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One new genus and three new species of carp in Guangxi

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This abstract describes a new genus and three new species of Cyprinidae fish collected from Hechi, Guangxi. The new genus *Anchicyclocheilus* gen. nov. is distinguished from *Sinocyclocheilus* by having lateral line scales that are identical to body scales, which are larger than those of *Sinocyclocheilus*. The type species, *Anchicyclocheilus hal fibindus* sp. nov., has nine branched fin rays on its dorsal fin, indicating its primitiveness. Another new species in the genus, *Anchicyclolocheilus altishoulderus* sp. nov., is distinguished from *Anchicyclolocheilus altishoulderus* sp. nov. by having seven branched fin rays on its dorsal fin and a prominent frontal projection. The third new species, *Sinocyclocheilus yishanensis*, sp.nov., is distinguished from the soft-finned golden barb by its unbranched dorsal fin rays, slender, soft, smooth, and serrated surface; subsuperior mouth; large scales with a scale ratio of 2.1; and 52-54 lateral line scales.

Keywords: Cyprinidaceae, genus *Syzygium*, new genus and species, Guangxi

Between 1981 and 1989, a batch of fish specimens were collected in Guangxi, including one new genus and three new species of Cyprinidae fish, which are described below:

Near the genus *Anchicyclocheilus*, a new genus, gen.nov.

The type species is *Anchicyclocheilus hal fibindus*, sp.nov.

The body is elongated and somewhat laterally compressed. The snout is blunt and rounded, protruding forward, with the snout skin covering the base of the upper lip. The upper and lower lips are relatively thick, covering the upper and lower jaws. The upper and lower lips connect at the corners of the mouth, interrupted by the postlabial groove. The mouth is inferior, horseshoe-shaped. The mouth cleft extends to between the nostrils and the eyes. There are two pairs of barbels, well-developed; the rostral barbels extend to the posterior margin of the eye, and the maxillary barbels extend to the posterior margin of the preopercle.

The pharyngeal teeth are in three rows, 2.3.5/5.3.2; the gill rakers are 10-12, short. The gill membrane connects to the isthmus below the vertical line of the posterior margin of the preopercle. The dorsal fin has 4-7-9 rays, the last unbranched ray being a stout, hard spine with serrated posterior margins. The anal fin has 3-5 rays, without spines. The pectoral fins are long, generally extending beyond the origin of the pelvic fins, and the caudal fin is deeply forked.

The body scales are large, round, and arranged in an imbricate pattern. The lateral line is complete, and the lateral line scales are roughly the same size as the body scales, with fewer than 60 lateral line scales. This new genus differs from the genus *Sinocyclocheilus* Fang in that the lateral line scales are the same size as the body scales, while the latter's lateral line scales are significantly larger than the body scales.

A new species of semi-blind barb, *Anchicyclocheilus hal fibindus*, sp.nov., Fig. 1.

The holotype specimen, numbered 8903277970, is 243 mm in total length and 190 mm in body length. It was collected on March 27, 1989, from an underground lake in Fengcheng, Fengshan County, Guangxi (part of the Hongshui River system). It is about 30 m below the surface, with a lake surface area of about 1000 m^2 and a depth of 10-15 m.

Twenty-four paratype specimens were collected, numbered 8903277951-8903277969 and 8903277971-8903277975. They ranged in total length from 103 to 282 mm, with body lengths from 77 to 220 mm, and were collected from the holotype's habitat. The type specimens are preserved at Yunnan Machinery Factory No. 3 Middle School and the Du'an County Aquatic Products Station in Guangxi.

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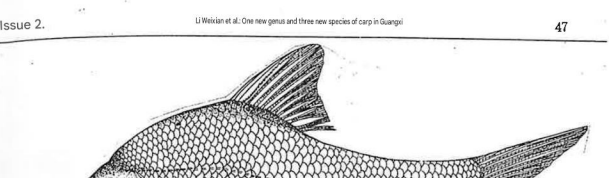

Figure 1. Half-blind barb, a new species, *Anchicyclocheilus halfibindus*, sp. nov.

Dorsal fin rays 4-9; anal fin rays 3-5; pectoral fin rays 1-14~16; pelvic fin rays 1-8. Caudal fin branched rays 16. Pharyngeal teeth in 3 rows: 2, 3, 5/5, 3, 2; gill rakers: 10-12. Lateral line scales: 50-13-14 (6-7-V 54).

The body length is 2.9 (2.8–3.1) times the body depth, 4.1 (3.8–4.7) times the head length, 3.7 (3.4–4.0) times the caudal peduncle length, and 7.7 (7.3–8.2) times the caudal peduncle depth. The head length is 2.3 (2.2–2.6) times the snout length, 14.7 (13.0–18.7) times the eye diameter, 3.4 (3.0–3.8) times the interorbital distance, 0.96 times the head depth, and 0.96 times the pectoral fin length. The mouth width is 2.0 (1.7–2.4) times the mouth length. The caudal peduncle length is 2.1 (2.0–2.1) times the caudal peduncle depth.

The body is elongated and laterally compressed, with its height significantly greater than its head length. The snout is broad and flat, flattened in front of the eyes and dorsally, resembling a duck's bill, while the head is angled at 45° behind the eyes. The mouth is inferior, horseshoe-shaped, with nostrils near the snout and far from the eyes. The eyes are small and vestigial, with a membrane protruding from the supraorbital bone covering nearly half of the eye. In some specimens, one eye is completely covered, while the other is covered only by a slit, almost blind. There are two pairs of barbels, thick and long; the rostral barbels extend to the posterior margin of the eye or the preopercle; the maxillary barbels extend to the posterior margin of the preopercle or the middle of the opercle. In some specimens, the head length is only 1.8 times the barbel length. The gill membranes connect to the isthmus below the vertical line of the preopercle. The lateral pore system of the head is well-developed.

The dorsal fin originates slightly behind the pelvic fin origin, extending to nearly the base of the tail at the snout. The last unbranched ray of the dorsal fin is a coarse, hard spine with serrated posterior margins and a soft, segmented tip. The anterior dorsal fin is ridged and arched, without a distinct frontal protuberance at its junction with the head. Small scales are present on the scale sheaths at the base of the dorsal and anal fins. The pectoral fins are long, extending more than one-third of the way behind the pelvic fins. The pelvic fins are long, extending to or beyond the anus (in adults) or beyond the anus (in juveniles). The anal fin is close to the anus. The tail is deeply forked, with the longest outer ray approximately three times the length of the shortest inner ray.

The body is covered with large, overlapping scales. The scales are round, with a scale ratio of 1.0; the body length is 30 times the scale length. There are 21-25 short radial grooves on the body scales, all concentrated in the posterior area. The lateral line is complete and straight, curving slightly downwards only at the end of the pectoral fin. The lateral line scales are roughly the same size as the scales above and below the pectoral fin. The gill rakers are triangular and sparsely arranged. The pharynx is hooked at the end. The swim bladder has two chambers; the posterior chamber is less thick than the anterior chamber but twice the length of the anterior chamber. The peritoneum is gray.

When alive, the body is translucent, and the blood vessels in the tail are visible. After formalin fixation, it turns milky white or beige, and the fins are colorless. High-shouldered golden barb, a new species *Anchicyclocheilus altishoulderus*, sp. nov. Figure 2.

The holotype specimen, number 890480026, is 220 mm in total length and 158 mm in body length. It was collected on April 8, 1989, from an underground river in Taiping Township, Donglan County, Guangxi Zhuang Autonomous Region. Twelve paratype specimens, ranging from 143 to 228 mm in total length and 111 to 178 mm in body length, were collected at the same time and place as the holotype, numbered 890480027-0038. The type specimens are preserved at Yunnan Machinery Factory No. 3 Middle School and the Du'an County Aquatic Products Station in Guangxi.

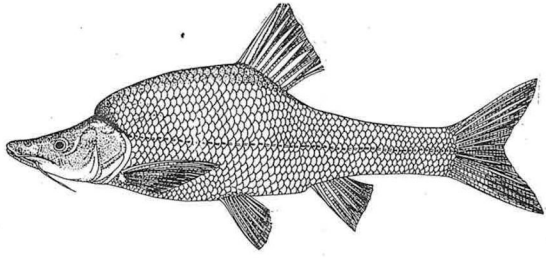

Figure 2. High-shouldered golden barb, a new species, *Anchicyclocheilus altishoulderus*, sp. nov.

Dorsal fin rays 4-7; anal fin rays 3-5; pectoral fin rays 1-16; pelvic fin rays 1-8; caudal fin branched rays 14-16. Gill barbs 10-12. Pharyngeal teeth 3 rows 2, 3, 5/5, 3, 2. Lateral $\frac{\text{line scales}}{54\ 14\text{-}17\ 9\text{-}11}$ v 58.

The length of the peduncle is 3.1 (2.9–3.3) times the body depth, 3.4 (3.3–3.5) times the head length, 4.7 (4.4–5.0) times the caudal peduncle length, and 7.8 (7.2–9.4) times the caudal peduncle depth. The head length is 2.3 (2.1–2.5) times the snout length, 11.4 (7.8–15) times the eye diameter, 5.3 (4.7–5.8) times the interorbital distance, 1.7 times the mouth width, and 1.1 times the pectoral fin length. The mouth width is 2.3 times the mouth length. The caudal peduncle length is 1.7 (1.5–1.8) times the caudal peduncle depth.

The body is elongated and laterally compressed. The head is pointed, with a slightly flattened snout that slopes backward to a raised forehead, with a prominent frontal protuberance. The nostrils are close to the snout and far from the eyes. The eyes are small and located on the upper side of the head. In some specimens, the eyes are covered by a protrusion of the supraorbital bone, leaving only a slit. The bony protrusion between the eyes and nostrils forms two ridges, and the interocular distance is narrow, equal to the internocular distance. The mouth is inferior and horseshoe-shaped. There are two pairs of barbels; the rostral barbels reach the middle of the eyes, and the maxillary barbels are close to the preopercle. The gill membranes connect to the isthmus below the vertical line of the preopercle. The lateral pores on the head are well-developed.

The dorsal fin originates slightly behind the pelvic fin origin, extending to the snout and then slightly closer to the tail base. The last unbranched ray of the dorsal fin is a hard, stout spine with serrated posterior margins, and soft, segmented at the tip. The anterior dorsal fin is ridged and arched, forming a distinct forehead protuberance where it meets the head. The base of the dorsal fin has a well-developed scale sheath with small scales. The pectoral fins are long, extending beyond the base of the pelvic fins; the pelvic fins are also long, extending to the anus. The anal fin is close to the anus. The tail is deeply forked.

The body is covered with large, overlapping scales, which are round and have a scale ratio of 1.0. The body length is 34 times the scale length. There are 21-23 short radial grooves on the body scales, distributed in the posterior region. The lateral line is straight. The lateral line scales are the same size as the scales on the upper and lower body. Above the lateral line, there are three rows of longitudinal ridges on the sides of the body, with wavy lines, extending from the gill cover to the base of the tail. The scales on the chest and abdomen are prominent. The gill rakers are short, flat, and sparsely arranged. The pharyngeal teeth are small with hooked tips.

They live in underground rivers 15 meters above the ground, where the water is deep and voluminous. When alive, their bodies are translucent, and the blood vessels in their tails are visible. After formalin fixation, their body color becomes orange-yellow, and their fins are light yellow.

This new species is similar to *Anchicyclocheilus halfibindus*, but can be distinguished by the following characteristics:

1. The new species has a prominent frontal protuberance, while the latter has no frontal protuberance.

2. The new species has 7 branched fin rays on its dorsal fin, while the latter has 9.

3. The new species has a narrower interorbital distance, and its head length is 5.3 (4.7–5.8) times the interorbital distance, while the latter is 3.4 (3.0–3.6) times.

The new species *Sinocyclocheilus yishanensis*, sp. nov., is described in Figure 3.

The holotype specimen number is 8311001, with a total length of 170 mm and a body length of 142 mm. It was collected in November 1983 from Lidong Reservoir in Yishan County, Guangxi.

Two paratype specimens, total length 131–135 mm, body length 106–112 mm, serial numbers 8903001–002, were collected in March 1989 from the holotype's origin. The type specimens are preserved at Yunnan Machinery Factory No. 3 Middle School.

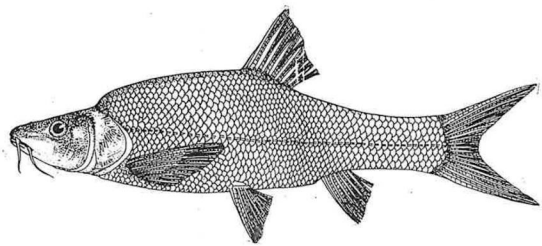

Figure 3. *Sinocyclocheilus yishanensis*, a new species of barb. nov.

fin rays 4-7; anal fin rays 3-5; pectoral fin rays 1-14~16; pelvic fin rays 1-8; caudal fin branched rays 16. Gill rakers 8-9. Pharyngeal teeth 3 rows 2, 3, 5/5, 3, 2. Lateral line scales $\frac{52\text{-}14\text{-}17}{8\sim11\text{-}V540}$

The body length is 3.7 (3.6–3.8) times the body depth and 3.7 (3.6–3.9) times the head length. The head length is 2.9 (2.8–3.0) times the snout length, 5.8 (5.6–6.0) times the eye diameter, 2.8 (2.5–3.1) times the interorbital distance, 1.8 (1.6–1.9) times the head width, and 1.1 (1.0–1.2) times the head depth. The caudal peduncle length is 1.7 (1.6–1.8) times the caudal peduncle depth. The body is elongated and laterally compressed. The head is slightly pointed, with a flat dorsal surface and nostrils located between the snout and eyes. The eyes are medium-sized and located on the upper side of the head. The mouth is terminal with an upward-sloping cleft. There are two pairs of barbels, which are relatively long. The rostral barbels extend posteriorly to the middle of the eye diameter or the anterior margin of the eye, while the maxillary barbels extend posteriorly to the posterior margin of the eye or the middle of the preopercle. The gill membrane connects to the isthmus below the vertical line at the posterior margin of the preopercle.

The dorsal fin originates slightly behind the pelvic fin origin, and the distance to the snout is greater than the distance to the tail base. The terminal unbranched fin rays are slender and soft, with no serrations on the posterior margin. The anterior dorsal fin is arched, and the forehead is also raised, slightly forming a protruding forehead. The pectoral fins are short, extending only slightly behind the pelvic fins (in juveniles, they may reach the pelvic fins). The pelvic fins are short, extending only slightly behind the anus. The anal fin is close to the anus, extending to about half the distance to the tail base. The caudal fin is deeply forked, with the longest outer fin ray approximately 2.5 times the length of the shortest inner fin ray.

The body is covered with scales in an imbricate pattern, oblong in shape, with a scale ratio of 2.1. The body length is 36 times the scale length. There are 23-25 radial grooves on the body scales, concentrated in the posterior region, sparse in the anterior region, and absent in the lateral region. The lateral line is straight, curving slightly downwards only above the pectoral fin. The lateral line scales are significantly larger than the body scales. The scales on the chest and abdomen are prominent. The gill rakers are short and sparsely arranged. The pharyngeal teeth have grooved ends.

After being fixed with formalin, the body color is pale yellow, with a darker back and a light yellow belly, and the fins are colorless.

The new species has a soft dorsal fin spine similar to that of *Sinocyclocheilus malacopterus* Chu et Cui, but it is distinctly different in the following ways:

1. The last branch of the dorsal fin has slender, smooth, and serrated rays without branching, while the latter has serrated rays.

2. The scales are large, oblong, with a scale ratio of 2.1, and the body length is 36 times the scale length. The scales of the latter are small, approximately oval, with a scale ratio of 0.75, and the body length is 197 times the scale length.

3. Few lateral line scales, 50–54: 70–80.

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A NEW GENUS AND THREE NEW SPECIES OF CYPRINIDAE FROM GUANGXI, CHINA

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Abstract

Anchicyclocheilus, gen. nov.

Type species: *Anchicyclocheilus hafibindus*, sp. nov.

The new genus differs fistinctly from Sinocyclocheilus Fang (1936) in the sama of scales lateral and body.

Anchicyclocheilus hafibindus, sp. nov. (fig 1)

Holotype No. 8903277970 total length 243mm, body length 190mm collected in March 1989, from Fengshan County, Guangxi Paratype 24 specimens total length 103–282mm. body length 77–220mm. collected with the holotype.

D.4,9; A.3,5; P.1, 14–16; V.1,8. Ph teeth 2.3.5 5.3.2. Gillrak 10–12. Scales 50–54.

Anchicydocheilus altishoulderus, sp.nov. (fig 2)

Holotype No. 89048002 8 total length 220mm, body length 158mm collected in April 1989 from Donlan County, Guangxi Paratype 12 specinens total length 143–228mm. body length