

Garra incisorbis, a new species of labeonine from Pearl River basin in Guangxi, China (Teleostei: Cyprinidae)

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Garra incisorbis, new species, is described from the Pearl River drainage, Guangxi, China. It has a median notch on posterior edge of the oral sucking disc shared only with *G. micropulvinus*. *Garra incisorbis* is distinguished by having 2–4 fleshy buds on each side of the central fleshy pad, a fan-shaped central fleshy pad, prominent papillae densely set over the central pad, and 14 circumpeduncular scale rows.

Introduction

The genus *Garra* is widely distributed in Asia and Africa (Zhang et al., 2000). Yang & Mayden (2010) considered that *Garra* was a monophyletic genus. Based on more samples, Zheng et al. (2010, 2012) and Yang et al. (2012) later proposed that *Garra* was not monophyletic and at least three lineages could be distinguished. Although the molecular results indicated that the systematics of *Garra* needed to be revised, the number of species and broad geographic distribution make it impossible to revise the whole genus of *Garra* right now. Awaiting a revision of the genus *Garra* as a whole, we retain the name *Garra* in its present usage.

Recently, a new species of *Garra* was collected from Sanchahe River, a tributary of the Zuojiang River, itself a tributary of the Pearl River, in Napo County, Guangxi Province, China. It is described herein.

Material and methods

Measurements were made with digital calipers point to point with an accuracy of 0.1 mm. Counts and measurements follow Kottelat (2001a) except that counts of fin rays follow Chu & Chen (1989), with the last two branched rays of dorsal and anal fins articulated on the same pterygiophore counted as one, and with the addition of the following measurements: pre-dorsal, pre-pectoral, pre-pelvic and pre-anal lengths were taken from tip of the snout to the origin of the dorsal, pectoral, pelvic and anal fins, respectively. Lateral line scale count includes the 2–3 scales on caudal-fin base. Examined specimens are in the collection of the Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming (KIZ). Abbreviations used in the text are: SL, standard length; HL, lateral head length.

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Fig. 1. a, *Garra incisorbis*, KIZ 2013003383, holotype, 85.2 mm SL; China: Guangxi: Zuojiang River; b, *G. micropulvinus*, KIZ 2008008604, 76.8 mm SL; China: Yunnan: Yuanjiang River.

Garra incisorbis, new species
(Fig. 1)

Holotype. KIZ 2013003383, 68.2 mm SL; China: Guangxi: Napo County: Zuojiang River, a tributary of Pearl River at Pohe village, 23°18'56" N 105°56'16" E; J.-H. Lan, 19 May 2013.

Paratypes. KIZ 2013003300–3304, 3384–3385, 7, 47.1–79.5 mm SL; collected with holotype.

Diagnosis. *Garra incisorbis* has a median notch on posterior edge of the oral sucking disc shared only with one congener: *G. micropulvinus*. It is distinguished from *G. micropulvinus* by having 2–4 (vs. 4–8) fleshy buds on each side of the central fleshy pad of the oral sucking disc, a fan-shaped central fleshy pad (vs. round), prominent (vs. indistinct or absent) papillae densely set (vs. sparsely) over the central pad, and 14 circumpeduncular scale rows (vs. 12).

Description. Morphometric data are listed in Table 1. Body rounded and caudal peduncle compressed, abdomen smooth. Highest point of body usually in front of dorsal-fin origin. Head rounded, and width greater than its depth. Snout moderately rounded, its length longer than post-orbital length. Distinct keratinized tubercles on

tip of snout. Eye moderately large, in posterior half of head, close to dorsal profile. Largest measured size 79.5 mm SL. 38–39 vertebrae (10 specimens).

Mouth inferior (Fig. 2). Rostral fold pendulous and fringed, densely covered with papillae. Upper lip vestigial. Middle of oral sucking disc with a relatively small and fan-shaped fleshy pad, densely covered with papillae. Central pad almost entirely surrounded by skin folds. Fleshy pad anteriorly with a crescentic fold, separated from pad by a deep and transverse groove. Central pad laterally and posteriorly with thin folds, laterally and posteriorly separated from oral sucking disc by a deep groove. Posterior groove discontinuous with a narrow interruption centrally. Crescentic fold densely covered by papillae, smaller than margin of lateral and posterior regions of disc. Two to four fleshy buds on each side of central fleshy pad. Posterior edge of oral sucking disc with a median notch. Lower jaw with a keratinized, blunt and straight edge. Two pairs of short barbels, rostral barbels longer than maxillary barbels, but shorter than eye diameter. Maxillary barbels slender and weak, at corners of mouth. Two rows of pharyngeal teeth, 3.5–5.3.

Dorsal fin with 4 soft unbranched rays and 8 branched rays, origin nearer to tip of snout than to caudal-fin base, concave. Anal fin with 3 unbranched and 5 branched rays, concave, tip not



Fig. 2. Ventral view of mouth of: **a**, *Garra incisorbis*, KIZ 2013003300, 78.7 mm SL; **b**, *G. micropulvinus*, KIZ 2008008604, 76.8 mm SL. Scale bars 5 mm.

reaching caudal-fin base, but longer than half of distance between anal and caudal-fin base. Pectoral fin with 12–14 branched rays, longer than half of distance between pectoral- and pelvic-fin origins. Pelvic fin with 8–9 branched rays, origin below or slightly posterior to dorsal-fin origin, tip reaching or nearly reaching anal-fin origin; longer than half of distance between pelvic- and anal-fin origins. Axillary pelvic lobe present. Anus very close to anal-fin origin. Distance from anus to anal fin less than eye diameter. Caudal fin with 9+8 branched rays, forked, upper lobe slightly longer than lower lobe.

Scales large, with scales of abdomen from

thorax to pectoral-fin base embedded under skin. Pre-dorsal midline scales smaller than flank scales, and not embedded under skin. Lateral line complete and straight, ending at caudal-fin base. 40–42 lateral line scales; 4–5 scale rows between lateral line and origin of dorsal-fin; 3 scale rows between lateral line and origin of pelvic-fin; 14 circumpeduncular scale rows.

Colouration. Body dark brown dorsally, light brown ventrally. A faint dark stripe along lateral line on flank, terminating in a large black blotch at caudal-fin base, its width equal to two scales. Each scale on back and flank with dark chro-



Fig. 3. *Garra incisorbis*, about 80 mm SL, alive; China: Guangxi: Zuojiang River; not preserved. (Photograph by J.-H. Lan).

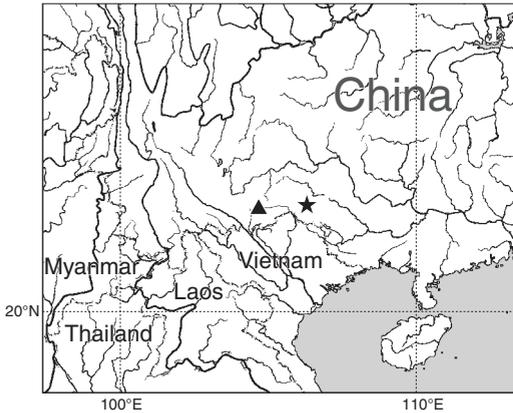


Fig. 4. Distribution of *Garra incisorbis* (★) and *G. micropulvinus* (▲).

matophores (Fig. 3). Back of pectoral and pelvic fins, dorsal, anal and caudal-fin rays black, fin membranes hyaline.

Distribution. *Garra incisorbis* is presently known only from the Sanchahe River, a small tributary of Zuojiang River, in Napo County, Guangxi Province, China, draining into the Pearl River (Fig. 4).

Etymology. From the Latin *incisus* (notched) and *orbis* (circle, disk), an allusion to posterior edge of the oral sucking disc with a median notch. A noun in apposition.

Discussion

Garra incisorbis shares the presence of a median notch on the posterior edge of the oral sucking disc with only one congener: *G. micropulvinus* (Zhou et al., 2005). *Garra incisorbis* is distinguished from *G. micropulvinus* by having 2–4 (vs. 4–8) fleshy buds on each side of the central fleshy pad of the sucking disc, a fan-shaped central fleshy pad (vs. round), prominent (vs. indistinct or absent) papillae densely set (vs. sparsely) over the central pad, more circumpeduncular scale rows (14 vs. 12), a shorter dorsal fin (22.7–26.0 % SL vs. 25.8–31.1), a shorter pelvic-fin (16.0–18.1 % SL vs. 18.4–24.2), and a shorter snout (39–48 % HL vs. 49–55). Besides the above species of *Garra*, *Sinigarra* and *Vinagarra* also share a median notch on the posterior edge of the oral sucking disc (Nguyen & Doan, 1969; Mai, 1978; Kottelat, 2001b; Li et al., 2008; Zhang & Zhou, 2012; Endruweit, 2014). *Garra incisorbis* is easily distinguished from

Table 1. Morphometric data for *Garra incisorbis* and *G. micropulvinus*.

	<i>G. incisorbis</i> n=8			<i>G. micropulvinus</i> n=15	
	holotype	range	mean±SD	range	mean±SD
In percent of standard length					
Body depth	19.1	16.4–22.3	19.8±2.19	15.6–21.9	19.8±1.55
Head length	24.8	22.5–25.4	24.0±1.16	24.1–29.8	25.8±1.35
Head depth	15.0	13.5–16.5	15.1±1.27	14.8–19.2	16.0±1.01
Head width	16.4	14.7–17.2	16.0±0.99	16.4–20.8	17.5±1.14
Dorsal-fin length	26.0	22.7–26.0	24.5±1.37	25.8–31.1	28.1±1.80
Pectoral-fin length	19.7	19.0–21.5	19.8±0.81	19.0–24.4	21.8±1.78
Pelvic-fin length	17.2	16.0–18.1	17.1±0.72	18.4–24.2	20.1±1.66
Anal-fin length	18.7	17.7–19.8	18.7±0.70	18.1–23.8	19.9±1.41
Caudal peduncle length	23.0	19.2–23.4	22.3±1.33	18.0–21.7	19.8±1.02
Caudal peduncle depth	10.6	10.3–11.9	11.2±0.52	9.4–11.4	10.6±0.51
Predorsal length	49.0	45.9–50.4	48.3±1.85	46.4–50.5	48.6±1.21
Prepectoral length	20.8	19.9–23.2	21.1±1.13	20.0–25.2	22.5±1.37
Prepelvic length	49.0	48.2–51.4	49.2±0.96	49.9–54.8	52.2±1.58
Preanal length	67.5	66.1–71.3	67.8±1.51	68.4–74.0	71.0±1.45
In percent of lateral head length					
Snout length	45	39–48	45±2.9	49–55	51±1.8
Head depth	61	59–66	63±2.8	59–65	62±2.0
Eye diameter	21	21–26	23±2.0	16–24	20±2.4
Interorbital width	42	42–45	43±1.2	40–49	44±2.3

the species of *Vinagarra* by having 2–4 fleshy buds on each side of the central fleshy pad (vs. absent), the central fleshy pad is separated from the posterior margin of the disc by a deep groove (vs. no groove), two pairs of barbels (vs. no barbels in *V. findolabium*, one pair in *V. elongata* and *V. tamduongensis*), a faint dark stripe along lateral line on flank, terminating into a large black blotch at caudal-fin base (vs. absent in *V. findolabium*), no blotch on the caudal fin (vs. an irregular dark patch, extending to half of length of caudal fin in *V. findolabium*); more lateral line scales (40–42 vs. 37–38 in *V. findolabium*, 38–39 in *V. laichowensis*, 35–38 in *V. tamduongensis*), fewer circumpeduncular scale rows (14 vs. 15–16 in *V. findolabium* and *V. laichowensis*). *Garra incisorbis* is distinguished from *Sinigarra napoensis* by the anterior margin of the oral sucking disc modified (vs. not) into an anteromedian crescentic fold, vestigial upper lip (vs. present), prominent (vs. indistinct or absent) papillae densely set (vs. sparsely) on rostral fold and lower lip, and the presence of 2–4 fleshy buds on each side of the central fleshy pad (vs. absence).

It is worth mentioning that *G. incisorbis* and *Sinigarra napoensis* were all collected from Napo County, Guangxi Province, but they are distributed in different drainages. There are two drainages in Napo County, one tributary to the Zuojiang River in Jingxi County, and the other tributary to the Red River in Vietnam. *Sinigarra napoensis* has been erroneously reported from Zuojiang River by Zhang & Zhou (2012). In fact it should be corrected as Red River in Vietnam after reconfirmation (Lan, pers. comm.).

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