

First record of *Garra mirofrontis* from Thailand (Actinopterygii: Cyprinidae)

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ABSTRACT: The present paper records *Garra mirofrontis* from Thailand for the first time. The species was collected in Huai Sai Marn stream, a small stream that flows to the Mekong River in Chiang Rai Province. The distribution of this species is therefore known to be extended 200 km southwestward from Yunnan, China.

KEY WORD: first record, *Garra mirofrontis*, Cyprinidae, Thailand.

INTRODUCTION

While conducting a survey of the ichthyofauna of northern Thailand during October 2000, the authors caught a cyprinid species previously unknown from Thai waters, *Garra mirofrontis*, by cast net in the Huai Sai Marn stream which is a small stream that flows to the Mekong river near Chiang Khong District, Chiang Rai Province (Fig. 1). The fish were caught about 200 m upstream from the mouth of the stream where the bottom was of sand and rock. The water was about 30 cm in depth, with high turbidity and a swift current. *Garra mirofrontis* (Chu and Cui, 1987) has been known only from Menglun and Mengyang in Yunnan, China (Zhang et al, 2000). Since this new locality record for this species represents the distribution range and its first record from Thailand, we provide herein a short description, color

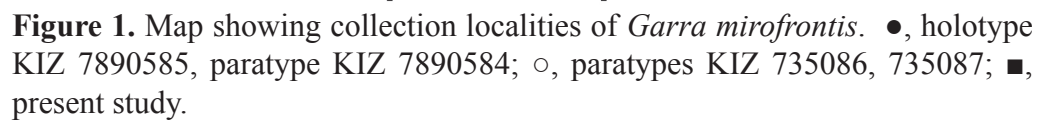
photos and some comments.

MATERIALS AND METHODS

The specimens are deposited in the fish collection of the Natural History Museum, National Science Museum, Thailand (THNHM F00139, 91.0 mm SL, F0010001-08, 8 specimens, 48.8-55.3 mm SL, F0010009-50, 42 specimens, 28.0-45.5 mm SL). Methods used for counting and measuring almost follow Kottelat (2001), except for sucking disc width and length, which follows Zhang and Chen (2002). Observations were made under binocular microscope. The measurements were carried out by using calipers, or a set dividers and steel rules to the nearest tenth of a millimeter. The other institutional abbreviation used to denote the location of specimens follows Eschmeyer (1998).

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RESULTS

Description: counts and proportional measurements were mostly taken from THNHM F00139, F0010001-08, except for the count of breeding tubercles on the snout of all specimens. General appearances on the left side of the body and dorsal and ventral aspects of the head are demonstrated in Figs. 2, 3a and 3b, respectively.

Dorsal rays iv,8½; anal rays iii,5½; pectoral rays i,14(3), i,15(4), i,16(2); pelvic rays ii,8; lateral line scales 32(2), 33(7); scales from lateral line to dorsal origin 4½(8), 5½(1); scales from lateral line to pelvic origin 3; scales from lateral line to anal origin 4½; predorsal scales 10; circumpeduncular scales 16; breeding tubercles on snout, female and juvenile specimens 0(29), male specimens 1(1), 2(5), 3(3), 4(3), 5(2), 6(5), 9(1), 11(1). Proportions as %standard length (mean ± SD): body depth 23.4-25.8 (24.4±1.0); head length 26.7-29.4 (28.1±1.0); head depth at occiput 17.6-19.5 (18.4±0.7); Head width 18.6-19.9 (19.1±0.4); dorsal fin length 22.2-25.6 (24.4±1.1); pectoral fin length 22.3-25.9 (24.5±1.4); pelvic fin length 20.1-23.4 (21.8±1.0); anal fin length 20.0-23.0 (21.3±1.1); length of caudal peduncle 15.7-18.9 (17.2±1.0); depth of caudal peduncle 13.2-14.6 (13.7±0.4); predorsal length 47.3-50.3 (48.7±0.8); prepectoral length 22.8-26.7 (25.1±1.3); prepelvic length 52.9-57.1 (55.4±1.5); preanal length 76.0-79.0 (77.6±1.1). Proportions as %head length (mean ± SD): snout length 47.5-

54.6 (50.9±2.2); eye diameter 19.6-24.1 (21.4±1.5); interorbital width 38.3-44.3 (41.0±2.0); sucking disc length 37.3-43.3 (41.4±2.3); sucking disc width 46.7-52.6 (50.1±2.0).

Body is robust and slightly elongate, cylindrical anteriorly, gradually compressed behind dorsal fin base. Dorsal profile of body is slightly convex and ventral surface slightly round from head to pelvic insertion. Head is somewhat moderated, with a slightly rounded interorbital space, depth less than its length. Snout is blunt and broadly rounded with shallow transverse frontal groove in front of nostril, forming a small forward pointed proboscis distally bifurcated with a large conical tubercle at each side of it. Sucking disc is well developed and round, length shorter than width. Eye is small, dorsolateral, closer to posterior margin of operculum than to tip of snout. Barbels, two pairs, rostral ones anteroventrally located and maxillary ones at corner of mouth. Dorsal fin is inserted anterior to pelvic-fin origin, distal margin slightly concave. Anal fin is long, almost extending to caudal fin base when fin is depressed. Pectoral fin is rhom-shaped, extending to dorsal origin when depressed fin. Pelvic fin is rounded, inserted vertically below base of 3-4 branched dorsal-fin rays; axillary scale long, extending beyond base of last pelvic-fin ray. Caudal fin is moderately forked. Scales are moderate. Large breeding tubercles developed on anterodorsal and lateral surfaces of snout in male

specimens.

Colouration in life. Dorsum, sides and head gray turning lighter below lateral line. Head ventrally, chest and abdomen whitish. A distinct dark mark at middle of operculum and a pale yellowish mark at upper edge of gill opening. Four distinctive longitudinal black bands on sides of caudal peduncle. A pale black blotch near base of caudal fin. Eyes silvery. Paired and anal fins basally yellowish and distally pinkish. An ovate yellowish spot at upper of pectoral fin base. Dorsal fin basally grayish and distally pinkish, with lower half of membranes between rays with dark pigmentation. Caudal fin uniformly grayish in all specimens except the largest specimen (THNHM F00139, 91.0 mm SL) having additional two terminal black stripes, one on second branched ray of upper lobe and another on third branched ray of lower lobe.

DISCUSSION

The original description of Chu and Cui (1987) was published in Chinese with a brief English abstract. The paragraphs of the morphological description of *G. mirofrontis* can be translated to English as follows:

Dorsal fin rays ii, 7-8; anal fin rays ii, 5; pectoral fin rays i, 14-15; pelvic fin rays i, 7-9; pharyngeal teeth 2, 3, 4-4, 3, 2; lateral line scales 31-32; scales from lateral line to dorsal origin 4; scales from lateral line to pelvic origin

3; predorsal scales 9; circumpeduncular scales 16.

Body length is 3.5-5.0 times the body height, 3.5-3.8 times the head length, 6.2-7.4 times the caudal peduncular length and 6.8-7.4 times in caudal peduncular depth. Head length is 1.9-2.0 times the snout length, 4.5-5.1 times the eye diameter, 2.1-2.5 times the interorbital width. Caudal peduncular length 1.0-1.1 times in its depth. Length of longest caudal ray 2.0-2.3 times in that of the central shortest caudal ray.

Body is slightly compressed. Chest and abdomen flat. Contour curvature of dorsal profile is greater than that of ventral surface. Head moderately large, width equal with depth. Dorsal portion of front head is a specific shape with a transverse groove right before eyes, forming a more or less pendulous frontal proboscis with a conical tubercle at each side of it. Snout is not marked off by a transverse groove and no clear demarcation between snout and its posterior portion. Snout and its posterolateral portion are smooth, without any denticles, even small ones. Nostril near the front of eyes, its distal tip without any tapered protrusion. Eyes is situated dorsally, rear half of head, close to dorsal profile of head. Interorbital space is slightly convex. Mouth is inferior when closed. Lower lip with sucking disc encompassed by fleshy skin. Jaws developed with horny edges. Width of sucking disc is greater than length. Posterior margin of gill opening with several links in ventral corner. Dor-

sal margin of gill opening is situated rear edge of eye, vertically above to isthmus. Two paired barbels, their length less than eye diameter.

Dorsal fin without spines, its origin in front of pelvic fin, with the second ray longest. Dorsal fin is shallow, with distal margin concave. Dorsal fin is distant from snout. Anal fin with the third ray longest, reaches the caudal fin base. Pectoral fin is flat and fan-shaped, its distal tip distant from pelvic fin 2-4 scales, ventral surface of anterior 4-5 rays with thick skin. Distance from pelvic origin to snout is greater than that to caudal fin base. Pelvic fin expands beyond anus, far from anal origin 1-2 scales. Caudal fin is forked, with distal tips angled.

Chest and belly scales are slightly smaller than lateral scales. Chest scales are less visually recognizable than belly scales. 2-3 scales from anus to anal origin.

Dorsal and lateral sides of body dark gray, ventral surface before anal fin milky white. Lateral side behind base of pelvic fin with 5-6 black and white longitudinal stripes. Color of fins is the same as the body. Base of dorsal fin with black spots. Ventral fins milky white, chest and abdomen are the same colour. Caudal fin base with an unclear black blotch.

This description agrees well with the specimens examined here, although some details in the description are ex-

pressed differently, probably due to erroneous observations. The important character in the description which makes the specimens recognisable as *G. mirofrontis* is the peculiar proboscis on the dorsal portion of the front of the head distally bifurcated with a large conical tubercle at each end. However, there are some differences between them which are worth noting. In the original description noted that the species has a snout and its posterolateral portion is without tubercles, even small ones. In our specimens, however, breeding tubercles are visible, with 1-11 on the dorsal surface of the snout in male specimens. Consequently, the variation of tuberculation on the snout in the species is assumed to be also caused by sexual dimorphism as well as in most cypriniforms (Fink and Fink, 1996). The colorations of the specimens is basically similar to the original description except a distinct dark mark at the middle of the operculum and a pale yellowish mark at the upper edge of the gill opening; the paired and anal fins basally yellowish and distally pinkish; dorsal fin basally grayish and distally pinkish; caudal fin of the largest specimen with additional two terminal black stripes. For the last color character, owing to inadequacy in number of large specimens, we are not able to examine variation of this character.

Garra mirofrontis differs from all other species of *Garra* in having the dorsal head forming a small forward pointed proboscis distally bifurcated with a large conical tubercle at each end (vs.

absence). In addition, the species can be further distinguished from the other species of the genus found in the Mekong River basin comprising *G. cambodgiensis*, *G. cyrano*, *G. fasciacauda*, *G. fuliginosa*, *G. imberba* and *G. theunensis* (see Rainboth, 1996; Kottelat, 1998, 2000, 2001, 2013; Zhang and Chen, 2002; Zhou *et al.*, 2005; Chen *et al.*, 2009) by the following combination of characters: lateral line scales 31-34 (vs. 48-50 in *G. theunensis*, 46-52 in *G. imberba*), predorsal scales 9-10 (vs. 15 in *G. imberba*), dorsal branched rays 7-8 ½ (vs. 9-9 ½ in *G. imberba*), two pairs barbels including rostral and maxillary barbels (vs. rostral barbel only in *G. cambodgiensis* and *G. fasciacauda*, no barbel in *G. imberba* and *G. theunensis*), the snout with a shallow transverse groove in front of nostril (vs. with a deeply transverse groove in *G. cyrano* and *G. fuliginosa*, no groove in *G. cambodgiensis*, *G. fasciacauda*, *G. imberba* and *G. theunensis*), no a black mid-lateral stripe running from behind gill openings to the base of caudal fin (vs. presence in *G. cambodgiensis* and *G. fasciacauda*).

Chu and Cui described *G. mirofrontis* on the basis of four specimens, the holotype KIZ 7890585 and a paratype KIZ 7890584 from Menglun Town (21°58'N, 101°20'E) close to a tributary of Luosuo River, two paratypes KIZ 735086, 735087 from Mengyang Town (22°05'N, 100°55'E) near a drainage of Mengyang River, both localities in Mekong River basin (Fig. 1). According to the present record

from the Mekong River in northern-Thailand, this may extend the range of this species considerably more south-westward, 200 km from Yunnan to the Mekong basin in Thailand, Myanmar and Laos.

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