Zootaxa 5738 (1): 156–161
https://www.mapress.com/zt/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

https://doi.org/10.11646/zootaxa.5738.1.19
http://zoobank.org/urn:lsid:zoobank.org:pub:C2EF6CB5-2F78-422B-B5EB-EF60AC196D99

A new species of shrimp-goby genus *Cryptocentrus* (Teleostei:Gobiidae) from the Philippines

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Abstract

A new marine shrimp-goby of the genus *Cryptocentrus* was collected from the coastal waters of Luzon, the Philippines. This new species, *Cryptocentrus aureostriatus* **sp. nov.**, can be well distinguished from other congeneric species by the following unique combination of features: (1) second dorsal fin I/11; anal fin I/10; pectoral fin 16; (2) squamation: longitudinal scale rows 60–62; transverse scale rows 24; predorsal scale rows 17; (3) normal vertebral count 26; and (4) colouration in life: body generally creamy yellow, body with about eight major brown cross-bars; nape with two brown major bars; caudal fin base with a deep, vertical brown bar; head with three major oblique, parallel golden yellow stripes; snout tip with one short orange bar; the posterior tip of opercle with one yellow mark; first dorsal fin with three major oblique yellow stripes; second dorsal fin translucent with several yellow stripes; anal fin creamy yellow to pale white and unmarked. A description of the new species and a brief comparison with related species in the Indo-Pacific region will be reported in this paper.

Key words: *Cryptocentrus*, new fish, shrimp-goby, fish taxonomy, the Philippines

Introduction

Gobiid fishes of the family Gobiidae form the largest species group of the teleost fishes (Miller 1988, 1993). In the Indo-Pacific region, the great diversity of marine fish fauna has yielded the highest number of generic and specific diversity of gobies, especially around coral reef habitat, compared to all the other marine habitats.

Among them, a good variety of gobies associate with shrimps: 13 genera and approximately 150 species are currently known (Eschmeyer *et al*. 2018), of which *Amblyeleotris* Bleeker, 1874 (39 species), *Cryptocentrus* Valenciennes in Cuvier & Valenciennes, 1837 (38 species), and *Vanderhorstia* Smith, 1949 (29 species) contain the majority of species (Greenfield & Allen 2018; Hoese 2019).

Hoese & Larson (2004) characterized the genus *Cryptocentrus* and divided the group into at least 5 morphological groups. After that, Allen & Randall (2011) described two new species with unique dentition within the genus: one species with vomerine teeth and the other with large fangs anteriorly in both jaws. Greenfield & Allen (2018) described a dwarf species from Fiji, *Cryptocentrus nanus* Greenfield & Allen, 2018. Hoese (2019) revised the *Cryptocentrus strigilliceps* complex, distinguished within the genus mainly by having ctenoid scales posteriorly on the body, and named a new goby, *Cryptocentrus altipinna* Hoese, 2019, bringing the total number of species in the genus up to 37.

During our recent research of shrimp-goby in Taiwanese waters via SCUBA diving, one newly described species was *Cryptocentrus taiwanensis* Chen & Yang, 2024 found from northern Taiwan, bringing the total species up to 38.

 Accepted by C.-W. Chang: 2 Dec. 2025; published: 30 Dec. 2025

Till present, the recently identified, undescribed species can be well defined as a member of *Cryptocentrus* in the Indo-Pacific. A new discovery was found from the marine fish expedition in the Aurora Sea, the Philippines, teamed by one of us (KTS) in 2007. The aim of this paper is to describe herein the new species as the 39th species of *Cryptocentrus* from the Indo-Pacific region.

Here we describe this very rare, new shrimp-goby species based on the only holotype from the coastal waters of Aurora, northern Luzon, the Philippines. A brief comparison of this new species will also be addressed in this paper.

Materials and Methods

All counts and measurements were made from specimens preserved in 70% ethanol after 10% formalin fixation. The counting methods followed Akihito *et al.* (1984), Chen & Shao (1996) and Chen *et al.* (1999; 2006). The measurements followed Chen *et al.* (1999; 2006) and Chen & Fang (2003).

Terminology of cephalic sensory system in general followed Miller (1988) and Wongrat & Miller (1991) based on Sanzo (1911). Vertebrae and dorsal pterygiophore formula (sensu Akihito *et al.* 1984) were counted from X-ray radiographs. Standard length (SL) was used throughout. The type specimen is deposited at Pisces collection of the Zoological Museum in Research Center for Biodiversity, Academia Sinica, Taipei (ASIZP).

Systematics

***Cryptocentrus aureostriatus* sp. nov.**
(金帶猴鯊)
(Figs. 1–2)

Holotype

NTOUP- 2007-05-351, 48.1 mm SL, May 20, 2007, coll. Y.C. Liao, CP2653, Aurora, the Philippines.

Diagnosis

Cryptocentrus aureostriatuss **sp. nov.** can be well distinguished from all other congeners by the unique combination of the following features: (1) second dorsal fin I/11; anal fin I/10; pectoral fin 16; (2) squamation: longitudinal scale rows 60–62; transverse scale rows 24; predorsal scale rows 17; (3) normal vertebral count 26; and (4) colouration in life: body generally creamy yellow, body with about eight major brown cross-bars; nape with two brown major bars; caudal fin base with a deep, vertical brown bar; head with three major oblique, parallel golden yellow stripes; snout tip with one short orange bar; the posterior tip of opercle with one yellow mark; first dorsal fin with three major oblique yellow stripes; second dorsal fin translucent with several yellow stripes; anal fin creamy yellow to pale white and unmarked.

Description

Body proportions as the following different values.

Head length 27.3; predorsal length 35.3; snout to second dorsal fin origin 52.9; snout to anal fin origin 59.2; snout to anus 55.9; prepelvic fin length 35.3; caudal peduncle length 19.0; caudal peduncle depth 9.6; first dorsal fin base 16.6; second dorsal fin base 33.3; anal fin base 23.3; caudal fin length 39.5; pectoral fin base 26.2; pelvic fin length 22.2; body depth in pelvic fin origin 21.3; body depth in anal fin origin 17.0; body width in pelvic origin 8.5; and pelvic fin origin to anus 25.7 all above as percentage in standard length.

Snout length 26.2; eye diameter 26.4; postorbital length 63.9; cheek depth 36.2; head width in upper gill-openning 42.2; head with in maximum 50.5; fleshy interorbital width 15.6; bony inteeorbital width 6.8; and lower jaw length 50.2 all all above as percentage in head length.

Body rather slender, subcylindrical anteriorly, compressed posteriorly. Head subcylindrical and somewhat compressed. Snout profile very straight but steeply oblique. Lips thick. Eye relatively high and large. Eye diameter about equal to snout length. Outer profile of eye above dorsal-profile projection. Tongue margin rounded. Rear

edge of mouth: extending to the vertical of midline of orbit. Anterior nostril as the short tube. Posterior nostril as an oblong pore anterior to lower part of eye. Postorbital range rather long. Gill-opening extending ventrally to about vertical of midline of opercle. Vertebral count 10+16=26.

Fins.—D1 VI, D2 I/11; A I/10; P 16; V I/5+I/5. D1 rounded, all anterior 5 spinous rays about equal. Origin of A inserted below about third branched rays of D2. Rear tips of D2 and A fin rays almost not extending to procurrent rays of C in both sexes. P moderate moderate large and oblong, rear tip merely reaching about vertical line of last spinous rays in male. V moderate size and rounded, the distal franum margin rather straight. C elliptical and middle extension somewhat pointed.

Scales.—Body mostly covered with rather small cycloid scales, predorsal scale rows 17. LR 60–62; TR 24; Pred 17; and SDP 18. Head and prepelvic region entirely naked.

TABLE 1. *Cryptocentrus aureostraiatus* from the Philippines.

Type	Holotype
No. of samples	
standard length (mm)	48.1
% in SL	
Head length	27.3
Predorsal length	35.3
Snout to 2nd dorsal fin origin	52.9
Snout to anal fin origin	59.2
Snout to anus	55.9
Prepelvic length	35.3
Caudel peduncle length	19.0
Caudal peduncle depth	9.6
First dorsal fin base	16.6
Second dorsal fin base	33.3
Anal fin base	23.3
Caudal fin length	39.5
Pectoral fin length	26.2
Pelvic fin length	22.2
Body depth of pelvic fin origin	21.3
Body depth of anal fin origin	17.0
Body width of anal fin origin	8.5
Pelvic fin origin to anus	25.7
% in HL	
Snout length	26.2
Eye diameter	26.4
Postorbital length	63.9
Cheek depth	36.3
Head width in upper gill-opening	42.2
Head width in maximum	50.5
Fleshy interorbital width	15.6
Bony interorbital width	6.8
Lower jaw length	49.0
% in Caudel peduncle length	
Caudal peduncle depth	50.2

Values in parenthese are the average.

Head lateral line system (Fig. 2)

Canals: Nasal extension of anterior oculoscapular canal with terminal pore σ located in above posterior nostrils. Anterior interorbital sections of oculoscapular canal with a single pore λ. A single pore κ in near rear of interorbital region and with paired pore ω. Lateral section of anterior oculoscapular canal with the front pore α, median pore β, and posterior terminal pore ρ. Posterior oculoscapular canal with two terminal pores θ and τ. Preopercular canal present with three pores including pore γ, δ and ε.

Sensory papillae: Typically cheek with transverse infraorbital papillae pattern. 5 major transverse rows of papillae below eye. In the middle crossing with very long row *b* starting from midline vertical of eye to corner of preopercule. Row *d* as the ventrally terminal points of all 5 transverse rows. Row 1 simple transverse. Row 2 mainly located below the longitudinal mid-line as row *b.* Row *3* long and crossing the row *b*. Row *4i* mostly as linear transverse row below row *b*. Row *5* only seen as *5s* as all papillae above row *b*. Row *f* as paired longitudinal row. Anterior edge of row *oi* connecting to lower region of row *ot*.

FIGURE 1. *Cryptocentrus aureostriatus*, holotype, NTOU-2007-05-351, 48.1 mm SL, Aurora Sea, the Phillipines.

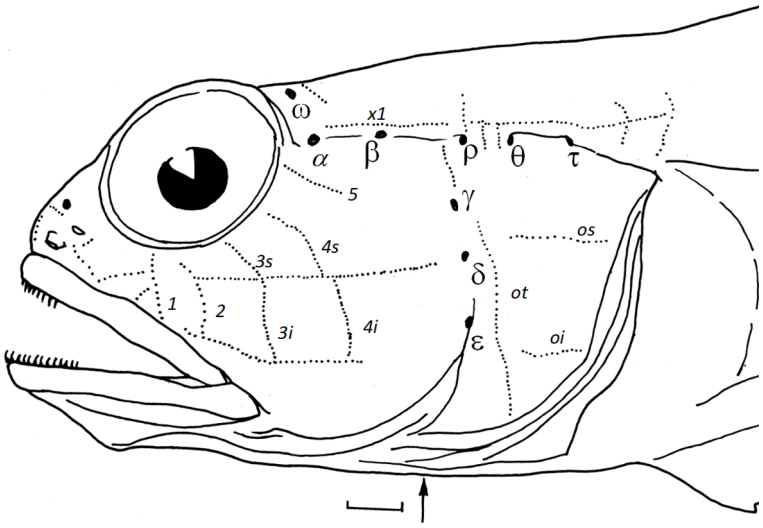

FIGURE 2. Head lateral-line system of *Cryptocentrus aureostriatus,* holotype, 48.1 mm SL, the Philippines. Bar = 1 mm SL. The arrow indicates the ventral terminal of gill-opening.

Coloration while fresh

Body generally creamy yellow, body with about eight major brown cross-bars, three before anus, five on posterior trunk. Belly snow white. Nape with two brown major bars. Caudal fin base with a deep, vertical brown bar.

Head with three major oblique, paralell golden yellow stripes. Snout tip with one short orange bar. Upper jaw with yellow median mark. The posterior tip of opercle with one yellow mark. First dorsal fin translucent with three

major oblique yellow stripes. Second dorsal fin translucent with several yellow stripes. Caudal fin translucent with yellow marks on most of fin rays. Pectoral fin translucent. Pelvic fin pale white. Anal fin creamy yellow to pale white and unmarked.

Etymology

The specific name, *aureostriatus*, is referred to specific character on head with several parallel golden stripes (*Latin:* aureus + stiatus).

Distribution

The new species is very rare and only found from the type locality of current goby merely found from the coastal waters of Aurora, the Philippines. It is still possible to be found in other locality of eastern Taiwan after more intensive survey for further field exploration.

Remarks

Therefore, the new species *Cryptocentrus aureostriatus* **sp. nov.** can be well distinguished from somewhat related species *C. shigensis* Kuroda, 1956 with blunt head and caudal fin as lanceolate profile among congeners by the following features: (1) pectoral fin rays 16 vs. 18; (2) second dorsal fin I/11 vs. I/10; (2) anal fin rays I/10 vs. I/9; (3) longitudinal scale 60–62 vs. 69; and (4) specific pattern: head with three paralell golden yellow stripes vs. no any such stripes; trunk with brown cross-bars vs. median oblong blotches. However, the detail distribution pattern of current new species is still far from under understanding, more field survey for current taxonomic group is still very essential in near future in the West Pacific.

Acknowledgments

ISC wishes to thank the research grant support of CEO of NTOU, Keelung, Taiwan. KTS is very grateful for the grant support from Philippe Bouchet for organizing and sponsoring the expedition of 2007 AURORA expedition of the Philippines and the financial support from U.S. and France.

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