

CYCLOCHEILICHTHYS SCHOPPEAE, A NEW SPECIES OF FRESHWATER FISH (TELEOSTEI: CYPRINIDAE) FROM NORTHERN PALAWAN, PHILIPPINES

Miguelito Cervancia

Western Philippines University-Puerto Princesa Campus, Sta. Monica,
Puerto Princesa City 5300, Palawan, Philippines
E-mail: mikecervancia@gmail.com

Maurice Kottelat

Route de la Baroche, Case postale 57, CH-2952 Cornol, Switzerland (permanent address); and
Raffles Museum of Biodiversity Research, National University of Singapore, Kent Ridge, Singapore 119260, Republic of Singapore
E-mail: mkottelat@dplanet.ch

ABSTRACT. – *Cyclocheilichthys schoppeae*, new species, is described from the Abongan and Barbacan river basins in northern Palawan. It is distinguished from all its congeners by having 12 circumpeduncular scale rows (vs. 16–22). It is further distinguished by having 26 circumferential scale rows, 6–7 rows of black spots along the flank, no black spot at caudal fin base, two pairs of barbels, the lateral line tubes not branched and no midlateral stripe. The status of the present knowledge on Palawan's freshwater fish fauna is briefly commented.

KEY WORDS. – Fish taxonomy, Cyprinidae, *Cyclocheilichthys*, Palawan, Philippines.

INTRODUCTION

The freshwater fish fauna of the Philippines is still superficially known. Most of the studies were conducted in the early 20th century (Day, 1914; Herre, 1924). Lack of awareness is partly responsible for the destruction of aquatic habitats (e.g. conversion of marshes, swamps, lakes, etc. into agricultural land). Furthermore, the introduction of exotic species (e.g. *Oreochromis niloticus*, *Clarias gariepinus*) constitutes an additional threat to the native fish fauna.

In Palawan, Lake Manguao is one of the few studied areas; other habitats have not received attention (pers. obs). The lack of concern for freshwater fish is possibly due to the overall proximity of marine environment around the island, which attracted more attention from scientists. Also they generate only a limited interest as food resource compared to the larger, more easily available marine species. It has only recently been realized that freshwater fish needs attention and two unpublished studies have been conducted in freshwaters of northern Palawan (MC, pers. obs.; J. Matillano, pers. comm.).

While conducting an ichthyological survey in Northern Palawan, a new species of the genus *Cyclocheilichthys* was discovered and it is described herein.

MATERIAL AND METHODS

Specimens were collected with gill net and small beach seine and fixed in 10% formalin and stored in 75% ethanol. Methods for measurements and counts follows Kottelat et al. (1993), except for the cheek depth which is measured vertically from the lower margin of the eye to the ventral outline of head where the cheek ends. All morphometric and meristic data are taken from the left side of the body with the use of vernier calipers, to the nearest 0.1 mm. Three specimens were dissected to examine stomach content. The examined material is deposited in the National Museum of the Philippines, Manila (PNM); Western Philippines University-Puerto Princesa Campus Biological Collection, Puerto Princesa City (WPU-PPC); and in the collection of the second author (CMK).

Cyclocheilichthys schoppeae, new species (Fig. 1)

Cyclocheilichthys armatus (non Valenciennes): Roberts, 1989: 35 (in part; Iwahig River); Kottelat et al., 1993: 34 (in part; Palawan).

Material examined. – Holotype: PNM, 100.3 mm SL, Philippines: Palawan, Iraan River, a tributary of Barbacan River, between Iraan and Dumarao villages, 10°25'49.6"N 119°22'25.5"E, J. Matillano, G. Aludja, B. Galindez & M. Echaure coll., 18 Nov.2004.

Paratypes: All from Philippines: Palawan: WPU-PPC, 2 ex., 79.1–82.5 mm SL, Abongan River, southeast of Abongan village, 10°39'53.7"N 119°26'43.2"E, J. Matillano et al., coll. 16 Nov.2004; WPU-PPC, 2 ex., 61.1–64.2 mm SL; Barbacan River, west of Dumarao village, 10°26'N 119°22'E; J. Matillano, G. Aludja, B. Galindez, M. Echaure, 18 Nov.2004; WPU-PPC, 9 ex., 39.2–94.8 mm SL, CMK 18533, 3 ex., 96.1–103.7 mm SL, Barbacan River, west of Dumarao village, 10°26'N 119°22'E, M. Cervancia & G. Factor coll., 27–29 Jan.2005.

Diagnosis. – *Cyclocheilichthys schoppeae* is distinguished from all other members of the genus in having fewer scales rows around the caudal peduncle (12 vs. 16–22 in other species), and 6–8 rows of black spots on flank. Additional characters useful to identify the species but not unique to it are: 26 scale rows around the body in front of the pelvic-fin origin, two pairs of barbels, barbels not fimbriated (vs. fimbriated in *C. heteronema*), lateral line tubes not branched (vs. branched in *C. enoplos* and *C. furcatus*), no dark midlateral stripe (vs. obvious black midlateral stripe in *C. janthochir*, sometimes a faint greyish stripe in *C. repasson*), no dark blotch at end of caudal peduncle.

Description. – See Fig. 1 for general appearance and Table 1 for morphometric data. Body laterally compressed. Dorsal profile of body convex; ventral profile nearly straight or slightly convex. Depth of caudal peduncle 1.0–1.3 times in its length.

Head elevated from occiput to snout, sometimes with a small hump at nape. Snout with blunt tip. Depth of head at nape 1.6–1.8 times in head length. Mouth subterminal and small; mouth gape not reaching vertical through front margin of anterior nostril. Lips separated from skin of snout by a deep groove. Maxillary barbel slender, short, originating with a fleshy and wide base and gradually tapering, usually not reaching vertical through anterior margin of eye. Rostral barbel much shorter than maxillary barbel.

Dorsal fin with 4 simple and 8½ branched rays. Origin above lateral line scale 11 or 12, posterior margin concave. Last simple ray pointed at tip, with 19–38 fine serrae along posterior edge; number of serrae increasing with size. A scale

sheath along base. Length of base 1.6–1.8 times in length of last simple ray.

Pelvic fin with 1 simple and 9 branched rays. Origin under lateral line scale 10 or 11. Length 1.3–1.5 times in head length, tip reaching to or beyond anus but failing to reach anal-fin origin. Posterior margin convex.

Pectoral fin with 1 simple and 15 or 16 branched rays, pointed, almost reaching pelvic-fin origin.

Anal fin with 3 simple and 5½ branched rays. Origin below lateral line scale 21 or 22. Base 1.5–1.8 times in length last simple ray, 2.5–2.8 times in head length. Posterior margin concave.

Caudal fin forked, lobes pointed, length of median rays 2.4–2.9 times in length of longest rays.

Lateral line scales 32–34+2–3 (modally 33+2); transverse line from origin of dorsal fin to the origin of anal fin ½5/1¼½; scale rows around caudal peduncle 12; predorsal scales 12–13 (rarely 11); scale rows around body in front of dorsal fin 26; 4 scales between lateral line and pelvic-fin origin; scales in front of pelvic fin 3.

Coloration. – Live specimens silvery white below lateral line, dusky above with a yellowish shade all over body. Six or seven rows of black spot along body, located on scale pocket. Head silvery white on side with shiny reflections, top brownish. Dorsal fin orange distally, becoming yellowish orange near base. Upper caudal-fin lobe orange merging to yellow on lower lobe. Anal, pectoral and pelvic fins yellowish.

Freshly fixed specimens (Fig. 1) grayish silvery above lateral line, silvery white below, with yellowish shade all over body. Six to eight rows of black spot along body, located on scale pocket (most juveniles have six rows, only three of the largest ones have eight). Top of head brownish, side silver with shiny reflections. Upper lobe of caudal fin orange, lower one yellow. Dorsal and anal fins yellowish to orange. Pelvic and pectoral fins yellowish.



Fig. 1. *Cyclocheilichthys schoppeae*, holotype, PNM uncat., 100.3 mm SL; Philippines: Palawan: Iraan river (Photo: Joie Matillano).

Table 1. Morphometric data of holotype and 14 paratypes of *Cychocheilichthys schoppeae*.

	Barbacan River				Barbacan River				Iraan River		Abongan River				
	94.8	72.1	71.5	65.3	64.7	60.1	56.6	55.3	39.2	64.2	61.1	120.1	100.3 holotype	82.5	79.1
Standard length (mm)															
% of standard length															
Total length	134.4	136.6	137.3	133	135	138.7	139	136.2	139.9	139.6	134.6	-	138.3	-	-
Head length	28.2	32.1	30.6	28	30.5	29.1	31.5	29.4	32.4	28.2	28.7	30.1	29.5	30	29.8
Predorsal length	55.8	54.4	54.1	52.3	53.3	53.1	53.1	52.8	54.7	52.5	51.7	57.1	56.5	54.9	54.7
Prepelvic length	49.5	51.9	51.9	50.3	51.4	51.3	52.9	51.9	51.5	50.4	51.8	52.8	50.3	51.2	51
Preanal length	74.1	74	74.5	74	72.2	74.9	76.7	74.2	74.2	73.9	71.6	75.9	73.5	72.2	73.6
Head depth at nape	17.7	20	19.3	17.7	18.3	17.3	19.5	16.3	18.4	17.4	17.9	17.4	17.2	17.7	17.4
Caudal peduncle depth	13.1	13.2	12.6	13.1	12.5	13.2	13.6	12.7	11.7	12.9	13	14.2	13.5	13.2	13.5
Caudal peduncle length	15.5	15.3	14.8	15.2	15.2	15.2	15.9	16.1	14.3	15.5	15.5	14.8	15.6	14.4	13.9
Snout length	10.2	11.4	11	10.3	11.3	9.8	10.8	10	11	9.5	10.1	10.8	11.2	10.3	9.3
Body depth	31.4	32.5	31.3	30.3	29.9	31.1	31	31	27.8	30.4	30.4	34.4	34.3	33.2	33.5
Eye diameter	8.6	9	9.1	9.4	9.4	9.3	9.5	9.5	10.6	9.5	9.7	8.2	8.7	9.1	9.4
Interorbital distance	8.3	8.7	8.5	8	9.1	8.6	8.6	8.8	8.7	8.3	8.4	9	8.8	8.1	7.7
Dorsal fin base length	16.4	17.8	17.1	16.5	17.1	16.2	17.2	17.3	16.5	16.1	16.5	17.3	17	17.8	17.5
Anal fin base length	10.6	11.4	11.4	10.5	12.1	11.5	10.9	11.1	11.6	10.4	10.6	11.6	10.3	11.3	10.9
Pelvic fin length	19.2	22.2	22	20.3	21.1	21.5	21	21.5	21.9	22.1	21.1	22.6	20.8	22.2	21.6
Length of upper caudal lobe	35.5	39.7	37.3	39.7	37.5	39.1	*	38.2	37.6	38.8	34	*	*	*	34.4
Length of median caudal rays	12.4	14.8	14.4	14.4	13.2	14.3	14.1	14.1	15.9	14.4	14	*	12.3	*	13.3
Length of lower caudal lobe	35.5	37.6	36.1	39.3	35	38.6	37.6	39.9	40.2	39.4	33.8	*	34.4	*	*
Length of last simple dorsal ray	*	27.9	27.3	26.7	28.6	28.9	28.5	28.1	27.4	*	27.7	28.2	30.3	29.7	27.5
Length of last simple anal ray	17.5	17.7	17.6	18.6	18.3	17.7	18.7	17.7	19.9	*	18	19.1	18.4	20.1	*
Pectoral fin length	20.8	20.2	20.1	21.2	20.7	21.2	22.5	21.5	21.1	23.5	20.6	21.7	21.2	22.2	20.9
% of head length															
Eye diameter	30	28	30	34	31	32	30	32	33	33	33	28	29	30	32
Interorbital distance	30	27	28	29	30	30	27	30	27	29	28	31	29	27	26
Snout length	36	35	36	37	37	34	34	34	34	33	34	37	37	34	32
Cheek depth	23	23	23	25	24	22	19	19	18	23	23	22	21	22	19

Ethanol-stored specimens: body grayish to brownish with silvery reflection above lateral line merging to silvery white to yellowish below lateral line. Six or seven rows of black spots along scale rows. Free edge of scales margined by a silvery reflection or whitish line. Underside of head just behind mouth usually with small orange dots. Dorsal-fin membranes and posterior margin blackish. Caudal fin hyaline with blackish edge at the posterior margin..

Biology. – The stomachs of three specimens (PNM uncat., non types) from Barbacan River (64.4, 59.2, 62.6 mm SL) examined contained shrimps, worms, insect larvae, detritus and sand.

Distribution and habitat. – *Cyclocheilichthys schoppeae* is presently known only from the Barbacan (Municipality of Roxas), Abongan (Municipality of Taytay) and Babuyan (Puerto Princesa City) drainages. If the specimen reported by Roberts (1989: 35) from the Iwahig River in Puerto Princesa City belongs to *C. schoppeae*, this extends the range of the species by about 60 km southward.

Cyclocheilichthys schoppeae has been collected from streams, medium and large rivers with clear, slowly moving to relatively fast flowing water, with gravel and muddy substrate.

River banks are deforested and planted with crops. Few trees and bamboo clumps are present along the banks. During summer, some parts of the rivers are dry, especially the tributaries.

Etymology. – Named for Sabine Schoppe, in appreciation for her lasting help and support to the studies and research of the first author.

Remarks. – The genus *Cyclocheilichthys* has a distribution typical of numerous Southeast Asian genera, in the whole Indochinese and Sundaic areas (as defined by Kottelat, 1989). The genus consists of 10 species known from the Mekong and Chaophraya drainages, peninsular Malaysia, Sumatra, Java and Borneo (Sontirat, 1976). The genus had earlier been recorded from Palawan (“west coast Iwahig River”) on the basis of a single specimen collected in 1963 and which Roberts (1989: 35) had identified as *C. armatus*. Although we have not examined this specimen, we hypothesize that it is possibly the present species.

As mentioned in the diagnosis, *C. schoppeae* is distinguished from all other species of *Cyclocheilichthys* in having 12 circumpeduncular scale rows (vs. 16–22 in other species). It shares with *C. armatus* the longitudinal rows of black spots,

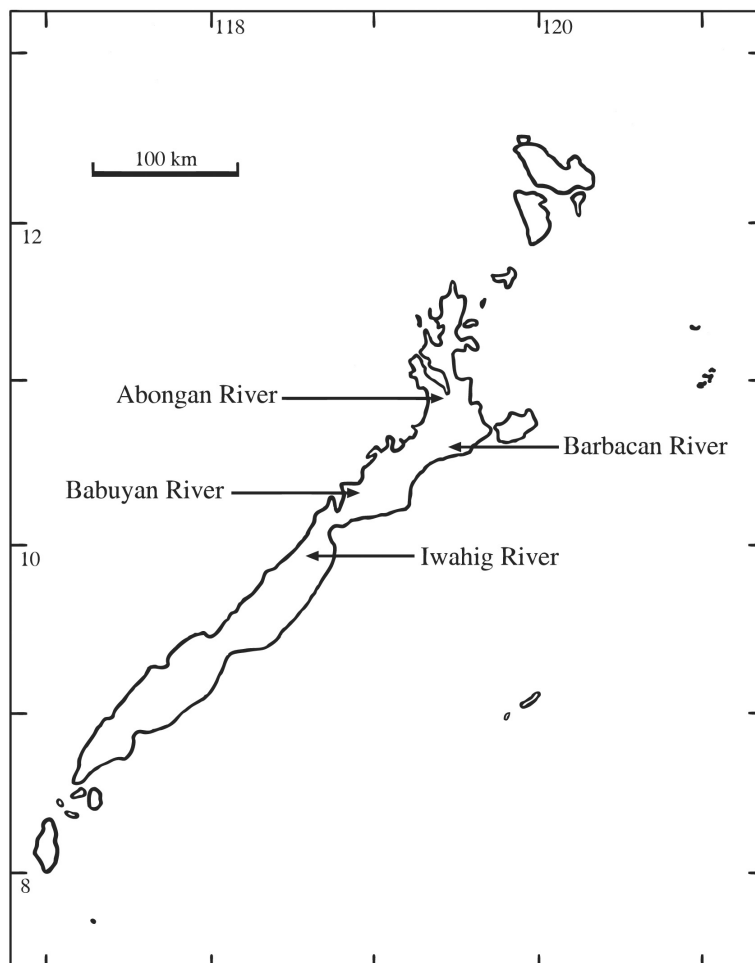


Fig. 2. Map of Palawan showing location of Abongan, Barbacan, Babuyan and Iwahig Rivers (indicated by arrows) (courtesy of Palawan Provincial Planning and Development Office).

two pairs of barbels (occasionally a single pair in *C. armatus*), and the small number of scale rows on the caudal peduncle (12–16, vs. 16–22), but *C. schoppeae* is easily distinguished in having fewer circumpeduncular scale rows (12, vs. 16 in *C. armatus*), and 6–7 rows of black spots on flank (vs. 7–8) (see Sontirat, 1976, for additional data on *C. armatus*).

Only two species of *Cyclocheilichthys* are known from northern Borneo (Inger & Chin, 1962, 2002), viz. *C. apogon* and *C. repasson*. *Cyclocheilichthys schoppeae* is distinguished from *C. apogon* by the presence of two pairs of barbels (vs. no barbels), a shallower body (depth 27.8–34.4% SL, vs. 30–42), and fewer scale rows around caudal peduncle (12, vs. 16). It is distinguished from *C. repasson* in having fewer scale rows around caudal peduncle (12, vs. 18–22), fewer scale rows around body (26, vs. 28–30, usually 30). Data on other *Cyclocheilichthys* species from Sontirat (1976) and personal observations.

Although inhabited by some fishes of primary division freshwater families (as defined by Myers, 1938), Palawan is considered to have a depauperate freshwater fish fauna. While the number of species is effectively low, the very limited effort invested to date on freshwater faunistic investigations suggests that this low number may more reflect the absence of surveys rather than an actual low taxonomic diversity. The presence of an overlooked species endemic to Palawan (which before was known from a single specimen that we hypothesize to be conspecific) strengthens this hypothesis. The case is not unique, e.g. *Dermogenys palawanensis* was first identified as the widely distributed *D. pusilla* until re-examination of museum material revealed that it is a distinct species endemic to Palawan (see Meisner, 2001). Several nominal fish species described from Palawan have subsequently been treated as synonyms of species more widely distributed, especially in northern and eastern Borneo, but are now considered as distinct species (*Rasbora everetti*, *R. taytayensis*, *Puntius palawanensis*, *P. manguaoensis* [of which *P. bantolanensis* might be a synonym], *Oxyeleotris expatria*; pers. obs., Kottelat, 1984; Kottelat & Vidthayanon, 1993). It is certain that a number of freshwater fish species still await discovery on Palawan. Noteworthy is the absence of the family Balitoridae, which is rich and diverse in Sabah and which one would expect to be present in hill streams of at least southern Palawan.

Comparative material. – *Cyclocheilichthys armatus*: CMK 4897, 1 ex., 88.9 mm SL; Thailand: Ayuttaya Province: Chao Phraya River; CMK 4948, 3 ex., 114.0–125.4 mm SL; Thailand: Nan Province: Chao Phraya drainage; CMK 12282, 5 ex., 71.5–74.6 mm SL; Laos: Khammouan Province: Xe Bangfai drainage; CMK 10161, 1 ex., 53.3 mm SL; CMK 10202, 5 ex., 31.7–62.5 mm SL; Indonesia: Borneo: Kapuas drainage.

C. repasson: CMK 7641, 3 ex., 95.9–107.5 mm SL; CMK 7673, 4 ex., 75.2–80.4 mm SL; CMK 7748, 2 ex., 74.8–83.2 mm SL; Indonesia: Borneo: Mahakam drainage; CMK 11786, 1 ex., 94.5 mm SL; Indonesia: Borneo: Barito drainage; CMK 12370, 4 ex., 95.3–118.9 mm SL; Laos: Khammouan Province: Xe Bangfai drainage.

ACKNOWLEDGMENTS

We thank the Haribon Foundation through the efforts of Joie Matillano, Mc Resven Echaure, Geoffrey Aludja, Benjie Galindez, Diverlie Acosta, Rosline Pastrana and Ronelito Esuma, for the gift of the specimens and for providing the coordinates; Joie Matillano, for photographing the species; Guy Factor, for help in the field; Sabine Schoppe, for her continuous support and advices to the first author; WPU-PPC, for the use of microscopes and other laboratory facilities.

LITERATURE CITED

- Day, A. L., 1914. Two new cyprinoid fishes of the genus *Barbus* from Lake Manguao, Palawan, P. I. *Philippine Journal of Science*, **9D**(2): 187-193, 1 pl.
- Herre, A. W. C. T., 1924. Distribution of the true fresh-water fishes in the Philippines. I. The Philippine Cyprinidae. *Philippine Journal of Science*, **24**: 249-306, Pls. 1-2.
- Inger, R. F. & P. K. Chin, 1962. The fresh-water fishes of North Borneo. *Fieldiana, Zoology*, **45**: 1-268.
- Inger, R. F. & P. K. Chin, 2002. The freshwater fishes of North Borneo. 2nd reprint. Natural History Publications, Kota Kinabalu. 268 + 78 pp.
- Kottelat, M., 1984. A new *Rasbora* s. l. (Pisces: Cyprinidae) from northern Thailand. *Revue Suisse de Zoologie*, **91**(3): 717-723.
- Kottelat, M., 1989. Zoogeography of the fishes from Indochinese inland waters with an annotated check-list. *Bulletin Zoologisch Museum Universiteit van Amsterdam*, **12**(1): 1-54.
- Kottelat, M. & C. Vidthayanon, 1993. *Boraras micros*, a new genus and species of minute freshwater fish from Thailand (Teleostei: Cyprinidae). *Ichthyological Exploration of Freshwaters*, **4**(2): 161-176.
- Kottelat, M., A. J. Whitten, S. N. Kartikasari & S. Wirjoatmodjo, 1993. *Freshwater fishes of Western Indonesia and Sulawesi*. Periplus, Hong Kong. 259 pp., 84 pls.
- Meisner, A. D., 2001. Phylogenetic systematics of the viviparous halfbeak genera *Dermogenys* and *Nomorhamphus* (Teleostei: Hemiramphidae: Zenarchopterinae). *Zoological Journal of the Linnean Society*, **133**: 199-283.
- Myers, G. S., 1938. Fresh-water fishes and West Indian zoogeography. *Annual Report of the Smithsonian Institution for 1937, Publication 3465*: 339-364, 3 pls.
- Roberts, T. R., 1989. The freshwater fishes of western Borneo (Kalimantan Barat, Indonesia). *Memoirs of the California Academy of Sciences*, **14**: 1-210.
- Sontirat, S., 1976. Revision of the southeastern Asiatic cyprinid fish genus *Cyclocheilichthys*. Unpublished Ph.D. thesis, University of Michigan, Ann Arbor. 133 pp.