

A new species of black water fighting fish from Singkep Island (Teleostei: Osphronemidae)

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Abstract. A new species of *Betta* from the *B. waseri* group is described based on a single specimen from Singkep Island. It appears to be closely allied to *B. spilotogeta*. *Betta andrei*, new species, differs from *B. spilotogeta* in having a different throat pattern, comprised of a black lower jaw, continuous with a large pitcher-like pattern on throat, ending with a protruding segment on buccal membrane (vs. isolated teardrop shaped black mark on throat); opercle uniform brown with dark brown spots along posterior margin; faint black transverse bars on the dorsal- and caudal-fin interradiation membranes; absence of a dark distal border on anal fin.

Keywords. *Betta*, new species, Indonesia, peat swamp, biodiversity

INTRODUCTION

The *Betta waseri* species group was first proposed by Ng & Kottelat (1994). They redescribed *B. waseri* Krummenacher, 1986 based on fresh material from Pahang (Malaysia) and described the following new species: *B. hipposideros* from Selangor (Malaysia), *B. tomi* from Johor (Malaysia), and *B. spilotogeta* from Pulau Bintan (Indonesia). Kottelat & Ng (1994) described *B. chloropharynx* from Pulau Banka (Indonesia), but they treated it as part of the *B. akarensis* group. Tan & Kottelat (1998) transferred *B. chloropharynx* into the *B. waseri* group, with justifications. Tan (1998) further described two species, viz. *B. pi* from Sungei Kolok (southern Thailand) and *B. renata* from central Sumatra (Indonesia). In 2009, Tan described *B. pardalotos* from South Sumatra (Indonesia), which is closely allied to *B. chloropharynx*. Most recently in 2018, Tan & Ahmad described a possibly extinct *B. omega* from remnant peat swamp habitats in southwestern Johore. At present, the *B. waseri* group consists of nine species.

Recently, a single specimen of a fighting fish from the *B. waseri* group was obtained from Singkep Island. As the fish was stressed, the throat pattern was not apparent. Upon preservation, the throat pattern became distinct and it did not resemble any existing member of the *B. waseri* group. This species is herein described as a new species.

MATERIAL AND METHODS

Specimen obtained was initially fixed in 10% formalin solution and then transferred to 70% ethanol solution for long-term storage. Material examined is deposited in the Museum Zoologicum Bogoriense (MZB), Cibinong, Java Barat, Indonesia; the Zoological Museum Amsterdam (ZMA), now incorporated with the Naturalis Biodiversity Center, Leiden, The Netherlands; and the Zoological Reference Collection (ZRC) of the Lee Kong Chian Natural History Museum, National University of Singapore.

Meristic and morphometric measurements follow those of Witte & Schimdt (1992), Ng & Kottelat (1994), and Tan & Ng (2005a). All measurements are taken with a pair of dial calipers. Abbreviations used are SL – standard length, TL – total length, HL – head length. Trunk length is measured from posterior edge of opercle to base of caudal fin. Vertebral count and most fin-ray counts were taken from digital radiographs using a Faxitron LX-60.

TAXONOMY

Betta andrei, new species (Figs. 1–2)

Betta spilotogeta (non-Ng & Kottelat) – Tan & Ng, 2005b: 126 (part).

Material examined. – Holotype: MZB 17241, 1 ex., 50.7 mm SL; Singkep: Singkep Barat, area around Air Merah; A. Chandra, 1 April 2023.

Non-type material : ZMA.PISC.121586, 1 ex.; Singkep: abandoned tin pits at Dobo and Ayer Puteh; don. Semmelink, 1888.

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Fig. 1. *Betta andrei*, ZRC 64279, 50.7 mm SL: topmost – live fish; second from top – freshly preserved fish with white background; third from top – freshly preserved fish with black background; bottom – radiograph.



Fig. 2. Composite of head region of *Betta andrei* (ZRC 64279, 50.7 mm SL), showing oblique (top) and ventral (bottom) views.

Diagnosis. *Betta andrei* can be distinguished from other members of the *B. waseri* group in having the following combination of characters: black lower jaw, continuous with large black pitcher-shaped mark on throat, ending with a protrusion on buccal membrane (see Figs. 2–3); opercle uniform brown with dark brown mottling along posterior margin, operculum without lower distal margin black; faint black transverse bars on the dorsal and caudal fin interradial membranes; absence of a dark distal border on anal fin.

Betta andrei differs from its presumed closest relative, *B. spilotogeta*, in having a large black pitcher-mark on throat (vs. isolated teardrop-shaped black mark); 35 lateral scales (vs. 31–32); lateral scale 18 below the dorsal-fin origin (vs. 16–17), lateral scale 6 above the anal-fin origin (vs. 7–8); predorsal scales 22 (vs. 23–25); postdorsal scales 11 (vs. 10–10 ½).

Description. General body form as in Fig. 1; see Table 1 for morphometric data. Body relatively long and stout (body depth at dorsal-fin origin 27.4% SL). Head stout with pointed snout and with slight convexity at supra-orbital area (head length 31.6% SL). Dorsal fin I, 8; pointed, situated nearer to caudal fin (predorsal length 66.3% SL). Dorsal-fin base short (dorsal-fin base length 12.2% SL), covering 6 subdorsal scales. Caudal fin iii 5+6 ii; rounded, median rays elongate beyond fin membrane. Anal fin I, 29; posterior rays elongate. Anal-fin base more than half of SL (anal-fin base length 59.8% SL). Pelvic fin I, 4; falcate with first ray filamentous, relatively long (pelvic-fin length 28.2% SL), reaching up to 9th anal fin ray. Pectoral fin rounded, 12 rays. Vertebral count: 12 + 21 (total 33).

Live colouration. See Fig. 1. Head and body dorsum brown. Eye with unique colouration zones of the *B. waseri* group (as defined by Tan, 1998). Mouth with lower and upper lips yellow-brown, brown lower jaw, throat pattern not distinct or faint. Opercle with faint greenish-yellow iridescence, corresponding adjacent belly area cream. Body yellowish-

Table 1. Selected morphometric data for the holotype (MZB 17241) of *Betta andrei*, new species.

<i>Betta andrei</i>	
SL (mm)	50.7
% standard length	
Total length	142
Trunk length	72.0
Predorsal length	66.3
Postdorsal length	23.1
Caudal-peduncle depth	18.3
Preanal length	40.0
Head length	31.6
Body depth at dorsal-fin origin	27.4
Pelvic-fin length	28.2
Anal-fin base length	59.8
Dorsal-fin base length	12.2
% head length	
Eye diameter	27.5
Postorbital length	48.8
Interorbital width	35.6
Snout length	26.3

brown, without obvious central brown stripe, with faint dark brown patches just above anal fin sheath scales. Dorsal fin brownish with up to 8 transverse bars on interradial membrane. Caudal fin brownish with up to 12 transverse bars on interradial membrane. Anal fin brownish, without distal dark border but with very thin white margin. Pelvic fins yellowish-brown with whitish interradial membrane, distal part of pelvic fin filamentous ray iridescent whitish-green. Pectoral fin hyaline with a black sub-basal bar.

Preserved colouration. Preserved colouration illustrated in Fig. 1. Head and body dorsum dark brown. Black lower jaw, continuous with large black pitcher-shaped mark on throat, ending with a protrusion on buccal membrane. Opercle area with black mottling, lower half cream. Lateral surface of body with indistinct brown central stripe, black patch at middle of caudal-fin base. Faint black stripe above anal-fin base. Rest of body yellowish-brown laterally and cream-yellow on venter. Fin rays light brownish and rest hyaline; transverse bars on dorsal and caudal fins as above.

Distribution. *Betta andrei* appears to be restricted to acid water habitats in Singkep Island.

Habitat notes. The stream in which the holotype of *Betta andrei* was collected (Fig. 4) runs through partly intact lowland swamp forest. Tannin-stained water flows slowly over a bottom of sand, silt and mud. Syntopic fish species include: *Rasbora kalochroma*, *Trigonopoma gracile*, *T. pauciperforatum*, *Trigonostigma hengeli* (Danionidae), *Paedocypris* sp. (Paedocyprididae), *Hemirhamphodon pogonognathus* (Zenarchopteridae), *Nandus nebulosus* (Nandidae), *Betta pugnax*, *Parosphromenus* cf. *bintan*, and *Sphaerichthys osphromenoides* (Osphronemidae). Some

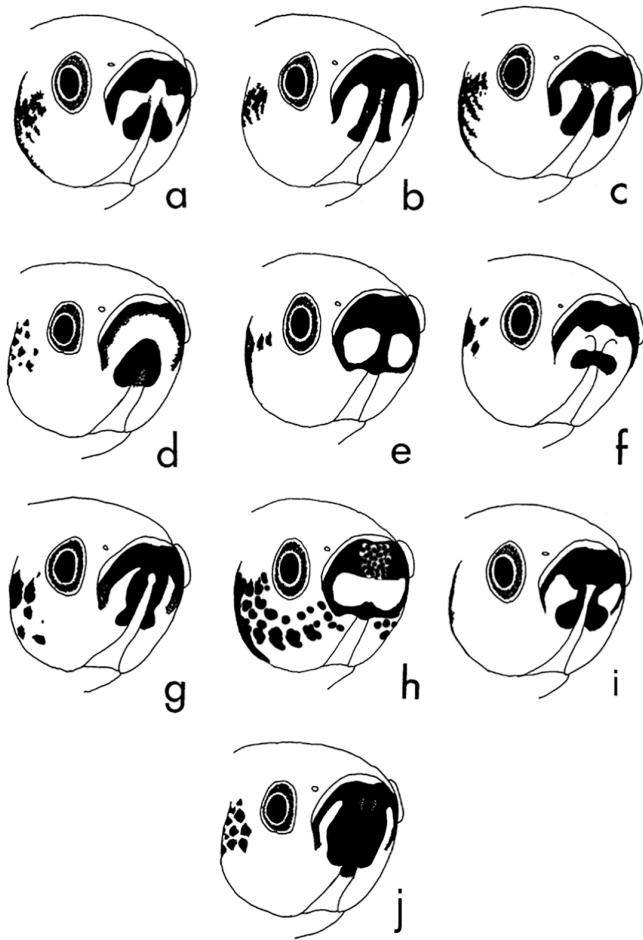


Fig. 3. Schematic diagrams of throat pattern of the *Betta waseri* group in chronological order of discovery: a, *B. waseri*, b, *B. hipposideros*, c, *B. tomi*, d, *B. spilotogena*, e, *B. chloropharynx*, f, *B. renata*, g, *B. pi*, h, *B. pardalotos*, i, *B. omega*, and j, *B. andrei*.

aquatic macrophytes were also present: *Cryptocoryne longicauda*, *Cyrtosperma* sp. (Araceae), *Eleocharis* sp. (Cyperaceae) and *Blyxa* sp. (Hydrocharitaceae).

Etymology. This species is named for Andre Chandra, an intrepid fish collector and enthusiast, who rendered much assistance to the author in procuring specimens and information; fishy discussions and good meals. A noun in the genitive.

Remarks. Tan & Ng (2005b) listed *Betta spilotogena* from Singkep Island. This was based on a specimen (ZMA. PISC.121586) collected in 1888, in which the throat markings were not distinct. Based on fresh material at hand, this is very likely an example of *Betta andrei*.

The following comparisons with the species of the *Betta waseri* group are made using data obtained from Ng & Kottelat (1994), Kottelat & Ng (1994), Tan (1998, 2009), and Tan & Ahmad (2018).

Betta andrei can be distinguished from *B. waseri* in the following characters: large black pitcher-shaped mark on throat (vs. two tear-drop shaped black marks below but not connected to black lower lip); absence of black lower



Fig. 4. Stream in which the holotype of *Betta andrei* was collected (Photograph: Andre Chandra).

margin of operculum (vs. presence); opercle with distinct brown markings and with light greenish-yellow iridescence (vs. several short black streaks, and without iridescence); anal fin begins at lateral scale 6 (vs. 8–9).

Betta andrei can be distinguished from *B. tomi* in the following characters: large black pitcher-shaped mark on throat (vs. throat with two black oval spots which do not merge with black lower lip); absence of black lower margin of operculum (vs. presence); opercle with distinct brown markings and with light greenish-yellow iridescence (vs. several short black streaks, and without iridescence); distal margin of anal fin without black or coloured band (vs. presence); anal fin begins at lateral scale 6 (vs. 7–8); subdorsal scales 6 (vs. 5–5 ½); postdorsal scales 11 (vs. 10–10 ½, mode 10).

Betta andrei can be distinguished from *B. chloropharynx* and *B. pardalotos* in the following characters: large black pitcher-shaped mark on throat (vs. throat with two cream blotches on a black throat); opercle with distinct brown markings along posterior margin and with light greenish-yellow iridescence (vs. heavily spotted opercle of *B. pardalotos*).

Betta andrei can be further distinguished from *B. pi* in the following characters: large black pitcher-shaped mark on throat (vs. throat with π -shaped black pattern); opercle with distinct brown markings and with light greenish-yellow iridescence (vs. opercle with several black blotches of variable size, without iridescence); distal margin of anal fin without black or coloured band (vs. presence); 35 lateral scales (vs. 32–33).

Betta andrei can be further distinguished from *B. renata* in the following characters: large black pitcher-shaped mark on throat (vs. a kidney-shaped black mark on throat, not connected with black lower lip); absence of black lower margin of operculum (vs. presence); 35 lateral scales (vs. 31–32); less deep caudal peduncle depth (18.3% SL, vs. 18.7–21.5).

Betta andrei can be further distinguished from *B. omega* in the following characters: large black pitcher-shaped mark on throat (vs. “Ω /omega” shape throat pattern); opercle with distinct brown markings and with light greenish-yellow iridescence (vs. no markings); lateral scale 18 below dorsal-fin origin (vs. 15); shorter dorsal-fin length (12.2% SL, vs. 12.6–15.4); less deep caudal peduncle depth (18.3% SL, vs. 19.2–20.6).

From this present study, it can be surmised that there is potentially more species from the *Betta waseri* group to be discovered from the multitude of islands in the Riau Archipelago and other nearby island clusters, especially when fresh material becomes available.

COMPARATIVE MATERIAL

See Kottelat & Ng (1994), Ng & Kottelat (1994), Tan (1998), Tan & Ng (2005a, 2005b), Tan (2009) and Tan & Ahmad (2018) for a list of comparative material.

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