

A REVIEW OF THE CHINESE SPECIES OF *CROSSOCHEILUS*, WITH DESCRIPTION OF A NEW SPECIES (OSTARIOPHYSI: CYPRINIDAE)

Su Rui-Feng, Yang Jun-Xing and Chen Yin-Rui

Department of Systematic Zoology, Kunming Institute of Zoology, Chinese Academy of Sciences, 32 Jiao Chang Dong Road, Kunming, Yunnan 650223, The People's Republic of China. Email: Chenxy@mail.kiz.ac.cn; Yangjx@mail.kiz.ac.cn (All correspondence to Yang Jun-Xing)

ABSTRACT. - Fishes of the genus *Crossocheilus* in China is reviewed on the basis of specimens in Kunming Institute of Zoology, Chinese Academy of Sciences. *Crossocheilus multirastellus* is described from the upper Irrawaddy and upper Salween rivers. It is distinguished from all of its congeners by having two black longitudinal stripes on sides of body, 36-38 lateral line scales, 18-25 gill rakers, anus at midpoint between ventral fin and anal fin insertions, ventral fin extending over anus, a large deep blue rhomboid spot above the pectoral fin, and a straight mouth gape almost equal to head width. There are presently two species of *Crossocheilus* fishes in China. *Crossocheilus bamaensis* Fang and *Crossocheilus liuchengensis* Liang, Liu & Wu are recognized here as members of the genus *Sinocrossocheilus*.

KEYWORDS. - *Crossocheilus*, China, review, new species

INTRODUCTION

Fishes of the genus *Crossocheilus* are distributed over India, the Yunnan-Guizhou plateau of China, Thailand, western Indonesia and Malaysia. They are recognized by the following characters: mouth inferior; rostral cap well-developed, downward and completely covering upper jaw and upper lip; prefringe of rostral cap fissured vertically into tassels; lower lip not modified into a sucking disc, with irregular fleshy papillae; mental groove longer; one or two pairs of barbells, rostral ones often well-developed, maxillary ones absent or rudimentary in some species; no rigid moveable lobes on sides of the snout; and lateral line complete with 33-41 scales.

Since the genus *Crossocheilus* Hasselt was established in 1823, 12 species and subspecies had been recognized as valid by Bănărescu (1986) and Kottelat *et al.* (1993). They are: *C. latius latius* (Hamilton-Buchanan, 1822) from Bangladesh; *C. latius diplocheilus* (Heckel, 1838) from Pakistan and Afghanistan; *C. oblongus oblongus* (Valenciennes, 1842) from Java and Sumatra; *C. oblongus stigmaeus* (Smith, 1945) from the Mekhan River (Chao Phraya) of Thailand; *C. cobitis* (Bleeker, 1853) from western Indonesia and Malaysia; *C. langei* Bleeker (1860) from Sumatra; *C. nigriroba* (Poey, 1904) from

Borneo; *C. gnathopogon* Weber and de Beaufort (1916) from Sumatra; *C. siamensis* (Smith, 1931) from Thailand; *C. reticulatus* (Fowler, 1934) from Thailand and China; *C. kalliurus* (Inger & Chin, 1962) from Borneo; *C. horai* Bănărescu (1986) from the Salween River and Inle Lake of Myanmar. *Crossocheilus horai* Bănărescu (1986) was regarded as *Cirrhinus lu* by Roberts (1997). Other two species in the Yunnan-Guizhou plateau of China were not included in the revision of Bănărescu (1986). They are *Crossocheilus liuchengensis* Liang, Liu & Wu (1987) and *Crossocheilus bamaensis* Fang (1981), both from the Xijiang (upper Pearl River). Yue *et al.* (1998) placed *Crossocheilus bamaensis* in the genus *Sinocrossocheilus* Wu (1977). Although Bănărescu (1986) clarified many of the problems in the taxonomy of *Crossocheilus*, some confusion are still present in the Chinese species. Furthermore, the phylogeny of *Crossocheilus* fishes has not yet been intensively worked out.

In China, four *Crossocheilus* species have been described until now. They are *Crossocheilus reticulatus* (Fowler, 1934) from Lancangjiang (upper Mekong) and *Crossocheilus latius* (Hamilton-Buchanan, 1822) from Longchuanjiang and Dayingjiang (Irrawaddy), Nanding River and Nujiang (Salween) (Chu & Chen, 1989) (Fig.1); *Crossocheilus liuchengensis* Liang, Liu & Wu (1987) and

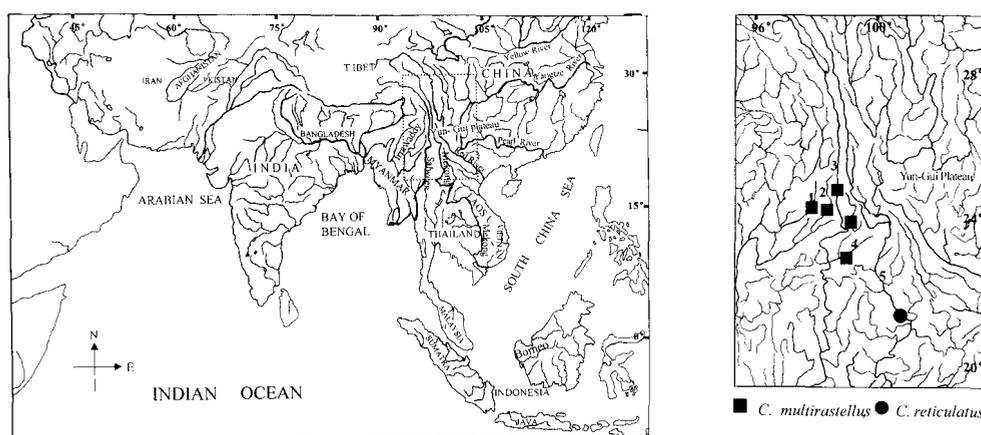


Fig. 1. Map showing the distribution of *Crossocheilus* spp. in China. 1. Dayingjiang (upper Irrawaddy), 2. Longchuangjiang (upper Irrawaddy), 3. Nujiang (upper Salween), 4. Nangding River(tributary of Salween), 5. Lancangjiang (upper Mekong).

Table 1. Main differences among *C. multirastellus*, new species, *C. latius diplocheilus* (Heckel) and *C. latius latius* (Hamiton-Buchanan).

	<i>C. multirastellus</i>	<i>C. latius latius</i> ^a	<i>C. latius diplocheilus</i> ^b
Gill rakers	18-25	37-39	17-21
Romhoid spot	Present	absent	absent
Longitudinal stripe	Present	absent	absent
Outer margin of dorsal fin	scythe-shaped	scythe-shaped	faintly concave
D	3, 8	4, 8	3, 8
Lateral line scales	36-39	39-41	35-38
Scales over LL	5	5-6	5-6
Scales below LL	3-4	2-3	4
In % of SL			
CD	6.3-12.5 (M, 8.4)	8.5-11	9.5-12.1
CPL	12-19.6(M,14.5)	16.7-20.7	16.7-21.3
PL	40.4-46.8(M, 3.7)	38.9-42.2	
P-A	29.3-4.2(M, 31.2)	26.6-32.2	
V-A	26.5-29.5(M, 28)	24.4-29.8	21.1-25.6
In % of HL			
SNL	31.3-50 (M, 43.5)	35.5-43.5	35.5-43.5
ID	40-58.8 (M, 52.6)	40.4-43.5	30-33.8
ED	21-33.3 (M, 22.7)	25.0-32.3	20.4-30.4

^{a, b}: Data from Bănărescu in 1986 and Talwar and Jhingran (1992).

Crossocheilus bamaensis Fang (1981), both from the Xijiang (upper Pearl River). In the present view, close examination of specimens identified as *C. latius* (Hamilton-Buchanan) by Chu & Cui (in Chu & Chen, 1989) revealed characters that are distinct from the two subspecies of *C. latius* (Table.1) and these specimens represent a new species. Our research indicates that *C. bamaensis* and *C. liuchengensis* should be placed in the genus *Sinocrossocheilus*.

MATERIALS AND METHODS

Examined material belongs to the collections of Kunming Institute of Zoology (KIZ), Chinese Academy of Sciences. Except for one series of *Crossocheilus reticulatus*, all specimens listed under the material examined sections are from China. Comparative material comprising 9 specimens of *Crossocheilus bamaensis* and 10 specimens of *C. liuchengensis* from the Xijiang (deposited at KIZ) were also examined.

Counts and measurements follow Chu & Chen (1989). Characters of *C. latius latius* (Hamilton-Buchanan) and *C. latius diplocheilus* (Heckel) are cited from Bănărescu (1986) and Talwar & Jhingran (1992). Our experience in reviewing the fishes of Yunnan (Chu & Chen, 1989; Yang & Winterbottom, 1998) demonstrates that our measurements are comparable to those of Bănărescu (1986) and Talwar & Jhingran (1992). The following 13 morphometric measurements have been made in Table 1 & 2: standard length (SL), body depth (BD), head length (HL), snout length (SNL), eye diameter (ED), interorbital width (IW), caudal peduncle length (CPL) and depth (CD), predorsal length (PL), distance between pelvic fin and ventral fin (P-V) and distance from ventral fin to anal fin (V-A). Mean value and lateral line are abbreviated respectively as M and LL.

Crossocheilus reticulatus (Fowler, 1934).

Holotylognathus reticulatus Fowler, 1934: 128 (type locality: Srisawat, Thailand).

Crossocheilus tchangii: Li, 1976 (Lancangjiang, Yunnan).

Material examined. -2 ex. (KIZ 735263-735264), 63-71mm SL, Lancangjiang, Yunnan, China; 20 May 1973. ---3 ex. (KIZ 781001-781003), 50-54mm SL; front of the dam at Payao Lake, Northern Thailand; T. R. Roberts, Oct.1978.

Diagnosis. - This species is recognized by: its small size (69-87 mm in total length); dorsum and sides of

body with a reticulated color pattern; a large black spot present on the caudal base; lateral line scales 32-34; anus closer to anal fin origin than to insertion of ventral fin, ventral fin not reaching to anus; upper lip separated from upper jaw; two pairs of barbels; horny tubercles absent on sides of snout; gill rakers on the outside of first gill arch 22; swim bladder with two chambers, the anterior one oval-shaped, the posterior one slender and its length almost two times of the anterior one; last simple dorsal fin ray unossified and unserrated.

Distribution and Ecology. - This species is distributed in Chao Phraya (Northern Thailand), Mekong River and lower reaches of Lancangjiang. It seems to prefer rapid areas of streams and rivers

Food habit. - Feeds mainly on algae and zooplankton.

Crossocheilus multirastellus, new species

(Fig. 2)

Crossocheilus latius: Chu & Cui, in Chu & Chen, 1989 (Tengchong, Yunnan).

Material examined. - Holotype (KIZ8310384), 132 mm SL, Longchuanjiang (upper Irrawaddy), Yunnan, 25°00' N, 98°41'E, China; 22 Oct.1983

Paratype - 4 ex. (KIZ748211, 748213, 748215-748216), 63-79 mm SL, Nanding River (upper Salween), Yunnan, 23°54'N, 99°01'E, China; 27 Aug.1974; --- 8 ex. (KIZ764283-764286, 764291-764292, 764298, 764304), 90-160 mm SL, upper Irrawaddy, Yunnan, 24°43'N, 97°56'E, China; 15 Apr.1976; --- 5 ex. (KIZ7801006-7801007, 7801012, 7801014, 781018), 109-125 mm SL, upper Irrawaddy, Yunnan, 25°00'N, 98°41'E, China; 10 Jan.1978; -- 2 ex. (KIZ8310382, 8310386), 128-145 mm SL, same data as holotype; --- 1 ex. (KIZ8311129), 113 mm SL, Nujiang, Yunnan, 26°26'N, 99°1'E, China; Nov.1983 .

Diagnosis. - The new species is distinguished from all known species of the genus *Crossocheilus* by the following characters (Table 2): body rather elongate, body depth 17.1-22.2% (M, 19.9) of SL ; side of body with a black longitudinal stripe, a deep blue rhomboid spot above pectoral fin, lateral line scales 36-39, anus at midpoint between ventral fin and anal fin origins, ventral fin extending over anus, upper lip not separated from upper jaw, and gill rakers on the outside of first gill arch 18-25.

Description. - Dorsal fin ii, 8. Pectoral fin i, 12-14. Ventral fin i, 8. Anal fin ii, 5. Branched caudal fin rays 20. Lateral line scales 36-39; scales from lateral line to dorsal fin origin 4-5, scales from lateral line to ventral

Table 2. Morphometric and meristic characters of *Crossocheilus multirastellus* and *Crossocheilus reticulatus*.

	<i>Crossocheilus multirastellus</i>		<i>Crossocheilus reticulatus</i>
	Holotype	Paratype	
SL	132	60-160 (M, 116.8)	50-71(M, 58.6)
BD	25	12-32 (M, 22.8)	11-21(M, 15.6)
HL	26	13-31 (M, 22)	12-14(M, 12.8)
SNL	11	5-13 (M, 9.2)	4-6.1(M, 5.1)
ED	6	4-7 (M, 5.5)	3-3.5(M, 3.2)
CPL	19	8-29 (M, 16.1)	7-12(M, 8.8)
CD	13	6-16 (M, 10.9)	6-8(M, 6.8)
in % of SL			
HL	20.4	18.1-21.7 (M, 20)	19.7-24(M, 22)
BD	19.0	17.1-22.2(M, 19.9)	22.0-29.6(M, 25.2)
PL	43.2	40.4-46.8 (M, 43.7)	45-46.4(M, 45.8)
P-V	31.1	29.3-34.4 (M, 32.2)	28-30.8(M, 29.4)
V-A	29.5	26.5-29.5 (M, 28.1)	25-26.2(M, 25.6)
in % of HL			
SNL	41.7	31.3-50 (M, 43.5)	33.3-42.9(M, 39.8)
ED	23.3	20.8-50 (M, 22.7)	25(M, 25)
IW	50	40-58.8 (M, 52.6)	50-60.7(M, 53.8)

fin origin 3-4. Circumpeduncular scales 14-16. Predorsal scales 9-12. Gill rakers on the outside of first gill arch 18-25. Pharyngeal teeth in 3 rows, 5.4.2-2.4.5. Vertebrae: 29 + 4=33.

Body rather elongate. Eyes situated at the posterior part of head. Nostril nearer to eye than to tip of snout. Mouth gape straight, its width almost equal to head width, extending to the vertical of posterior rim of eye. Snout broad and rounded, longer than postorbital length of head. The prefringe of rostral cap splits into 17-19 fimbriations with fleshy papillae. Prefringe of lower lip with dense fleshy papillae, separated from lower jaw by a deep groove. Lower jaw with a sharp horny edge. Mental groove long, the part between two mental grooves oval-shaped. Two pairs of barbels, rostral ones reaching to the posterior rim of nostril, shorter than eye diameter, maxillary ones concealed at the corner of mouth.

Lateral line complete and horizontal. Scales on chest and abdomen relatively small, without black spots.

Dorsal fin situated in advance of ventral fin origin, outer edge scythe-shaped. Last simple ray unossified, about 1.2-1.5 times of head length. Ventral fin origin is

opposite to bases of fourth or fifth branched dorsal fin rays. Tip of ventral fin extending over anus, but not reaching to anal fin. Anus situated at midpoint between anal fin and ventral fin origins. Caudal fin deeply forked.

Pharyngeal teeth with sharp tips. Swim bladder with two chambers, the anterior one elliptic, the posterior one greatly variable. Intestine very long in adaptation to digest algae.

Color pattern. - In alcohol, the dorsal and sides of body and head deep brown, with irregular black spots, the ventral part yellow, pink or greyish white in some specimens. A large deep blue rhomboid spot present above pectoral fin. Sides of body with a conspicuous black longitudinal stripe. Outer edges of dorsal and caudal fins slightly black. Other fins pinkish or yellowish.

Habitat & Distribution. - *Crossocheilus multirastellus* is known only from Yunnan, China where occurs in the middle and lower layers of swift, mountainous streams and rivers. It has been collected from Longchuanjiang, Dayingjiang (upper Irrawaddy), Nanding River and Nujiang (upper Salween).

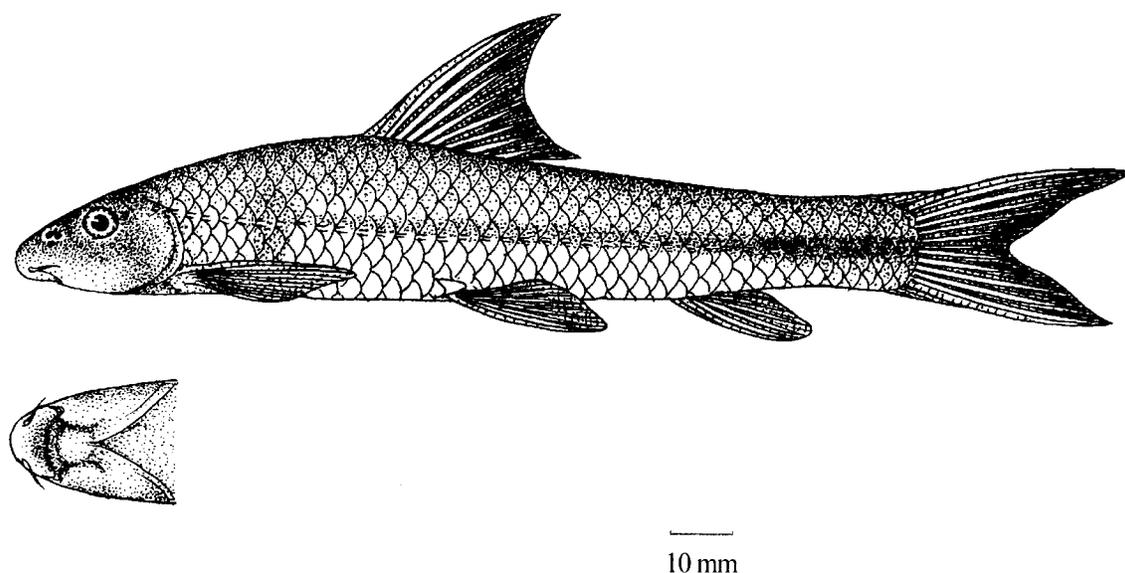


Fig. 2. Lateral view of *Crossocheilus multirastellus*, new species and ventral view of head.

Food habit.- Apparently feeds mainly on algae.

Etymology.- *multi*, much or many; *rastellus*, rakers; alluding to its numerous gill rakers.

DISCUSSION

Crossocheilus multirastellus is different from its only congener in China, *C. reticulatus*, by having two black longitudinal stripes, a large deep blue rhomboid spot above pectoral fin, ventral fin extending over anus and lateral line with 36-39 scales. By contrast, *C. reticulatus* has a reticulated color pattern, a large black spot on the caudal base, ventral fin not extending over anus and lateral line with 32-34 scales.

Crossocheilus multirastellus resembles *C. latius diplocheilus* in having the same numbers of lateral line scales and gill rakers. However, the two species can be separated in the following aspects: distance from ventral fin to anal fin (26.5-29.5% of SL in *C. multirastellus* vs. 21.1-25.6% of SL in *C. latius diplocheilus*), interorbital width (40-58.8% vs. 30-33.8% of HL), length of caudal peduncle (12-19.6% vs. 16.7-21.3% of SL); a deep blue rhomboid spot above pectoral fin and a conspicuous black longitudinal stripe are present in *C. multirastellus* (vs. absent in *C. latius diplocheilus*) (Table 1 & Fig.2). *C. multirastellus* shares with *C. latius latius* the same

number of lateral line scales, but is separated in following aspects: number of gill rakers on the outside of the first gill arch (18-25 in *C. multirastellus* vs. 37-39 in *C. latius latius*), scales below lateral line (3-4 vs. 2-3), interorbital width (40-58.8% vs. 40.4-43.5% of HL), length of caudal peduncle (12-19.6% vs. 16.7-20.7% of SL), predorsal length (40.4-46.8% vs. 38.9-42.2% of SL) and color pattern (a deep blue rhomboid spot above pectoral fin and a conspicuous black longitudinal stripe are present in *C. multirastellus* versus absent in *C. latius diplocheilus*) (Table 1 & Fig.2). Furthermore, those three species and subspecies display an allopatric distribution pattern. *C. multirastellus* occurs in Longchuanjiang and Dayingjiang (upper Irrawaddy), Nanding River and Nujiang (upper Salween) of northwestern Yunnan, China; whereas *C. latius latius* spreads mainly over India, Bangladesh and Subarnarakna, and *C. latius diplocheilus* ranges over the Indus basin, Pakistan, Afghanistan and southeastern Iran.

Li (1976) once reported *C. tchangi* from Lancangjiang, Yunnan. His specimens had 32 lateral line scales with eye diameter equal to mouth width. Bănărescu (1986) recognized *C. tchangi* as a valid species distinct from *C. reticulatus* because it has very small eyes and 30 lateral line scales. We agree to Bănărescu (1986) in that *C. tchangi* is a valid species. The specimens examined by us and those examined by Bănărescu (1986) demonstrate that *C. reticulatus* has eye diameter equal

to or larger than mouth width, lateral line with 32-34 scales. The eye diameter and number of lateral line scales of Li's (1976) specimens fall in the range of *C. reticulatus* and should be ascribed to the species of *C. reticulatus*.

Because some taxonomic confusion present between *Sinocrossocheilus* Wu (1977) and *Crossocheilus* (Hasselt, 1823), it's necessary to list the diagnostic characters of the two genera here. A row of tiny fleshy lobes are present on the upper jaw of *Sinocrossocheilus*, but absent in *Crossocheilus*; prefringe of rostral cap splitted into 10-15 papillate fimbriations in *Sinocrossocheilus* versus 17-21 papillate fimbriations in *Crossocheilus* (Yang & Winterbottom, 1998); 39-46 lateral line scales in *Sinocrossocheilus* versus 30-41 lateral line scales in *Crossocheilus* (Bănărescu, 1986; Yang & Winterbottom, 1998); the central lobe of lower lip with two straight lateral margins risen as the horse-hooked in *Sinocrossocheilus* versus the central lobe with two oblique lateral margins in *Crossocheilus*.

Crossocheilus bamaensis from upper streams of Pearl River is endemic to the east of the Yunnan-Guizhou plateau. Close examination indicates that *C. bamaensis* should be assigned to the genus *Sinocrossocheilus* because it has the diagnostic characters of *Sinocrossocheilus* listed above: a row of tiny fleshy lobes on upper jaw, 39-43 lateral line scales, the central lobe of lower lip horse-hooked with two straight lateral margins.

Crossocheilus liuchengensis is found only in upper streams of Pearl River in the east of the Yunnan-Guizhou plateau. Close examination of specimens from the type locality suggests that this species belongs to the genus *Sinocrossocheilus* because it has the diagnostic characters of *Sinocrossocheilus*: a row of tiny fleshy lobes on upper jaw, 40-42 lateral line scales, the central lobe of lower lip horse-hooked with two straight lateral margins.

ACKNOWLEDGEMENTS

We gratefully acknowledge Li Z. Y., Cui G. H. and Chen X. Y. for their valuable help. Thanks Mr. Wu B. L. very much, KIZ, for preparing the two illustrations of holotype of *Crossocheilus multirastellus*. Su Rui-Feng expresses many thanks to Wei J. N. KIZ, for his priceless help during her research. We are indebted to Dr. Carl Ferraris, California Academy of Science, for presenting three specimens of *Crossocheilus horai* and

reference. This research is supported by The Grand-A Grant, The Middle Sized Grant and The Taxonomy & Evolution Foundation of Chinese Academy of Sciences, National Science Foundation of China, and The Applied and Basis Research Foundation of Yunnan Province.

LITERATURE CITED

- Bănărescu, P. M., 1986. A review of the species of *Crossocheilus*, *Epalzeorhynchos* and *Paracrossocheilus* (Pisces, Cyprinidae). *Trav. Mus. Hist. Nat. Grigore Antipa.*, **28**: 141-161.
- Bleeker, P., 1853. Nieuwe tientallen diagnostische beschrijvingen van nieuwe of weinig bekende vischsoorten van Sumatra. *Natuurk. Tijdschr. Ned. - Indie.*, **5**: 495-534.
- Bleeker, P., 1860. Negende bijdrage tot de kennis der vischfauna van Sumatra. Visschen uit de Lematang- Enim en van Benkoelen. *Act. Soc. Sci. Indo-Neerl.*, **7**: 49-108.
- Chu, X. L. & Y. R. Chen, 1989. *The Fishes of Yunnan, China*. Part. I. Science Press, Beijing, people's Republic of China. 229-245pp
- Cuvier, G. & A. Valenciennes, 1842. *Histoire naturelle des Poissons*. Paris. **16**: 1- 363.
- Fang, S. H., 1981. *Freshwater fishes of Guangxi*. Guangxi People's Press, Nanning, 101-102.
- Fowler, H. W., 1934. Zoological results of the third de Schauensee Siamese expedition. Part. 1. *Fishes Proc. Acad. Nat. Sci. Phila.*, **86**: 67-163.
- Fowler, H. W., 1935. Zoological results of the third de Schauensee Siamese expedition, Part 6. Fishes obtained in 1934. *Proc. Acad. Nat. Sci. Philadelphia*, **87**: 126-129.
- Fowler, H. W., 1937. Zoological results of the third De Schauensee Siamese Expedition, Part 8. Fishes obtained in 1936. *Proc. Acad. Nat. Sci. Philad.*, **87**: 125-264.
- Hamilton, F. & Buchanan, 1822. *An account of the fishes found in the River of Ganges and its branches*. Edinburgh. 345- 393pp.
- Hasselt, J. C., 1823. Uittreksel uit een brief van den Heer J. C. van Hasselt, aan den Heer C. J. Temminck, geschreven in Tjebandje, Residentie Bantam, den 29 ften December 1822. *Alg. Konst. Letterbode*, **2**:130-135.
- Heckel, J. J., 1838. *Fische aus Caschmir*, gesammelt und herausgeben von Carl Freiherrn von Hugel, Beschrieben von J. J. 1: 53pp.
- Inger, R. F. & P. K. Chin, 1962. The fresh-water fishes of North Borneo. *Fieldiana Zool.*, **45**: 1-268.
- Kottelat, M., A. J. Whitten, S. N. Kartikasari & S.

- Wirjoatmodjo, 1993. *Freshwater fishes of western Indonesia and Sulawesi*. Periplus Editions Ltd.: 221pp., 84pls.
- Liang, L., et al., 1987. A new species of Barbinae. *Journal of Guangxi Agricultural College*, **2**: 77-80.
- Li, S. Z., 1976. New records of fishes collected from Lanchangjiang of Yunnan, China. *Acta Zoologica Sinica*, **22**:117.
- Popta, C. M. L., 1906. Resultats ichthyologiques des voyages scientifiques de Monsieur le Professeur Dr. A. W. Nieuwenhuis dans le centre de Borneo (1898 et 1900). *Notes Leyden Mus.*, **27**: 1-304.
- Roberts, T. R., 1997. Systematic revision of the tropical Asian labeoin cyprinid fish genus *Cirrhinus*, with descriptions of new species and biological observations of *C. lobatus*. *Nat. Hist. Bull. Siam Soc.*, **45**: 171-203.
- Smith, H. M., 1931. Description of new genera and species of Siamese fish. *Proc. US Nat. Mus.*, **79**: 148.
- Smith, H. M., 1945. The fresh-water fishes of Siam, or Thailand. *Bull. US Nat. Mus.*, **188**: 269-271.
- Talwar P. K. & Arun G., Jhingran, 1992. Inland Fishes of India and Adjacent Countries. Vol 1. A .A. Balkema/Rotterdam, India. 413-416 pp.
- Weber, M. & L. F. Beaufort, 1916. *The fishes of the Indo-Australian Archipelago*. **3**: 231-235.
- Wu, X. W., 1977. *The Cyprinid fishes of China*. Part 2. Technology Printing House, Shanghai, People's Republic of China.
- Yang, J. X. & R. Winterbottom, 1998. Phylogeny and zoogeography of the cyprinid genus *Epalzeorhynchus* Bleeker (Cyprinidae: Ostariophysi). *Copeia* (**1**): 48-63.
- Yue, P. Q., Y. Y. Chen & W. X. Chao, 1998. *Fauna Sinica of China (Osteichthyes: Cypriniformes II)*. Science Press, Beijing.