

PSEUDOMYSTUS FUNEBRIS, A NEW SPECIES OF CATFISH FROM BORNEO (TELEOSTEI: BAGRIDAE)

Heok Hee Ng

Raffles Museum of Biodiversity Research, Department of Biological Sciences,
National University of Singapore, 6 Science Drive 2, #03-01, Singapore 117546, Republic of Singapore
Email: heokhee@nus.edu.sg

ABSTRACT. – *Pseudomystus funebris*, a new species of bagrid catfish is described from blackwater habitats in southern Borneo. The new species can be distinguished from congeners except for *P. heokhuii* by its unique colour pattern of a pale midlateral stripe and pale oblique bands on the sides of the body. It is distinguished from *P. heokhuii* in having a shorter adipose-fin base (14.2–17.7% SL vs. 18.2–22.8), more slender caudal peduncle (7.3–8.9% SL vs. 8.8–10.5), wider head (24.4–26.2% SL vs. 21.7–23.8) and larger eye (11.2–14.7% HL vs. 8.5–10.7) and a slightly convex (vs. evenly sloping) predorsal profile.

KEY WORDS. – Siluriformes, Rungan, Kahayan, peat swamps, Kalimantan Tengah.

INTRODUCTION

Members of the bagrid genus *Pseudomystus* Jayaram, 1968, are commonly known as bumblebee catfishes due to a recurring colour pattern of contrasting vertical bars or blotches. There are currently 19 valid species of these small- to mid-sized freshwater catfishes endemic to Southeast Asia (Lim & Ng, 2008).

Recently, I was given the opportunity to examine *Pseudomystus* from the Rungan River drainage in southern Borneo collected for the aquarium trade. These specimens had been collected from blackwater habitats, and were initially identified as *P. heokhuii* (the only species known from such habitats to date). Closer examination revealed enough differences to justify the recognition of the Bornean material as belonging to a distinct, unnamed species. The description of this material as *Pseudomystus funebris* new species forms the basis of this study.

MATERIALS AND METHODS

Measurements were made point to point with a pair of dial calipers and data recorded to tenths of a millimeter. Counts and measurements were made on the left side of specimens whenever possible. Subunits of the head are presented as proportions of head length (HL). Head length and measurements of body parts are given as proportions of standard length (SL). Measurements follow those of Ng & Kottelat (1998). Asterisks after meristic counts indicate values for holotype and numbers in parentheses indicate the

number of specimens with that particular count. Institutional abbreviations follow Ferraris (2007).

Pseudomystus funebris new species (Figs. 1, 2a, 4a)

Material examined. – Holotype: MZB 17181, 41.8 mm SL, Borneo: Kalimantan Tengah, Rungan River drainage in the vicinity of Tangkiling, 2°1'S 113°44'E, coll. P. Yap, 22 Oct. 2007.

Paratypes: MZB 17182, 11 ex., 30.7–37.7 mm SL; UMMZ 248771, 12 ex., 28.6–50.0 mm SL, locality as for holotype, P. Yap, 3 Dec. 2007. ZRC 51845, 13 ex., 30.8–40.6 mm SL; data as for holotype; ZRC 51846, 4 ex., mm SL; locality as for holotype, coll. P. Yap, 21 Jan. 2009.

Diagnosis. – *Pseudomystus funebris* can be distinguished from congeners except for *P. heokhuii* (from Sumatra) in having a colour pattern consisting of a pale midlateral stripe and two pale oblique bands on the sides of the body. It differs from *P. heokhuii* in having a shorter adipose-fin base (14.2–17.7% SL vs. 18.2–22.8), more slender caudal peduncle (7.3–8.9% SL vs. 8.8–10.5), wider head (24.4–26.2% SL vs. 21.7–23.8) and larger eye (11.2–14.7% HL vs. 8.5–10.7) and a slightly convex (vs. evenly sloping or slightly concave) predorsal profile (Fig. 2). Additional characters for distinguishing *P. funebris* from congeners are mentioned in the **Discussion**.

Description. – Biometric data as in Table 1. Head depressed; dorsal profile slightly convex and ventral profile almost straight; snout acutely rounded or truncate when viewed dorsally. Bony elements of dorsal surface of head covered

Table 1. Biometric data for *Pseudomystus funebris* (n=20).

Parameter	Holotype	Range	Mean \pm SD
%SL			
Predorsal length	38.8	38.3–42.5	39.8 \pm 1.25
Preanal length	69.1	64.6–70.7	67.6 \pm 1.92
Prepelvic length	53.6	52.5–54.6	53.3 \pm 0.71
Prepectoral length	26.1	23.1–26.1	24.7 \pm 0.99
Length of dorsal-fin base	14.8	12.5–15.3	13.8 \pm 0.86
Dorsal-spine length	18.4	15.7–19.8	17.6 \pm 1.18
Anal-fin length	16.0	14.4–16.9	15.6 \pm 0.82
Pelvic-fin length	12.9	12.9–15.6	14.4 \pm 0.89
Pectoral-fin length	24.2	20.7–25.5	23.0 \pm 1.31
Pectoral-spine length	21.5	17.6–21.7	19.9 \pm 1.19
Caudal-fin length	35.4	33.5–44.0	38.3 \pm 3.26
Length of adipose-fin base	17.7	14.2–17.7	16.2 \pm 1.05
Dorsal to adipose distance	13.2	13.2–16.7	15.2 \pm 1.19
Post-adipose distance	16.7	16.3–20.7	18.2 \pm 1.34
Caudal peduncle length	18.4	16.9–20.3	18.5 \pm 1.07
Caudal peduncle depth	8.1	7.3–8.9	8.1 \pm 0.54
Body depth at anus	19.1	14.6–19.2	17.2 \pm 1.43
Head length	29.4	27.6–30.4	29.0 \pm 0.97
Head width	25.8	24.4–26.2	25.3 \pm 0.57
Head depth	20.7	18.4–20.9	20.0 \pm 0.79
%HL			
Snout length	31.7	30.2–34.5	32.4 \pm 1.44
Interorbital distance	35.8	32.1–36.4	34.2 \pm 1.60
Eye diameter	11.4	11.2–14.7	13.0 \pm 1.35
Nasal barbel length	68.3	56.0–79.4	65.0 \pm 6.16
Maxillary barbel length	91.1	91.1–114.3	99.8 \pm 8.39
Inner mandibular barbel length	48.0	32.7–57.3	46.4 \pm 6.62
Outer mandibular barbel length	60.2	60.2–85.5	73.7 \pm 6.61

with thin skin; bones visible, especially on posterior half of neurocranium, and ornamented with numerous fine, radial grooves. Midline of cranium with fontanelle extending from behind snout to just beyond level of posterior orbital margin. Supraoccipital process moderately broad, with gently converging sides and blunt tip; extending to nuchal plate. Supratemporal with short posterior process, about half as long as postcleithral process. Eye ovoid, horizontal axis longest, subcutaneous; located entirely in dorsal half of head. Gill openings wide, extending from post-temporal to beyond isthmus. Gill membranes free from isthmus, with 8 (20) branchiostegal rays. First branchial arch with 3+7 (2), 4+6 (1), 3+8 (6) or 4+7* (1) gill rakers.

Mouth subterminal. Oral teeth small and viliform, in irregular rows on all tooth-bearing surfaces. Premaxillary tooth band in a shallow arc, of equal width throughout. Dentary tooth band much narrower than premaxillary tooth band at symphysis, tapering laterally. Vomerine tooth band

unpaired, continuous across midline; smoothly arched along anterior margin, of equal width throughout and wider than premaxillary band; band narrower than premaxillary band at midline, widening laterally and then tapering to a sharp point posterolaterally.

Barbels in four pairs. Maxillary barbel slender, extending to middle of pectoral-fin base. Nasal barbel slender, extending to dorsal insertion of opercle. Inner mandibular-barbel origin close to midline; barbel thicker and longer than nasal barbel and extending for two thirds of head length. Outer mandibular barbel originating posterolateral of inner mandibular barbel, extending to base of pectoral spine.

Body slightly compressed, becoming more so toward caudal peduncle. Dorsal profile rising evenly but not steeply from tip of snout to origin of dorsal fin and sloping gently ventrally from origin of dorsal fin to end of caudal peduncle. Ventral profile slightly convex to anal-fin base, then sloping slightly

dorsally to end of caudal peduncle. Skin smooth; lateral line complete and midlateral in position. Vertebrae 14+21 (4), 15+20 (1), 16+19 (1), 14+22 (2), 15+21* (5), 16+20 (3), 15+22 (3) or 16+21 (1).

Dorsal fin with spinelet, spine, and 7 (20) rays. Origin of dorsal fin anterior to mid-body, about two-fifths of body. Dorsal fin margin convex, usually with anterior branch of fin rays longer than other branches. Dorsal fin spine short, straight and slender, posterior edge without serrations. Nuchal shield moderately broad, with rounded tip anteriorly.

Pectoral fin with stout spine, sharply pointed at tip, and 6*i* (11) or 7* (9) rays. Anterior spine margin smooth; posterior spine margin with 9–15 large serrations along entire length (number of serrations is ontogenetically related; 9 serrations in specimens ca. 30 mm SL and 15 serrations in specimens ca. 50 mm SL). Pectoral fin margin straight anteriorly, convex posteriorly. Postcleithral process of moderately broad, with slightly convex dorsal margin and extending for half of pectoral-spine length.

Pelvic fin origin posterior to vertical through posterior end of dorsal-fin base, with *i*,5 (20) rays and slightly convex margin; tip of adpressed fin reaching base of second or third anal-fin ray. Anus and urogenital openings located at vertical through middle of adpressed pelvic fin. Males with an elongate conical genital papilla reaching to base of first anal-fin ray.

Adipose fin with convex margin for entire length, with deeply-incised posterior portion and origin at or immediately anterior to vertical through base of first anal-fin ray; fin-base moderate, spanning about one-third of postdorsal distance. Anal fin base at or just posterior to vertical through origin of adipose fin, with *iv*,8,*i* (3); *iv*,9 (13); *v*,8* (1) or *iv*,10 (3) rays and curved posterior margin.

Caudal peduncle moderately deep. Caudal fin deeply forked, with *i*,7,8,*i* (20) principal rays; upper and lower lobes slender and lanceolate. Procurrent rays extend anterior to fin base.

Colouration. – In 70% ethanol: Body dark brownish-gray above, dusky below. Sides with pale stripe over the lateral line from middle of body below dorsal fin origin to base of caudal peduncle. Ventral surfaces of head and body dark yellow. Caudal fin hyaline with dark brownish gray submarginal bar on each caudal lobe, and two separate spots in middle of upper and lower caudal lobes; spots faintly coalescent to form irregular bar in some individuals. Three irregular yellowish bars: first (indistinct in some individuals) over nape, second from immediately posterior to dorsal fin base to immediately posterior to pelvic origin, third on anterior part of caudal peduncle from immediately posterior to adipose fin base to immediately posterior to anal-fin base. Small yellowish blotches also present on anterior part of upper and lower procurrent caudal rays, adipose fin origin, and along anal fin base. Dorsal, anal and pelvic fins hyaline with dark



Fig. 1. *Pseudomystus funebris*, MZB 17181, holotype, 41.8 mm SL; Borneo: Kalimantan Tengah, Rungan River drainage.

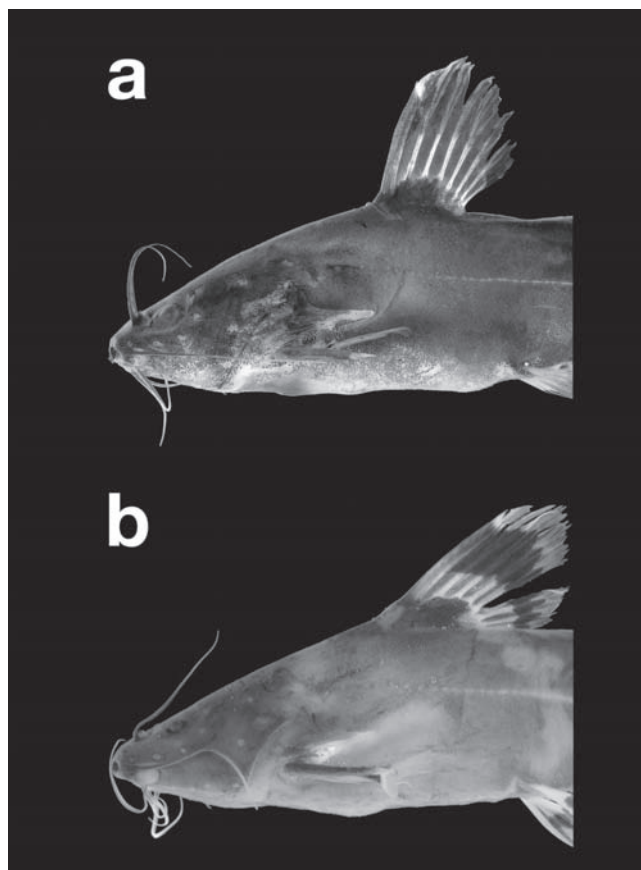


Fig. 2. Predorsal profiles of: a, *Pseudomystus funebris*, ZRC 51845, paratype, 36.3 mm SL; b, *P. heokhuii*, ZRC 39069, paratype, 42.6 mm SL. Images not to scale.

basal and submarginal bars; dark markings nearly absent in anal and pelvic fins of some individuals. Posterior edge of adipose fin hyaline.

Live colour similar, with more pronounced yellow colouration.

Distribution. – Known currently only from the Rungan River in southern Borneo (Fig. 3). The Rungan River is part of the Kahayan River drainage.

Etymology. – The specific epithet comes from the Latin *funeris*, meaning “of a funeral”. Being clothed in black is traditionally associated with funerals, and the name alludes to the blackwater habitat of this species.

DISCUSSION

Pseudomystus funebris, like the allopatric *P. heokhuii*, is found in floodplain peat swamps, in tannin-stained, very acidic (pH below 5) water. It superficially resembles *P. leiacanthus* (from Sumatra and the Malay Peninsula), but can be distinguished from it in having two (vs. one) dark narrow irregular bars on the caudal fin, longer caudal fin (33.5–44.0% SL vs. 25.7–31.9) with pointed (vs. rounded) lobes, longer nasal and maxillary barbels (56.0–79.4% HL vs. 31.3–51.5 and 91.1–114.3% HL vs. 70.9–91.3 respectively; nasal barbel reaching to dorsal insertion of opercular flap vs. to just beyond posterior orbital margin and maxillary barbel reaching just beyond base of last pectoral-fin ray vs. to base of pectoral spine),

In addition to the difference in size, the shapes of the adipose fin in *P. funebris* and *P. heokhuii* also appear to differ slightly: the dorsal margin of the former species appears more steeply- and evenly-sloping than in the latter species (Fig. 4). However, this difference is slight and is thus not used in the diagnosis to distinguish between the two species.

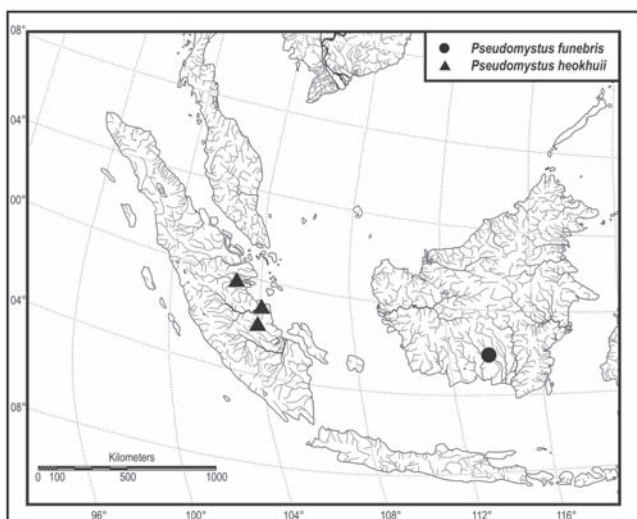


Fig. 3. Map showing collection localities of blackwater *Pseudomystus* species (*P. funebris* and *P. heokhuii*).

In addition to the characters described in the diagnosis, *P. funebris* further differs from *P. breviceps*, *P. bomboides*, *P. flavipinnis*, *P. siamensis*, *P. sobrinus*, *P. stenomus* and *P. vaillantii* in having a wider head (24.4–26.2 %HL vs. 17.4–22.2), and from *P. carnosus*, *P. fumosus* and *P. moeschii* in having the post-temporal with a posterior process that is only two-thirds as long as (vs. as long as) the postcleithral process. *Pseudomystus funebris* can be further distinguished from *P. inornatus*, *P. mahakamensis*, *P. rugosus* and *P. stenogrammus* in having a deeper caudal peduncle (7.3–8.9% SL vs. 5.4–7.6) and wider head (24.4–26.2% SL vs. 15.1–18.4), and from *P. myersi* in having the posterior end of the adipose fin not in contact (vs. confluent) with the upper procurvent caudal rays. It further differs from *P. robustus* in having a moderately (vs. very) broad postcleithral process and the pelvic fin reaching (vs. not reaching) the anal-fin base.

COMPARATIVE MATERIAL

Pseudomystus heokhuii: ZRC 41951, 6 paratypes, 38.0–51.6 mm SL, Sumatra: Jambi, Batang Hari drainage at Rantau Panjang; ZRC 39069, 17 paratypes, 31.5–46.6 mm SL, Sumatra: Riau, Indragiri drainage, peat swamp draining into Sungai Bengkwan, tributary of Indragiri River; ZRC 46151 12 paratypes, 37.4–54.0 mm SL, Sumatra: Sumatera Selatan, Layang drainage, Sungai Sentang, 12 km from Jambi to Bayung Lencir (216 km to Palembang) near Desa Sukajaya.

See Lim & Ng (2008) for additional list of comparative material.

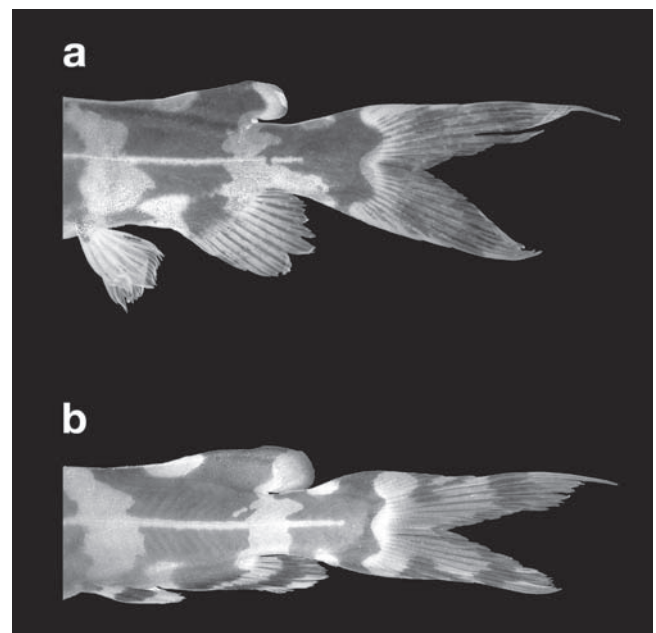


Fig. 4. Postdorsal views of: a, *Pseudomystus funebris*, ZRC 51845, paratype, 36.3 mm SL; b, *P. heokhuii*, ZRC 39069, paratype, 36.1 mm SL, showing differences in shapes of adipose fin. Images not to scale.

ACKNOWLEDGMENTS

I thank John Lundberg (ANSP), Mohammad Zakaria-Ismail (BIRCUM), James Maclaine (BMNH), David Catania (CAS), Maurice Kottelat (CMK), Mary Anne Rogers (FMNH), Renny Hadiaty (MZB), Martien van Oijen (RMNH), Douglas Nelson (UMMZ), Lynne Parenti (USNM), Klaus Busse (ZFMK), Isaïc Isbrücker (ZMA) and Kelvin Lin (ZRC) for permission to examine material under their care. I am also grateful to Patrick Yap for making the material available for study. This work was partially supported by research grant R-154-000-318-112 of the National University of Singapore to Heok Hui Tan.

LITERATURE CITED

- Ferraris, C. J., 2007. Checklist of catfishes, recent and fossil (Osteichthyes, Siluriformes) and catalogue of siluriform primary types. *Zootaxa*, **1418**: 1–628.
- Lim, K. K. P. & H. H. Ng, 2008. *Pseudomystus heokhuii*, a new species of bagrid catfish from Sumatra (Teleostei: Bagridae). *Zootaxa*, **1686**: 37–47.
- Ng, H. H. & M. Kottelat, 1998. *Hyalobagrus*, a new genus of miniature bagrid catfish from Southeast Asia (Teleostei: Siluriformes). *Ichthyological Exploration of Freshwaters*, **9**: 335–346.