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# *RASBORA KOTTELATI*, A NEW SPECIES OF CYPRINID FISH FROM NORTH-WESTERN BORNEO

**Kelvin K. P. Lim**

*ABSTRACT.* - A new species of cyprinid fish, *Rasbora kottelati*, is described from the peat swamps of north-western Borneo. It is distinguished from the very similar *Rasbora kalochroma* in having (versus absence of) a large dark blotch on the caudal peduncle, and in lacking (versus having) a well-defined blackish stripe in the middle of the caudal fin. Both species are geographically separated. *R. kottelati* is found along the Sarawak coast from Sibu to Brunei Darussalam; while *R. kalochroma* occurs from the Kuching area southwards to the Kapuas and Barito basins, and outside Borneo, in Belitung, Banka, Sumatra and the Malay Peninsula.

## INTRODUCTION

*Rasbora kalochroma* is a colourful cyprinid which has been exploited largely for the ornamental fish trade. It is at once distinguished from its congeners by its bright reddish colouration and two dark blotches on its sides, one above the pectoral fin, the other, over the anal fin origin. It largely inhabits peat swamps, and has been recorded from eastern Sumatra, Banka, Belitung, Pulau Bintan (Tan & Tan, 1995), southern Borneo and Peninsular Malaysia (see Fig. 1).

On a recent visit to Brunei Darussalam in 1992, the author was presented with two fishes which were identified as *Rasbora kalochroma*. These specimens (ZRC.31791) differ from *R. kalochroma* as defined by Bleeker (1851, 1863) and Brittan (1954) in having an additional black blotch at the caudal base. Collection of fresh material from Sarawak, and direct comparison with specimens of *R. kalochroma* sensu stricto have shown that this colour feature is not subject to variation within any given population. Despite their otherwise very close similarity, the two forms are geographically separate, and are unlikely to interbreed in the natural state. The north Sarawakian population is herein described as a new species.

Morphometric and meristic measurements follow Brittan (1954: 205). Caudal peduncle length (PL) is measured from the anal fin origin to the caudal base at the end of the hypural plate. Direct comparison of specimens have been made between the new species and a large

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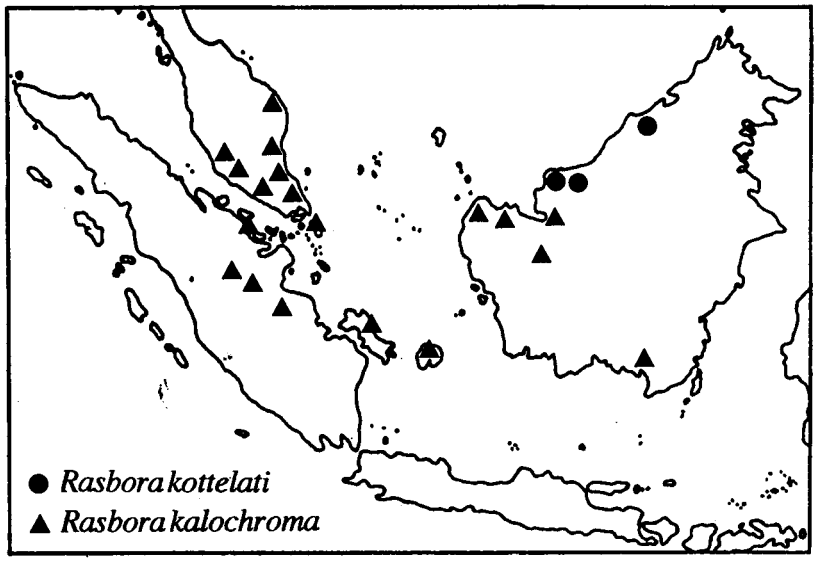


Fig. 1. Map of Sundaland depicting known distribution of *Rasbora kottelati* and *Rasbora kalochroma*. Note that each symbol may cover several localities.

series of *R. kalochroma.* from the Malay Peninsula, Borneo and Sumatra (see Comparison material).

## *Rasbora kottelati* , new species

(Figs. 2, 3 and 4; Table 1)

***Material examined.*** - All specimens from north-western Borneo. ZRC - Zoological Reference Collection, Department of Zoology, National University of Singapore, Singapore; CMK - Collection of Maurice Kottelat, Cornol, Switzerland; SM - Department of Zoology, Sarawak Museum, Sarawak, Malaysia.

Holotype - 50.2 mm SL (ZRC.37918), Sarawak: ditch 34 km from Mukah, Mukah-Sibu Road, coll. M. Kottelat et al., 14 May.1994.

Paratypes - Sarawak (Malaysia): 9 ex. (ZRC.37918), 10 ex. (CMK.10935), 10 ex. (SM), 29.3-58.9 mm SL, same data as holotype —— 7 ex. (ZRC.37961), 5 ex. (CMK.10970), 5 ex. (SM), 34.7-55.3 mm SL, Sg. Tebu at 8 km, Daro-Matu Road, coll. M. Kottelat & T. H. T. Tan, 14 Jun.1994 —— 7 ex. (ZRC.37934), 7 ex. (CMK.10945), 6 ex. (SM), 33.5-45.9 mm SL, Sg. Gayao, ca. 40 km from Mukah on Mukah-Sibu Road, coll. M. Kottelat et al., 14 May.1994 —— 10 ex. (ZRC.37949), 9 ex. (CMK.10958), 8 ex. (SM), 33.3-57.3 mm SL, 1.5 km south of Durin ferry on Sibu-Sarikei Road, coll. M. Kottelat et al., 15 May.1994 —— 4 ex. (ZRC.37841), 3 ex. (CMK.10866), 3 ex. (SM), 16.5-56.9 mm SL, outskirts of Sibu, 4.2 km north of airport runway end on Jalan Teku, coll. M. Kottelat et al., 6 & 15 May.1994 —— 3 ex. (ZRC.37856), 22.1-41.0 mm SL, Sg. Nibong at about 1 km north of Durin ferry on Sri Aman-Sibu Road, coll. M. Kottelat et al., 7 & 15 May.1994 —— 1 ex. (ZRC.37848), 29.4 mm SL, outskirts of Sibu at northern extremity of Sibu airstrip, coll. M. Kottelat et al., 6 May.1994 —— 3 ex. (ZRC.37969), 41.5-44.4 mm SL, Parit Nyadok at 200 m after 10 km stone on Dato-Matu Road, coll. M. Kottelat & T. H. T. Tan, 14 Jun.1994 —— 2 ex. (ZRC), 21.1-26.9 mm SL, Marudi, peat swamp at Bakong, coll. Charles Leh, 12 Sep.1992 ——Brunei Darussalam: 2 ex. (ZRC.31791), 46.5-47.8 mm SL, Belait District at Seria, coll. Satish C. Choy, Oct.1992.

Non-types - 12 ex. (ZRC.8355), 41.7-69.7 mm SL, Sarawak: 'Kuching', coll. & date unknown.

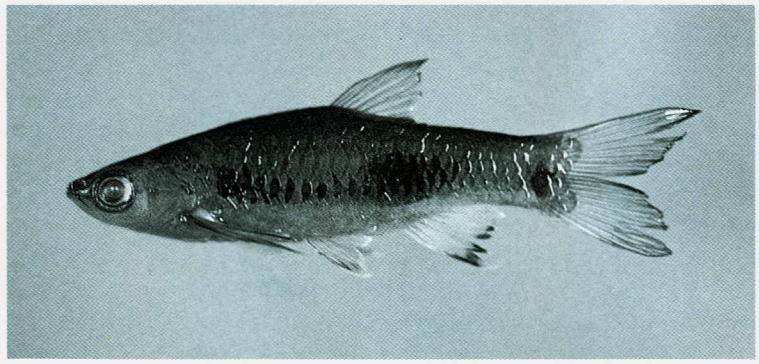

Fig. 2. Holotype (ZRC.37918) of *Rasbora kottelati*, new species (right side, reversed).

Fig. 3. Live specimen of *Rasbora kottelati*, new species, of about 50 mm SL. in aquarium (right side, reversed; example not preserved at time of writing). Photographed by Tan Heok Hui.

***Diagnosis***. - *Rasbora kottelati* is distinguished from all other *Rasbora* species by its distinctive markings and colouration. It differs from its closest congener, *Rasbora kalochroma* in having a vertically oval dark blotch (versus absence of such a blotch) at the caudal base, and lacking (versus having) a well-defined blackish band across the middle of the caudal fin.

***Description***. - General shape and appearance (lateral view) shown in Figs. 2, 3 and 4. Meristic and morphometric data of holotype and seven paratypes given in table 1. Head and body compressed, belly rounded. Eyes lateral, visible from dorsal and ventral aspects. Mouth directs upwards, gape begins at level with upper margin of pupil, rictus to almost vertical line through anterior margin of eye. Symphyseal knob of lower jaw and opposite corresponding depression of upper jaw strongly developed. Dorsal profile of head vary from slightly concave to slightly convex. Predorsal profile elevated, slightly convex when viewed laterally.

Lateral line complete, piercing 28 scales from upper edge of opercle to caudal base. Two unperforated scales present on the caudal fin beyond the caudal base. Predorsal scales 12-13. Circumpeduncular scales 12, transverse series $^1/_2$,3/1/1,$^1/_2$. Elongated axillary scales present at base of pectoral and pelvic fins. Scales in transverse series counted from dorsal to pelvic origin $^1/_2$,4/1/2,$^1/_2$. Nine scales over dorsum between lateral lines counted at dorsal origin. Dorsal fin with two simple and seven branched rays, last branched ray split to the

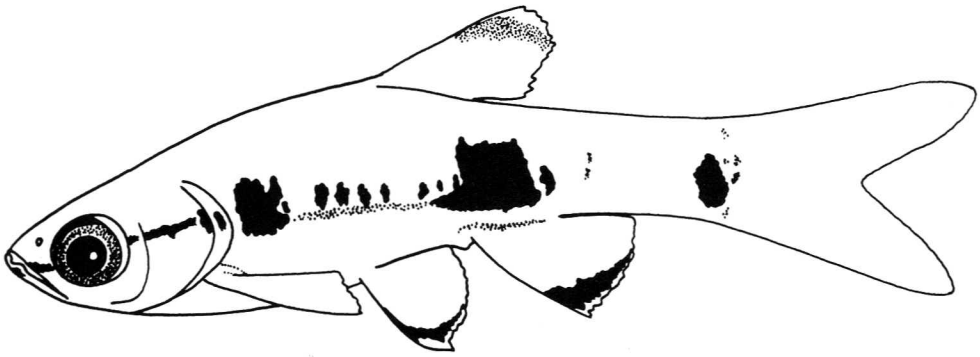

Fig. 4. *Rasbora kottelati*; ZRC, 21.1 mm SL juvenile from Marudi, Sarawak, with the more prominent markings typical of certain young fish.

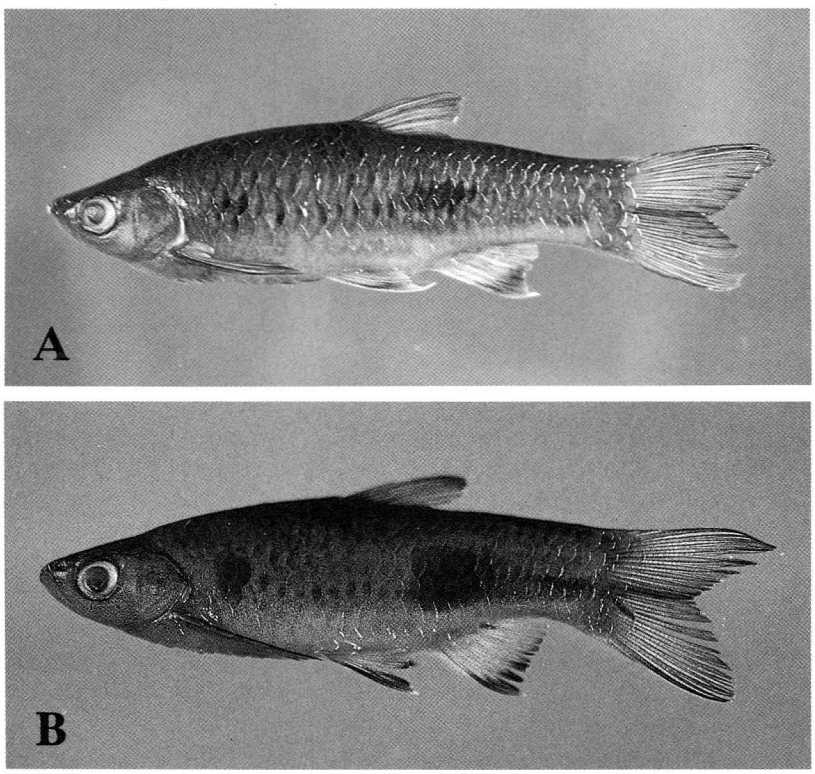


Fig. 4. *Rasbora kalochroma*: a - ZRC.27857, 74.0 mm SL example from Sarawak (Borneo), head band faded (right side, reversed); b - ZRC.15850, 47.5 mm SL example from north Selangor (Malaysia).

Table 1. Meristic and morphometric data from *Rasbora kottelati*, new species

Meristics: D - dorsal fin rays, P - pectoral fin rays, V - pelvic fin rays, A - anal fin rays, C - principal caudal fin rays, LS - scales in lateral series (through lateral line, but including unperforated scales), TS - scales in transverse series, CS - circumpeduncular scales, PS - predorsal scales. Morphometrics: PD - predorsal length, HL - head length, DH - dorso-hypural distance, CL - caudal fin length, BD - greatest body depth measured above origin of pelvic fin, PP - pre-pelvic length, PA - pre-anal length, PL - length of caudal peduncle, PE - pectoral fin length, AL - anal fin length, VL - pelvic fin length, ED - eye diameter, SN - snout length, IO - inter-orbital distance, CD - depth of caudal peduncle.

| | Holotype ZRC.37918 | Paratypes ZRC.37949 | | Paratypes ZRC.31791 | | Paratypes ZRC.37961 | | |
|---|---|---|---|---|---|---|---|---|
| TL | 68.2 | 76.0 | 61.6 | 61.6 | 62.5 | 73.9 | 58.1 | 67.1 |
| SL | 50.2 | 57.8 | 46.6 | 46.5 | 47.8 | 55.3 | 44.5 | 49.5 |
| D | II 7 | II 7 | II 7 | II 7 | II 7 | II 7 | II 7 | II 7 |
| P | I 12 | I 13 | I 13 | I 12 | I 12 | I 12 | I 12 | I 12 |
| V | I 7 | I 7 | I 7 | I 7 | I 7 | I 9 | I 7 | I 7 |
| A | III 5 | III 5 | III 5 | III 5 | III 5 | III 5 | III 5 | III 5 |
| C | I 9+8 I | I 9+8 I | I 9+8 I | I 9+8 I | I 9+8 I | I 9+8 I | I 9+8 I | I 9+8 I |
| LS | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| TS | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| CS | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| PS | 12 | 12 | 12 | 13 | 13 | 12 | 12 | 12 |
| in % standard length: | | | | | | | | |
| PD | 56.6 | 55.3 | 56.0 | 54.2 | 53.1 | 54.4 | 55.1 | 56.2 |
| HL | 27.3 | 27.0 | 28.3 | 26.9 | 26.2 | 25.7 | 24.9 | 27.5 |
| DH | 49.0 | 47.2 | 48.7 | 50.5 | 51.0 | 49.7 | 46.1 | 47.9 |
| BD | 27.9 | 27.5 | 26.2 | 27.7 | 27.4 | 27.5 | 26.3 | 26.5 |
| PP | 51.2 | 51.2 | 49.8 | 50.1 | 48.7 | 51.2 | 48.8 | 51.9 |
| PA | 70.3 | 71.5 | 70.0 | 69.7 | 70.1 | 71.1 | 67.2 | 71.3 |
| PL | 30.6 | 34.6 | 33.7 | 34.6 | 34.7 | 33.1 | 32.4 | 31.7 |
| PE | 28.9 | 29.2 | 25.3 | 25.6 | 26.4 | 26.8 | 26.7 | 29.9 |
| AL | 23.9 | 23.4 | 22.7 | 18.9 | 21.1 | 20.8 | 24.5 | 22.6 |
| VL | 17.3 | 23.5 | 21.5 | 18.7 | 20.3 | 21.5 | 22.0 | 22.6 |
| CD | 14.9 | 14.9 | 14.2 | 14.0 | 14.0 | 14.8 | 15.1 | 14.9 |
| BW | 15.9 | 13.5 | 13.9 | 14.4 | 14.4 | 14.6 | 13.9 | 14.1 |
| in % body depth | | | | | | | | |
| CD | 53.6 | 54.1 | 54.1 | 50.4 | 51.1 | 53.9 | 57.3 | 56.5 |
| in % head length: | | | | | | | | |
| ED | 31.4 | 28.8 | 29.5 | 28.0 | 28.0 | 28.9 | 32.4 | 27.9 |
| SN | 21.9 | 28.8 | 25.0 | 24.8 | 27.2 | 27.5 | 26.1 | 27.9 |
| IO | 43.1 | 43.6 | 42.4 | 40.0 | 40.0 | 47.9 | 46.8 | 45.6 |

base. Dorsal fin broadly pointed, its posterior margin convex, its origin over the 12th scale of the lateral line, slightly behind a vertical line through the pelvic fin origin, and behind middle between snout and caudal base, such that the dorsal-hypural distance, when carried forward, falls on the middle of the pupil. Anal fin with three simple and five branched rays, the last branched ray split to the base. Anal fin broadly pointed, its posterior margin concave, its origin opposite the 16th scale of the lateral line. Pelvic fin origin slightly in front of a vertical line through the dorsal fin origin. Pelvic fin with one simple and seven (one with nine) branched rays. Pelvic fin tips reaching anus, but barely reaching anal fin origin. Pectoral fin with one simple and 12 to 13 branched rays, pectoral fins broadly pointed, reaching beyond pelvic fin origin. Caudal fin with 9+8 branched rays. Caudal fin broad, not deeply forked, with the lobes more or less equal, and broadly pointed. The last simple rays of the pelvic and anal fins are the longest in relation to adjacent fin rays, and may sometimes extend beyond the fin margin, curving slightly near the tip. Vertebrae (of 12 specimens from ZRC.3855, see Table 2): 13-16+14-17 = 29-31. About 8 gill rakers on the lower ramus of first gill arc. No sexual dimorphism observed. Largest recorded specimen, 69.7 mm in standard length.

Table 2. Number of vertebrae present in *Rasbora kottelati* and *R. kalochroma*

| *Rasbora kottelati* | *Rasbora kalochroma* | | |
|---|---|---|---|
| ZRC.8355<br>Sarawak<br>12 spec.<br>13-16+14-17<br>= 29-31 | ZRC.1701<br>Sarawak<br>16 spec.<br>14+14-15<br>= 28-29 | ZRC.4770<br>Johor, Endau<br>2 spec.<br>14-15+14-15<br>=29 | ZRC.15857<br>Selangor<br>5 spec.<br>14-15+12-15<br>=26-30 |

***Colouration***. - Preserved (formalin-fixed) specimens (Fig. 2) are uniformly greyish-brown, darker on the back and paler on the lower half of the sides and on the ventrum. A black stripe through the eye from tip of snout and lower jaw to edge of opercle. The intensity of this stripe varies with specimens. It may be faint and interrupted, appearing as dark spots behind the edge of the preopercle and opercle, or it may appear as a bold, black stripe (see Fig. 4). An irregular blackish blotch, about three scales wide and two scales high present about three scales behind the opercle. There is another, larger, oblong-shaped dark blotch, about seven scales wide and two scales high above the anal fin base, and below the posterior base of the dorsal fin. This blotch is connected to the anterior blotch by a lateral series of small dark spots, each spot within a scale, about two scales above pelvic origin. There is a third, vertically oval black blotch at the caudal fin base, about one scale wide and two scales high. There are also melanophores over the body, with densest concentration on the back and at the edges of scales on the sides, but scattered most sparsely on the belly. Supra-anal pigment present, but diffuse. A diffuse dark stripe links the lower posterior edge of the second dark blotch to the third blotch on the caudal base. Subpeduncular and mid-dorsal stripes absent. Fin rays dusky. Anal and pelvic fins with slightly sub-terminal black bands. Dorsal fin usually with a dusky sub-terminal band, which may be highly intensified in certain young specimens (see Fig. 4). Fin rays slightly dusky. The two large blotches on the body, the stripe across the side of the head, and the dark markings on the dorsal, pelvic and anal fins may differ in size and intensity, apparently according to the physical environment. Two specimens (ZRC.31791) that have been kept in a bare aquarium for some months, are rather faded and pale in relation to their conspecifics.

In life (Fig. 3), dark brown above and yellow to rosy on the sides, ventrally pale; fins reddish, caudal fin with an undefined blackish distal edge; the black blotches covered with a greenish iridescent sheen.

***Habitat.*** - Inhabits lowland streams and swamps, with tanin-stained, brownish to black, acidic freshwater of pH 4.1-6.1. Syntopic species include *Osteochilus spilurus*, *Puntius pentazona*, *Rasbora axelrodi*, *Rasbora pauciperforata*, *Hemirhamphodon kuekenthali*, *Parosphromenus allani*, *Luciocephalus pulcher* and *Nandus nebulosus*. They appear to occur in small schools, in midwater (P. K. L. Ng, pers. comm.). M. Kottelat (pers. comm.) noted that several of the localities where *Rasbora kottelati* was collected were quite disturbed by human activities, and in the most disturbed locality (of ZRC.37949), *R. kottelati* was the most abundant species.

***Distribution.*** - North-western Borneo (see Fig. 1). In Sarawak (Malaysia), around Sibu (Rajang basin) and Marudi (Baram basin). In Brunei Darussalam, from around Seria (Belait basin). Expected to occur in swampy lowland drainages in between these localities.

***Etymology.*** - Named for Dr. Maurice Kottelat, in appreciation of his help and his outstanding contributions to Southeast Asian ichthyology.

## DISCUSSION

The present new species is very similar to *Rasbora kalochroma* . Both species share a broad overlap in meristic and morphometric characters, and cannot be distinguished from each other with the present suite of morphological and meristic characters explored herein. The presence of a dark blotch on the caudal peduncle of the new species easily distinguishes *R. kottelati*, and is apparently the most reliable and consistent character. The caudal blotch is present on *R. kottelati* of all sizes and sex. On *R. kalochroma* examined by the author from elsewhere in Sundaland, this spot is consistently never present.

Freshly-preserved specimens of *Rasbora kottelati* tend to be yellow on the lower half of the body with red fins. This colouration is also observed on some living specimens. All *R. kalochroma* seen by the author tend to be very dark grey, with a reddish sheen when freshly-preserved, or when observed alive. In *R. kalochroma*, the dark colouration may fade in captivity, but the rose colour still remains.

*Rasbora kottelati* also has a dark stripe from the snout, across the eyes, to the opercular edge. This feature is not present on the *R. kalochroma* the author has examined from Peninsular Malaysia and Sumatra (material from Jambi available at CMK and examined by M. Kottelat). It is, however, rather distinct on specimens of *R. kalochroma* from Sarawak (see Fig. 5a). *R. kalochroma* has never been described as having this stripe on the head (see Bleeker, 1851: 272-273; 1863: 121-122, tab. CXXI, fig. 1; Weber & de Beaufort, 1916: 70-72, fig. 27; Brittan, 191-194, fig. 46; Alfred, 1963a: 130-131, 1969: 113; Roberts, 1989: 74; Kottelat et al., 1993: 47, pl. 18).

*Rasbora kottelati* and *R. kalochroma* appear to be geographically separated in Borneo, and seem to have been derived from a common ancestral stock. *R. kottelati* has been collected in Sarawak from the northern drainages of the Rajang basin (area of Sibu) and from the Belait district in Brunei Darussalam. It is therefore, likely to occur in the lowland drainages

between these two areas. *R. kalochroma*, however, is found in the Kuching area, and towards the south, in the Kapuas basin and Barito basin in Kalimantan. The author has refrained from simply regarding the present new species as a colour variant of *R. kalochroma* because there appears to be a clear geographical demarcation between the two species. The northernmost range of *R. kalochroma* in Sarawak known to the author and his colleagues is from the Saribas basin which drains the southern slopes of the westernmost tip of the Kapuas Hulu Range. All 16 examples of this series (ZRC.1701) of *R. kalochroma* display the distinct dusky stripe on the median caudal fin rays and lack the caudal spot. It would seem that these two closely related species are genetically isolated by the western end of the Kapuas Hulu Range in Sarawak. According to field observations, both *R. kottelati* and *R. kalochroma* are strictly inhabitants of peat swamps. It is noted that the populations of *R. kalochroma* from Sumatra, Borneo and the Malay Peninsula could not (apart from the presence of the dark head stripe on the south Sarawakian examples) be distinguished from each other as easily as one could with *R. kottelati*. It must also be noted that all populations of *R. kottelati* and *R. kalochroma* seen by the author are homogenous in the colour markings, and that no specimens showing intermediate markings have been found.

Other examples of such closely-related sister species, distinguishable from each other with confidence only by colour pattern, but geographically isolated from each other, are known from Sarawak (see Kottelat & Lim, 1993: 230). The freshwater halfbeak, *Hemirhamphodon kuekenthali* is only reliably distinguished from *H. pogonognathus* by its having melanophores of two sizes (versus of only one size) on its dorsal fin. *H. kuekenthali* is known only from Sarawak. Further south in Kalimantan Barat and the rest of Sundaland, it is replaced by *H. pogonognathus* (Anderson & Collette, 1991: 158; Kottelat et al., 1993: 85-86). The banded barb, *Puntius pentazona* is distinguished from the morphologically and meristically indistinguishable *P. hexazona* on account of its having an additional (versus absence of) a dark spot at the base of the last dorsal ray (Alfred, 1963b, as subspecies *P. pentazona pentazona* and *P. pentazona johorensis* respectively; Kottelat et al., 1993: 43-44, as full species *P. pentazona* and *P. johorensis*). While *P. pentazona* is known from Sarawak, Roberts (1989: 65) noted that the material from the Kapuas River further south in Kalimantan Barat lacks the diagnostic spot, and refers these to *P. pentazona johorensis* (= *P. hexazona*, see Kottelat, 1992). Similarly, the eel-loach *Pangio agma* can only be distinguished reliably from *P. kuhlii* by its irregularly banded (versus rather uniformly-banded) colour pattern, and the former species is known in Sarawak from Niah and the Baram basin. *P. kuhlii* occurs from the Rajang River southwards (Burridge, 1992, as *Acanthophthalmus agmus* and *A. kuhlii*; Kottelat et al., 1993: 60).

An old series of *Rasbora kottelati* (ZRC.8355) was labeled as having originated from 'Kuching'. It is not known who collected the series and when these were obtained. The author is of the opinion that the specimens did not originate from Kuching itself. Either the specimens have been purchased from Kuching, or 'Kuching' on the label was intended to be a much larger general area, which covers the Rajang basin where the species occurs. This suspicion finds support from Dr. Charles Leh, curator of zoology at the Sarawak Museum (through P. K. L. Ng, pers. comm.) who had cautioned that 'Kuching' was indiscriminately used to label many specimens collected in Sarawak in the past.

*Rasbora kalochroma* was described from Bandjermassing (Banjarmasin) near the mouth of the Barito River in southern Kalimantan, Borneo. The species as originally described by Bleeker (1851: 272-273) and figured in Bleeker (1863, pl. CXXI, fig. 1) distinctly lacks the blotch on the caudal peduncle, the stripe across the head, and has a strongly-defined dark

band in the middle of the caudal fin. A paralectotype of *R. kalochroma* (BMNH.1866.5.2.156) examined by me agrees in colour pattern with Bleeker's illustration. *R. kottelati* does have dusky median caudal rays, but these are faint, and never well-defined as on *R. kalochroma* (see Figs. 5a and 5b).

***Comparison material.* - *Rasbora kalochroma***

BMNH – The Natural History Museum, London, United Kingdom

**Borneo**: Kalimantan - 1 paralectotype (BMNH.1866.5.2.156), 65.5 mm SL, Bandjermassing, coll. J. Wolff —— 1 ex. (BMNH.1994.12.16.220), 40.1 mm SL, Palangkaraya, 1994

Borneo: Sarawak - 16 ex. (ZRC.1701), 29.3-47.1 mm SL, Saribas, Stambak, coll. L. K. Charles, Aug.1952 —— 1 ex. (ZRC.27857), 74.0 mm SL, 7 km on Kuching-Batu Kawa Road, coll. M. Kottelat & K. Lim, 3 Jul.1992 —— 1 ex. (ZRC.29069), 47.3 mm SL, Batu Kawa-Kuching Road, 2 km after turn-off from Kuching-Bau Road, coll. M. Kottelat et al., 3 Jul.1992 —— 2 ex. (ZRC.37894), 38.2 - 39.7 mm SL, blackwater ditch at km 4 on Simunjan-Balai Ringin Road, coll. M. Kottelat et al., 11 May.1994

**Sumatra**: Riau Archipelago, Pulau Bintan - 1 ex. (ZRC.33039), 46.0 mm SL, Pulau Bintan north (SS10), coll. N. Sivasothi et al., 12 May.1993

**Peninsular Malaysia**: Johor - 2 ex. (ZRC.4770), 46.6-50.0 mm SL, Endau, coll. unknown, 14 Jan.1960 —— Pahang - 6 ex. (ZRC.27984), 16.7 - 36.2 mm SL, Pekan-Mersing Road, 1 km north of 3°22'4.1"N, 103°25'13.8"E, coll. P. K. L. Ng et al., 10 Mar.1992 —— Selangor - 5 ex. (ZRC.16381), 23.4 - 56.5 mm SL, North Selangor at Sabak Bernam peat swamp-forest, pool about 47 km on road to Tanjung Malim from Sungai Besar, coll. P. K. L. Ng et al., 20 Jun.1991 —— 7 ex. (ZRC.15850), 24.3-47.5 mm SL, North Selangor at Sabak Bernam peat swamp-forest, stream at 43 km on road to Sungai Besar from Tanjung Malim, coll. P. K. L. Ng et al., 19 Jun.1991 —— Terengganu - 9 ex. (ZRC.1700), 40.4-53.9 mm SL, Merchang swamp-forest, coll. M. W. F. Tweedie, Aug.1950

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