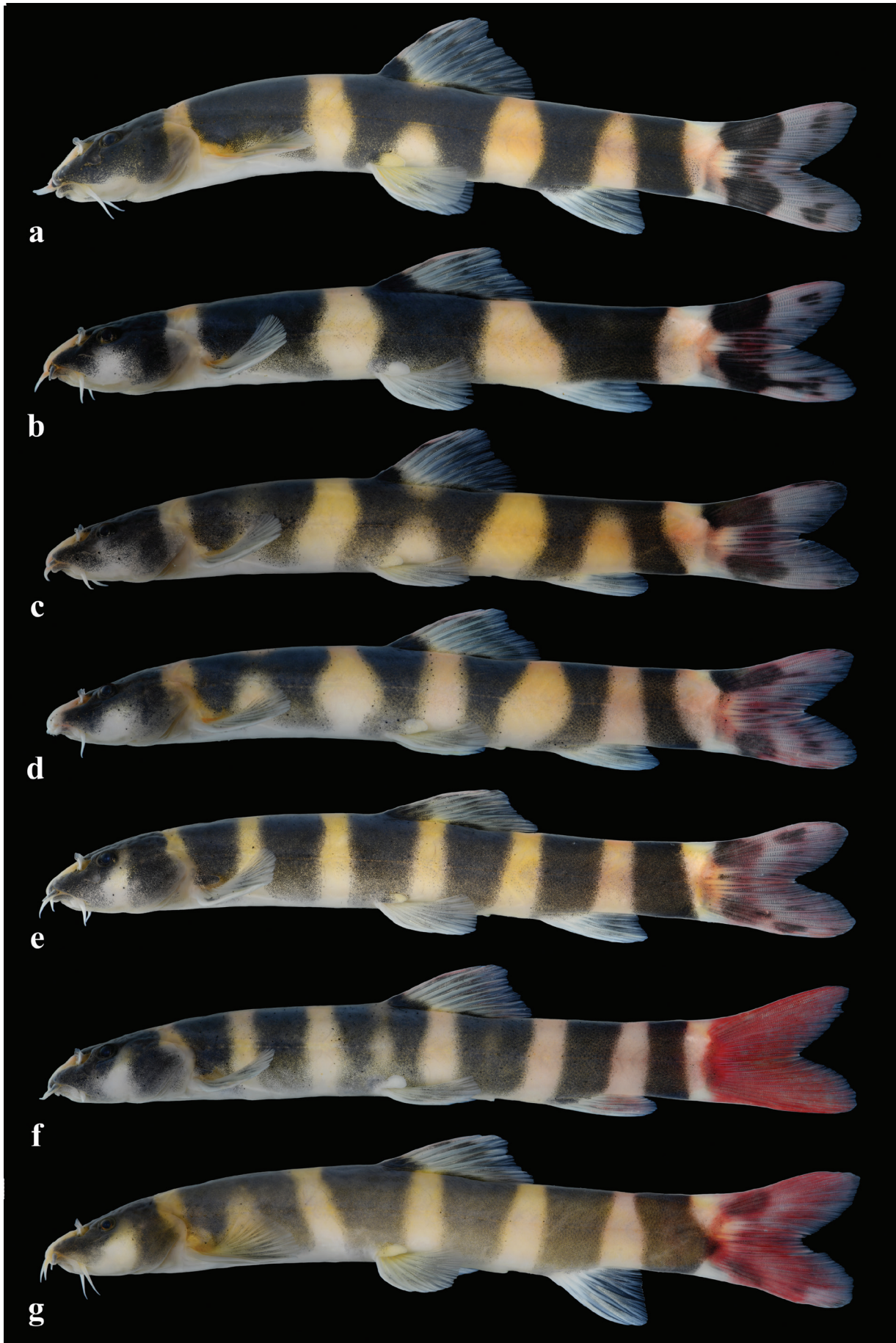


Fig. 2. *Kapuasias falaris*, paratypes, Borneo: Barito drainage. a, ZRC 65844, male, 43.0 mm SL; b, ZRC 65844, male, 48.6 mm SL; c, ZRC 65844, male, 51.5 mm SL; d, CMK 29184, female, 56.6 mm SL; e, CMK 29184, male, 52.3 mm SL; f, ZRC 65844, male, 57.5 mm SL; g, ZRC 65844, female, 66.0 mm SL.



Fig. 3. *Kapuasiasia falaris*, paratypes, live, Borneo: Barito drainage; ZRC 65844. a, male, 43.0 mm SL (reversed); b, male, 51.5 mm SL; c, female, 66.0 mm SL (reversed).

appear vertically orientated (Fig. 3). In pelvic fin, innermost rays also curled upwards. No difference between sexes in this character.

Body entirely covered by scales, except in a few specimens on belly, from throat to anus. Scales embedded, not externally visible on anterior part of body. Lateral line complete, with approximately 86–93 pores (difficult to count with accuracy). Cephalic lateral line system with 6 supraorbital, 4 + 10–11 infraorbital, 9–10 preoperculo-mandibular and 3 supratemporal pores.

Anterior nare pierced in front side of a pointed flap-like tube. Posterior nare adjacent to anterior one. Mouth U-shaped,

gape about two times wider than long (Fig. 7). Lips thin. Upper lip usually with median notch, with a few shallow, thin wrinkles on posterior edge. Processus dentiformis present. Lower lip almost continuous, with a median notch but not forming two median lobes; median part with small irregular ridges, radiating from anterior extremity of postlabial groove, lateral parts smooth. Anterior part of lower lip and space between anterior extremities of postlabial grooves with irregular ridges, continuous with the patch on the lip itself. Tip of lower jaw not exposed when mouth is closed. No median concavity in lower jaw. Inner rostral barbel not reaching corner of mouth; outer one reaching corner of mouth. Maxillary barbel reaching vertical of eye.

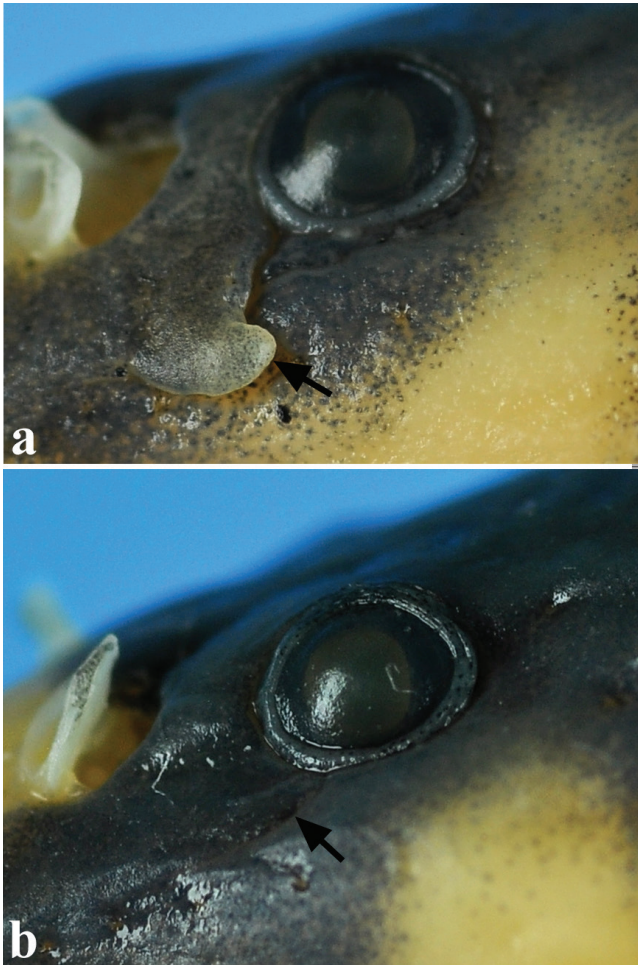


Fig. 4. *Kapuasia falaris*, ZRC 65844, upper part of cheek; a, 57.5 mm SL; male with suborbital flap (arrow); b, 58.9 mm SL; female with suborbital crease (arrow).

Stomach elongated, intestine with a bend some distance behind stomach (Fig. 8). Air bladder without posterior chamber in abdominal cavity.

Sexual dimorphism. Males with suborbital flap (modified lateral ethmoid; Fig. 4a), in lower position than in most other nemacheilids, globulous, movable, upper outline continued upwards, almost vertically, by a groove reaching orbit. Flap missing in females, but a shallow crease corresponds to position of lower edge of flap in males (Fig. 4b).

No tubercles on body and fins, in both sexes. In males, on the dorsal surface of pectoral fin, a conspicuous vertical skin flange, translucent, between branched rays 1–8, most developed between branched rays 1–6 (Fig. 5). These flanges not present in females. Females deeper bodied and apparently reach a larger size than males.

Unbranched and 1 or 2 anterior branched pectoral-fin rays thicker than others (Figs. 5, 9). In males, branched ray 1 branched only once, anterior branch usually thicker than posterior one, without membrane between branches. Branched ray 2: anterior branch thicker than posterior one, unbranched; posterior branch maybe branched at tip; no membranes. Branched rays 3: as ray 2 but branches may be branched.

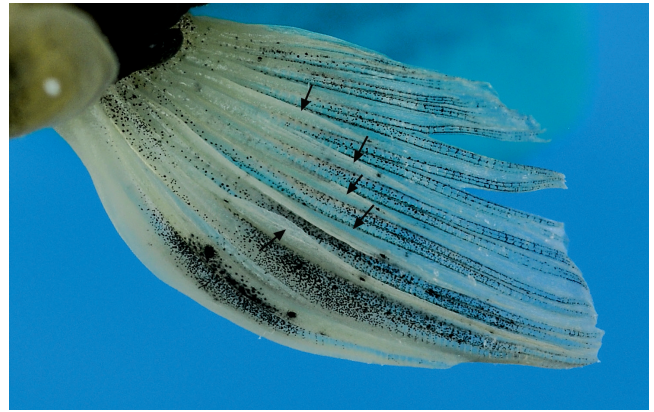


Fig. 5. *Kapuasia falaris*, CMK 29184, male, 52.3 mm SL; pectoral fin, antero-dorsal view, showing skin flanges between branched rays (arrows).

Branched rays 4 and following: both branches are branched, with narrow membranes between branches. Some individual variation exists in the thickness and branching pattern. In females, pattern roughly similar, but membranes are present between all branches. Branched ray 1: posterior branch may be slightly branched near tip. Branched rays 2 and 3: anterior branch not branched, posterior branch branched near tip. Branched ray 4 and following: both branches are branched, with membranes between all branches.

Colouration (Figs. 1–3). After fixation in formalin and 4 months in ethanol. Head and body background colour yellowish white. Unless otherwise stated, markings black. Head black; snout white on top, between nostrils to extremity, black on sides; white mark or bar on cheek, from immediately behind eye downwards. Posterior part of opercle white, extending across back, over occiput and continuous with contralateral. Outer rostral barbel black, other barbels whitish.

Body with 3–7 bars, extending from dorsal midline to ventral midline (faint on belly in front of anal fin), continuous with their contralaterals on back. Bars mostly of regular width and shape, wider than interspaces, sometimes paired or with paler central area, appearing vertically split.

Pattern at caudal-fin base: a conspicuous black blotch on each lobe of caudal fin, on proximal half, along upper and lower edge, irregular shape, extending for about half of length of lobe, on unbranched rays and adjacent 4 branched rays. Blotch on upper lobe, a spot of more intense black at anterior extremity. In most specimens, anterior extremity of upper blotch more forward than lower one. A faint inner mark in front of lower blotch. Between blotches, rays black, membranes hyaline, sometimes almost forming a bar. In most specimens, a smaller blotch behind both main ones, along dorsal and ventral edges. In most specimens, a narrow margin around part of whole caudal fin. In one specimen, caudal fin almost entirely hyaline.

Dorsal fin hyaline, with a black blotch at base of unbranched rays and first branched rays (1–2). A stripe made of melanophores at middle of last unbranched ray, and in middle area of branched rays, on rays near branching points.

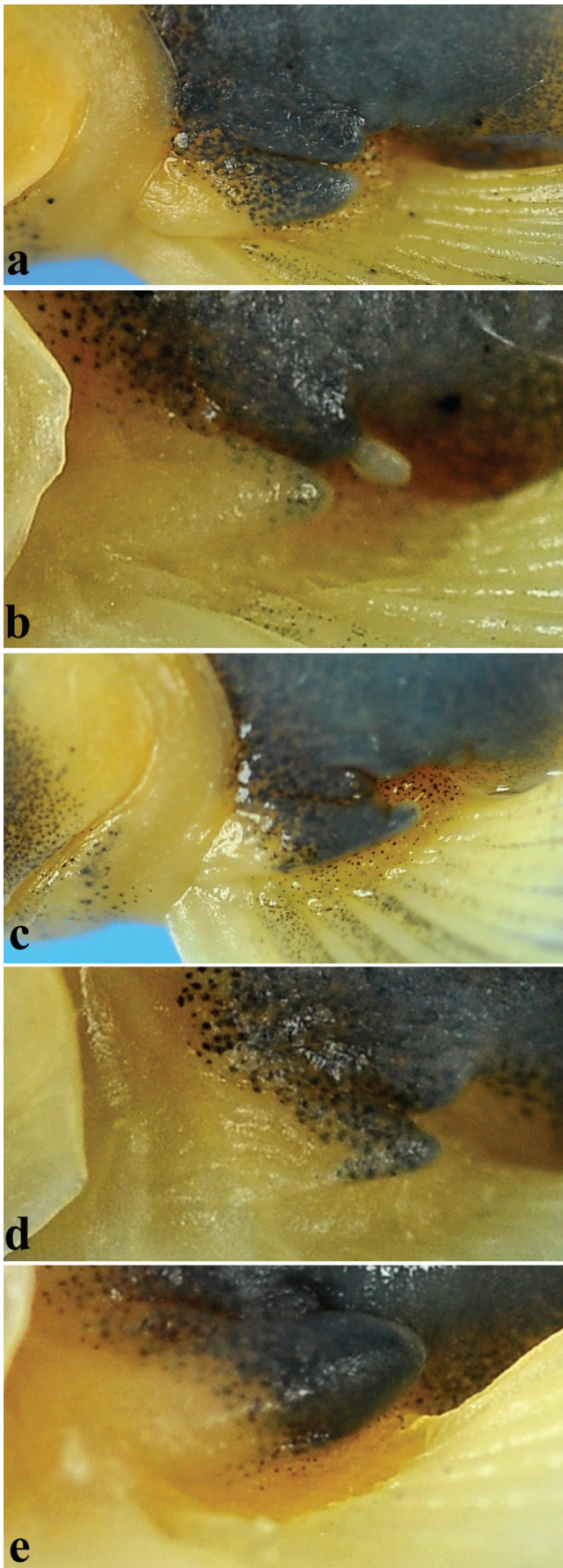


Fig. 6. *Kapuasia falaris*; variability in shape of supra-pectoral lobe(s). a, ZRC 65844, female, 56.1 mm SL; b, CMK 29184, male, 52.3 mm SL; c, ZRC 65844, female, 58.9 mm SL; d, CMK 29184, male, 50.1 mm SL; e, CMK 29184, male, 51.4 mm SL.



Fig. 7. *Kapuasia falaris*, CMK 29184, 51.4 mm SL; mouth.



Fig. 8. *Kapuasia falaris*, ZRC 65915, 55.0 mm SL; schematic. Scale bar: 1 mm.

No melanophores on membranes, except between branches immediately distal to branching points.

Anal fin hyaline, with a row of patches of melanophores on rays near branching points. Pelvic fin hyaline or with a few faint melanophores on rays near branching points.

Pectoral fin hyaline. Unbranched and branched rays 1–2 with a patch of melanophores on dorsal surface of distal $\frac{1}{2}$ to $\frac{1}{3}$. On other rays, melanophores along edge of rays and branches.

In life: Pattern as in preserved specimens. Body cream-white, dorsum slight golden, venter white. Iris of eye flecked with gold specks. Bars on body brown, darker on dorsum. Caudal fin hyaline to light yellow, can be fully red. Upper part of last pale band (between last black bar and blotch at upper caudal base, and top of snout, bright iridescent white.

Notes on biology. The stomach content of two dissected females (ZRC 65915, 59.2 mm SL, ZRC 65844, 58.9 mm

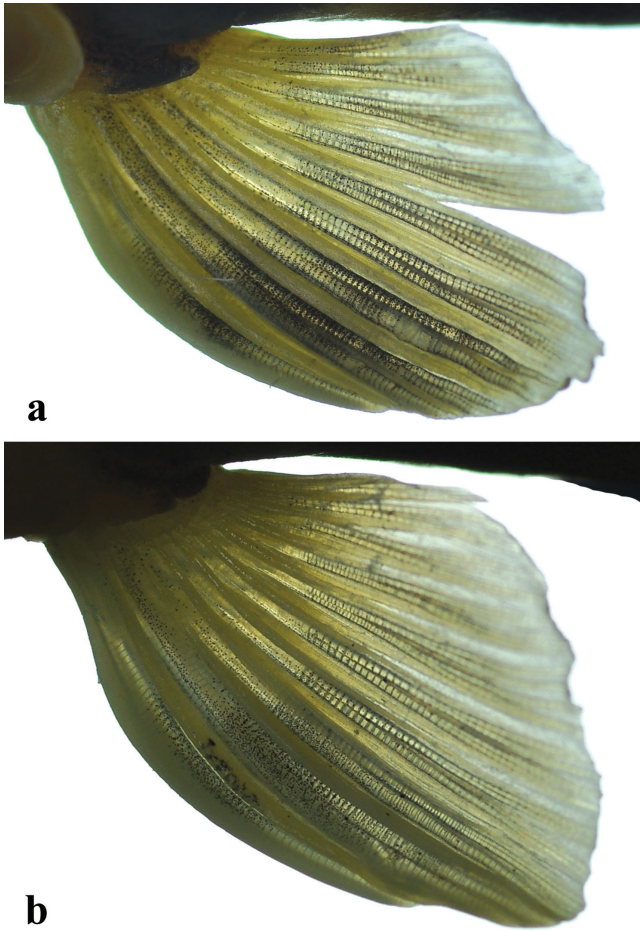


Fig. 9. *Kapuasia falaris*, pectoral fin in dorsal view; ZRC 65844. a, female, 58.9 mm SL; b, male 52.3 mm SL (reversed).

SL) is uninformative because specimens kept in captivity for several days. The ovaries of the 58.9 mm SL specimen contained unripe eggs, the largest ones about 0.5 mm diameter. We have no information on habitat. The curled and slanted orientation of the pectoral and pelvic fins suggest an adaptation to strong current. In captivity: in a 60 cm (length) tank setup with rocks and stones, individuals remain not visible as they hide amongst the crevices or burrowed into coarse gravel. When food is introduced, the fish will swim out or even forcefully push against the coarse gravel in its foraging activity. They have a preference for a carnivore diet.

Distribution. *Kapuasia falaris* is presently known only from one locality in the Barito drainage, Borneo. It is logically expected to have a wider distribution.

Etymology. From the Greek ‘phalaros’ (having a patch of white, φάλαρος) and ‘rhis’ (nose, snout, ῥίς); with a white spot on the nose. Used as a noun in apposition. Falaris or phalaris (φαλαρίς), is the name of the coot, *Fulica atra*, a black bird with white beak and forehead.

Remarks. *Kapuasia* (and *K. maculiceps*) is distinguished from all other genera of Nemacheilidae in the morphology of the mouth. It is strongly arched, U-shaped, the upper lip is swollen and smooth. The lower lip is swollen, with a deep postlabial groove along the lateral parts; its anterior edge

is continuous, with a narrow shallow median longitudinal groove 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, radiating from the anterior extremity of the postlabial groove, across the whole lip, and also present on median space between the anterior extremities of the postlabial groove.

In *K. falaris*, the lips are thinner, the groove in the median part of the lower lip is wider (but not forming conspicuous lobes) and the ridges are less obvious and less well organised.

Kapuasia was also distinguished from all known nemacheilid loaches by the presence of a large, conspicuous, rounded suprapectoral lobe above the pectoral fin. In *K. falaris*, the lobe is cylindrical, posteriorly pointed, usually separated from skin of flank by a deep groove; groove often margined above by a second pointed lobe (Fig. 6), often less regularly shaped and more or less distinct than the first one.

One specimen of *K. maculiceps* had a few small tubercles on the anterior branched pectoral-fin rays, assumed to be a male character. Both sexes are present in the material of *K. falaris*; no tubercles were present in males. Males of *K. falaris* are also distinguished by the presence of vertical skin flanges between the branched rays of the pectoral fin (Fig. 5); such flanges had not been reported in *K. maculiceps*, but a shallow ridge of skin between the rays is visible on the photographs of ZRC 56404, of unknown sex, and ZRC 61464, apparently a male, and appears possibly homologous (Kottelat & Tan, 2024: figs. 1b, c, 3, 4).

The males *K. falaris* have a conspicuous suborbital flap (modified lateral ethmoid; Fig. 4), which is missing in the single specimen of *K. maculiceps* tentatively identified as male. The flap is globulous, movable, at some distance below the eye, with a deep groove connecting it to the edge of the orbit. In most nemacheilids of Southeast Asia, when a flap is present, it is immediately below the eye and the groove is not present. A somewhat similar condition is reported only in ‘*Mustura*’ *shuangjiangensis*, in which the flap is at a distance from the eye, and the groove slanted (see Kottelat, 2018: fig. 26).

Another character shared by the two species and distinguishing them from all sundaic nemacheilids is the colour pattern of the caudal fin, made of a pair of black blotches in the proximal area of the fin, of which the anterior extremity of the lower one is slightly pushed backwards, the black rays between them, and a bar or row of spots in subdistal position.

The strongly curled pectoral and pelvic fins, with innermost rays positioned very close to the body and appearing in life as if the fins were vertical is a feature not observed in any other nemacheilid in Southeast Asia. However, the preserved specimen of *K. maculiceps* figured by Kottelat & Tan (2024: fig. 2) shows a possibly similar condition.

Material examined. *Kapuasia maculiceps*: see Kottelat & Tan (2024).

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LITERATURE CITED

- Bohlen J & Šlechtová V (2011) A new genus and two new species of loaches (Teleostei: Nemacheilidae) from Myanmar. *Ichthyological Exploration of Freshwaters*, 22(1): 1–10.
- Freyhof J & Serov DV (2001) Nemacheiline loaches from Central Vietnam with descriptions of a new genus and 14 new species (Cypriniformes: Balitoridae). *Ichthyological Exploration of Freshwaters*, 12(2): 133–191.
- Hadiaty RK & Kottelat M (2009) *Nemacheilus tebo*, a new nemacheiline loach from Sangkulirang Karst, East Kalimantan, Indonesia (Teleostei: Nemacheilidae). *Raffles Bulletin of Zoology*, 57(1): 119–125.
- Hadiaty RK & Kottelat M (2010) *Nemacheilus marang*, a new loach (Teleostei: Nemacheilidae) from Sangkulirang karst, eastern Borneo. *Zootaxa*, 2557: 39–48.
- Hadiaty RK & Siebert DJ (2001) A new species of loach, genus *Nemacheilus* (Osteichthyes, Balitoridae) from Aceh, Sumatra, Indonesia. *Bulletin of the Natural History Museum, Zoology Series*, 67(2): 183–189.
- Hadiaty RK & Yamahira K (2014) The loaches of the genus *Nemacheilus* (Teleostei: Nemacheilidae) in Sunda Islands, with an identification key. *Jurnal Iktiologi Indonesia*, 14(2): 83–100.
- Kottelat M (1984) Revision of the Indonesian and Malaysian loaches of the subfamily Noemacheilinae. *Japanese Journal of Ichthyology*, 31(3): 225–260.
- Kottelat M (1990a) Indochinese nemacheilines. A revision of nemacheiline loaches (Pisces: Cypriniformes) of Thailand, Burma, Laos, Cambodia and southern Viet Nam. Pfeil, München, 262 pp.
- Kottelat M (2012a) *Conspectus cobitidum*: an inventory of the loaches of the world (Teleostei: Cypriniformes: Cobitoidea). *Raffles Bulletin of Zoology, Supplement 26*: 1–199.
- Kottelat M (2012b) *Draconectes narinosus*, a new genus and species of cave fish from an island of Halong Bay, Vietnam (Teleostei: Nemacheilidae). *Revue Suisse de Zoologie*, 119(3): 341–349; erratum p. 571.
- Kottelat M (2013) The fishes of inland waters of Southeast Asia: a catalogue and core bibliography of the fishes known to occur in freshwaters, mangroves and estuaries. *Raffles Bulletin of Zoology, Supplement 27*: 1–663.
- Kottelat M (2018) *Mustura celata*, a new genus and species of loaches from northern Myanmar, and an overview of *Physoschistura* and related taxa (Teleostei: Nemacheilidae). *Ichthyological Exploration of Freshwaters*, 28(4): 289–314.
- Kottelat M (2019) *Rhyacoschistura larreci*, a new genus and species of loach from Laos and redescription of *R. suber* (Teleostei: Nemacheilidae). *Zootaxa*, 4612(2): 151–170.
- Kottelat M & Freyhof J (2007) *Handbook of European freshwater fishes*. Kottelat, Cornol & Freyhof, Berlin, xiv + 646 pp.
- Kottelat M & Grego J (2020) *Kayahschistura lokalayensis*, a new genus and species of cave fish from Myanmar (Teleostei: Nemacheilidae). *Raffles Bulletin of Zoology, Supplement 35*: 179–185.
- Kottelat M & Tan HH (2024) *Kapuasia*, a genus name for '*Nemacheilus*' *maculiceps* (Teleostei: Nemacheilidae). *Raffles Bulletin of Zoology*, 72: 105–109.
- Kottelat M, Whitten AJ, Kartikasari SN & Wirjoatmodjo S (1993) *Freshwater fishes of Western Indonesia and Sulawesi*. Periplus, Hong Kong, 259 pp., 84 pls.
- Roberts TR (1989) The freshwater fishes of western Borneo (Kalimantan Barat, Indonesia). *Memoirs of the California Academy of Sciences*, 14: 1–210.
- Tan HH & Kottelat M (2009) The fishes of Batang Hari drainage, Sumatra, with description of six new species. *Ichthyological Exploration of Freshwaters*, 20(1): 13–69.