

A Taxonomic Review of the Gobiid Fish Genus *Rhinogobius* Gill, 1859, from Taiwan, with Descriptions of Three New Species

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I-Shiung Chen and Kwang-Tsao Shao (1996) A taxonomic review of the gobiid fish genus *Rhinogobius* Gill, 1859, from Taiwan, with descriptions of three new species. *Zoological Studies* 35(3): 200-214. The taxonomic status of the freshwater gobiid genus *Rhinogobius*, specimens of which were collected throughout Taiwan is reviewed. Nine species of this genus are recognized which can be assigned into 2 species complexes. The *R. giurinus* complex has only a single species, *R. giurinus* (Rutter, 1897); and the *R. brunneus* complex contains the remaining 8 species: 5 valid nominal species (*R. candidianus* [Regan 1908]; *R. nagoyae formosanus* Oshima, 1919; *R. rubromaculatus* Lee & Chang, 1996; *R. gigas* Aonuma & Chen, 1996, and *R. nantaisensis* Aonuma & Chen, 1996), and 3 new species, *R. delicatus*, *R. maculafasciatus*, and *R. henchuenensis*. These species can be distinguished by the combination of fin ray count, vertebrae count, scalation, color pattern, habitat, and distribution. The 3 new species are described here with a key and specimen photos, as well as with morphological comparisons of all species of this genus distributed in Taiwan.

Key words: Freshwater gobies, Diadromous fish, Fish taxonomy, Fish fauna, Gobiidae.

Gobioid fishes belong to the Gobioidae of Perciformes and include 8 families, Rhyacichthyidae, Gobiidae, Eleotridae, Gobioidae, Trypauchenidae, Microdesmidae, Kraemeriidae, and Xenisthmidae, comprised of at least 270 genera and 2 000 species (Birdsong et al. 1988, Hoese 1993). But recently Nelson (1994) combined the Gobioidae and Trypauchenidae into the Gobiidae and added the Odontobutidae and Schindleriidae into the Gobioidae in his 3rd edition of "Fishes of the World". The Gobiidae comprises the most species-rich family in the Gobioidae. Of the freshwater gobies, the genus *Rhinogobius* is a dominant group of benthic fishes in most drainages of East Asia, including China, Korea, Japan, Okinawa, and Taiwan, as well as some other regions in south-eastern Asia, such as the Philippines, Vietnam, and Thailand.

Rhinogobius was first named by Gill in 1859 from the type species of *R. similis* from Japan. The life histories of members of this genus in-

dicate that it contains both diadromous and land-locked types (Mizuno 1960, Mizuno and Goto 1987, Iguchi and Mizuno 1990, Chen 1994). In China, there are at least 17 nominal species of *Rhinogobius* but this genus was previously treated as *Ctenogobius* (Chu and Wu 1965, Chen 1994, Prof. HL Wu pers. comm.; unreferenced, see "Acknowledgements"). In the Japanese Archipelagoes, there are about 10 coloration types of the *R. brunneus* (Temminck and Schlegel 1945) complex (Masuda et al. 1984, Mizuno and Goto 1987, Kawanabe and Mizuno 1989, Aonuma 1992, Chen 1994), 1 land-locked species *R. flumineus* (Mizuno, 1960), and *R. giurinus* (Rutter 1897), a widely distributed species in East Asia. Recently most similar coloration types of the *R. brunneus* complex in Japan have been regarded as different species based on additional ecological evidence (Mizuno et al. 1979, Mizuno and Goto 1987) and isozyme analysis (Masuda et al. 1989).

In Taiwan, 2 species of *Rhinogobius* were

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recognized previously: *R. brunneus* and *R. giurinus* (Chen and Yu 1986, Tzeng 1986). Aonuma (1992) mentioned 4 unidentified species of this genus from Taiwan. Of these, 1 species, *R. rubromaculatus*, has been described by Lee and Chang (1996), 2 were treated as new species, *R. gigas* and *R. nantaiensis*, by Aonuma and Chen (1996) based on their theses (Aonuma 1992, Chen 1994), while the last one should be a variation of *R. candidianus* (Regan 1908). However, after our intensive collections and reexamination of all specimens from many main drainages of Taiwan during the last 5 years, we believe that the *R. brunneus* complex in Taiwan should include at least 8 species based on evidences from both morphological and molecular data (mtDNA sequence), as well as on some ecological considerations (Chen 1994). In addition to the foregoing 3 recently described species, namely *R. rubromaculatus*, *R. gigas*, and *R. nantaiensis*, herein we also redescribe the other 3 early nominal species, *R. giurinus*, *R. candidianus*, and *R. nagoyae formosanus*. Three additional new species are described in the present paper for a synopsis of all *Rhinogobius* species from Taiwan.

MATERIALS AND METHODS

All specimens were collected by the senior author using either a handnet during snorkeling, a cast net, or gill-net, or by electric-shock. Figure 1 shows the sampling locations, and Table 1 indicates occurrence or absence at these locations of all *Rhinogobius* species in Taiwan. The specimens of *R. rubromaculatus*, *R. gigas*, and *R. nantaiensis* used for interspecific comparisons include the following: *R. rubromaculatus*: ASIZP-057271, ASIZP-057433, ASIZP-057434, ASIZP-057435, ASIZP-057436, ASIZP-057437, and ASIZP-057438; *R. gigas*: ASIZP-057224, ASIZP-057225, ASIZP-057226, and NMMBP-00302; *R. nantaiensis*: ASIZP-057237, ASIZP-057238, ASIZP-057239, and ASIZP-057240. The specimens of the other 6 species used in the present study are described in the following section. All counts and measurements were made from specimens preserved in 10% formalin. Descriptions of coloration patterns were all based on fresh specimens. Names of the pores of the cephalic sensory system and meristic characters follow the methods of Akihito in Masuda et al. (1984). Morphometric characters generally follow Hubbs and Lagler (1958). Additional characters adopted include: (1) scales between origin

of the 1st dorsal and pectoral (SP1D1) counted from upper origin of pectoral to origin of 1st dorsal; and (2) postorbital length (PoL) measured from postorbital margin of eye to upper end of operculum. The pterygiophore formula and vertebrate number were determined from X-ray photographs. The pterygiophore formula follows Birdsong et al. (1988). All specimens collected from Taiwan are now deposited at the Institute of Zoology, Academia Sinica (ASIZP) or the Preparatory Office, National Museum of Marine Biology/Aquarium (NMMBP).

RESULTS AND DISCUSSION

Genus *Rhinogobius* Gill, 1859

Rhinogobius Gill, 1859: 145, (Type species, *Rhinogobius similis* Gill, 1859).

D V-VII-1, 7-10; A I, 7-10; P₁ 14-23; P₂ I, 5; LR 27-40; TR 9-14; V 25-30.

Body elongated, compressed posteriorly. Head depressed, snout tip obtuse. Eyes high. Snout, cheek and operculum naked. Cheek with 2 rows of mainly horizontally distributed sensory papillae. Predorsal with or without scales. Side of body with ctenoid scales. Gill opening extending to the vertical of midline of operculum. Pelvic fin as a rounded sucking disc with frenum and connecting membrane. Pectoral and caudal fins rounded or elliptical.

Key to species complex of the genus *Rhinogobius* from Taiwan

- 1a. Predorsal with large ctenoid scales, scaled area extending almost to the posterior margin of eyes (Fig. 2a); cheek with several short vertical rows of sensory papillae (Fig. 3a) *R. giurinus* complex
- 1b. Predorsal naked, or with small cycloid scales, scaled area never extending beyond the vertical of posterior margin of preoperculum (Fig. 2b, c); cheek with 2 mainly horizontal rows of sensory papillae (Fig. 3b) *R. brunneus* complex

Rhinogobius giurinus complex *Rhinogobius giurinus* (Rutter, 1897) (Fig. 4)

Gobius giurinus Rutter 1897: 86 (San-Tou (Swatow), Guangdong, China); Tomiyama 1936: 68.

Ctenogobius hadropterus: Jordan and Snyder 1901: 60, Fig. 7 (Hizen, Nagasaki, Japan).

Ctenogobius platycephalus: Jordan and Evermann 1903: 362.

Rhinogobius giurinus: Oshima 1919: 297; Masuda et al. 1984: 269, pl. 248; Tzeng 1986; Mizuno in Kawanabe and Mizuno 1989: 585; Chen 1994: 15, pl. I A.

Material: 3 specimens, NMMBP-00308, 40.0-

47.1 mm SL, Aug. 15, 1975, Katuura-gawa River, Oshima Is., Kagoshima Pref., Japan; 3 specimens, ASIZP-057219, 62.8-69.8 mm SL, Jun. 20, 1990, Peishi Brook, Taipei County; 4 specimens, ASIZP-057220, 31.6-47.9 mm SL, Apr. 3, 1993, Liyu Lake of Hualien River, Hualien County; 5 specimens;

NMMBP-00309, 42.7-53.2 mm SL, Jan. 15, 1994, Tsengwen River, Chiayi County; 5 specimens, NMMBP-00303, 47.6-55.7 mm SL, Feb. 20, 1994, Joshuei River, Nantou County.

Diagnostic characters: D VI-1,8; P1 19-20; P2 1,5; LR 29-32 (usually 30-31); TR 9-10 (10); Pred

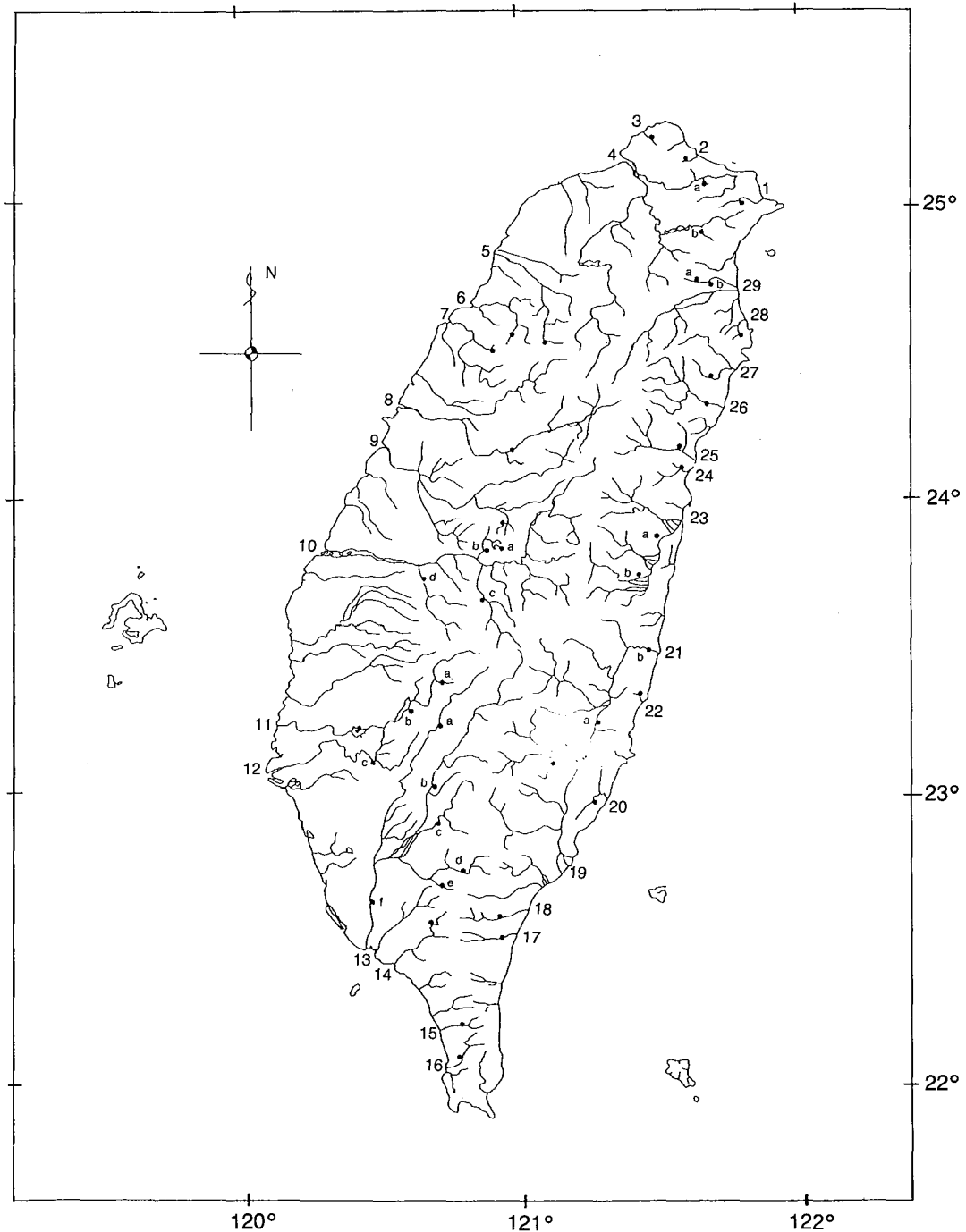


Fig. 1. The sampling locations of *Rhinogobius* from Taiwan. (The names of locations are shown in Table 1.).

Table 1. Distribution of *Rhinogobius* species in Taiwan

No.	River	Local Branch	<i>R. giurinus</i>	<i>R. candidianus</i>	<i>R. nagoyae</i>	<i>R. rubromaculatus</i>	<i>R. gigas</i>	<i>R. delicatus</i>	<i>R. maculafaciatus</i>	<i>R. nantaiensis</i>	<i>R. henchuenensis</i>
1	Shuanshi R.		•	•	•						
2	Marlian R.			•	•						
3	Parlian R.		•	•		•					
4	Tamshuei R.	a. Keelung R.	•	•		•					
		b. Peishi B.	•	•	•						
5	Tochen R.			•							
6	Holong R.			•		•					
7	Jongkang R.		•	•		•					
8	Darchia R.		•	•		•					
9	Tatu R.	Nankang B.	•	•		•					
10	Joshuei R.	a. Sun Moon Lake	•	•							
		b. Shueili B.		•		•					
		c. Chenyulan B.		•		•					
		d. Chinshuei B.	•	•		•					
11	Janjun R.	Coral Lake	•								
12	Tzengwen R.	a. Alisan B.				•				•	
		b. Reservoir	•						•		
		c. Tzengwen R.	•						•	•	
13	Kaoping R.	a. Nantsushan B.	•							•	
		b. Launon B.	•			•				•	
		c. Jokou B.	•			•			•	•	
		d. Ailiaopei B.	•			•			•	•	
		e. Ailiaonan B.				•			•	•	
		f. Kouping R.	•			•			•		
14	Lipen R.	Laiyi B.	•			•					
15	Fongkang R.		•								•
16	Ssuchung R.		•								•
17	Kinglun R.						•				
18	Taimarli R.						•				
19	Peinandar R.	Shinwulwu B.	•				•	•			
20	Marwuku R.		•					•			
21	Shokulwan R.	a. Fuli B.						•			
		b. Shokulwan R.	•				•	•			
22	Shimen R.						•				
23	Hwalian R.	a. Liyu Lake	•								
		b. Fonglin B.					•	•			
24	Sanjang R.						•				
25	Liwu R.						•				
26	Hoping R.						•				
27	Nanau R.						•				
28	Wulaokun R.			•	•						
29	Juan R.	a. Juntow B.		•							
		b. Dar Lake	•								

S 11-14 (12-13); A I, 8; SP1D1 6-7 (7); V 26; P-V 3-22110/9. Morphometric measurement data are listed in Table 2.

Head large and depressed; snout slightly broad, projecting straight from snout tip to eyes. Eyes high, interorbital narrow. Upper lip slightly prominent. Cephalic sensory papillae apparent, with a series of short vertical rows between 2 mainly horizontal lines of papillae on cheek (Fig. 3a).

Scales on predorsal ctenoids, as type I pattern in dorsal view (Fig. 2a), almost reaching posterior margin of eyes. Dorsals separated, the 2nd and 3rd spines of 1st dorsal longer, but not specially elongated. Rays of 2nd dorsal longer in posterior ones. Pelvic united as large elliptical sucking disc.

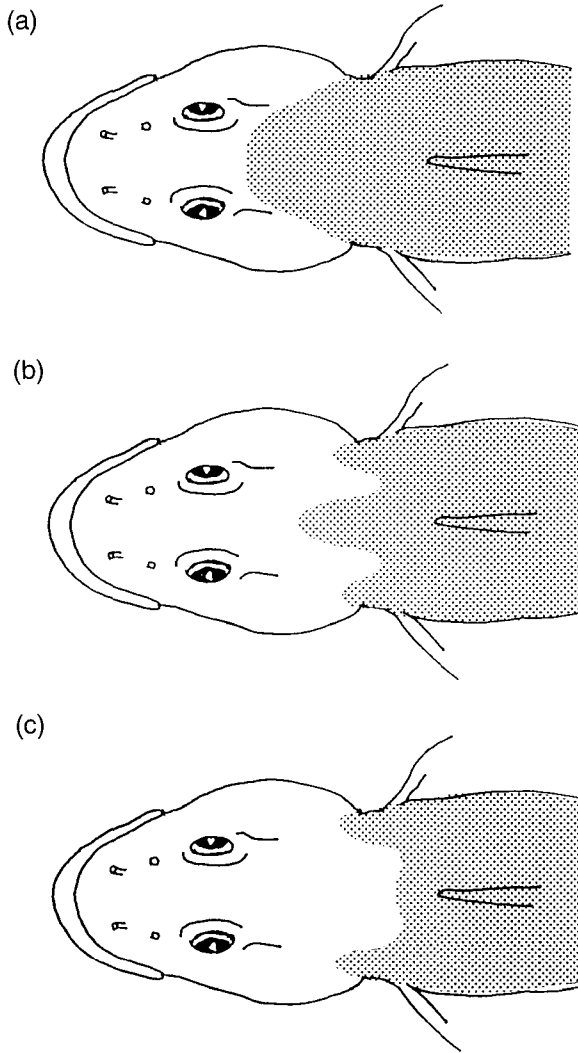


Fig. 2. Three distinct types of scalation of predorsal area of *Rhinogobius* from Taiwan. The shadowing indicates the scaled area. (a) Type I (from *R. giurinus*); (b) Type II (from *R. candidianus*); (c) Type III (from *R. gigas*).

Body yellowish or grayish brown. Side of body with a row of 4-5 dark brown blotches in middle part, and with some scattered small irregular dark spots. Abdomen grayish white, belly yellow in adult female. Snout, cheek, and operculum with many wavy brownish lines that are slightly incline forward. Dorsal part and nape with many irregular brown blotches. First dorsal gray, lower part with 3-5 rows of brownish spotted lines, its spines brown. Second dorsal with a whitish or translucent margin, its upper part with a longitudinal yellow stripe extending to upper part of caudal, lower part with 4-6 rows of brownish spotted lines. Anal yellowish brown. Caudal with 6-11 rows of vertical brown lines. Pectoral grayish white, upper base with a large black spot and a short dark brown band running downward and backward. Pelvic whitish gray.

Distribution: This species is widely distributed in Korea, Japan, the Ryukyus, China, and Taiwan. It is commonly distributed in main drainages of rivers, brooks, ponds, or lakes in Taiwan.

Key to species of the *Rhinogobius brunneus* complex from Taiwan

- 1a. Pectoral 15-17 (16); snout usually less than 29% of head; postorbital about 52%; vertebrae 27-28 *R. rubromaculatus*

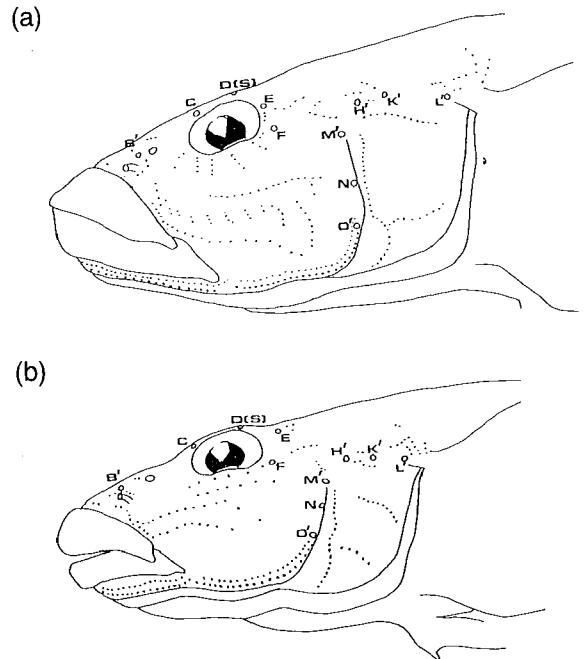


Fig. 3. The cephalic sensory systems of *Rhinogobius* from Taiwan. (a) *R. giurinus*. (b) *R. brunneus* complex.

Table 2. Means and standard deviations for morphometric characters of *Rhinogobius* species and subspecies from Taiwan

Character	<i>R. giurinus</i>	<i>R. candidianus</i>	<i>R. nagoyae</i> <i>formosanus</i>	<i>R. rubromaculatus</i>	<i>R. gigas</i>	<i>R. delicatus</i>	<i>R. maculafaciatus</i>	<i>R. nantaiensis</i>	<i>R. henchuenensis</i>
No. of specimens	20	20	15	20	15	21	21	20	20
Head length	31.5 ± 1.5	31.1 ± 1.4	31.8 ± 2.1	30.5 ± 1.2	30.8 ± 2.4	32.3 ± 1.5	30.9 ± 1.8	32.0 ± 1.9	31.6 ± 1.6
Snout length	34.7 ± 3.0	36.8 ± 4.1	37.7 ± 3.7	26.3 ± 2.5	36.0 ± 3.7	33.4 ± 2.9	34.1 ± 3.8	36.3 ± 4.0	31.8 ± 3.5
Eye ^a	18.9 ± 2.1	17.9 ± 2.2	18.6 ± 1.6	21.7 ± 2.4	17.5 ± 3.0	19.3 ± 2.1	17.8 ± 2.1	18.8 ± 1.7	21.9 ± 2.1
Postorbital ^a	46.4 ± 2.2	46.0 ± 2.5	43.7 ± 3.6	52.1 ± 1.9	46.5 ± 2.8	47.3 ± 2.2	48.0 ± 2.5	45.0 ± 3.0	46.3 ± 2.6
Lower jaw length ^a	41.2 ± 3.0	37.6 ± 4.9	36.8 ± 4.0	36.5 ± 3.5	38.8 ± 4.6	35.0 ± 4.9	39.6 ± 6.8	35.1 ± 4.8	35.5 ± 2.8
Head width ^a	65.3 ± 5.1	62.7 ± 7.0	59.7 ± 4.5	61.8 ± 5.7	68.9 ± 7.1	73.7 ± 4.9	67.8 ± 5.6	68.3 ± 8.1	67.5 ± 4.6
Interorbital ^a	16.0 ± 2.9	13.6 ± 1.7	15.6 ± 2.3	18.6 ± 2.8	16.6 ± 2.1	17.0 ± 2.6	15.9 ± 2.2	15.6 ± 2.3	18.1 ± 2.4
Body depth in P2 origin ^a	19.0 ± 2.4	17.6 ± 1.6	17.8 ± 1.1	17.0 ± 1.8	17.8 ± 1.3	20.5 ± 0.8	16.9 ± 1.5	18.3 ± 1.6	18.9 ± 1.0
Body depth in A origin ^a	17.7 ± 1.7	17.1 ± 1.6	17.2 ± 1.5	16.4 ± 1.5	17.3 ± 1.1	18.4 ± 1.1	16.6 ± 1.2	17.0 ± 1.4	17.9 ± 1.0
Predorsal length ^b	38.2 ± 1.4	41.5 ± 1.3	41.6 ± 1.9	40.0 ± 1.5	41.4 ± 2.5	41.4 ± 1.9	40.4 ± 2.1	42.3 ± 2.3	41.5 ± 1.5
Caudal peduncle depth ^b	12.0 ± 0.8	13.0 ± 1.1	12.9 ± 0.8	12.4 ± 1.0	12.8 ± 0.6	13.4 ± 0.7	12.1 ± 0.7	12.8 ± 0.7	13.2 ± 0.5
Caudal peduncle length ^b	25.0 ± 1.6	23.7 ± 1.7	23.3 ± 0.9	22.5 ± 1.9	24.8 ± 1.8	23.2 ± 1.2	23.0 ± 2.1	23.4 ± 1.4	23.8 ± 1.7
Distance from snout to P2 ^b	35.3 ± 3.2	29.4 ± 2.2	31.9 ± 2.6	30.4 ± 1.4	30.1 ± 3.0	33.4 ± 1.9	32.4 ± 3.2	32.8 ± 2.2	31.4 ± 1.5
Distance from P2 to A ^b	23.2 ± 1.8	31.5 ± 2.6	30.8 ± 2.1	29.1 ± 2.1	35.2 ± 4.2	34.7 ± 2.3	29.1 ± 2.5	31.9 ± 3.5	28.7 ± 1.4
1st Spine of D1 ^b	13.4 ± 1.4	17.5 ± 3.2	15.8 ± 1.6	11.7 ± 1.3	15.5 ± 1.6	13.9 ± 1.0	13.3 ± 1.7	16.6 ± 2.3	16.4 ± 2.2
2nd Spine of D1 ^b	15.7 ± 1.2	21.6 ± 5.0	18.8 ± 3.1	13.7 ± 1.6	18.6 ± 3.5	14.8 ± 1.2	16.6 ± 3.9	20.8 ± 5.8	17.8 ± 3.3
3rd Spine of D1 ^b	16.3 ± 1.6	19.6 ± 3.0	16.4 ± 2.1	13.7 ± 1.3	15.5 ± 1.9	14.5 ± 1.0	17.2 ± 3.7	16.1 ± 4.3	17.3 ± 3.2
Spine of D2 ^b	12.2 ± 0.9	12.1 ± 1.1	11.2 ± 0.9	11.5 ± 1.6	11.3 ± 1.0	11.5 ± 1.1	11.6 ± 1.1	11.1 ± 1.2	12.5 ± 0.9
Spine of A ^b	9.0 ± 0.9	8.4 ± 1.0	9.3 ± 1.6	8.7 ± 1.3	8.2 ± 1.0	8.5 ± 1.1	8.0 ± 0.8	8.7 ± 1.3	9.4 ± 1.1
D2 base ^b	19.0 ± 1.1	18.0 ± 1.5	16.5 ± 0.8	21.5 ± 1.9	15.6 ± 1.1	17.2 ± 1.3	17.5 ± 1.7	19.0 ± 2.0	16.5 ± 1.4
A base ^b	16.3 ± 1.0	14.1 ± 1.4	13.6 ± 0.6	17.0 ± 1.9	13.2 ± 0.9	14.4 ± 1.9	14.6 ± 1.2	15.2 ± 1.8	14.4 ± 1.3
P1 length ^b	24.6 ± 1.9	26.1 ± 1.5	24.6 ± 1.1	26.8 ± 2.4	25.0 ± 1.8	25.7 ± 1.4	25.9 ± 1.7	24.9 ± 2.6	26.6 ± 1.4
P2 length ^b	21.0 ± 2.2	15.2 ± 1.5	14.4 ± 0.9	18.9 ± 2.5	15.6 ± 1.8	16.0 ± 1.1	15.7 ± 1.5	16.7 ± 1.1	15.0 ± 1.4

^aValues shown are percentages (%) as ratios with head length.^bValues shown are percentages (%) as ratios with standard length.

- 1b. Pectoral always more than 17; snout not less than 30%; postorbital less than 52%; vertebrae 25-26 2
- 2a. Scales between origin of 1st dorsal and pectoral 6-8; longitudinal scale rows 30-32 *R. maculafasciatus*, n. sp.
- 2b. Scales between origin of 1st dorsal and pectoral more than 8; longitudinal scale rows more than 32 3
- 3a. Second dorsal and anal without spot 4
- 3b. Second dorsal and anal with some rows of spots 5
- 4a. Cheek without spot in female and most males; lateral body usually uniform dark brown, longitudinal scales rows 34-38 (35-37), scales between origin of 1st dorsal and pectoral 11-15 (12-13) *R. candidianus*
- 4b. Cheek with significant spots in both sexes; midline of side of body with a row of dark blotches; the inner part of caudal blue in adult male; longitudinal scale rows 33-36 (34-35), scales between origin of 1st dorsal and pectoral 10-12 (11) *R. nantaiensis*
- 5a. Cheek with many wavy lines *R. nagoyae formosanus*
- 5b. Cheek with many spots 6
- 6a. Pectoral 21-23 (22); body with apparant dark brown cross-bands, caudal fin base with a vertical dark arc in female *R. gigas*
- 6b. Pectoral less than 21; body without cross-bands; caudal fin base with 2 darkish brown spots in female 7
- 7a. Pectoral 17-19 (18); longitudinal scale rows 32-36 (33-34); dorsals, anal, and caudal brownish black; cheek with hundreds of minute black spots, caudal spots blackish in adult male *R. delicatus*, n. sp.
- 7b. Pectoral 18-21 (19-20); longitudinal scale rows 34-37 (35-36); dorsals, anal, and caudal light brown; cheek with red spots but less than 35, caudal spots orange or red in adult male *R. henchuenensis*, n. sp.

***Rhinogobius rubromaculatus* Lee & Chang,**

1996

(Fig. 5)

Rhinogobius rubromaculatus Lee & Chang, 1996: (30)

Rhinogobius sp. Zhan, 1989: 48.

Rhinogobius sp. 2 Aonuma, 1992: 33, fig. 12.

Rhinogobius sp. T1 SSN Chen, 1994: 23, fig. 33, pls. E, F, G, H.

Distribution: This typically landlocked species is distributed in the upstream portions of most rivers in Taiwan, from the Tamshuei River in the north to the Kaoping River in the south (Fig. 1) but excluding the drainages of eastern Taiwan.

***Rhinogobius candidianus* (Regan 1908)**

(Figs. 6, 7)

Ctenogobius candidianus Regan, 1908: 153 (Sun Moon Lake (Lake Candidius), Taiwan).

Rhinogobius taiwanus: Oshima, 1919: 298, pl. LIII, fig. 1 (Shinchiku, Taiwan); Aonuma, 1992: 17, fig. 9.

Rhinogobius candidius: Oshima, 1919: 295.

Rhinogobius candidianus: Aonuma 1992: 22, Fig. 10; Chen 1994: 20, pl. I C, D.

Materials: 4 specimens, ASIZP-057221, 57.5-78.4 mm SL, Jul. 20, 1989, Darchia River; Taichung County; 2 specimens, ASIZP-057222, 42.1-42.2 mm

SL, Jun. 10, 1990, Marlian River, Taipei County; 2 specimens, ASIZP-057223, 43.2~44.0 mm SL, Aug. 12, 1993, Peishi Brook of the Tamshuei River, Taipei; 5 specimens, NMMBP-00304, 41.0-44.9 mm SL, Sep. 4, 1993, Wulaokun River, Ilan County; and 4 specimens, NMMBP-00305, 34.6~47.5 mm SL, Feb. 16, 1994, Keelung River, Taipei County.

Diagnostic characters: D VI-I, 7-9 (8); A I, 7-9 (8); P1 17-19; P2 I, 5; LR 34-38 (35-37); TR 12-14 (12-13); Pred S 9-19 (13-17); SP1D1 11-15 (12-14); V 25-26 (26); P-V 3-22110/9. For morphometric data see Table 2.

Snout broader in male, its length in adult male longer than in female. Eyes high, interorbital very narrow. Upper lip slightly prominent.

Predorsal with small cycloid scales, as type II pattern in dorsal view (Fig. 2), Spines of 1st dorsal when depressed extending beyond 2nd rays of 2nd dorsal in adult male. Anal spine origin vertical from the 2nd ray base of 2nd dorsal and its height slightly lower than 2nd dorsal. Pectoral rounded. Pelvic united as a rounded sucking disc.

Body yellow or dark brownish, some with 6-7 indistinct blotches on side. Some adults with blue spots. Each scale base with dark orange spots. Abdomen gray, and belly blue in adult female. Cheek always without spot in female; and usually without spot in male except a few individuals with few indistinct spots on margin and lower part of preoperculum. Snout with 2 red lines, one from anterior margin of eye to snout tip, another from lower margin of eye to upper middle area of upper jaw; line shorter in males than in females and its lower part with a blue margin. Nape with several horizontal brown lines. Dorsal spines reddish brown and membrane grayish brown. The anterior and upper margins of 1st dorsal and upper edge of 2nd dorsal yellow. Caudal grayish brown, outer part darker with yellow margin, narrow edge translucent. Pectoral somewhat translucent or grayish brown, with 2 reddish-brown curves near base. Upper end of pectoral base with a dark spot in female, but indistinct or absent in male. Pelvic gray or white.

Distribution: Endemic in the northeastern and north-central part of Taiwan; i.e., northward of and including the Joshuei River. Hundreds of specimens were collected from the Shuanshi River, Marlian River, Parlian River, Tamshuei River; Holong River, Jongkang River, Darchia River, Tatu River and Joshuei River.

Remarks: Although *R. candidianus* (Regan, 1908) was described from its type locality, "Lake Candidius", they can only be found around the

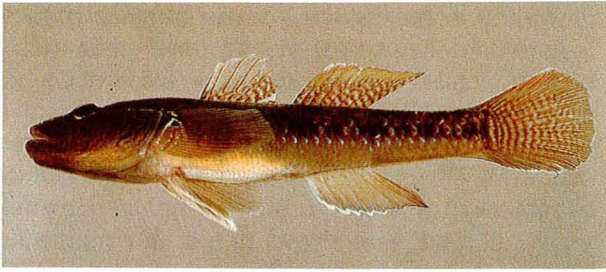


Fig. 4. *Rhinogobius giurinus*, 67.2 mm SL, male, Peishi Brook, Taipei.

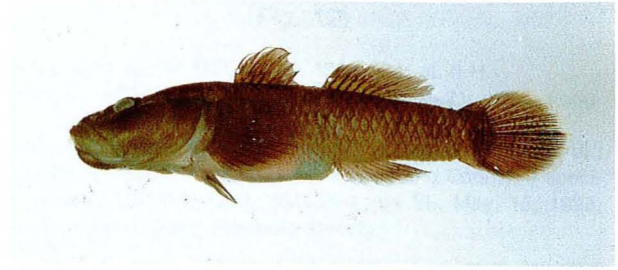


Fig. 8. *Rhinogobius delicatus*, paratype, ASIZP-057229, 51.5 mm SL, male, Marwuku River, Taitung.

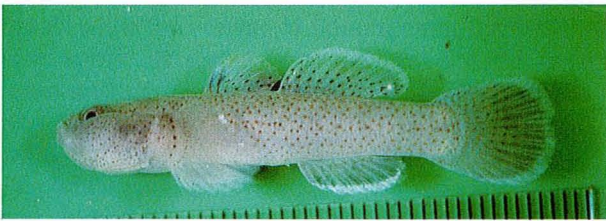


Fig. 5. *Rhinogobius rubromaculatus*, 33.7 mm SL, Johsuei River, Nantou.

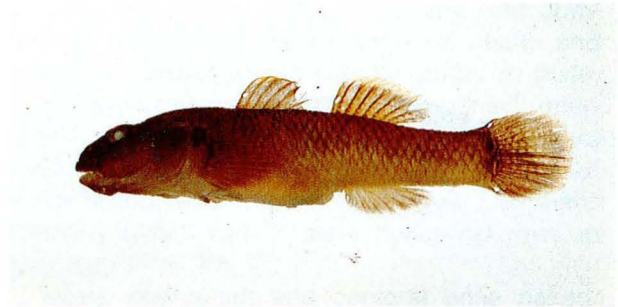


Fig. 9. *Rhinogobius delicatus*, paratype, ASIZP-057229, 48.5 mm SL, female, Marwuku River, Taitung.

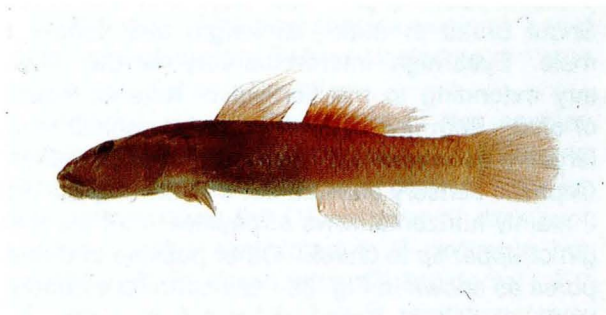


Fig. 6. *Rhinogobius candidianus*, 43.2 mm SL, Peishi River, Taipei.

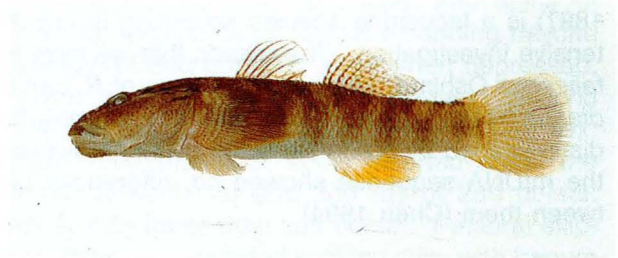


Fig. 10. *Rhinogobius gigas*, 67.4 mm SL, male, Nanau River, Ilan.



Fig. 7. *Rhinogobius candidianus*, 50.9 mm SL, Peishi River, Taipei.

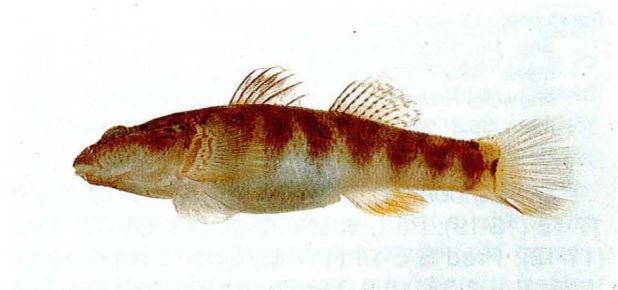


Fig. 11. *Rhinogobius gigas*, 52.4 mm SL, female, Nanau River, Ilan.

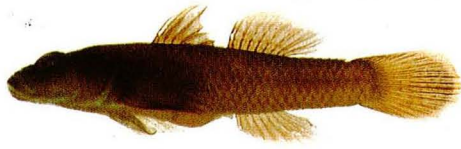


Fig. 12. *Rhinogobius henchuenensis*, paratype, ASIZP-057242, 37.8 mm SL, male, Fongkang River, Pingtung.

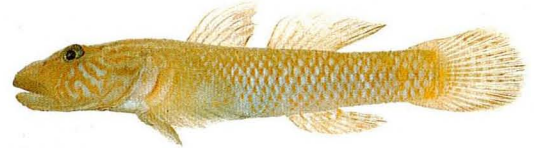


Fig. 14. *Rhinogobius nagoyae formosanus*, 54.1 mm SL, male, Peishi Brook, Taipei. (Note: the dark cross-bands of body faded).



Fig. 13. *Rhinogobius maculafaciatus*, paratype, ASIZP-057235, 49.5 mm SL, male, Tzengwen River, Tainan.

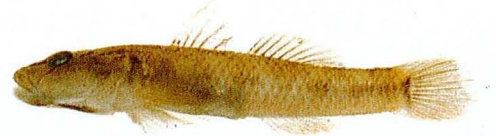


Fig. 15. *Rhinogobius nantaiensis*, paratype, ASIZP-057238, 34.3 mm SL, male, Nantsushan Brook, Kaohsiung.

nearby drainages of the Tatu and Joshuei Rivers but not in the lake since only *R. giurinus* (Rutter, 1897) is a lacustrine species according to our intensive investigation. The reason that we treat *R. taiwanus* Oshima, 1919 as a synonym of *R. candidianus* (Regan, 1908) is because they can only be distinguished by predorsal scale count. However, the mtDNA sequence showed no differences between them (Chen 1994).

***Rhinogobius delicatus*, n. sp.**
(Figs. 8, 9)

Rhinogobius sp. T3 MSP Chen, 1994: 27, fig. 35, pl. II C, D.
Holotype: ASIZP-057227, 64.9 mm SL, Dec. 29, 1993, Shokulwan River, Hualien County.

Paratypes: 13 specimens, ASIZP-057228, 36.0-63.1 mm SL, Sep. 14, 1992, Shinwulwu River, Taitung County; 6 specimens, ASIZP-057229, 48.5-62.7 mm SL, Dec. 12, 1992, Marwuku River, Taitung County; ASIZP-0057230, 1 specimen, 55.2 mm SL, Dec. 29, 1993, Shokulwan River, Hualien County.

Description: D VI-I, 7-9 (8); A I, 7-10 (8); P1 17-19 (18-19); P2 I, 5; LR 32-36 (33-34); TR 11-13 (11-12); Pred S 5-15 (11-13); SD1P1 9-12 (10-11); V 26; P-V 3-22110/9. Morphometric data are listed in Table 2.

Body elongated; robust anteriorly and com-

pressed posteriorly. Head large and depressed. Snout broad in male, its length also longer in male. Eyes high, interorbital very narrow. Maxillary extending to the vertical of anterior margin of orbit. Both jaws with 3-4 rows of conical teeth, larger in outer row. Lip fleshy, upper lip prominent. Cephalic sensory papillae not well developed, with 2 mainly horizontal rows of papillae from the margin of upper lip to cheek. Other papillae and head pores as shown in Fig. 3b. Gill-opening extending to the vertical of margin of operculum.

Head, operculum, nape, and pectoral base naked. Ctenoid scales in lateral body larger in posterior. Predorsal with small cycloid scales and arranged like type II or III scalation patterns in Fig. 3, but midline of scales always not reaching or extending beyond the vertical of posterior margin of operculum. Abdomen with small cycloid scales. Dorsal separated, 2nd and 3rd spines longer, its spines when depressed usually not reaching the origin of 2nd dorsal in either sex. Rays of 2nd dorsal about equal, its last ray not extending to caudal base in either sex. Caudal rounded. Anal inserted about the vertical between 1st and 2nd rays of 2nd dorsal. Pectoral elliptical. Pelvic as a rounded sucking disc, with frenum and connecting membrane.

Body uniformly brown or darkish brown, base of each scale in upper part on side of body with a dark spot, lower part of scales yellowish brown, and each scale with dark margin. Middle of side in female with a row of darkish spots extending to caudal base. Abdomen gray, belly yellow in adult female. Cheek with many minute brownish-black spots, the number of spots in male always more than 100, but in female less than 50. Nape with some horizontally darkish-brown stripes. Two pairs of brown lines from the eyes to snout; one from anterior margin to snout tip, and the other from lower margin of orbit to middle part of upper lip, but the latter one shorter in male. Dorsals brown or dark brown. In 1st dorsal, the upper part before 2nd spine yellow. Second dorsal with 3-5 rows of longitudinal brownish-black spots, its upper edge yellow. Caudal dark brown with 6-8 rows of vertical dark spots, its base with 2 vertical dark bars in female, and with a narrow yellow or pale margin. Anal brown with white margin. Pectoral brown, its upper base with a black blotch, and with a broad and dark brown curve near base. Pelvic gray or brown.

Etymology: From the Latin, *delicatus*, "delicate", in reference to the many delicate, dark spots on the cheeks of both sexes.

Distribution: This new species was only found in the rivers of eastern Taiwan, including those in Hualien and Taitung Counties.

Remarks: The color pattern of this species is somewhat similar to *R. multimaculatus* (Wu and Zheng, 1985). However, the 2 species can be easily distinguished by: (1) absence of dark spot on anterior part of first dorsal in *R. delicatus*, but presence in *R. multimaculatus*; (2) 2nd dorsal I, 7-9 in *R. delicatus*, but I, 10-11 in *R. multimaculatus*; (3) predorsals with 10-14 scales in *R. delicatus*, but naked in *R. multimaculatus*; and (4) V. 26 in *R. delicatus*, but V. 29 in *R. multimaculatus* (Wu and Chen, unpublished data).

***Rhinogobius gigas* Aonuma & Chen, 1996**
(Figs. 10, 11)

Rhinogobius gigas Aonuma & Chen, 1996: 9-11.

Rhinogobius brunneus (in part): Tzeng, 1986: 138.

Rhinogobius sp. 1 Aonuma, 1992: 28, fig. 11.

Rhinogobius sp. T2 ECB Chen, 1994: 25, pl. II A, B.

Distribution: This species is distributed in middle or lower drainages of the rivers in eastern Taiwan including the southern part of Ilan, as well as Hualien and Taitung Counties.

***Rhinogobius henchuenensis*, n. sp.**
(Fig. 12)

Rhinogobius sp. T7 RSC Chen, 1994: 34: pl. II H.

Holotype: ASIZP-057241, 37.0 mm SL, Oct, 21, 1993, Fongkang River, Pingtung County.

Paratypes: 10 specimens, ASIZP-057242, 31.3-44.5 mm SL, Oct. 21, 1990, Fongkang River, Pingtung County; 9 specimens, ASIZP-057243, 28.0-38.0 mm SL, May, 15, 1994, Fongkang River, Pingtung County.

Description: D VI-I, 7-9 (8); A I, 7-8 (8); P1 18-21 (19-20); P2 I, 5; LR 34-37 (35-36); TR 11-13 (12); Pred S 12-16 (14); SD1P1 10-11; V 26; pterygiophore formula 3-22110/9. Morphometric data are listed in Table 2.

Body elongated, robust anteriorly and compressed posteriorly. Head large in male and depressed. Snout length slightly longer in male. Upper lip prominent. Eyes high and small, interorbital narrow. Maxillary reaches the vertical of anterior margin of eye. Both jaws with 3-4 rows of conical teeth, teeth larger in outer row. Cephalic sensory papillae with 2 main horizontal rows in operculum (Fig. 3b).

Head, operculum and pectoral base naked. Body with ctenoid scales and slightly larger in posterior. Predorsal with minute cycloid scales, resembling type II pattern in dorsal view (Fig. 2b), the midline of scales extending beyond the vertical of margin of gill-opening. Ventral side with small cycloid scales. Dorsal separated, 2nd spine of 1st dorsal longest, spiny dorsal extending beyond the origin of 2nd dorsal in male when depressed, but not reaching the origin in female. Second dorsal not reaching the caudal base in either sex. Caudal rounded. Anal spine inserted about the vertical between 1st and 2nd ray of 2nd dorsal. Anal slightly lower than soft dorsal. Pectoral elliptical. Pelvic is a rounded sucking disc, with frenum and connecting membrane.

Body uniformly yellowish brown or brown. Base of each scale with a dark spot, reddish brown in male and dark brown in female; dorsal part of scales denser. Abdomen gray. Belly in adult female yellow. Cheek and operculum with about 15-30 red spots, with no significant difference in number between sexes, but shinier in male. Snout with 2 pairs of brownish-red lines; one from anterior margin of orbit to snout tip, the other from lower margin of eye to the posterior part of upper lip, its lower part with blue margin. Nape with some brown stripes. First dorsal membrane light brown, and its spines reddish brown, upper part before 2nd spine yellow. Second dorsal light brown with 3-5 rows of longitudinal reddish-brown spots or

lines, upper edge yellow. Caudal light brown, with 4-6 rows of vertical spots, red in male and grayish brown in female, its outer margin reddish orange or yellow. Anal light brown with darker rays, its margin yellow or translucent. Pectoral pale brown, with dark spot on upper base and with a broad reddish-brown curve near basal part. Pelvic pale or white.

Etymology: From the Chinese name of "Hengchuen" Peninsula, its type locality in southern Taiwan.

Distribution: This new species was only found from the Fongkang River and Ssuchung River in the Hengchuen Peninsula, southern Taiwan.

Remarks: This species is allied to *R. delicatus* n. sp. But they can be distinguished by: (1) predorsal scales always 13-15 in *R. henchuenensis*, but 11-13 in *R. delicatus*; (2) pectoral always 19-20 in *R. henchuenensis*, and 18-19 in *R. delicatus* (Table 3, 4); (3) in adult male, cheek and caudal with orange-red spots, the number of spots on cheek about 15-30 in *R. henchuenensis*, but cheek

and caudal with numerous minute dark spots, the number on cheek more than 100 in *R. delicatus*.

***Rhinogobius maculafasciatus*, n. sp.**

(Fig. 13)

Rhinogobius sp. T5 SCB: Chen, 1994: 30, pl. II F.

Holotype: ASIZP-057233, 44.1 mm SL, Mar. 7, 1993, Joko River of Kaoping River, Pingtung County.

Paratypes: 4 specimens, ASIZP-057234, 31.6-42.8 mm SL, Nov. 6, 1993, Tzengwen River, Tainan County; 15 specimens, ASIZP-057235, 30.1-50.0 mm SL, Jan. 14, 1994, Tzengwen River, Chiayi County; 1 specimen, ASIZP-057236, 33.2 mm SL, Apr. 3, 1994, Tzengwen River, Tainan County.

Description: D VI-I, 8-10 (8); A I, 8-9 (8); P1 18-20 (19-20); P2 I, 5; LR 30-32 (31-32); TR 10-11; Pred S 8-12 (9-11); SD1P1 6-8 (7); V 26; pterygiophore formula 3-22110/9. The morphometric data are listed in Table 2.

Body elongated; robust anteriorly and compressed posteriorly. Head large and depressed. Snout broader in male, its length longer than female. Eyes high, interorbital narrow. Both jaws

Table 3. Frequency distribution of the number of pectoral fin rays of *Rhinogobius* species and subspecies from Taiwan

	No. pectoral rays (P)											X
	15	16	17	18	19	20	21	22	23	24		
<i>R. giurinus</i>					11	9						19.5
<i>R. candidianus</i>			6	9	5							18
<i>R. nagoyae formosanus</i>					3	9	6					20
<i>R. rubromaculatus</i>	5	20	3									15.9
<i>R. gigas</i>							6	7	2			21.7
<i>R. delicatus</i>			2	11	8							18.3
<i>R. maculafasciatus</i>				1	10	10						19.4
<i>R. nantaiensis</i>				11	9							18.5
<i>R. henchuenensis</i>				2	7	9	2					19.6

Table 4. Frequency distribution of the number of predorsal scales of *Rhinogobius* species and subspecies from Taiwan

	No. predorsal scales (Pred S.)																X
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
<i>R. giurinus</i>							4	5	8	2							12.4
<i>R. candidianus</i>				1	2	1	1	2	1	4	4	2	1	1			14.4
<i>R. nagoyae formosanus</i>				3	5	5	1		1								10.5
<i>R. rubromaculatus</i>				3	7	10	2	1									10.6
<i>R. gigas</i>	1	2	3		1	3	2			2		1					9.5
<i>R. delicatus</i>					2	4	8	5	1								12
<i>R. maculafasciatus</i>				1	6	8	4	2									10
<i>R. nantaiensis</i>									6	6	4	1	2				14.3
<i>R. henchuenensis</i>							1	4	10	4	1						14

with 3-5 rows of conical teeth, teeth larger in outer row. Maxillary extending to the vertical of anterior margin of eye. Lip fleshy, upper lip prominent. Cephalic sensory papillae not well developed, with 2 mainly horizontal lines from the margin of upper lip to cheek. Other papillae and head pores shown in detail as in Fig. 3b. Gill-opening reaching the vertical of midline of operculum.

Head, operculum, nape, and pectoral base naked. Body with large ctenoid scales and slightly larger in posterior. Predorsal with cycloid scales, as type II pattern in dorsal view (Fig. 2b), the midline of scales extending to or beyond the vertical of posterior margin of operculum. Ventral side with small cycloid scales. Dorsals separated, the 3rd spine of 1st dorsal longest, 1st dorsal extending to the origin of 2nd dorsal in male when depressed, but not reaching the origin in female. Rays of 2nd dorsal about equal, rays extend to caudal base when depressed in some adult males. Anal spine inserted about the vertical of 1st ray of 2nd dorsal, and anal lower than soft dorsal. Caudal rounded. Pectoral elliptical. Pelvic is a rounded sucking disc, with frenum and connecting membrane.

Body light brown or yellowish brown, with 6-7 darkish-brown cross-bands, their widths about equal to interspaces. Abdomen gray, belly yellow in adult female. Each scale of lateral body with a yellow or shiny orange spot near base. Cheek and operculum with many shiny orange spots, more on edge of cheek. Two pairs of brownish-red lines from eyes to lip; one from anterior margin of eye to snout tip, the other from lower margin of eye toward posterior part of upper lip, the latter connecting eye to lip in female but its lower end in between lip and eye in adult male. Nape with

some irregular brown networks on dorsal part. On 1st dorsal, with light brown background, upper part before 3rd spine yellow, and with a shiny darkish-blue spot located at the lower part of membrane between 1st and 3rd spines in some adult males. Second dorsal light brown, with 5-7 rows of longitudinal brown spots; its outer edge yellow. Caudal with about 7-10 rows of vertical brown lines or spots in adult, but fewer in young; its base with 2 connected and alternating vertical black bars. Upper part of caudal base with a shiny orange blotch in adult male. Anal yellow, with some white spots, outer part with black margin and narrow translucent edge. Pectoral light yellow or translucent, with 2 rows of irregular orange spots in both sexes; but with a dark blotch located in upper half of base in female. Pelvic pale or translucent.

Etymology: From the Latin, macula, "spotted", and fasciatus, "bands" in reference to its spot and band on the sides of body of both sexes.

Distribution: This new species was only found in middle and lower drainages of southern Taiwan, such as the Tzengwen and Kaoping Rivers.

Remarks: *R. maculafasciatus* n. sp. can be distinguished by the lower count of LR (30-32) and SD1P1 (6-8) among all species of the *R. brunneus* complex from Taiwan (Tables 5, 6). *R. maculafasciatus* is similar to *R. cervicosquamus* (Wu et al. 1986) in some meristic characters and coloration. But these 2 species also can be distinguished by the following: (1) in the pectoral, *R. maculafasciatus* with 2 rows of orange spots, *R. cervicosquamus* with 2 rows of orange curves; (2) in the pectoral rays with 18-20 in *R. maculafasciatus*, 16-18 in *R. cervicosquamus*; (3) and in longitudinal scale rows with 30-32 in *R. maculafasciatus*, but 28-29 in *R. cervicosquamus*.

Table 5. Frequency distribution of the number of transverse and longitudinal scale rows of *Rhinogobius* species and subspecies from Taiwan

	No. transverse scale rows (TR)							No. longitudinal scale rows (LR)												
	9	10	11	12	13	14	X	29	30	31	32	33	34	35	36	37	38	39	X	
<i>R. giurinus</i>	3	17					9.9	3	8	7	2									30.4
<i>R. candidianus</i>				9	7	4	12.8						2	7	5	4	2			35.9
<i>R. nagoyae formosanus</i>			9	5	1		11.5				2	8	5							33.2
<i>R. rubromaculatus</i>		2	10	9	3		11.5	5	10	8	1									30.2
<i>R. gigas</i>				7	7		12.5									1	4	8	2	37.7
<i>R. delicatus</i>			11	8	2		11.6				3	7	7	3	1					33.6
<i>R. maculafasciatus</i>		15	6				10.3	4	9	8										31.2
<i>R. nantaiensis</i>			4	13	3		12					3	6	8	3					34.6
<i>R. henchuenensis</i>			8	9	3		11.8						5	8	6	1				35.2

Table 6. Frequency distribution of the number of scales between the origin of 1st dorsal fin and pectoral fin of *Rhinogobius* species and subspecies from Taiwan

	No. scales between original 1st dorsal fin and pectoral fin (SD1P1)										
	6	7	8	9	10	11	12	13	14	15	X
<i>R. giurinus</i>	7	13									6.7
<i>R. candidianus</i>						1	7	9	2	1	12.8
<i>R. nagoyae formosanus</i>					4	7	4				11
<i>R. rubromaculatus</i>				1	14	6					10.2
<i>R. gigas</i>					3	5	5	1			11.3
<i>R. delicatus</i>				1	14	4	2				10.3
<i>R. maculafasciatus</i>	5	12	4								7
<i>R. nantaiensis</i>					4	12	4				11
<i>R. henchuenensis</i>					11	9					10.5

***Rhinogobius nagoyae formosanus* Oshima,
1919
(Fig. 14)**

Rhinogobius nagoyae Jordan and Seale, 1906: 147, fig. 5 (Nagoya, Japan); Aonuma 1992: 12, fig. 8.

Rhinogobius formosanus: Oshima, 1919: 300, pl. LIII, fig. 2 (Shinchiku, Taiwan).

Rhinogobius brunneus (cross-band type): Hayashi in Masuda et al. 1984: 296, pl. 248 B, C.

Rhinogobius sp. CB: Mizuno in Kawanabe and Mizuno 1989: 586, pl. 579 D, E.

Rhinogobius nagoyae formosanus: Chen 1994: 18, pl. I B.

Materials: 9 specimens, ASIZP-057231, 42.3-48.4 mm SL, Jul. 10, 1990, Marlian River, Taipei County; 4 specimens, ASIZP-057232, 44.2-48.7 mm SL, Jul. 5, 1990, Peishi River of Tamshuei River, Taipei County; 1 specimen, NMMBP-00306, 48.0 mm SL, Aug. 25, 1993, Peishi River of Tamshuei Rivers, Taipei County; 1 specimen, NMMBP-00307, 45.2 mm SL, Sep. 8, 1993, Wulaokun River, Ilan County.

Diagnostic characters: D VI-I, 7-9(8); A I, 7-8(8); P1 19-21(20); P2 I, 5; LR 32-34 (33-34); TR 10-12 (11-12); Pred S 9-14 (9-11); SD1P1 10-12 (11); V 26; pterygiophore formula 3-22110/9. The morphometric data are listed in Table 2.

Snout broad, its length in adult male slightly longer than in female. Eyes high, interorbital very narrow. Upper lip slightly prominent.

Predorsal with small cycloid scales, as type II pattern in dorsal view (Fig. 2b). Dorsal spines extending to or beyond the 2nd ray of 2nd dorsal when depressed in adult male; but not reaching or extending just beyond the origin of 2nd dorsal in most females. Anal not higher than 2nd dorsal, its spine located at the vertical of 2nd ray of 2nd dorsal.

Body yellowish brown or dark brown, with 6-7

vertical dark cross-bands on side, bands wider than their interspaces. Abdomen gray, belly blue in adult female. Each scale in lateral side with shiny blue area in adult male. Snout with 3 pairs of red lines from the margin of orbit to upper lip. Cheek radiated with reddish and worm-like wavy lines; and with shiny blue background in some adult males. First dorsal spine light brown, and grayish brown or somewhat translucent, upper part before 2nd spine yellow. Second dorsal ray light brown or brown, its membrane with 4-5 horizontal dark brown stripes on grayish brown background; its upper edge white or translucent. Anal grayish brown, with 3 longitudinal brown lines. Caudal grayish brown, with 7-9 vertical cross-lines; posterior edge white or translucent. Caudal base with 2 connected and alternating vertical dark bars. In pectoral, upper part of base with reddish-brown blotches, and its anterior part with 3-4 dark brown curves downward and slightly forward. Pelvic gray or white.

Distribution: *R. nagoyae* Jordan and Seale, 1906 is widely distributed from Korea, Honshu, Kyushu, the Ryukyus of Japan to Taiwan. This endemic subspecies of *R. nagoyae formosanus* could only be found in northern and northeastern Taiwan.

Remarks: Oshima, 1919, described *R. formosanus* from Shinchiku, northern Taiwan. However, this species is very similar to *R. nagoyae* with only a few differences. We regard it as a subspecies of *R. nagoyae* based on their similar coloration pattern. The distinctions between these 2 subspecies, *R. nagoyae nagoyae* and *R. nagoyae formosanus*, include: (1) snout usually with 3 pairs of red lines in *R. n. formosanus*, but with 4 pairs in *R. n. nagoyae* (shown in Kawanabe and Mizuno 1989, Nakabo 1993); and (2) fewer longitudinal

scales (32-34) in *R. n. formosanus* than in *R. n. nagoyae* (34-37 in Nakabo 1993; 35-36 in 2 examined specimens from Japan).

***Rhinogobius nantaiensis* Aonuma & Chen,
1996
(Fig. 15)**

Rhinogobius nantaiensis Aonuma and Chen 1996: 11-12.

Rhinogobius sp. 4 Aonuma, 1992: 42, fig. 14.

Rhinogobius sp. T6 STD Chen, 1994: 32, pl. II G.

Distribution: This recently described species was only found from middle and upper drainages of rivers in southern Taiwan, including the Tzengwen and Kaoping Rivers.

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臺灣產吻鰕虎(*Rhinogobius*)屬魚類之分類綜論，並兼記該屬之三新種

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本文重新整理臺灣產吻鰕虎屬(*Rhinogobius*)之分類。本屬魚種在臺灣共可分成兩個相似種群：極樂鰕虎種群(*R. giurinus* complex)與褐吻鰕虎種群(*R. brunneus* complex)。極樂鰕虎種群在臺灣僅有極樂吻鰕虎 *R. giurinus* (Rutter, 1897) 一種，其餘八種均屬於褐吻鰕虎種群，包括明潭吻鰕虎 *R. candidianus* (Regan, 1908)、名古屋吻鰕虎(臺灣亞種) *R. nagoyae formosanus* Oshima, 1919；與六個世界新種：短吻褐斑吻鰕虎(*R. rubromaculatus* Lee & Chang, 1996)、大吻鰕虎(*R. gigas* Aonuma & Chen, 1996)、南臺吻鰕虎(*R. nantaiensis* Aonuma & Chen, 1996)、細斑吻鰕虎(*R. delicatus* n.sp.)、斑帶吻鰕虎(*R. maculafasciatus* n.sp.)、與恆春吻鰕虎(*R. henchuenensis* n.sp.)。其中前三種新種已被發表，後三種新種則於本文中描述。本屬魚種可藉由鰭條數、脊椎骨數、鱗列數、色斑等特徵，及其棲所、分佈地區等予以區分。文中並提供本屬各魚種之檢索表及各種之彩色標本照片，以利參考。

關鍵詞：淡水鰕虎，雙向洄游魚類，魚類分類，魚類相，鰕虎科。

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