

BETTA PARDALOTOS, A NEW SPECIES OF FIGHTING FISH (TELEOSTEI: OSPHRONEMIDAE) FROM SUMATRA, INDONESIA

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ABSTRACT. – A new species of *Betta* from the *B. waseri* group is described based on recent material. It is closely allied to *B. chloropharynx* from Pulau Banka. *Betta pardalotos* differs from *B. chloropharynx* in having a slightly different throat pattern; spotted opercle and throat (vs. unmarked); even sloping or convexity at area posterior to upper jaw to supra-orbital area (vs. slight concavity) and other characters. This brings to eight members in the *B. waseri* group.

KEY WORDS. – *Betta*, new species, Sumatra, 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. spilotogena* 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 *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 2005, Tan & Ng (2005b) covered the labyrinth fishes of Sumatra and associated islands, listing down 32 species from three families (Anabantidae, Helostomatidae and Osphronemidae). At present, the *B. waseri* group consists of seven species.

Recently, consignments of *Betta* were obtained from southern Sumatra. From initial examination of living material, they resembled *B. chloropharynx*. Upon acclimatization, there were distinct morphological and colour pattern differences. The southern Sumatran population is herein described as a new species – *B. pardalotos*.

MATERIAL AND METHODS

Specimens obtained were initially fixed in 10 % formalin solution and then transferred to 70 % ethanol solution for long term storage. Material examined is deposited in

the Zoological Reference Collection (ZRC) of the Raffles Museum of Biodiversity Research, National University of Singapore; Research and Development Centre for Biology, The Indonesian Institute of Sciences (LIPI, formerly the Museum Zoologicum Bogoriense - MZB), Cibinong, Indonesia; and the collection of Maurice Kottelat (CMK) in Cornol, Switzerland.

Meristic and morphometric measurements follow that of Ng & Kottelat (1994) and Tan & Ng (2005a). All measurements are taken with a pair of digital Mitutoyo® calipers. Abbreviations used are SL - standard length, TL - total length, HL - head length.

TAXONOMY

Betta pardalotos, new species
(Figs. 1–5)

Material examined. – **Holotype** – MZB 10999 (53.3 mm SL), Indonesia, Sumatra: South Sumatra Province; Musi drainage; Palembang, Laut Kenten, Sungai Gelam; T. Sim, 11 Oct.2006.

Paratypes – CMK, 2 ex., MZB 11000, 2 ex., ZRC 51837, 5 ex. (48.6–61.2 mm SL), same locality data as holotype. — ZRC 51838, 2 ex., (54.0–72.4 mm SL), same locality as holotype, 5 June 2006. — ZRC 51839, 1 ex. (55.4 mm SL), same locality as holotype, M. Kottelat & H. H. Ng, 14 May 2008.

Diagnosis. – *Betta pardalotos* can be distinguished from other members of the *B. waseri* group in having the following combination of characters: two white rounded patches on a black throat (Figs. 2, 3, 5); opercle with three



Fig. 1. *Betta pardalotos*, ZRC 51838, paratype, 72.4 mm SL.



Fig. 2. *Betta pardalotos*, ZRC 51838, paratype, 72.4 mm SL, close-up of head.



Fig. 3. *Betta pardalotos*, ZRC 51838, paratype, 72.4 mm SL, front view of head showing lower jaw, throat and opercle pattern.

arched rows of black dots following opercle edge; black transverse bars on the dorsal and caudal fin interradianal membranes; absence of a dark distal border on anal fin; operculum without lower distal margin black. It is further differentiated from the closely allied *B. chloropharynx*



Fig. 4. *Betta pardalotos*, MZB 10999, holotype, 53.3 mm SL.

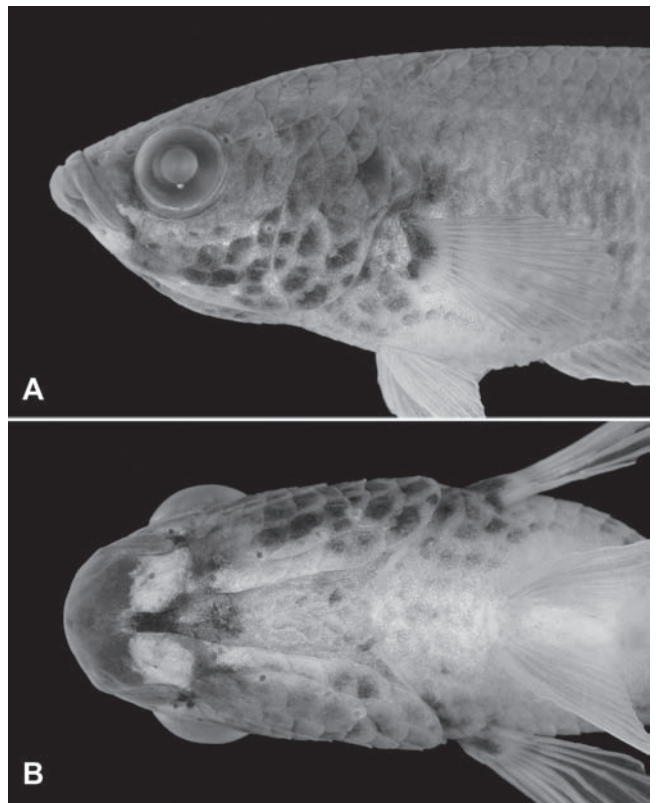


Fig. 5. *Betta pardalotos*, ZRC 51837, paratype, 61.2 mm SL, close-up of head pattern, lateral and ventral views.



Fig. 6. *Betta chloropharynx*, ZRC 35166, 56.6 mm SL, holotype; Sumatra: Banka Island."

Table 1. Meristic and morphometric data of *Betta pardalotos*.

	Holotype MZB 10999	Min.	Max.	Paratypes (n=7) mode	
Standard length (mm)	53.3	51.7	72.4		
Anal fin rays (total)	29 (II,27)	27	30	29	
Dorsal fin rays (total)	10 (I,9)	9	10	10	
Pelvic fin rays	1, 5			1, 5	
Pectoral fin rays	12			12	
Subdorsal scales	7	7	7 ½	7	
Transverse scales	10			10	
Lateral scales	33	33	34	34	
Lateral scale below dorsal fin origin	16	15	17	16	
Lateral scale above anal fin origin	6	6	7	6	
Predorsal scales	24	23	26	24	
Postdorsal scales	13	12	13	12	
% standard length		Min.	Max.	mean	SD (±)
Total length	167.1	135.7	167.1	144.1	9.77
Body length	67.0	65.9	69.8	68.2	1.32
Predorsal length	67.2	65.2	67.2	66.3	0.88
Postdorsal length	21.7	21.4	24.4	22.9	1.23
Caudal peduncle depth	21.7	18.4	21.7	20.1	0.94
Preanal length	46.3	41.5	57.8	45.3	5.44
Head length	35.6	32.5	35.8	34.1	1.13
Body depth	29.5	24.7	29.5	27.0	1.41
Pelvic fin length	34.0	28.7	34.3	31.7	2.10
Anal fin base length	55.9	53.7	58.9	56.7	1.77
Dorsal fin base length	14.4	12.9	14.8	13.8	0.68
% head length					
Orbit diameter	25.5	23.2	28.8	26.6	1.76
Postorbital length	47.1	47.1	54.3	50.6	2.89
Interorbital width	39.2	37.3	41.8	39.1	1.44
Snout length	28.3	22.8	29.2	25.8	2.05

(Fig. 6) in having the following characters: heavily spotted opercle (vs. no spots); even sloping or convexity at area posterior to upper jaw to supra-orbital area (vs. slight concavity); body dusky with irregular blotches (vs. uniform body pattern); anal-fin origin at lateral scale 6–7 (vs. 8); deeper caudal peduncle (18.4–21.7% SL, vs. 16.7–18.8); longer head (32.5–35.8% SL, vs. 29.9–33.7); more lateral scales (modally 34, vs. 33).

Description. – General body form as in Figs. 1, 4; meristics and morphometrics listed in Table 1. Body relatively long and stout (body depth at dorsal fin origin 24.7–29.5% SL); head stout with pointed snout and evenly sloping or slight convexity at supra-orbital area (head length 32.5–35.8% SL); dorsal fin pointed, situated nearer to caudal fin (predorsal length 65.2–67.2% SL), dorsal fin base short (dorsal fin base length 12.9–14.8% SL), covering 7–7 ½ subdorsal scales; caudal fin rounded with median rays elongate; anal fin with posterior rays elongate, anal fin base more than half of SL (anal fin base length 53.7–58.9% SL);

pelvic fin falcate with first ray filamentous, relatively long (pelvic fin length 28.7–34.3% SL), reaching up to 12th anal fin ray; pectoral fin rounded. Vertebral count: 11–12 + 19–21 (total 31–32, mode 32, n=10).

Live colouration. – See Figs. 1–3 for live colouration. Head and body dorsum dark brown. Eye with unique colouration zones of the *B. waseri* group (as defined by Tan, 1998). Lower jaw with lower and upper lips black, throat with two white semi-circles (curved surface facing downwards; see Figs. 2, 3, 5), bordered below with black chin bar. Lower half of opercle creamy white with light greenish-gold iridescence, lower half of opercle distinctly covered with three rows of fairly regularly spaced small black spots, arranged according to curvature of opercle edge. Body yellowish-brown, with indistinct central dark brown stripe, with faint dark patches just above anal fin sheath scales. Dorsal fin brownish with up to 13 transverse bars on interradiation membrane. Caudal fin brownish with up to 16 transverse bars on interradiation membrane. Anal

fin brownish, without distal dark border but with very thin white margin. Pelvic fins yellowish-brown with whitish interradiation membrane, distal part of pelvic fin filamentous ray iridescent whitish-green. Pectoral fin hyaline with a black sub-basal bar.

Preserved coloration. – Preserved coloration illustrated in Figs. 4–5. Colouration as above, except no iridescence present and opercle pattern indistinct on some specimens.

Distribution. – *Betta pardalotos* is currently known only from the Musi basin in South Sumatra province in Sumatra, Indonesia (Fig. 7).

Field notes. – The type locality is a tributary of the lower part of Musi River, as such there are euryhaline elements present, as seen in the presence of *Nypa* palms, *Hemibagrus hoevenii* (a bagrid catfish known only from lower reaches of rivers), *Zenarchopterus ectuntio* and various gobiid species. However, *Betta pardalotos* was obtained from smaller feeder streams, which were freshwater. Syntopic osphronemids present include: *Belontia hasseltii*, *Betta edithae*, *Luciocephalus pulcher* and *Trichopodus trichopterus*.

Etymology. – From the Greek *pardalis*, of the feline leopard (*Panthera pardalis*, an inhabitant of the tropical rainforests

in Southeast Asia), alluding to the spotted pattern on the opercle.

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

Additional material. – *Betta chloropharynx* – ZRC 47248, 1 ex. (69.3 mm SL), Indonesia, Sumatra: Banka; D. Yong, Jul.2001. — ZRC 51825, 6 ex., (43.8–73.1 mm SL), Indonesia, Sumatra: Banka; N. Takahashi, 30 Jul.2002.

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Fig. 7. Map of Sumatra showing location of *Betta chloropharynx* (square) and *B. pardalotos* (circle).