



## A new *Obliquogobius* Koumans, 1941 (Teleostei: Gobiidae) from Kumejima, Ryukyu Islands, Japan

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### Abstract

A new species of *Obliquogobius* was collected from the deep waters off Kumejima, Ryukyu Islands, Japan. The new species may be distinguished from its congeners by the following combination of characters: second dorsal fin rays I/9; anal fin rays I/10; pectoral fin rays 21; longitudinal scale rows 22; transverse scale rows 7; gill opening wide, extending to vertical of rear margin of pupil; colouration in preservative: ground colour beige; no markings on body except for inverted-triangular grayish-black mark on head, the broad end originating below eye and the apex terminating at the posterior extent of the lower jaw, and dorsal third of caudal fin dusky with random small black spots on fin membrane and life colouration: vertical yellow band under eye; one wide longitudinal yellow band originating on the posterior end of the operculum coursing along mid-flank, terminating at posterior end of caudal fin, band increasingly wider, such that posterior half of body completely yellow and band tapering in width to cover only lower two-thirds of caudal fin region.

**Key words:** *Obliquogobius*, Gobiidae, new species, Kumejima, Japan

### Introduction

The marine gobiid genus *Obliquogobius* Koumans, 1941, was established for *Gobius cometes* Alcock, 1890. The genus is characterized by: body elongate, compressed; head compressed; eyes large; interorbital width narrow; mouth oblique with prominent lower jaw; gill opening wide; body, breast and belly scaled; midline of nape naked; scales ctenoid posteriorly and cycloid anteriorly; caudal fin obliquely pointed (Koumans 1941). This genus was also observed to have several rows of short barbels on the head, most notably two rows on the lower half of the head. Koumans (1941) reported that *Obliquogobius* resembles *Parachaeturichthys* Bleeker, 1874, but noted that it differs in head squamation, extent of gill opening and the presence of the aforementioned barbels.

The genus remained monotypic from its description in 1941 until Goren (1992) described *Obliquogobius turkayi* from the Red Sea. Shibukawa & Aonuma (2007) subsequently described three species from Japanese waters and other localities; *Obliquogobius cirrifer*, *O. megalops* and *O. yamadai*. As *Gobius cometes* (Alcock, 1890), was obtained from the coast of Madras, India, these species described from Japan, East China Sea and Philippines were the first verifiable records of the occurrence of this genus in the Western Pacific.

Dredging efforts during an expedition to Kumejima, Ryukyu Islands, Japan, in 2009, obtained the single specimen of an undescribed species of this genus. We here describe this species and provide a key, adapted from Shibukawa & Aonuma (2007), to the nominal members of *Obliquogobius* occurring in the Western Pacific.

## Materials and Methods

Dredging was conducted at depths of 141–165 m off Kumejima, Ryukyu Islands, Japan. The single specimen obtained was photographed before the right fin was clipped for preservation in analytical grade ethanol for future molecular analyses. The fish was initially fixed in 10% buffered formalin and subsequently stored in 70% ethanol. Measurements were made using metric dial calipers. Morphometry follows Miller (1988) and Chen & Fang (2006). Meristic counts follow Akihito *et al.* (1984), Chen & Fang (2006), and Chen & Miller (2008).

Terminology of cephalic sensory canals and papillae follow Wongrat & Miller (1991) which they adapted from Sanzo (1911). The holotype is deposited at the National Museum of Nature and Science, Tokyo, Japan (NSMT). Abbreviations of meristic features are as follows: anal fin (A); caudal fin (C); first and second dorsal fins (D1 and D2 respectively); pectoral fin (P); pelvic fin (V); longitudinal scale series (LS); predorsal scales (PreD); transverse scale rows (TR); and vertebral count (VC). All lengths are presented in proportion of standard length in mm (SL).

## Systematics

### *Obliquogobius fluvostratus* n. sp.

(Figs. 1, 2)

**Material examined.** Holotype, NSMT-P102090, 24.3 mm SL, male, Dredge Station No. 79; Kumejima, Ryukyu Islands, Japan, 26°14.686'N, 126°49.623'E, 141–165 m depth, Tabata (triangular dredge); 11 Nov. 2009; coll. Y.C. Liao *et al.*

**Diagnosis.** *Obliquogobius fluvostratus* n. sp. is distinguished from other congeners by the following combination of features: D2 rays I/9; A rays I/10; P rays 21; VC 26; LR 22; TR 7; belly scaled; isthmus, P base, cheek, predorsal region and operculum naked; gill opening very wide, extending forward of the vertical through rear margin of pupil; and specific life colouration as head with vertically infraorbital yellow band; one wide longitudinal yellow band from operculum terminating at posterior end of caudal fin, band increasingly wider, such that posterior half of body completely yellow.

**Description.** Body proportions listed in Table 1. Body elongate, compressed. Head large (30.1% SL), compressed; snout profile slightly pointed and blunt, snout rather short. Eyes large, dorsal margin prominent; bony interorbital width narrow. Mouth oblique, forms a 45–50° angle to the horizontal, lower jaw terminates at a vertical of through anterior margin of the pupil. Lower jaw prominent; upper and lower jaws with 3–4 rows of conical teeth; outermost row of teeth irregularly arranged; 11–12 teeth on each side of upper jaw approximately four times larger than the rest; vomerine teeth absent; tongue truncate, weakly notched mid-tongue. Anterior naris a short tube, posterior naris as large hole. Gill opening very wide, extends anteroventrally through the rear margin of eye. VC 10 + 16 = 26. Dorsal pterygiophore formula 3/221101/9.

Fins. D1 rays VI; D2 rays I/9; A rays I/10; P rays 21(left); V rays I/5+I/5; C segmented rays 17; C branched rays 13. D1 rays reaching D2 origin when adpressed; D2 rays shorter, not reaching segmented C rays when adpressed. P elliptical and long, rear tip extending posterior to vertical of A origin; A origin inserted into vertical of second element of D2; V rounded and moderately long, reaching genital papillae when adpressed, frenum absent, two sides of V joined together by concave, low connecting membrane, all soft rays of V splits into three branches twice. C asymmetrical with upper half of rays more protruded than those of lower half.

Scales. LS 22; TR 7; PreD 0. Scales on body ctenoid posteriorly and cycloid anteriorly. Belly scaled; isthmus, pectoral fin base, cheek and operculum naked. Middle extension of predorsal region entirely naked. Anterolateral extension of scales on head to above terminal pore  $\rho$  of anterior oculoscapular canal, anterodorsal portion of nape partially abraded.

Head lateral-line system. Canals: Oculoscapular canal present: anterior terminal paired pores  $\sigma$ , single interorbital pore  $\lambda$ , single pore  $\kappa$ , paired pores  $\omega$ , paired postorbital pore  $\alpha$  and lateral terminal pore  $\rho$ ; preopercular canal with three pores as  $\gamma$ ,  $\delta$  and  $\epsilon$ .

Sensory papillae: Infraorbital papillae pattern longitudinal: row *a* short and not reaching vertical midline of eye; row *b* very short, along the lower margin of orbit, row *c* extending beyond vertical midline of orbit, row *d* with densely set papillae, row *cp* as single papilla, row *f* as paired papillae.

**TABLE 1.** Holotype morphometry of *Obliquogobius fulvostratus* n. sp., from Kumejima, Japan

Character	Value
Body length (mm)	23.4
% in Standard length	
Head length	30.1
Predorsal length	39.6
Snout to 2nd dorsal length	51.8
Snout to anus	50.5
Snout to anal fin origin	52.8
Prepelvic length	25.9
Caudal peduncle length	25.0
Caudal peduncle depth	10.9
1st dorsal fin base	14.3
2nd dorsal fin base	19.3
Anal fin base	19.8
Caudal fin length	28.9
Pectoral fin length	28.3
Pelvic fin length	24.0
Body depth at pelvic fin origin	19.0
Body depth at anal fin origin	17.1
Body width at anal fin origin	10.3
Pelvic fin origin to anus	23.5
% in Head length	
Snout length	23.0
Eye diameter	45.2
Cheek depth	26.4
Postorbital length	44.7
Head width in maximum	61.3
Head width in upper gill opening	34.9
Bony interorbital width	4.4
Fleshy interorbital width	16.9
Low jaw length	40.7
% in caudal peduncle length	
Caudal peduncle depth	43.3

Colouration in fresh preservative and markings. The following description is based on a photograph taken of a fresh specimen prior to preservation (Fig. 1). Ground colour beige to light gray; infraorbital yellow band about a half of pupil diameter in width, band originating below eye and coursing ventrally and terminates at rear margin of lower jaw, band does not persist in preservative; inverted-triangular grayish black mark obscured under yellow band when live; when preserved, only an inverted-triangular gray mark remains, the broad end originates below eye and the apex terminates at the posterior end of the lower jaw; mark made up of closely-set melanophores; region of snout anterior to aforementioned black mark beige and devoid of melanophores; anterior tips of upper and lower lips light pink; one wide longitudinal yellow band originating at the posterior end of the operculum and courses along mid-flank, terminating at posterior end of caudal fin, band about one pupil width, band increasingly

widens such that posterior half of body is uniformly yellow; band immediately decreases in width at the origin of caudal fin, covering only lower two-thirds of C region; upper third of C dusky, due to random small black spots on fin membrane; yellow longitudinal band does not persist in preservative; lower two-third of C hyaline in preservative; D1 slightly damaged but some melanophores observed distally; D2 hyaline with thin longitudinal yellow stripe at base, stripe does not persist in long preservative; P, V and A hyaline.

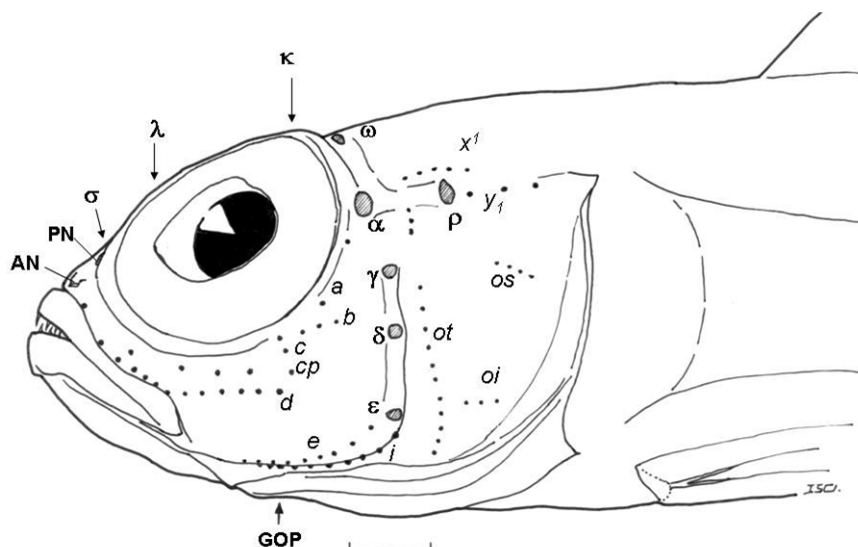


**FIGURE 1.** *Obliquogobius fulvostriatus* n. sp., holotype, NSMT-P102090, 24.3 mm SL, 141–165 m depth, Kumejima, Ryukyu Islands, Japan. Photograph by S.H. Su.

**Distribution.** This species is only known from Kumejima, Ryukyu Islands, Japan.

**Etymology.** The specific name, *fulvostriatus*, is derived from the longitudinal yellow band (in Latin: “*fulvo* + *striata*”) on the trunk, a conspicuous character in the fresh specimen.

**Remarks.** *Obliquogobius fulvostriatus* n. sp. and *O. megalops* Shibukawa & Aonuma, 2007, have wide gill openings and a low connecting membrane between the pelvic fins versus narrower gill openings and the pelvic fins completely united in congeners. However, *O. fulvostriatus* n. sp. can be differentiated from *O. megalops* by these characters: D2 rays I/9, A rays I/10, P rays 21 (vs. D2 rays I/8, A rays I/9, P rays 23); black T-shaped mark absent from C base (vs. present); and dark markings absent from the body in the preserved specimen (vs. 5 narrow vertical black bars in preserved specimens).



**FIGURE 2.** Head lateral-line system of *Obliquogobius fulvostriatus* n. sp., holotype, NSMT-P102090, 24.3 mm SL. Scale = 1 mm. The arrow indicates the ventral extent of gill opening. Abbreviations: AN and PN = anterior and posterior nares, respectively; GOP = anteroventral extension of gill opening. Illustration by I-Shiung Chen.

## An artificial key to *Obliquogobius* species in Western Pacific.

1. Gill opening terminates before or at vertical through the posterior margin of preopercle ..... 2
- Gill opening terminates at vertical through rear margin of pupil ..... 3
2. Second dorsal fin rays I/8; lateral body with median gray spot; and caudal fin base with two gray transverse bars .....  
..... *Obliquogobius cirrifer*
- Second dorsal fin rays I/9-10; lateral body with 6 transverse yellow stripes; and caudal fin base with a black spot .....  
..... *Obliquogobius yamadai*
3. Second dorsal fin rays I/8; anal fin rays I/9; black T-shaped mark present on caudal fin base; and 5 lateral narrow, vertical black bars on body .....  
..... *Obliquogobius megalops*
- Second dorsal fin rays I/9; anal fin rays I/10; no marks on caudal fin base; and no dark markings on body .....  
..... *Obliquogobius fulvostriatus* n. sp.

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