



A new freshwater goby of *Rhinogobius lingtongyanensis* (Teleostei, Gobiidae) from the Dongshi river basin, Fujian Province, southeastern China

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Abstract

A new species of freshwater gobiid fish of genus *Rhinogobius* Gill, 1859, were collected from the upper tributary of Dongshi river basin of Janchou City in southern region of Fujian Province, China. *Rhinogobius lingtongyanensis* n. sp. can be well distinguished from other congeners by the following features: (1) fins: second dorsal fin rays I/8; anal fin rays I/7; pectoral fin rays modally 16; (2) squamation: longitudinal scale series 25-27 (modally 26); predorsal scales 3-6 (modally 5-6); (3) vertebral count 26; and (4) specific colouration in male: lateral body with 6-7 major patches of irregularly grayish to brownish black marks; cheek blackish brown with four oblique grayish black stripes; branchiostegal membrane grayish blue without any light spots; first dorsal fin broad grayish brown band in middle, outer margin pinkish orange; pectoral fin base with longitudinal deep brown bar in upper region; and caudal fin gray with four vertical rows of brown spots, its base with a short brownish black bar. It belongs to the non-diadromous, fluvial hill-stream species. A diagnostic key to all valid species from Fujian Province, China is also provided in this paper.

Key words: *Rhinogobius*, new species, Dongshi river basin, Fujian Province, fish taxonomy

INTRODUCTION

Gobioid fishes are the very important components of benthic freshwater fish fauna in East Asia. The freshwater goby, *Rhinogobius* Gill, 1859, is widely distributed on several islands of the Western Pacific including Japan (Akihito *et al.* 1984, 1993, 2002; Masuda *et al.*, 1989; Suzuki *et al.* 2011), Taiwan (Aonuma & Chen 1996; Chen & Shao 1996; Lee & Chang 1996; Chen *et al.* 1998; Chen & Fang 1999; Chen 2009), Hainan (Wu & Ni 1985; Chen *et al.* 2002; Chen & Miller 2013), and Philippines (Herre 1927), and also continental Asia, in Russia, Korea, China, Vietnam, Laos, Cambodia, and Thailand (Chu & Wu 1965; Zheng & Wu 1985; Chen & Miller 1998; Chen *et al.* 1999a-c, Chen & Kottelat 2000, 2003, 2005; Chen & Fang 2006; Huang & Chen 2007; Li *et al.* 2007; Chen *et al.* 2008; Chen & Miller 2008; Yang *et al.* 2008; Wu *et al.* 2009).

The life history of *Rhinogobius* species and non-diadromous, landlocked, fluvial species species (Mizuno 1960; Mizuno & Goto 1987; Iguchi & Mizuno 1991; Akihito *et al.* 1993, 2002) as well as lake-river migratory species and lentic species (Takahashi & Okazaki 2002).

At present, the author estimates that there are at least over 90 species are known in East and Southeast Asia and still some of them still need formal description (Chen & Kottelat 2003, 2005; Chen & Fang 2006; Chen *et al.* 2008; Yang *et al.* 2008; Chen & Miller 2013). In the Fujian province, one endemic, fluvial species, *R. xianshuiensis*, was firstly described from the upper tributary of the Mulan River basin by Chen *et al.* (1999b). Two more species were described from the upper tributaries of Hanjiang basin including both *R. changtinensis* and *R. ponkouensis* which discovered by Huang & Chen (2007). The fourth species was described from the hillstream of Minjiang basin, as *R. reticulatus* Li *et al.*, 2007. Later on, another endemic species, *R. longyanensis* Chen *et al.*, 2008 was described from the Julongjiang basin, middle region of the province. Two species including both *R. rubrolineatus* Chen & Miller, 2008 and *R. sagittus* Chen & Miller, 2008 were described from two different tributaries of the Minjiang basin.

The field trip was conducted in 2015 from several remote hill-streams of large independent river basins from southern region of Fujian Province and the survey of freshwater fish fauna had yielded several undescribed freshwater fishes including gobiid fishes. The undescribed species were found from the Dongshi river basin in this southern region of Fujian Province. The detailed formal description of this new species would be provided herein. A diagnostic key to all nominal species of *Rhinogobius* from Fujian Province, China is also provided.

MATERIALS AND METHODS

Type specimens of these new gobies were collected by hand-net and cast-net.

All counts and measurements were made from specimens finally preserved in 70% ethanol. Morphometric methods follow Miller (1988) and meristic methods follow Akihito *et al.* (1984) and Chen & Shao (1996) and Chen *et al.* (1999b). Terminology of cephalic sensory canals and free neuromast organs (sensory papillae) is from Wongrat & Miller (1991), based on Sanzo (1911).

Meristic abbreviations are as follows: A = anal fin; C = caudal fin; D1 = first dorsal fin; D2 = second dorsal fin; LR = longitudinal scale rows; P = pectoral fin; PreD = predorsal scales; SDP = scale series from origin of first dorsal fin to upper pectoral fin origin; TR = transverse scale series from second dorsal to anal fins; V = pelvic fin; VC = vertebral count. All fish lengths are expressed by standard length (SL).

The type specimens and comparative materials are deposited in following institutions: the Biodiversity Research Center, Academia Sinica, Taipei (ASIZP); the Biological Laboratory, Imperial Household, Tokyo (BLIH); Pisces collection of National Taiwan Ocean University, Keelung (NTOUP); and the Zoological Reference Collection of the Raffles Museum of Biodiversity Research, Singapore (ZRC). The comparative materials of congeneric species are listed in Appendix I.

TAXONOMY

Rhinogobius lingtongyanensis new species (Figures 1–3)

Materials examined

Holotype: NTOUP 2015-04-303, 30.8 mm SL, Field station no. 2015-03-6B, Shar village, Darshi township near Lingtongyan mountain, Dongshi basin, Shaoan County, Janchou City, Fujian province, China, Coll. I-S. Chen, 10 Mar. 2015.

Paratypes: NTOUP 2015-04-304, 4 specimens, 30.2–38.5 mm SL, other data same as holotype.

Diagnosis

Rhinogobius lingtongyanensis can be well distinguished from all other congeners by the unique combination of the following features: (1) fins: second dorsal fin rays I/8; anal fin rays I/7; pectoral fin rays modally 16; (2) squamation: longitudinal scale series 25–27 (modally 26); predorsal scales 3–6 (modally 5–6); (3) vertebral count 26; and (4) specific colouration: In male, lateral body with 6–7 major patches of irregularly grayish to brownish black marks; cheek blackish brown with four oblique grayish black stripes; branchiostegal membrane grayish blue without any light spots; first dorsal fin broad grayish brown band in middle, outer margin pinkish orange; pectoral fin base with longitudinal deep brown bar in upper region; and caudal fin gray with four vertical rows of brown spots, its base with a short brownish black bar.

Description

Body proportions in Table 1. Body cylindrical anteriorly, compressed posteriorly. Head rather large, somewhat depressed in male. Eye large, dorsolateral. Snout pointed. Cheek somewhat fleshy in male. Lips thick. Mouth oblique, rear edge not extending beyond vertical of anterior margin of eye. Both jaws with 3–4 rows of conical teeth, outer jaws enlarged. Tongue margin rounded. Anterior nostril in short tube and posterior nostril round. Gill opening restricted, extending ventrally near the vertical midline of opercle. Vertebral count 11 + 15 = 26 (in all 5 specimens).

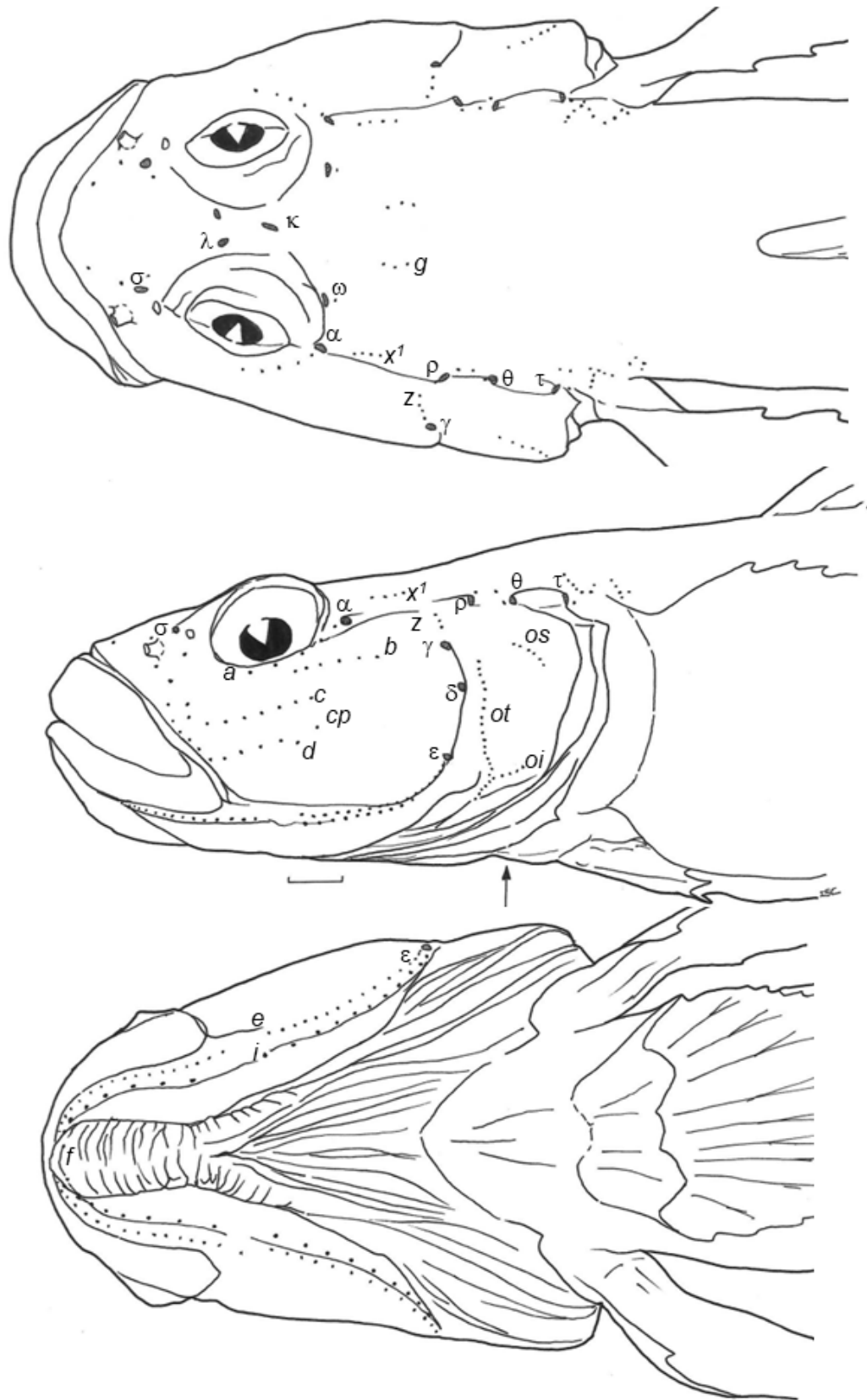


FIGURE 1. Head lateral-line system of *Rhinogobius lingtongyanensis*, new species, male, holotype, 30.8 mm SL, the Dongshi river basin, Fujian Province, PR China.

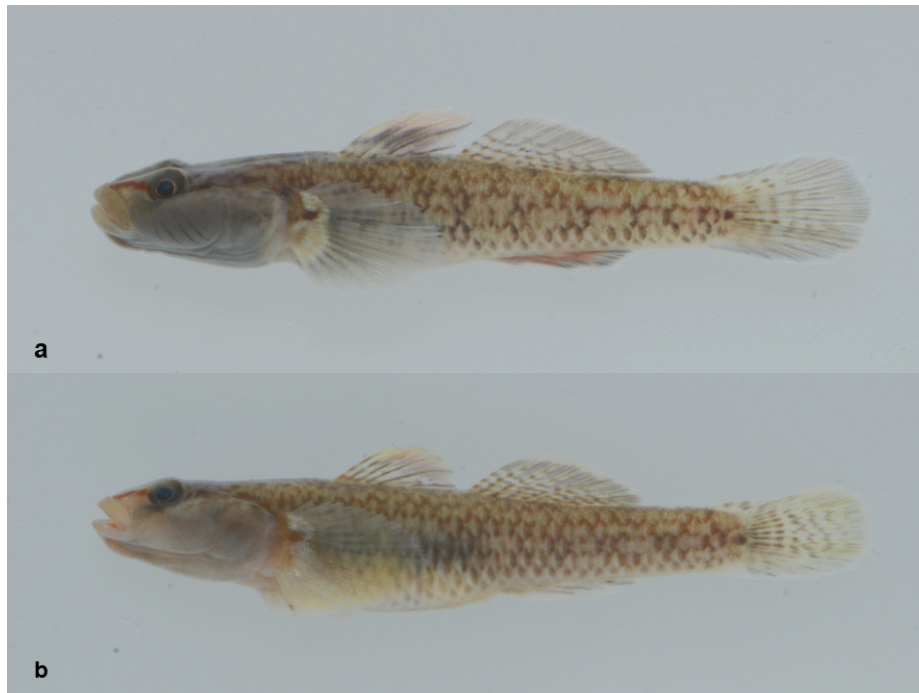


FIGURE 2. *Rhinogobius lingtongyanensis*, n. sp., **a**, male, holotype, 30.8 mm SL; **b**, female, paratype, 38.5 mm SL, the Dongshi river basin, Fujian Province, PR China.



FIGURE 3. Ventral view of *Rhinogobius lingtongyanensis*, n. sp., with spotless branchiostegal membrane in male, holotype, 30.8 mm SL, the Dongshi river basin, Fujian Province, PR China.

Fins. D1 VI, D2 I/8; A I/7; P 16-17 (modally 17); V I/5+I/5 (distribution frequency in Table 1). D1 high and 3rd and 4th rays longest, with rear tip extending to vertical line of second branched ray of D2 in male, but not reaching origin of D2 in female. The rear tip of D2 and A rays while depressed fall well short of procurrent rays of C. P moderate large and oblong, its rear tip extending just to vertical line of anus in male, but not reaching this line in female. V rounded, spinous rays with somewhat pointed membrane lobe. C elliptical, rear edge rounded.

Scales. Body with large ctenoid scales, anterior predorsal area naked; posterior predorsal area and belly cycloid. LR 25-27 (modally 26); TR 8-9 (modally 8); PreD 3-6 (usually 5-6); and SDP 7-8 (modally 7). Head and prepelvic region naked. Anterior edge of midperdorsal squamation extending about to vertical of upper end gill-opening.

TABLE 1. Morphometry of *Rhinogobius lingtongyanensis* n. sp. from the Dongshi river basin, Fujian Province, China

Type	holotype	paratypes
No. of samples	1	4
Sex	M	F
standard length (mm)	30.8	30.2-38.5
% in SL		
Head length	32.6	30.2-38.5 (29.6)
Predorsal length	40.3	37.6-40.5 (38.8)
Snout to 2nd dorsal fin origin	57.2	56.8-58.1 (57.6)
Snout to anal fin origin	60.7	62.6-64.7 (63.9)
Snout to anus	57.2	57.9-60.0 (58.9)
Prepelvic length	35.2	29.3-32.3 (31.0)
Caudel peduncle length	21.8	21.9-24.8 (23.5)
Caudal peduncle depth	11.2	10.9-11.5 (11.3)
First dorsal fin base	17.1	17.1-20.3 (18.7)
Second dorsal fin base	24.7	20.1-22.2 (20.9)
Anal fin base	18.6	15.2-17.3 (16.0)
Caudal fin length	28.3	25.4-26.7 (26.2)
Pectoral fin length	25.4	23.0-24.5 (23.8)
Pelvic fin length	18.3	16.1-19.1 (18.1)
Body depth of pelvic fin origin	16.1	15.2-15.9 (15.6)
Body depth of anal fin origin	15.5	15.1-15.7 (15.4)
Body width of anal fin origin	11.0	10.9-11.8 (11.4)
Pelvic fin origin to anus	26.3	27.8-30.7 (29.4)
% in HL		
Snout length	34.9	33.8-35.5 (34.5)
Eye diameter	21.1	19.3-21.0 (20.0)
Postorbital length	52.4	49.7-53.7 (51.1)
Cheek depth	26.7	21.3-29.7 (25.5)
Head width in upper gill-opening	48.9	49.1-52.7 (50.2)
Head width in maximum	68.7	68.7-74.6 (70.8)
Fleshy interorbital width	22.5	21.6-23.0 (22.3)
Bony interorbital width	9.0	8.1-10.2 (9.3)
Lower jaw length	39.0	30.2-34.6 (33.0)
% in Caudel peduncle length		
Caudal peduncle depth	51.4	44.1-52.3 (48.3)

TABLE 2. Comparison of frequency distribution of fin-ray counts of *Rhinogobius* species from Fujian Province, China

	D1			D2 rays					A rays			P rays									
	V	VI	VII	M	6	7	8	9	M	6	7	8	9	M	15	16	17	18	19	20	M
<i>Rhinogobius lingtongyanensis</i> n. sp.	-	5	-	6.0	-	-	5	-	8.0	-	5	-	-	7.0	3	7	-	-	-	-	15.7
<i>Rhinogobius changtinensis</i>	-	9	-	6.0	-	2	7	-	7.8	-	2	7	-	7.7	2	11	-	-	-	-	15.8
<i>Rhinogobius leavelli</i>	-	5	-	6.0	-	-	4	1	8.2	-	-	4	1	8.2	-	-	-	1	4	2	19.1
<i>Rhinogobius longyanensis</i>	-	10	-	6.0	-	-	10	-	8.0	1	4	5	-	7.4	-	-	14	4	-	-	17.2
<i>Rhinogobius ponkouensis</i>	-	5	1	6.2	-	-	6	-	8.0	-	5	1	-	7.2	-	6	4	-	-	-	16.4
<i>Rhinogobius reticulatus</i>	-	13	-	6.0	-	-	7	6	8.5	-	9	4	-	7.3	-	5	7	-	-	-	16.5
<i>Rhinogobius rubrolineatus</i>	-	6	-	6.0	-	-	6	-	8.0	-	6	-	-	7.0	-	1	6	1	-	-	17.0
<i>Rhinogobius sagittus</i>	-	4	-	6.0	-	-	4	-	8.0	-	4	-	-	7.0	-	3	2	-	-	-	16.4
<i>Rhinogobius xianshuiensis</i>	4	16	-	5.8	-	-	18	2	8.1	5	14	1	-	6.8	10	10	-	-	-	-	15.5

TABLE 3. Comparison of frequency distribution of scale and vertebral counts of *Rhinogobius* species from Fujian Province, China

	LR													TR													PreD												
	25	26	27	28	29	30	31	32	33	34	M	7	8	9	10	M	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	M					
<i>Rhinogobius lingtongyanensis</i>	2	5	3	-	-	-	-	-	-	-	26.1	-	4	1	-	8.2	-	-	-	1	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	5.0			
<i>n. sp.</i>																																							
<i>Rhinogobius changtinentensis</i>	-	-	-	2	11	5	-	-	-	-	29.2	2	9	-	-	7.8	1	6	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2			
<i>Rhinogobius leavelli</i>	-	-	-	-	-	-	-	2	5	1	33.1	-	-	-	-	5	10.0	-	-	-	-	-	-	-	-	-	-	1	1	-	1	-	1	-	1	12.8			
<i>Rhinogobius longyanensis</i>	-	-	-	-	-	10	8	2	-	-	30.6	1	8	1	-	8.0	-	-	-	-	-	-	1	8	1	-	-	-	-	-	-	-	-	-	-	7.0			
<i>Rhinogobius ponkouensis</i>	-	-	-	-	-	-	-	4	5	1	32.9	1	5	-	-	7.8	-	-	-	-	5	1	-	-	-	-	-	-	-	-	-	-	-	-	-	4.2			
<i>Rhinogobius reticulatus</i>	-	-	6	5	2	-	-	-	-	-	27.7	-	-	-	13	9.0	-	-	-	2	4	3	4	-	-	-	-	-	-	-	-	-	-	-	-	4.7			
<i>Rhinogobius rubrolineatus</i>	-	-	-	2	7	3	-	-	-	-	29.1	-	-	-	4	9.3	-	-	-	1	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	4.0			
<i>Rhinogobius sagittus</i>	-	-	-	-	1	5	2	-	-	-	30.1	-	-	-	2	9.5	-	-	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5			
<i>Rhinogobius xianshuiensis</i>	-	-	-	-	3	9	7	1	-	-	30.3	-	-	-	18	9.1	-	-	-	1	-	8	9	2	-	-	-	-	-	-	-	-	-	-	-	5.6			

	SDP													VC												
	6	7	8	9	M	26	27	28	M																	
<i>Rhinogobius lingtongyanensis n. sp.</i>	-	4	1	-	7.2	5	-	-	26.0																	
<i>Rhinogobius changtinentensis</i>	-	-	7	2	8.2	-	8	-	27.0																	
<i>Rhinogobius leavelli</i>	-	-	2	3	8.6	5	-	-	26.0																	
<i>Rhinogobius longyanensis</i>	-	9	1	-	7.1	-	10	-	27.0																	
<i>Rhinogobius ponkouensis</i>	-	-	5	1	8.2	-	-	6	28.0																	
<i>Rhinogobius reticulatus</i>	-	8	5	-	7.4	7	6	-	26.5																	
<i>Rhinogobius rubrolineatus</i>	6	-	-	-	6.0	6	-	-	26.0																	
<i>Rhinogobius sagittus</i>	1	3	-	-	6.8	4	-	-	26.0																	
<i>Rhinogobius xianshuiensis</i>	-	1	17	1	8.0	-	20	-	27.0																	

Head lateral-line system

Canals: Nasal extension of anterior oculoscapular canal with terminal pore σ located in between anterior and posterior nostrils. The gap between two oculoscapular canals is very narrow and less than a half length of posterior oculoscapular canal. Anterior interorbital sections of oculoscapular canal with paired pore λ . A single pore κ in rear of interorbital region. Pore ω present near dorsal side of posterior to eye. Lateral section of anterior oculoscapular canal with pore α and terminal pore ρ . Posterior oculoscapular canal with two terminal pores θ and τ . Preopercular canal with three pores γ , δ and ϵ .

Sensory papillae: Row *a* extending to vertical midline of orbit. Row *b* longer than a half of orbit. Rows *c*, *d* longer. A single *cp* papilla. Row *f* paired. Anterior edge of row *oi* connected to lower region of row *ot*.

Colouration of fresh preserved material

Body light brown to yellowish brown. Side of body with 6-7 major patches of irregularly grayish to brownish black marks in male, with distal deep brown edge on scale pockets in female. Dorsal region of body with about 5 major grayish blotches. Caudal fin base with a short deep brown bar. Head blackish brown to yellowish brown. Dorsal side of snout with a pair of bright red stripes united to snout tip, another gray stripe or bar below eye. Lips and dorsal snout yellowish orange to orange brown. Cheek blackish brown with four oblique grayish black stripes in male but yellowish brown spotless in female. Branchiostegal membrane grayish blue without any light spots in male, and pale brown and also spotless in female.

First dorsal fin broad grayish brown band wider and darkening in middle, outer margin orange in male, but translucent with brown spinous rays and distal orange yellow mark in female. Second dorsal fin with grayish black background and three to four basal longitudinal rows of deep brown spots in male; but translucent or gray with four to five basal longitudinal deep brown spots and grayish black margin in female. Anal fin orange with distal gray to black margin in male, but translucent with deep brown lines in female. Pectoral fin gray with basal creamy yellow band and its base with longitudinal deep brown bar in upper part and a vertical light brown bar in lower part in male; but translucent and its base with longitudinal deep brown mark and a vertical light brown bar in female. Caudal fin gray with four vertical rows of brown spots in male, but translucent or pale with 4-5 vertical rows of brown spots in female. Pelvic fin gray in male; but whitish in female.

Etymology.

The specific name, *lingtongyanensis*, refers to the collecting type locality: the small hill-stream in Dongshi river basin near the “Lingtongyan” mountain, Darshi township, Shaoan County, Janchou City, Fujian Province, China.

Distribution.

This new species is, thus far, only found in the small tributary of Dongshi basin near Shar village near the “Lingtongyan” mountain, Darshi township, Shaoan County, Janchou City, Fujian, China. It occurs in shallow-water riffles and front region of pools (depth 20-50 cm depth) with substratum of medium to large pebbles with moderate to fast flowing water.

Remarks.

The new species, *R. lingtongyanensis*, is rather similar to *R. longyanensis* Chen *et al.* 2008 than any other 6 congeneric fluvial species in Fujian Province by overall colouration pattern in male. However, *R. lingtongyanensis* can be well distinguished from *R. longyanensis* by the following features: (1) pectoral fin rays: 15-16 (modally 16) vs. 17-18 (modally 17); (2) longitudinal scale rows: 25-27 (modally 25) vs. 30-32 (modally 30); (3) vertebral count: 26 vs. 27; (4) cheek pattern: at least four main oblique black lines vs. three oblique black line in male; and (5) branchiostegal membrane: spotless vs. several red spots in male.

Diagnostic key to all nominal species of *Rhinogobius* with longitudinal infraorbital papillae pattern from Fujian Province, PR China

- 1a Pectoral fin rays modally 19-20, predorsal scales 10-16 - *R. leavelli* (All main basins)
- 1b Pectoral fin rays no more than 18; predorsal scales no more than 10 2
- 2a Cheek with many rounded spots, branchiostegal membrane with several parallel red stripes in male
. *R. reticulatus* (Minjiang basin)

2b	Cheek and branchiostegal membrane without such marks	3
3a	Pore ω 1 present, pectoral fin base with reticulated orange pattern in male	<i>R. xianshuiensis</i> (Mulan river basin)
3b	Pore ω 1 absent, pectoral fin base without such pattern in male	4
4a	Infraorbital stripe long and well extending downward to rear edge of both jaws or ventral edge of cheek in male	5
4b	Infraorbital stripe/mark absent or short and not extending ventrally to rear edge of both jaws in male	7
5a	Cheek with a conspicuous arrow-shape, red to reddish brown infraorbital mark always following by 4 oblique dark stripes in male	<i>R. sagittus</i> (Minjian basin)
5b	Cheek with 2-3 oblique dark stripes in male	6
6a	Pectoral fin rays modally 17; 27 vertebrae; cheek with 3 thin black lines and blackish brown infraorbital stripe in male	<i>R. changtingensis</i> (Hanjiang basin)
6b	Pectoral fin rays modally 16; 26 vertebrae; cheek with 2 thin brown lines and bright red infraorbital stripe in male	<i>R. rubrolineatus</i> (Minjiang basin)
7a	Longitudinal scale rows 25-27; 26 vertebrae; branchiostegal membrane spotless in male	<i>R. longtongyanensis</i> n. sp. (Dongshi river basin)
7b	Longitudinal scale rows 28-34; 27-28 vertebrae; branchiostegal membrane with orange to red rounded spots in male	8
8a	28 vertebrae; cheek modally with 2 oblique grayish brown stripes	<i>R. ponkouensis</i> (Hanjiang basin)
8b	27 vertebrae; cheek stripes 3	<i>R. longyanensis</i> (Julongjiang basin)

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Appendix I

Comparative material

Rhinogobius leavelli (Herre, 1935)

NTOUP 2006-4-470, 2 specimens, 28.6–30.9 mm SL, Mei-Chou City, Hanjiang basin, Guangdong Province, China, Coll. J.H. Wu & J.W. Wang, April, 2004. NTOUP 2006-4-271, 2 specimens, 50.8–51.1 mm SL, Mu-Loon, Lieojiang, Xijiang, Pearl River basin, Guangxi Province, China, Coll. B. Chen *et al.*, Oct. 2002.

Rhinogobius xianshuiensis Chen *et al.*, 1999

Holotype: ASIZP057440, 29.6 mm SL, small unnamed tributary of Xianshui Brook, about 25 km north of Xianyou County, Fujian Province, China, Coll. I-S. Chen, 19 Aug. 1994.

Paratypes: ASIZP057441, 17 specimens, 20.7–35.0 mm SL, data same as holotype above. ASIZP057442, 2 specimens, 26.6–30.5 mm SL, 20 Aug. 1994, other data same as holotype.

Rhinogobius ponkouensis Huang & Chen, 2007

Holotype: ZRC-50526, 30.2 mm SL, Pon-Kou County, Hanjiang basin, Fujian Province, China; Coll. I-S. Chen, 10 Spt. 2002.

Paratypes: NTOUP 2005-7-010, 4 specimens, 28.7–30.3 mm SL, all remaining data same as holotype above. ASIZP 0066341, 26.2 mm SL, all remaining data same as holotype above.

Rhinogobius changtingensis Huang & Chen, 2007

Holotype: ZRC-50527, 34.1 mm SL, small hill-stream near the free way terminal, tributary near Chang-Ting County, Fujian Province, Hanjiang basin, China, Coll. I-S. Chen, 10 Spt. 2002.

Paratypes: NTOUP 2005-7-011, 7 specimens, 22.4–26.3 mm SL, all other data same as holotype above. ASIZP0066340, 24.8 mm SL, all other data same as holotype above.

Rhinogobius longyanensis Chen *et al.*, 2008

Holotype: NTOUP 2006-3-465, 40.7 mm SL, a small tributary of Long-Chuang River in the Julongjiang basin, Dong-Hsiao, Long-yan City, Fujian Province, China, Coll. I-S. Chen, 10 Spt. 2002.

Paratypes: ASIZP0067105, 2 specimens, 29.3–35.1 mm SL, collected with holotype. BLIH 20020548, 42.5 mm SL, collected with holotype. NTOUP 2006-3-467, 5 specimens, 28.7–35.5 mm SL, a small tributary of Shi-Nan River in the Julongjiang basin, Shi-Nan, Jarn-Ping, Longyan City, Fujian Province, China, Coll. I-S. Chen, 15 Spt. 2002.

***Rhinogobius rubrolineatus* Chen & Miller, 2008**

Holotype: NTOUP 2008-06-390, 33.7 mm SL, Wen-choan-shi in Minjiang basin, Ju-shi, Lian-chen County, Longyan City, Fujian Province, China, Coll. I-S. Chen, 24 June 2006.

Paratypes: NTOUP 2008-06-391, 5 specimens, 29.5–42.3 mm SL, all other data same as holotype.

***Rhinogobius sagittus* Chen & Miller, 2008**

Holotype: NTOUP 2008-06-392, 35.1 mm SL, Nan-Shi, Minjiang basin, Shi-yang-jen, Yun-an City, Fujian Province, China, Coll. I-S. Chen, 25 June 2006.

Paratypes: NTOUP 2008-06-393, 3 specimens, 30.5–35.4 mm SL, other data same as holotype.

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