

A new genus record of *Yasuhikotakia* Nalbant, 2002 (Teleostei Botiidae) and a new species record of *Brachydanio* Weber et de Beaufort, 1916 (Teleostei Cyprinidae) to China

Zhiying Chen^{1,2}, Tao Qin^{1,2} & Xiaoyong Chen^{1,2*}

¹Southeast Asia Biodiversity Research Institute, Chinese Academy of Sciences, Yezin, Nay Pyi Taw, 05282, Myanmar; PR China

²Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming, Yunnan, 650223, PR China; e-mail: chenluchen-zhiying@163.com, qintao@mail.kiz.ac.cn, chenxy@mail.kiz.ac.cn

*Corresponding author

ABSTRACT

Two species of small freshwater fishes of Botiidae and Cyprinidae families of SE Asia were collected during field ichthyofauna surveys in lower Lancangjiang, Mekong basin before raining season in 2015. Both *Yasuhikotakia lecontei* (Fowler, 1937) (Teleostei Botiidae) and *Brachydanio rosea* (Fang et Kottelat, 2000) (Teleostei Cyprinidae) are new records to China, and the genus *Yasuhikotakia* Nalbant, 2002 is firstly recorded in China. The occurrence of the two species in Xishuangbanna Prefecture, Yunnan Province is most likely a natural extension of their distributional range. The meristics and measurements of the specimens, diagnosis, photographs, radiographs and distribution map of the two newly recorded species are provided.

KEY WORDS

Yasuhikotakia lecontei; *Brachydanio rosea*; New record; Mekong basin; Southwest China.

Received 05.04.2017; accepted 12.05.2017; printed 30.06.2017

INTRODUCTION

The Southeast Asian fish genus *Yasuhikotakia* Nalbant (2002) is a group of beautiful ornamental fishes of family Botiidae (Teleostei Cypriniformes). There are totally seven valid species in Mekong, Chao Phraya and MaeKlong basins in Thailand, Laos and Cambodia (Kottelat, 2012; 2013), viz. *Yasuhikotakia caudipunctata* (Taki et Doi, 1995), *Y. eos* (Taki, 1972), *Y. lecontei* (Fowler, 1937), *Y. longidorsalis* (Taki et Doi, 1995), *Y. modesta* (Bleeker, 1864), *Y. morleti* (Tirant, 1885) and *Y. splendida* (Roberts, 1995), respectively.

Danio Hamilton (1822) (Teleostei Cyprinidae) is a diverse group of small ornamental fishes throughout SE Asia including Yunnan of China and Indian

Subcontinent. Fang (2003) and Fang et al. (2009)'s phylogenetic works based on morphological and molecular data show that *Chela* F. Hamilton, 1822 + *Laubuca* Bleeker, 1859, *Esomus* Swainson, 1839, *Danio*, and *Devario* Heckel, 1843, with the addition of *Microdevario* Fang, Norén, Liao, Källersjö et Kullander, 2009 are a monophyletic group, and that *Danio* and *Devario*, are not sister groups. '*Danio*' was further divided into two major genera by Fang (2003), viz. *Danio* and a new erected genus *Devario*. Based on Fang et al. (2009) and other published molecular trees, Kottelat (2013) preferred to further divide '*Danio*' into four major groups, viz. *Danio*, a monotypic genus with *D. dangila* (Hamilton, 1822) as the type; *Celestichthys* Roberts, 2007 with four especially beautiful tiny

'*Danio*' species with *C. margaritatus* Roberts, 2007 as the type (Roberts, 2007); *Brachydanio* Weber et de Beaufort, 1916 with 10 '*Danio*' species with *B. albolineata* (Blyth, 1860) as the type (Weber & de Beaufort, 1916); and *Devario*, the biggest genus within '*Danio*' groups with 24 valid species with *D. devario* (Hamilton, 1822) as the type. There are totally 8 valid '*Danio*' species in China and they all occur in Yunnan (Chen, 2013). We follow Kottelat (2013) for classification of Chinese Danios here except his tentative assignment of *D. shanensis* (Hora, 1928) into *Inlecyptris* Howes, 1980. With the exception of *D. albolineata* moved into *Brachydanio*, all the other seven Chinese species were moved into *Devario*.

From April to June 2015, in field surveys of ichthyofauna in the main stem of Lancangjiang (upper Mekong), Yunnan Province, several new specimens to China were collected (Fig. 1). Further identification confirmed the two species, *Yasuhikotakia lecontei* and *Brachydanio rosea* (Fang et Kottelat, 2000) to be new records to China. Hereinto, is reported, for the first time, a true member of genus *Yasuhikotakia* in China, because the former recorded *Y. nigrolineata* (Kottelat et Chu, 1987) was moved into genus *Ambastaia* Kottelat, 2012 by Kottelat (2012) and followed by Chen (2013). The occurrence of the two species in Xishuangbanna, Yunnan Province is most likely a natural extension of their distributional range.

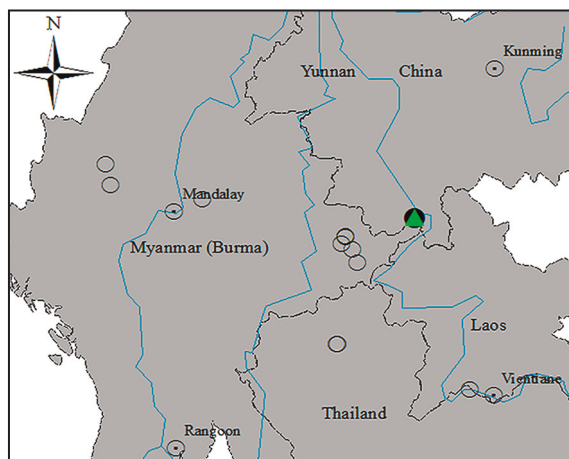


Figure 1. Collecting sites of *Yasuhikotakia lecontei* and *Brachydanio rosea*, data from Fishbase (Froese & Pauly, 2016). ○: City; △: Locality of *Y. lecontei*; ▲: New record of *Y. lecontei*; □: Locality of *B. rosea*; ●: New record of *B. rosea*.

MATERIAL AND METHODS

Meristics and measurements for *Yasuhikotakia* follow Kottelat (2004), while those for *Brachydanio rosea* follow Fang (1997) and Fang & Kottelat (2000). All measurements were made with a dial caliper and an accuracy of 0.1 mm. Counts were taken under Leica S60 microscope on the left side of specimens. Kubtec-Xpert 80 Digital Cabinet X-ray System is used for vertebra count. Vertebrae include the first four vertebrae which constitute the Weberian organ. GPS coordinates were obtained from Garmin e Trex handheld device. The specimens examined were deposited in 75% alcohol in the repository collection of the Kunming Institute of Zoology (KIZ), the Chinese Academy of Sciences (CAS). ABBREVIATIONS. BD: body depth; BW: body width; ex.: examined specimens; SL: standard length; TL: total length; HL: head length.

RESULTS

Yasuhikotakia lecontei (Fowler, 1937)

Botia lecontei - Fowler, 1937: 125-264

Yasuhikotakia lecontei - Nalbant, 2002: 309-333

EXAMINED MATERIAL. *Yasuhikotakia lecontei*, KIZ2015006371-6373, 3 ex., 54.4-56.4 mm SL (Table 1), from the main stem of Lancangjiang, Wenquan and Mengbo Village, Menghan Township, Jinghong City, Xishuangbanna Prefecture, Yunnan Province, China (21.839542° N, 101.042860° E, 526 m and 21.823279° N, 101.055848° E, 526 m), collected by Wansheng Jiang, Shusen Shu and Congwen Shi, 21 April and 13 June 2015, respectively.

DESCRIPTION. The examined specimen matches well diagnoses of *Y. lecontei* based on its original description (Fowler, 1937) and Kottelat (2001): 9 branched dorsal-fin rays (7-9 in original description) and 3 simple rays; pelvic fin almost reaching anus; suborbital spine bifid, curvulate, its tip of the long spine extending to posterior margin of eye and the short one reaching midpoint of eye, erect ethmoid spine parallel to horizontal axis of eye; relatively large mental lobe; a pair of papillae in lower jaw; a large blackish blotch on caudal peduncle, not extending to upper edge; incomplete lateral line (Fig. 2); total vertebrae 35 (Fig. 3).

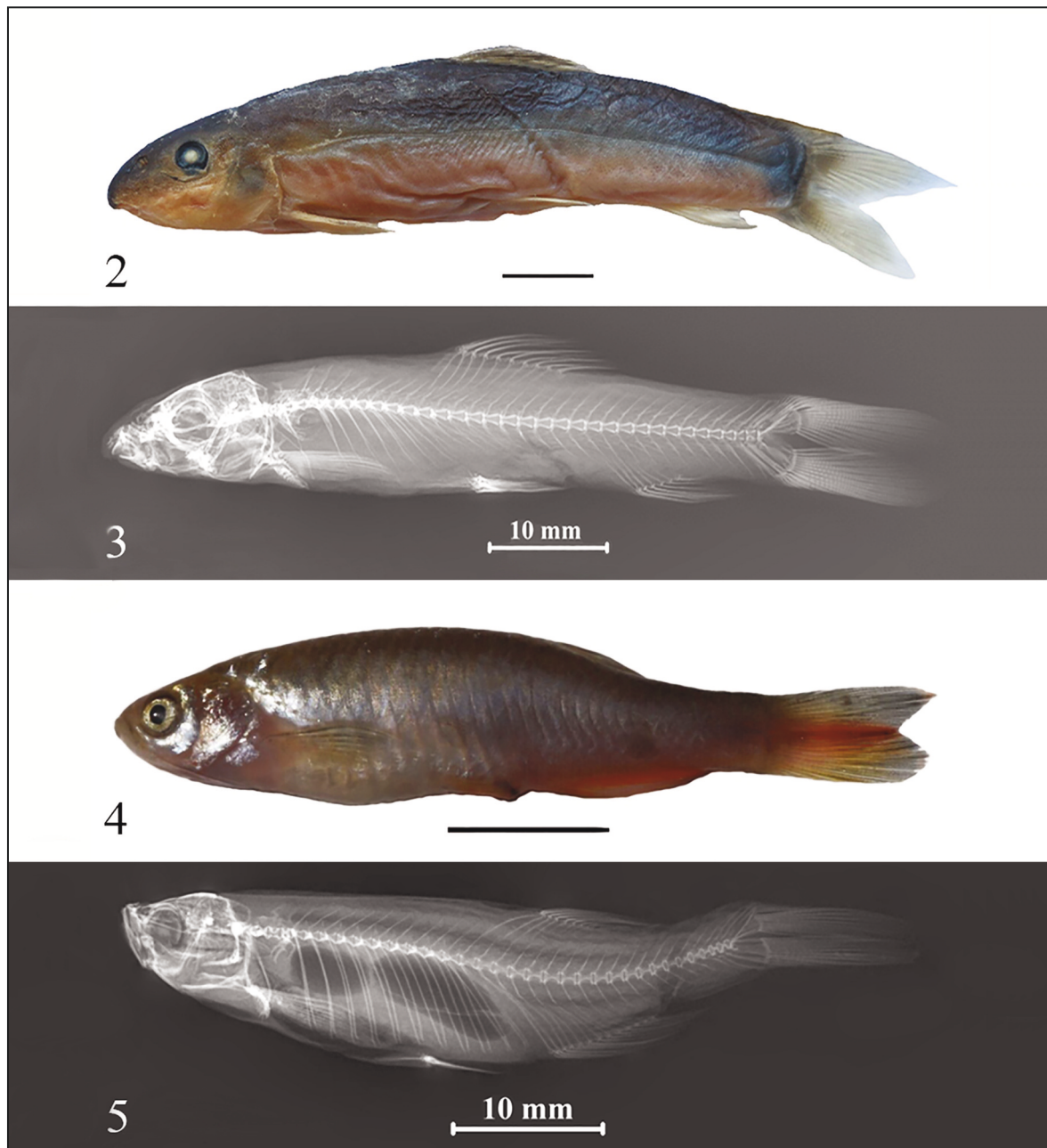


Figure 2. *Yasuhikotakia lecontei*, KIZ2015006373, 56.4 mm SL. Scale bar=1cm. Figure 3. X-ray photograph of *Y. lecontei*, KIZ2015006373, 56.4 mm SL. Figure 4. *Brachydanio rosea*, KIZ2015006374, 41.7 mm SL, shortly after capture (photograph by Wansheng Jiang). Scale bar=1cm. Figure 5. X-ray photograph of *B. rosea*, KIZ2015006374, 41.7 mm SL.

DISTRIBUTION AND BIOLOGY. Before this survey was undertaken, this species was just known in a broad region of Mekong and Chao Phraya basins of Southeast Asia except China, and now it expands to lower Lancangjiang, Yunnan, China (Fig. 1). *Yasuhikotakia lecontei* occurs in flowing rivers with stony to rocky substrate, usually inhabiting in

crevices or cover of rocks in the underwater during the day, going out to foraging at dusk and night; feeding on benthic invertebrates and mollusks; owing to its ornamental value, it is commonly found in the freshwater aquarium trade (Fowler, 1937; Vidthayanon et al., 1997; Kottelat, 1998; 2012; 2013).

Measurements	KIZ2015006371	KIZ2015006372	KIZ2015006373	Range
SL (mm)	55.0	54.4	56.4	54.4-56.4
TL (mm)	67.6	66.8	70.8	66.8-70.8
Percent (%) of SL				
HL	27.1	24.3	24.3	24.3-27.1
Predorsal length	47.6	48.0	50.5	47.6-50.5
Prepelvic length	54.2	54.0	54.6	54.0-54.6
Preanal length	76.9	76.2	78.2	76.2-78.2
BD	23.1	23.9	18.8	18.8-23.9
BW	6.5	6.6	6.9	6.5- 6.9
Caudal-peduncle depth	11.8	11.8	11.7	11.7-11.8
Caudal-peduncle length	13.5	12.3	13.5	12.3-13.5
Percent (%) of HL				
Snout length	43.6	48.7	50.0	43.6-50.0
Eye diameter	20.8	20.5	19.7	19.7-20.8
Interorbital width	37.5	34.8	37.2	34.8-37.5

Table 1. The morphological measurements of *Yasuhikotakia lecontei*.

Measurements	KIZ2015006374
SL (mm)	41.7
Vertebrae	34
Percent (%) of SL	
BD	25.6
HL	20.1
Eye diameter	5.8
Interorbital width	9.7
Caudal-peduncle length	18.1
Caudal-peduncle depth	10.9
Predorsal length	64.6
Preanal length	71.5
Prepelvic length	50.3
Prepectoral length	23.9

Table 2. The morphological measurements of *Brachydanio rosea*.

Brachydanio rosea (Fang et Kottelat, 2000)

Danio roseus Fang et Kottelat, 2000: 149–154
Brachydanio rosea Kottelat, 2013: 1–663.

EXAMINED MATERIAL. *Brachydanio rosea*, KIZ2015006374, 1 ex., 41.7 mm SL (Table 2), from Lancangjiang basin, Mengbo Village, Menghan Township, Jinghong City, Xishuangbanna Prefecture, Yunnan Province, China (21.823279° N, 101.055848° E, 526 m), collected by Wansheng Jiang, Shusen Shu and Congwen Shi, 13 June 2015.

DESCRIPTION. The examined specimen is exclusively identified as *D. roseus* according to its original description (Fang & Kottelat, 2000) and Kottelat (2001): a small sized species; incomplete lateral-line, perforating 9 scales (vs. 9-10); without infraorbital process; having 7 branched dorsal-fin

rays and 12 branched anal-fin rays (vs. 12-14); having two pairs of well-developed barbels, the rostral barbels extending to the posterior margin of orbit and the maxillary barbels nearly reaching anal-fin origin; body lacking horizontal black stripes along posterior part side; total vertebrae 34 (Fig. 5). Colour in life. Body bluish silver, caudal-fin with bright red median rays and black upper and lower margins, anal fin with a bright red subproximal stripe, pelvic fin proximal half orange (Fig. 4).

DISTRIBUTION AND BIOLOGY. *Brachydanio rosea* is usually found in small streams with relative cold running water under forest cover in Mekong basin of northern Thailand, Laos and Myanmar (Fang & Kottelat, 2000; Kottelat, 2001). Its occurrence in the downstream of Lancangjiang Basin in Yunnan, China is not surprising (Fig. 1).

DISCUSSION AND CONCLUSIONS

The herein study reported the occurrence of two new species, *Y. lecontei* and *B. rosea*, in Xishuangbanna Autonomous Prefecture, Yunnan Province. This raises a new genus and two species for the number of freshwater fishes in China. Although there is no opportunity to inspect the types of *Y. lecontei* and *B. rosea*, comparing all counts and measurements with the original descriptions, we found our specimens match well with *Y. lecontei* and *B. rosea*, respectively. Our location of this discovery is in the north-most geological range of these two species in Mekong River Drainage, what reported in the present paper expands the northern boundaries of the distribution of *Y. lecontei* and *B. rosea* and adds a new genus and two species for China records.

ACKNOWLEDGEMENTS

We sincerely thank Wansheng Jiang, Shusen Shu and Congwen Shi from KIZ for their contribution in the field survey, Lina Du from KIZ for helps on examining specimens, and Kunfeng Yang from KIZ for responsible assistance in taking radiographs.

This work was funded by Southeast Asia Biodiversity Research Institute, Chinese Academy of Sciences (Y4ZK111B01), the National Natural Science Foundation of China (31272275) and Natural Science Foundation of Yunnan Province of China (2013HB096).

REFERENCES

- Bleeker P., 1864. Description de deux espèces inédites de Cobitoides. *Nederlandsch Tijdschrift voor de Dierkunde*, 2: 11–14.
- Blyth E., 1860. Report on some fishes received chiefly from the Sitang River and its tributary streams, Tenasserim Provinces. *Journal of the Asiatic Society of Bengal*, 29: 138–174.
- Chen X.Y., 2013. Checklist of Fishes of Yunnan. *Zoological Research*, 34: 281–343.
- Fang F., 1997. Redescription of *Danio kakhienensis*, a poorly known cyprinid fish from the Irrawaddy basin. *Ichthyological Exploration of Freshwaters*, 7: 289–298.
- Fang F., 2003. Phylogenetic Analysis of the Asian cyprinid Genus *Danio* (Teleostei, Cyprinidae). *Copeia*, 4: 714–728.
- Fang F. & Kottelat M., 2000. *Danio roseus* a new species from the Mekong basin in northeastern Thailand and northwestern Laos (Teleostei: Cyprinidae). *Ichthyological Exploration of Freshwaters*, 11, 149–154.
- Fang F., Noren M., Liao T.Y. & Kallersjö S.O.K., 2009. Molecular phylogenetic interrelationship of the south Asian cyprinid genera *Danio*, *Devario* and *Microrasbora* (Teleostei, Cyprinidae, Danioninae). *Zoologica Scripta*, 38: 237–256.
- Froese R. & Pauly D. (Eds.), 2016. FishBase. World Wide Web electronic publication. www.fishbase.org, version (01 January 2016).
- Fowler H.W. 1937. Zoological results of the Third de Schauensee Siamese Expedition, part VIII, Fishes obtained in 1936. *Proceedings of the Academy of Natural Sciences of Philadelphia* 89: 125–264.
- Hamilton F., 1822. An account of the fishes found in the river Ganges and its branches. Archibald Constable and Company, Edinburgh, England, 411 pp.
- Hora S.L., 1928. Notes on the fishes in the Indian Museum. XV. - Notes on Burmese fishes. *Records of the Indian Museum*, 30: 37–40.
- Kottelat M. & Chu X.L., 1987. The Boitiinae loaches (Osteichthyes: Cobitidae) of the Lancangjiang (Upper Mekong) with description of a new species. *Zoological Research*, 8: 393–400.
- Kottelat M., 1998. Fishes of the Nam Theun and Xe Bangfai basins, Laos, with diagnoses of twenty-two new species (Teleostei: Cyprinidae, Balitoridae, Cobitidae, Coiidae and Odontobutidae). *Ichthyological Exploration of Freshwaters*, 9: 1–128.
- Kottelat M., 2001. Fishes of Laos. Wildlife Heritage Trust Publications, Colombo, Sri Lanka, 198 pp.
- Kottelat M., 2013. The fishes of the inland waters of southeast Asia: a catalogue and core bibliography of the fishes known to occur in freshwaters, mangroves and estuaries. *Raffles Bulletin of Zoology*, 27: 1–663.
- Kottelat M., 2004. *Botia kubotai*, a new species of loach (Teleostei: Cobitidae) from the Ataran River basin (Myanmar), with comments on botiine nomenclature and diagnosis of a new genus. *Zootaxa*, 401: 1–18.
- Nalbant T.T., 2002. Sixty million years of evolution. Part one: family Botiidae (Pisces: Ostariophysi: Cobitoidea). *Travaux du Muséum National d'Histoire Naturelle "Grigore Antipa"*, 44: 309–333.
- Roberts T.R., 1995. *Botia splendida*, a new species of loach (Pisces, Cobitidae) from the Mekong Basin in Laos. *Raffles Bulletin of Zoology*, 43: 463–467.
- Roberts T.R., 2007. The "Celestial Pearl *Danio*", a new genus and species of colourful minute cyprinid fish from Myanmar (Pisces: Cypriniformes). *The Raffles Bulletin of Zoology*, 55: 131–140.

- Vidthayanon C., Karnasuta J. & Nabhitabhata J., 1997. Diversity of freshwater fishes in Thailand. Office of Environmental Policy and Planning, Bangkok, 102 pp.
- Weber M.C.W. & de Beaufort L.F., 1916. The fishes of the Indo-Australian archipelago (Vol. 3). Brill Archive, Leiden, Holland, 459 pp.
- Taki Y., 1972. *Botia eos*, a new spiny loach from Thailand and Laos, with notes on some related forms in Asia. Japanese Journal of Ichthyology, 19: 63–81.
- Taki Y. & Doi, 1995. Two new species of the cobitid genus *Botta* from the Lao Mekong Basin. Japanese Journal of Ichthyology, 42: 147–155.
- Tirant G., 1885. Notes sur les poissons de la Basse-Cochinchine et du Cambodge. Excursions et reconnaissances, 10: 91–198.