



First record of marine goby *Priolepis profunda* (Weber, 1909) (Teleostei: Gobiidae) from Taiwan

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Abstract

The marine goby *Priolepis profunda* (Weber, 1909) is recorded for the first time from Taiwan, based on three specimens (33.2–36.4 mm SL) collected from fishery by-catches of commercial trawling that landed at Da-shi fish port in Ilan County and Keziliao fishing harbor in Kaohsiung, Taiwan. The redescription of current newly recorded species would be provided in this paper.

Keywords: New record, Gobiidae, species diversity, fish fauna, Taiwan

Introduction

Gobies of the family Gobiidae, with an incredible diversity of over 2,000 species across 250 genera, represents the most diverse group of vertebrate fish, (Nelson 2006; Fricke *et al.* 2023). The genus *Priolepis* Valenciennes, 1837, of the subfamily Gobiinae currently contains 37 valid species, and is a group of small marine gobies (less than 50 mm SL) that is widely distributed in Indo-Pacific and Atlantic Oceans. (Greenfield, 1989; Winterbottom & BurrIDGE 1989, 1992, 1993a, b; Allen *et al.* 2018). Most of the species members found from shallow rocky to deep water >100 meter (Winterbottom & BurrIDGE 1989, 1992, 1993a, b; Hoese & Larson 2011; Koeda *et al.* 2021). The fish genus is recognized by lacking cephalic sensory canals and associated pores, having a gill opening extending anteroventrally to below the vertical limb of the preopercle or just anterior to this, possessing, at least primitively, vertical bars with darkened borders on the head and body, and having denticles or odontoids on the medial surface of the outer gill rakers of the first gill arch (Winterbottom & BurrIDGE 1989, 1992, 1993a, b). Furthermore, the species members of the genus can be subdivided into three distinct groups based on their cheek papillae patterns and predorsal scale characteristics: Group I with well-developed transverse pattern of cheek papillae and predorsal scales, Group II with reduced pattern of transverse cheek papillae and no predorsal scales, and Group III with reduced pattern of transverse cheek papillae and has predorsal scales (Winterbottom & BurrIDGE 1989 1992, 1993a, b).

During our investigation on the diversity of marine goby fish of coastal water off Taiwan, we firstly discovered three specimens of *Priolepis profunda*, from the by-catch of commercial trawling which landing at two fish ports in northeastern and southern coast of Taiwan. The brief re-descriptions of current species from Taiwan, as well as character comparisons to previous *P. profunda* data are discussed in this paper.

Materials and Methods

Fish samples of three *P. profunda* specimens of were collected from commercial trawler catches that landed at two fish ports: Da-shi fish port in north-eastern Taiwan and Keziliao fishing harbour in Kaohsiung, southern Taiwan. The fish specimens were preserved in 10% formalin then transferred to 70% ethanol for long term storage.

Measurements were made to the nearest 0.01 mm using a digital calliper with the aid of a stereo microscope. Body length was recorded as standard length (SL). All morphological counts follow Miller (1988) and meristic counts follow Chen and Shao (1996).

The terminology of the cephalic sensory canals and free neuromast organs (sensory papillae) follow Wongrat and Miller (1991) based on Sanzo (1911). The fish length is given as percentage of standard length (SL). Meristic abbreviations used in this paper are as follows: A, anal-fin; C, caudal-fin; D1, first dorsal-fin; D2, second dorsal-fin; P, pectoral-fin; LR, lateral scales; TR, transverse scales; PreD, predorsal scales; SDP, scale series from origin first dorsal fin to upper pectoral fin origin; VC, vertebral count. Type specimens have been deposited in the Pisces collections of National Taiwan Ocean University, Keelung (NTOUP).

Systematics

Priolepis Valenciennes, 1837

Priolepis profunda (Weber, 1909)

(Figs. 1–2)

Quisquilius profundus Weber, 1909:155 (Sapeh-Strasse, Sumbawa and Dongala, Palos Bai, Celebes).



FIGURE 1. *Priolepis profunda*, upper one, NTOUP-2021-12-181, 36.0 mm SL; lower one, NTOUP-2022-09-111, 33.2 mm SL.

Materials examined

NTOUP-2021-12-181, 2 specimens (36.0–36.4 mm SL), Daxi Harbour, Toucheng township, Yilan County, Taiwan, depth 70–80 m, coll. H.E. Li & T. Harefa, 12 December, 2021.

NTOUP-2022-09-111, 33.2 mm SL, Kezilaio Fishing Harbor, Ziguan District, Kaohsiung City, depth more than 50 m, coll. H.E. Li & T. Harefa, 11 September, 2022.

Description

Body proportions were listed in Table 1. Body moderately elongated, slightly compressed posteriorly. Head slightly compressed. Mouth oblique, maxilla extending posteriorly to vertical drawn anterior margin of eye. Lower jaw slightly protruding. Anterior nasal with a short tapering tube reaching anteriorly to above anterior margin of upper lip, posterior opening pore-like with low raised rim. Eyes large, dorsolateral. Interorbital broad with no trench or groove. Cheek bulbous. Gill opening on each side large, extending anteroventrally to below the vertical limb of the preopercle.

Fins.—D1 VI, D2 I/10, A I/8, P 18, V I/5+I/5. Second to fourth spine of D1 longest but not elongated, when adpressed. D2 all rays branched and last ray always two rays with one branched; longest ray somewhat reaching upper procurent caudal-fin. A origin located below first ray of D2, all rays branched and last ray always two rays with one branched. All rays of P branched, longest fin ray reaching vertically genitalia pore. V in lacking fraenum; fused with poor-developed connecting membrane; fifth ray subequal with fourth ray; first to fourth rays with four to five branch points and fifth rays branched with two dichotomous branch points; longest ray reaching only anus. Caudal-fin rounded.

Scales.— Body scales were severely damaged, scale counts were primarily determined by examining scale pockets. LR 27–28, TR 11, PreD 19–20, SDP 7; no scales on cheek and opercle; pectoral-fin base cycloid scaled; prepelvic covered with 7 rows of cycloid scales.

TABLE 1. Morphometric measurements of *Priolepis profunda* from Taiwan.

Species	<i>Priolepis profunda</i>		
	NTOUP-2022-09-111	NTOUP-2021-12-181	NTOUP-2021-12-181
voucher number			
sex	male	female	female
Standard length	33.2	36.0	36.4
% in SL			
Head length	29.8	29.4	27.8
Snout to 1st dorsal origin	36.0	36.9	36.4
Snout to 2nd dorsal origin	56.3	56.9	56.6
Snout to anus	51.0	56.4	55.8
Snout to anal fin origin	59.3	62.0	59.8
Prepelvic length	32.6	32.3	31.7
Caudal peduncle length	18.2	23.5	24.5
Caudal peduncle depth	14.6	13.7	14.0
First dorsal fin base	17.6	14.9	14.8
Second dorsal fin base	24.3	22.7	23.8
Anal fin base	17.2	16.8	17.0
Caudal fin length	22.4	24.3	24.4
Pectoral fin length	28.3	27.5	28.2
Pelvic fin length	21.2	23.2	24.6

.....continued on the next page

TABLE 1. (Continued)

Species	<i>Priolepis profunda</i>		
	NTOUP-2022-09-111	NTOUP-2021-12-181	NTOUP-2021-12-181
voucher number			
Body depth of pelvic fin origin	25.4	23.0	25.3
Body depth of anal fin origin	22.9	21.0	23.5
Body width of anal fin origin	15.7	11.9	14.9
Pelvic fin origin to anus % in HL	22.2	25.7	26.0
Snout length	18.4	21.4	20.9
Eye diameter	23.4	20.8	23.1
Postorbital length	40.9	42.3	44.5
Check depth	38.6	34.1	36.8
Head width in upper gill opening	56.3	57.7	61.8
Head width in maximum	78.9	74.3	85.9
Fleshy interorbital width	23.8	24.0	26.7
Bony interorbital width	12.9	12.2	13.0
Lower jaw length	34.6	34.7	37.8

Head lateral-line system.—(Fig. 2)

Canals.—No canal pore on head.

Sensory papillae.—Sensory papillae distributed as follows, with counts and ranges shown in parentheses: Infraorbital papillae present as 6 transverse rows, each row with 4–6 papillae, except row 3 and 5 with 8 and 10 papillae, respectively; rows *b* and *d* (14 and 15 respectively); rows *e* and *i* (41 and 19, respectively) on preoperculo-mandibular and lower jaw; row *f* (7 paired papillae) on rostral mandibular; rows *n* and *g* (7 and 8, respectively); rows *ot*, *oi* and *os* (20, 6 and 12, respectively) on opercle; *p* papillae (9, paired) longitudinally on interorbital; rows *r* and *s* (7 and 3, respectively, all paired) flanking midline in preorbital area; rows *u*, *y* and *z* (11, 4 and 7, respectively) on oculoscapular region.

Colouration of fresh collection materials.—(Fig. 1)

Body brown with scale pockets strongly outlined. Head yellowish orange with four thin white vertical bands: first white vertical band extending from below anteroventral margin of eye to middle upper jaw; second white band extending from below midventral margin of eye along the cheek; third white band extending from below posterior margin of eye to posteroventral of cheek; fourth white band running along mid opercle.

Nape with four white bands: first band curved connecting eyes just middle behind of eyes; second white band curved, connecting third white band on cheek from posterior margin of eye; third white band, slightly curved, connecting with fourth white band on mid opercle. Interorbital with three white bands. Snout with one white band. Iris yellowish orange, pupil surrounded by reddish margin.

Dorsal-fin and anal-fin brown-orange. First dorsal-fin with dark brown blotch on anterior base; two white stripes: first stripe short, running posteriorly to base of fifth spine; second stripe longer, running posteriorly to base of sixth spine. Second dorsal fin alternating with brown-orange and white wavy stripes. Anal fin scattered with black melanophores basally. Pectoral-fin reddish-orange, scattered with black melanophores on anterior half of fin. Pelvic-fin reddish-orange. Caudal-fin brown orange, one specimen with 6–7 rows of brown orange spots, grading posteriorly.

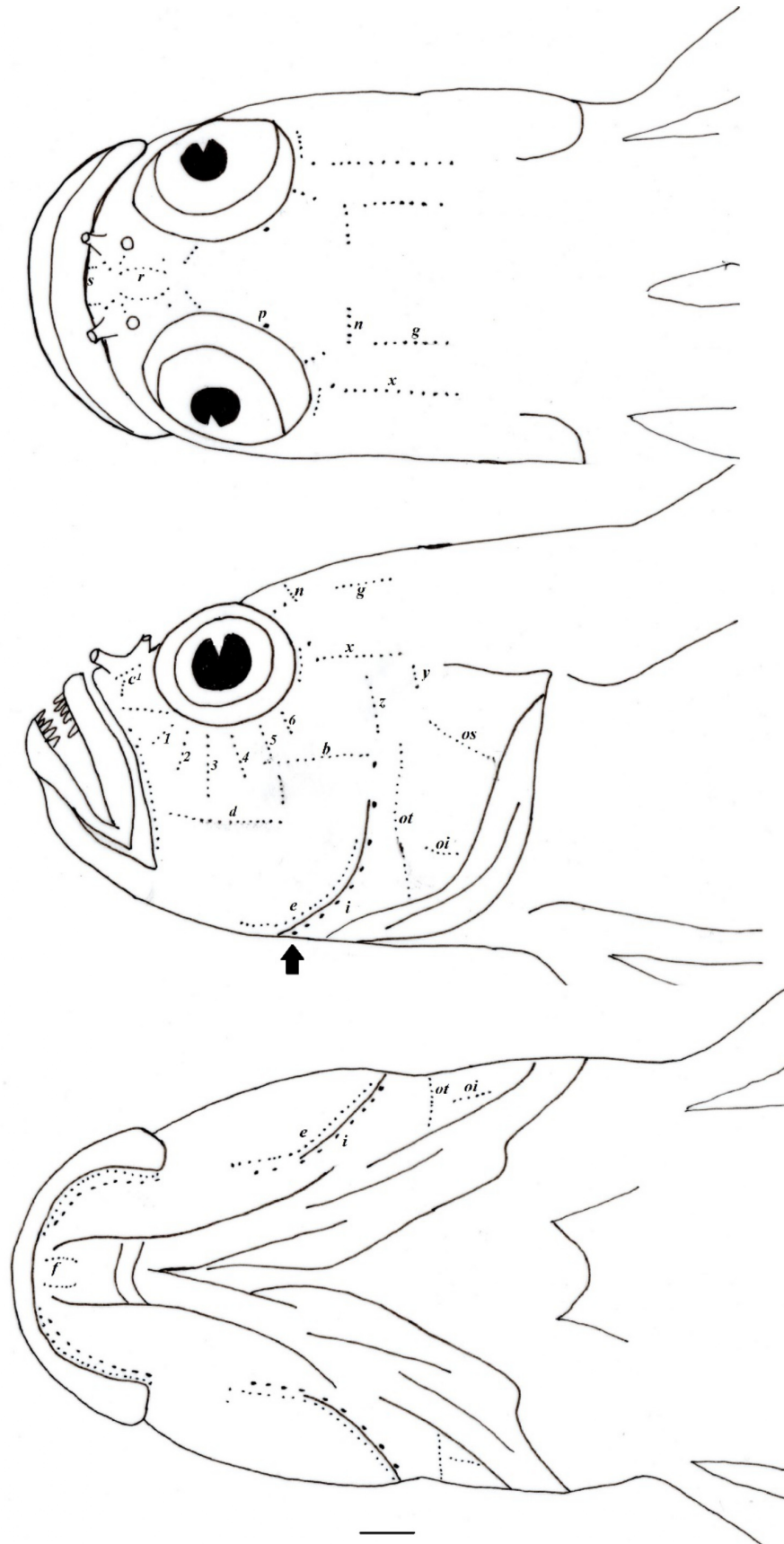


FIGURE 2. Head lateral-line system of *Priolepis profunda*, NTOUP-2022-09-111, 33.2 mm SL. Bar = 1 mm. The arrow denotes the position of the gill opening.

Distribution

P. profunda has been recorded in Indo-west Pacific Ocean, including India, Andaman sea (Myanmar), Indonesia, northwestern Australia, Papua New Guinea, Philippines, Thailand and Japan (Hoese & Larson 2010; Akhito *et al.* 2013; Ramachandran *et al.* 2020; and Fujiwara *et al.* 2022).

Remarks

Present specimens collected from Taiwan belong to Group I of *Priolepis* characterized by well-developed pattern of transverse cheek papillae and the presence of predorsal scale as reviewed by Winterbottom & Burrige (1989, 1992, 1993a, b). *P. profunda*, commonly known as narrow-bar reef goby, was redescribed by Hoese and Larson using syntypes from Indonesia, and diagnosed the species by having broad interorbital; presence of predorsal scales; prepelvic with 2-8 scales; opercular and cheek without scales; second dorsal-fin I/10, anal-fin rays I/8, pectoral rays 19; well-developed transverse cheek papillae, fifth rays of pelvic-fin branched; and a distinct large black blotch at anterior base of first dorsal-fin. The present specimen has similar character by possessing brown black blotch on the anterior base of first dorsal-fin and most meristic counts were within the range to those described by Hoese and Larson (2010) (Table 2).

TABLE 2. Comparison of meristic counts of *P. profunda* specimens.

Character	This record	Weber, 1909	Hoese & Larson, 2011	Ramachandran <i>et al.</i> 2020	Fujiwara <i>et al.</i> 2022
1 st dorsal-fin rays	VI	VI	VI	VI	VI
2 nd dorsal-fin rays	I/10	I/10–11	I/10–11	I/11	I/10
Anal-fin rays	I/8	I/8	I/8	I/8	I/8
Pectoral-fin rays	18	19	18–21	19	20
Pelvic-fin rays	I/5	-	I/5	I/5	I/5
Predorsal scale rows	19–20	-	14–21	15–16	18
Longitudinal scale rows	27–28	32	25–29	27	26
Transverse scale rows	11	10	10–14	11	11

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