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# Two new species of *Rasbora* Bleeker, 1860 from southern Yunnan and northern Thailand

(Osteichthyes, Cyprinidae)

By Maurice Kottelat and Chu Xin-Luo

## Abstract

Two new species of the cyprinid genus *Rasbora* are described. They belong to the *R. sumatrana* (Bleeker, 1852) “group” and have in common a character unique in this group (a black blotch at tip of dorsal fin). *Rasbora atridorsalis* spec. nov. is distinguished from any other *Rasbora* by having 5½ scale rows between lateral line and origin of dorsal fin; it is only known from the Mekong (Lancang-jiang) basin in Xishuangbanna, Yunnan. *Rasbora dorsinotata* spec. nov. has a black lateral stripe wider on anterior half of body and the black spot on caudal peduncle does not extend on scales on caudal fin base; it is closely related to *R. hobelmani* Kottelat, 1984.

## Introduction

In 1985, the first author collected in northern Thailand a small *Rasbora* which looked very similar to both *R. sumatrana* (Bleeker, 1852) and *R. hobelmani* Kottelat, 1984, but had a black blotch at the tip of dorsal fin, a character not encountered in any other *Rasbora* from this area. In 1986 he had the opportunity to visit Kunming Institute of Zoology. In the collections was a series of specimens from the Mekong basin looking like *R. sumatrana*, also with a black dorsal tip. They were first interpreted as the same species as those from Thailand, but detailed examination later disclosed that they are distinct and that both are new.

## Material and methods

Measurements and counts follow KOTTELAT (1984). Abbreviations used are: CMK first author’s collection; HL head length; KIZ Kunming Institute of Zoology; ZSM Zoologische Staatssammlung München. Data on *Rasbora sumatrana* were obtained from various samples from northern Thailand. They will be discussed in detail and listed in a forthcoming paper on Indonesian and Indochinese members of this species by the first author.

## *Rasbora atridorsalis* spec. nov.

Fig. 1

*Rasbora cromiei* (non Fowler, 1937), LI, 1976: 117 (Xishuangbanna)

Holotype: KIZ 74159, 81.5 mm SL; Yunnan: Xishuangbanna: Man Zhuang village (21°25' N 101°46' E).

Paratypes: KIZ 745164–68, 5 ex., 69.4–75.7 mm SL; same data as holotype.

Diagnosis: A species of *Rasbora* s. l. which can be distinguished from any known species of the genus by having 5½ scales between lateral line and dorsal fin origin. Other diagnostic characters (sha-

red with various species) are: a black spot at tip of dorsal fin; a longitudinal black stripe from opercle to posterior extremity of middle caudal rays, enlarged on posterior extremity of caudal peduncle.

Description: Morphometric and meristic data: total length 125.0–127.1% SL; lateral head length 23.9–25.9 (mean: 24.8) % SL; dorsal head length 16.9–18.3 (17.4) % SL, 68–72 (70) % HL; predorsal length 53.4–55.8 (54.3) % SL; prepelvic length 51.1–54.5 (52.7) % SL; preanal length 73.2–75.7 (74.5) % SL; body depth 27.4–29.6 (28.3) % SL, 107–119 (114) % HL; head depth (at nape) 16.3–17.4 (16.9) % SL, 64–71 (68) % HL; depth of caudal peduncle 12.2–12.5 (12.2) % SL, 47–51 (49) % HL; length of caudal peduncle 16.3–20.5 (18.5) % SL, 68–83 (74) % HL, 1.3–1.7 (1.5) times greater than its depth; interorbital width 8.8–10.1 (9.4) % SL, 36–40 (38) % HL; eye diameter 5.6–6.3 (6.0) % SL, 24–25 (24) % HL; snout length 6.9–7.2 (7.0) % SL, 27–30 (28) % HL; length of last simple dorsal ray 20.4–22.5 % SL; length of anal fin 14.9–16.9 % SL; length of pectoral fins 16.0–18.3 % SL; length of pelvic fins 15.3–16.4 % SL; length of upper caudal lobe 24.3–26.7 % SL; length of median caudal rays 15.4–19.3 % SL, 1.22–1.66 (1.41) times in length of upper caudal lobe. D 37 $\frac{1}{2}$ ; A 35 $\frac{1}{2}$ ; P 12–13; V 9; C 19/8/1. Lateral line complete perforating 29–30 + 2 scales. Transverse scale counts:  $\frac{1}{2}$ 5/ $\frac{1}{2}$ 1/ $\frac{1}{2}$  in front of pelvic fin base,  $\frac{1}{2}$ 5/ $\frac{1}{2}$ 1/ $\frac{1}{2}$  to pelvic fin base,  $\frac{1}{2}$ 3/ $\frac{1}{2}$ 1/ $\frac{1}{2}$  on caudal peduncle. Predorsal scales 13, including a deeply notched one immediately in front of first dorsal ray.

Supero-posterior edge of dorsal fin slightly convex. Pectoral fins rounded, reaching about halfway to pelvic fin base. Pelvic fins reach slightly beyond midway to anal fin but do not reach anus. Posterior edge of anal fin slightly concave.

Colouration: Body brown on top, yellowish below. A straight dark brown to black stripe from opercle to end of hypural complex, darker posteriorly, slightly enlarging on caudal peduncle; it is continued by a fainter stripe on median caudal rays. From tail to vertical of posterior extremity of dorsal base, the stripe is running over epaxial stripe. A thin yellowish stripe above the dark one and, above it, a brown stripe not very conspicuous, from opercle to about anterior extremity of caudal peduncle. A blackish stripe from nape to caudal fin along mid-dorsal line. A brown mark along anal base. Scales between lateral line and mid-dorsal stripes and on nape have dark basal crescent; scales on back have yellowish marginal marks. Black spot on distal third of dorsal fin, from last simple to second or third branched rays, on membrane and rays.

Habitat: The type specimens have been collected along the shores of a branch of Lancang-jiang (Upper Mekong) together with *Tor (Tor) sinensis* Wu and *Barbodes huangchuchieni* (Tchang).

Remark: KIZ 745164, 75.1 mm SL, is a female whose ovaries contain ovulae about 0.9 mm in diameter. It had been collected in May.

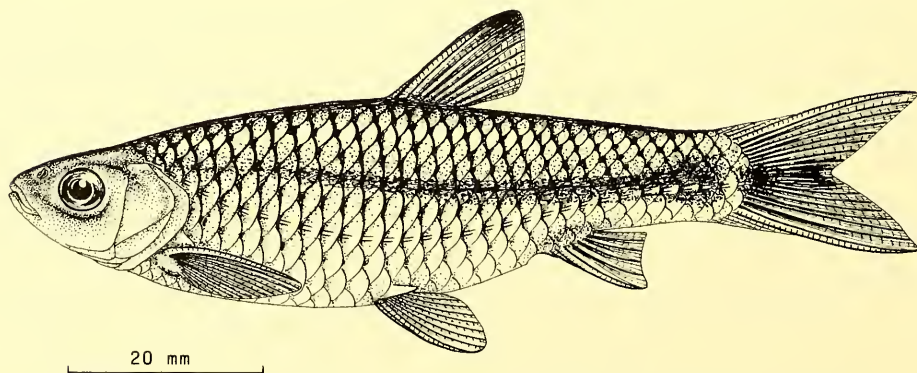


Fig. 1. *Rasbora atridorsalis* Kottelat & Chu, spec. nov. KIZ 745165, paratype, 72.7 mm SL.

**Discussion:** *Rasbora atridorsalis* shares a part of the details of its colour pattern (lateral stripe enlarged on caudal peduncle) with two other species: *R. sumatrana* (Bleeker, 1852) and *R. hobelmani* Kottelat, 1984, which are, geographically speaking, the two closest species. From *R. sumatrana* it is distinguished by the black markings on caudal and dorsal fins, rounded pectoral fins (vs falcate) which do not reach pelvic base (vs reaching pelvic base) and 68–79 % HL (vs 85–87), pelvics not reaching anus (vs reaching anal fin), short rounded snout (6.9–7.2 % SL, vs 8.4–9.1, pointed), enlarged spot on caudal peduncle not extending on caudal fin scales (vs extending), 5½ scales between lateral line and dorsal fin origin (vs 4½), shorter head (23.9–25.9 % SL, vs 27.4–28.4), smaller eye (5.6–6.3 % SL, vs 8.2–8.7).

From *R. hobelmani*, it is distinguished by the black markings on dorsal and caudal fin, by shorter pectoral (reaching halfway to pelvic fins, vs nearly reaching) and pelvic fins (not reaching anus, vs reaching), different shape of lateral stripe (regularly enlarging backwards, vs wider in front of dorsal fin), 5½ scale rows between lateral line and dorsal fin origin (vs 4½), more scales along lateral line (29–30+2, vs 25–27+1), more predorsal scales (13, vs [11–]12), shorter head (23.9–25.9 % SL, 27.7–31.0), greater preanal length (73.2–75.7 % SL, vs 67.9–72.6), smaller head depth (16.3–17.4 % SL, vs 19.2–22.0), smaller eye (5.6–6.3 % SL, vs 9.8–11.4; 24–25 % HL, vs 27–35), and shorter fins.

*Rasbora sumatrana* is widely distributed in Mekong (upstream to about Vientiane) and Chao Phraya basins, Malay Peninsula, Sumatra and Borneo while *R. hobelmani* is, as far as presently known, restricted to the northernmost km of Mae Nam Ping and Nam Mae Hsai on the Thai–Burmese border, in the Mekong basin. *Rasbora sumatrana*, as here understood, refers to mainland material; recent collections from the type locality indicate that *Rasbora sumatrana* in fact might be a group a species; this problem is presently investigated by the first author in collaboration with P. G. Bianco.

No other *Rasbora* species has 5½ scale rows between lateral line and dorsal origin; all have 4½ or less. According to BRITTAN (1954), *R. (Megarasbora) elanga* (Hamilton, 1822) has 7½, but *Megarasbora* Günther, 1868 is now recognized as a distinct genus (HOWES, 1980) and a synonym of *Bengana* Gray, 1834 (HOWES 1983; [HOWES spelt it *Bengala* and indicated publication date as 1832; according to SAWYER (1953) the spelling would be *Bengana* and the publication date is 1834; I have not been able to check the original spelling]).

Other species with a black blotch on tip of dorsal fin are: *R. caudimaculata* Volz, 1903 from Sumatra and the Malay Peninsula which also has black tips of caudal lobes; *R. dorsiocellata* Duncker, 1904 from the Malay Peninsula which does not grow larger than about 30 mm SL and in which the spot is in the middle of the fin; *R. spilocerca* Rainboth & Kottelat, 1987 from lower and middle Mekong basin which does not grow larger than 30 mm and has conspicuous black spots on caudal lobes and a large round blotch on caudal peduncle; finally, the minute *R. urophthalma* Ahl, 1922 from mainland south-east Asia, Sumatra and Borneo which reaches about 25 mm SL and has a reddish background and no lateral line.

The specimens referred to as *R. cromiei* by Li (1976) are the type series of the present species; KOTTELAT (1984) mentioned that this locality was farther upstream than any other known record of *R. sumatrana* (of which *R. cromiei* Fowler, 1937 is a synonym).

**Etymology:** *ater* (Latin); black, dark; *dorsalis* (Lat.): situated on the back [also dorsal fin]; to be treated as a noun in apposition.

### ***Rasbora dorsinotata* Kottelat, spec. nov.**

Fig. 2

**Holotype:** ZSM 26627, 41.7 mm SL; Thailand: Chiang Rai Prov.: Mae Nam Huey Bon, km 45 on road from Amphoe Tha Wang Pha to Amphoe Chiang Kham; Kottelat, 10. III. 1985.

**Paratypes:** CMK 4991, 3 ex., 31.1–43.2 mm SL; same data.





Fig. 2. *Rasbora dorsinotata* Kottelat, spec. nov. ZSM 26627, holotype, 41.7 mm SL.

**Diagnosis:** A new species of *Rasbora* distinguished by the combination of the following characters: dorsal fin with a black tip; a black lateral stripe from opercle to posterior half of caudal peduncle, ending in a rounded spot not extending on caudal peduncle scales;  $26+1-2$  scales on lateral line;  $4\frac{1}{2}$  scales between lateral line and basis of dorsal fin, 7 between lateral line over the back on caudal peduncle.

**Description:** Morphometric and meristic data: total length 131.0–134.0% SL; lateral head length 28.4–31.5 (mean 29.7)% SL; dorsal head length 19.9–23.1 (21.2)% SL, 69–73 (71)% HL; predorsal length 55.0–57.5 (56.7)% SL; prepelvic length 51.1–55.6 (52.9)% SL; preanal length 71.0–72.9 (72.1)% SL; body depth 30.7–31.8 (31.3)% SL, 99–110 (105)% HL; head depth (at nape) 19.9–22.1 (20.8)% SL, 69–71 (70)% HL; depth of caudal peduncle 14.7–16.0 (15.2)% SL, 47–55 (51)% HL; length of caudal peduncle 18.0–20.7 (19.4)% SL, 57–72 (65)% HL, 1.1–1.4 times greater than its depth; interorbital width 10.6–11.8 (11.1)% SL, 37–38 (37)% HL; eye diameter 9.0–11.2 (9.8)% SL, 31–36 (33)% HL; snout length 7.4–8.6 (7.9)% SL, 26–28 (27)% HL; length of last simple dorsal ray 23.1–26.0% SL; length of anal fin 18.5–21.1% SL; length of pectoral fins 20.2–24.2% SL; length of pelvic fins 17.8–20.6% SL; length of upper caudal lobe 30.2–32.3% SL; length of median caudal rays 18.9–22.5% SL, 1.44–1.61 times in length of upper caudal lobe. D  $3\frac{7}{12}$ ; A  $3\frac{5}{12}$ ; P 14–15; V 8–9; C  $1\frac{9}{8}+8\frac{1}{8}$ . Lateral line complete, perforating 26+1–2 scales. Transverse scale counts:  $\frac{1}{24}/1\frac{3}{12}$  in front of pelvic fin base,  $\frac{1}{24}/1\frac{1}{12}$  to pelvic fin base,  $\frac{1}{23}/1\frac{1}{12}$  on caudal peduncle. Predorsal scales 12, including a deeply notched one immediately in front of first dorsal ray.

Supero-posterior edge of dorsal fin slightly convex. Pectoral fins falcate, reaching about halfway to pelvic fin base. Pelvic fins reach to anus or anal fin origin. Posterior edge of anal fin slightly concave.

**Colouration:** Body and head brown, darker on the back, with a reticulate net pattern formed by distal and basal pigments on each scale. A black stripe from slightly behind opercle to posterior extremity of caudal peduncle. The stripe is wider below and in front of dorsal base; it enlarges in a spot on posterior half of caudal peduncle, but it does not extend on the scales on caudal fin base. Epaxial stripe slightly above mid-lateral stripe in anterior half of body. A dark brown stripe along mid-dorsal line. A black mark along anal fin base. Tip of dorsal fin with a black blotch. Tip of anal fin with a darker area (or a slightly marked black blotch in one specimen). In life, the caudal fin was red.

**Habitat:** The types specimens have been collected in a small creek, about 3–4 m wide with sandy bottom and slow current. The area was primarily forest covered but at the time of collection most tall trees had already been removed. Other fish collected there were *Xenentodon cancila* (Hamilton, 1822), and juveniles of *Barilius* sp. and *Nemacheilus* sp.

The exact position of the type locality is not very clear. It is along road 1148 from Amphoe Tha Wang Pha (Nan Prov., 19°16' N 100°47' E) to Amphoe Chiang Kham (Chiang Rai Prov., 19°32' N 100°18' E). This road is not on the topographic maps and the two road maps available to me are not concordant about it; on none is a Huei Bon or Mae Nam Huei Bon indicated. The area is on the divide between Mae Nam Nan, Mae Nam Yom (both tributaries of Chao Phraya) and Mae Nam Ing basins (tributary of Mekong River). I questioned several people but no one knew where Mae Nam Huei Bon was flowing. In any case, this creek is not in Mae Nam Nan basin and the divide between Mae Nam Yom and Mae Nam Ing basins is very low and it seems highly possible that numerous captures of small tributaries occurred between the two basins (based on map and field observations). To obscure the exact position, after I collected and noted the indication from km-stones, it appeared that information from later km-stones were not very consistent. The type locality was very close to a km-stone indicating 45 km from Amphoe Tha Wang Pha.

**Discussion:** The new species is obviously closely related to a group of species which includes *R. sumatrana* and *R. hobelmani* and which is characterized by the possession of a black lateral stripe enlarged in a spot on posterior extremity of caudal peduncle. It is distinguished from both by the possession of a black mark on tip of dorsal fin. From *R. hobelmani* whose mid-lateral stripe has the same shape, it is also distinguished by a deeper (14.7–16.0% SL, vs 12.0–13.7; 47–55% HL, vs 41–49) and shorter caudal peduncle (18.0–20.7% SL, 20.2–23.4; 57–72% HL, vs 72–80), a deeper body (30.7–31.8% SL, vs 27.8–29.9; 99–110% HL, vs 90–101), a greater prepelvic length (51.1–55.6% SL, vs 49.1–52.5) and greater preanal length (71.0–72.9% SL, vs 67.9–72.6). In life, *R. hobelmani* does not have any coloured mark on fins, while the new species has a reddish caudal fin.

The new species is distinguished from *R. sumatrana* by the shape of the black lateral stripe which is wider anteriorly (vs of about uniform depth), by the lack of a thin black posterior margin on caudal fin, deeper body (30.7–31.8% SL, vs 26.8–30.0), deeper caudal peduncle (14.7–16.0% SL, vs 13.2–14.6), shorter snout (7.4–8.6% SL, vs 8.0–9.0; 26–28% HL, vs 29–32), greater head depth (19.9–22.1% SL, vs 18.2–20.2). In *R. sumatrana*, the spot on the caudal peduncle extends on scales on base of caudal fin, while in *R. dorsinotata* these scales have the pigmentation of any other scale. In life, it is also distinguished by a reddish caudal fin without black posterior margin, while all the *R. sumatrana* that I collected had a yellowish caudal fin, often with a thin posterior black margin.

From *R. atridorsalis*, *R. dorsinotata* is distinguished by having 4½ scales between lateral line and dorsal fin origin (vs 5½), a smaller size (maximum known 43.2 mm SL, vs 81.5), longer head (lateral head length 28.4–31.5% SL, 23.9–25.8; dorsal head length 19.9–23.1, vs 16.9–18.2), larger eye (9.0–11.2% SL, vs 5.6–6.3; 31–36% HL, vs 24–25), etc. In addition the shape of lateral stripe is very different (compare figures 1 and 2).

KOTTELAT (1984) already discussed the species described as *R. taytayensis* Herre, 1924 by HORA & MUKERJI (1934). The three specimens had been collected in the Nam Mae Hsai, a tributary of the Mekong forming the border between Thailand and Burma. It is obviously distinct from *R. taytayensis*, a species described from the Philippines (HERRE, 1924) and is tentatively considered as conspecific with *R. hobelmani*; this still has to be confirmed by collection of new specimens from Nam Mae Hsai.

**Etymology:** *dorsalis* (Latin): situated on the back [also dorsal fin]; *notatus* (Latin): marked, stained.

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Maurice Kottelat  
Zoologische Staatssammlung  
Münchhausenstr. 21  
D-8000 München 60  
BRD

Prof. Chu Xin-Luo  
Kunming Institute of Zoology  
Academia Sinica  
Kunming, Yunnan  
The Peoples's Republic of China

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