

## FIVE NEWLY RECORDED GOBIES OF TAIWAN

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### ABSTRACT

**Kun-hsiung Chang and Sin-che Lee** (1971) *Five Newly Recorded Gobies of Taiwan* Bull. Inst. Zool., Academia Sinica 10(1): 37-43. The present paper reports on some notes and descriptions of the gobiid fishes found in the intertidal pools of Keelung and Hengchun in Taiwan. The materials dealt here are referable to five species belong to four genera of the family Gobiidae: *Gnatholepis knighti*, *Pipidonia arenarius*, *Quisquilius eugenius*, *Callogobius liolepis* and *C. snelli*. These species are recognized to be new to the fauna of Taiwan.

In 1969, Chen (4) listed fifty-one species of gobiid fishes in his "A synopsis of the vertebrates of Taiwan, vol. 2". At the same time, Chang and Lee (2) added *Zonogobius semidoliatus* (Valenciennes) therefore, the fishes of Gobiidae found in Taiwan including the following five gobies will be fifty-seven species in total. The present paper deals with the following five newly recorded gobiid fishes of Taiwan: *Gnatholepis knighti*, *Pipidonia arenarius*, *Quisquilius eugenius*, *Callogobius liolepis* and *C. snelli*, which were collected by the authors in March, May, 1969 and November 1970. The first three species were obtained from the tide pool of Keelung locating at the northern tip of Taiwan, the rest were obtained from the tide pool of Hengchun locating at the southern tip of Taiwan. All specimens are now deposited in the Museum of the Institute of Zoology, Academia Sinica, Taipei, Taiwan, R.O.C. All meristic counting of fin rays and vertebrae was based on their radiographs. The abbreviations for the disposition of the sensory canal pores used

in text are listed as follows: Na., the nasal pore; Itoa., the anterior interorbital pore; Itop., the posterior interorbital pore; Sot., the posterior otic pore; Ota., the anterior otic pore; Otp., the posterior otic pore; Ite., the intertemporal pore; Pop 1-3., the preopercular pores; Tea. and Tep., the anterior and posterior temporal pores respectively (3).

*Gnatholepis knighti* Jordan & Evermann, 1903 (Fig. 1)

*Gnatholepis knighti* Jordan & Evermann, 1903: 204-205 (10).

*Gnatholepis knighti*, Herre, 1927: 137-139, pl. 29, fig. 1 (9).

*Gnatholepis knighti*, Matsubara, 1955: 828 (14).  
*Gobius knighti* Tomiyama, 1936: 72, fig. 24 (18).

**Material examined:** 2♂♂, 46.0 and 47.0 mm, Keelung, III 27, 1969 (Lee), Lee leg.

**Descriptions:** Body moderately elongate, subcylindrical anteriorly and compressed posteriorly, covers with ctenoid scales. Cheeks and opercles scaled, without hori-

zontal furrow on head sides. Sensory canal pores: Itoa., Sot., Ota., others absent. Eyes subequal to snout, interorbital space narrow. Oblique mouth moderate, maxilla extends below one-third the eye length. Tongue truncate, slightly notched anteriorly. The

teeth of outer row in upper jaw curved, larger than the inner row; in lower jaw, the teeth of outer row smaller but with 1 or 2 larger canines close to the symphysis of lower jaw.

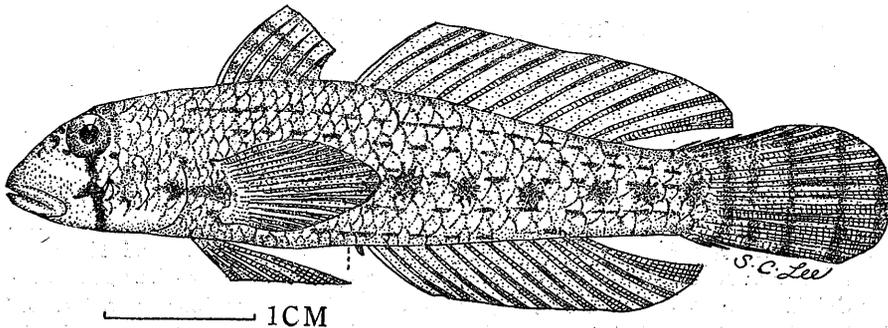


Fig. 1. *Gnatholepis knighti* Jordan & Evermann, ♂.

First dorsal VI. Second dorsal I, 11, all rays slender. Anal I, 11. Pectoral 17, long, extends a little beyond the origin of anal, all pectoral rays entirely connected by fin membrane. Pelvic I, 5, fully united to form a disc. Branched caudal rays 7+6=13. Lateral line absent, scales 30-31 in lateral series from the hind tip of gill-opening to caudal base, 10 in transversal series from origin of second dorsal fin, predorsal 8. Vertebrae 10+16=26 including urostyle.

**Measurements:** Length of head 3.83-3.92 (3.88), depth of body 4.70-4.84 (4.77), distance from origin of first dorsal to snout tip 3.36-3.54 (3.45), to caudal base 1.47-1.48 (1.48); origin of anal to snout tip 2.03-2.09 (2.09), to caudal base 2.14, all in standard length. Snout 4.0, eye 4.13-4.23 (4.21), interorbital 11.0-12.0 (11.5), width of head 1.60-1.71 (1.66), width of body 1.85-2.0 (1.93), all in length of head. Eye 1.04-1.07 (1.06) in length of head. Eye 1.04-1.07 (1.06) in length of snout. Interorbital 2.63-2.80 (2.72) in eye.

**Color in formalin:** Body light brownish gray, several interrupted dark lines and seven blotches on either side of body. A black stripe running across eyes. Dorsal and

anal fins with rows of spots while the caudal with blackish cross bars.

**Distribution:** This species is widely distributed in the subtropical and the tropical Pacific Ocean, eastward to Polynesia and Hawaiian Islands, westward to the Philippines and northward to the Ryukyu Islands and Japan.

**Remarks:** The specimens are quite in agreement with type specimen and the descriptions of Herre (9), Tomiyama (18) and Matsubara (14). From which the interorbital space of Herre's specimens are slightly narrower than that in other specimens. There are no sexual dimorphism in Taiwan specimens. This species can be distinguished from *G. otakii* by having black stripe across eyes.

*Pipidonia arenarius* (Snyder, 1908)

(Fig. 2)

*Heteroleotris arenarius* Snyder, 1908: 100 (16).

*Heterleotris arenarius*, Snyder, 1912: 513, pl. 67, fig. 3 (17).

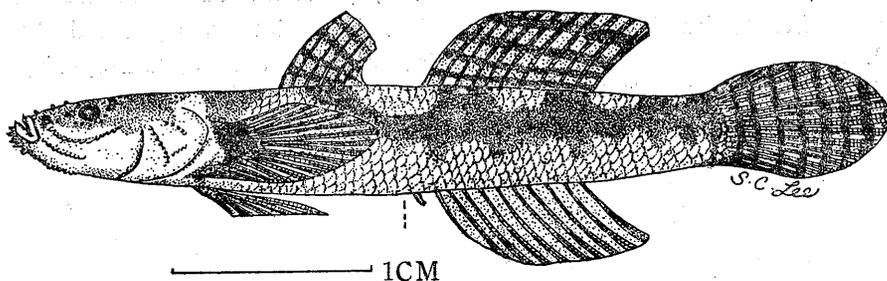
*Pipidonia arenarius* Tomiyama, 1936: 93 (18).

*Pipidonia arenarius*, Matsubara, 1955: 839 (14).

**Material examined:** 1♀, 30.5 mm and 4♂♂, 27.0-35.0 mm, Keelung, III 27, 1969 (Lee), Lee leg.

**Descriptions:** Body elongate and subcylindrical, covered with small ctenoid scales. Head and nape naked, depressed. Snout tip and throat with short fleshy barbels, head side with 4 pearly-like horizontal dermal ridges, the lowest two ridges running along

upper and lower jaws respectively. Sensory canal pores: Na., Sot., Ota., no pores on interorbital, an additional pore lies between paired anterior otic pores. Intraorbital row of papillae present, dorsal surface of snout ornaments several fleshy papillae. Small mouth subvertically, maxilla not reaching to the front margin of the orbit, lower jaw slightly protruded. Teeth rather small, about three rows in both jaws. Eyes very small, separated by broad interorbital space.



FFig. 2. *Pipidonia arenarius* (Snyder), ♂.

First dorsal VI. Second dorsal I, 10. Anal I, 9. Pectoral 17, elongate but not reaching to the origin of anal. Pelvic I, 4. Branched caudal rays 7+6=13. Lateral line absent, scales 40-45 in a longitudinal row. Vertebrae 11+15=26 including urostyle.

**Measurements:** Length of head 3.37-3.75 (3.61), depth of body 7.0-8.57 (7.95), distance from origin of first dorsal to snout tip 2.66-2.75 (2.70), to caudal base 1.58-1.67 (1.61), origin of anal to snout tip, 1.62-1.82 (1.70), to caudal base 2.35-2.62 (2.55), all in standard length. Snout 4.24-5.93 (4.80), eye 7.20-9.50 (8.74), interorbital 4.75-6.55 (5.97), width of head 1.46-1.62 (1.51), width of body 2.11-2.87 (2.46), all in length of head. Eye 1.50-2.0 (1.84) in length of snout. Interorbital 0.50-0.91 (0.70) in eye.

**Color in formalin:** Upper part of head dark brown. A brownish band running from snout tip to caudal base, and crossing with

6 or 7 same colored vertical bars. Dorsals and caudal with dark dots. Anal transparent. Pectorals also transparent but dark brown at basal upper halves.

**Distribution:** This species was only reported from the Ryukyu Islands.

**Remarks:** Only two species, *Pipidonia arenarius* and *P. quinquecincta* belonging to genus *Pipidonia*, but according to the opinion of Tomiyama (18), the latter one may be recognized as synonym of *P. arenarius*.

*Quisquilius eugenius* Jordan & Evermann, 1903 (Fig. 3)

*Quisquilius eugenius* Jordan & Evermann, 1903: 203-204 (10).

*Amblygobius naraharae* Snyder, 1912: 515: pl. 68, fig. 2 (17).

*Cingulogobius boulengeri* Herre, 1927: 201-202, pl. 16. fig. 1 (9).

*Gobius eugenius* Tomiyama, 1936: 61 (18).

*Quisquilius eugenius*, Koumans, 1953: 130-131 (13).

*Quisquilius naraharae* Matsubara, 1955: 826 (14).

*Gobius eugenius*, Tomiyama, 1958: 52 (19).

*Quisquilius eugenius*, Smith, 1959: 210, pl. 12, fig. D (15).

*Quisquilius eugenius*, Fowler, 1960: 152-153, figs. 26-27 (6).

*Quisquilius eugenius*, Gosline & Brock, 1960: 270 (8).

**Material examined:** 1 ♀, 41.0 mm, Kee-

lung, V 10, 1969 (Lee), Lee leg.

**Descriptions:** Body compressed, covers with large ctenoid scales. Predorsal scales extending forward to posterior margin of orbit. Opercles scaly at their upper corners. Cheeks naked, with two rows of papillae, both jaws and preopercles are fringed with papillae. Oblique mouth larger, lower jaw slightly protruded, maxilla extends to front edge of orbit. Tongue nearly rounded. Acute teeth strong. Anterior nostril a small tube, posterior one pore-like with short flap. Eyes larger, separated by narrow interorbital space. Gill-openings wide, connected with isthmus.

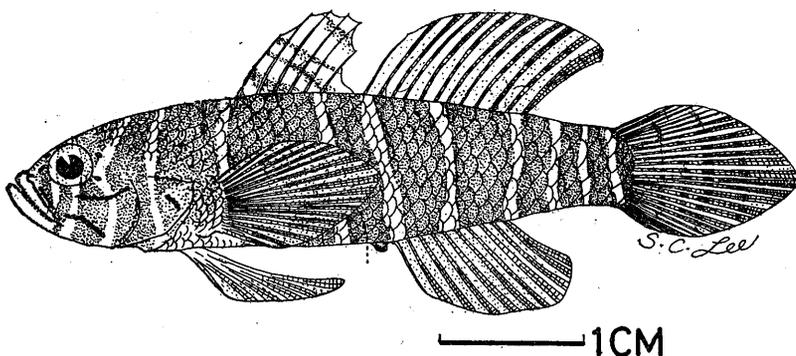


Fig. 3. *Quisquilius eugenius* Jordan & Evermann, ♀.

First dorsal VI. Second dorsal I, 11. Anal I, 9. Pectoral 18, tip exceeds the origin of second dorsal. Pelvic I, 5, bilobed posteriorly. Caudal rounded, branched rays  $7+7=14$ . Lateral line absent, scales 28 in a longitudinal row. Vertebrae  $10+16=26$  including urostyle.

**Measurements:** Length of head 3.42, depth of body 4.02, distance from origin of first dorsal to snout tip 2.73, to caudal base 1.46, origin of anal to snout tip 1.64, to caudal base 2.56, all in standard length. Snout 5.71, eye 4.0, interorbital 10.91, width of head 1.46, width of body 1.71, all in length of head. Eye 0.7 in length of snout.

Interorbital 2.73 in eye.

**Color in formalin:** Brownish body crossing with twelve narrow white-bands, the first four on head, two under first dorsal, three under second dorsal and the rest on caudal peduncle. Dorsals and caudal marked with black stripes.

**Distribution:** This species is widely distributed both in the Indian and the Pacific Ocean; its geographical range is from E. Africa across the tropical Indian Ocean eastward to the Philippines, Polynesia and Melanesia and northward to the Ryukyu Islands and Japan.

**Remarks:** The described specimen

mostly agree with the type specimen but it has shorter head, smaller eye and narrower interorbital space. This species is closely related to *Zonogobius semidoliatus* in appearance, but differs mainly in having the head scaled.

*Callogobius liolepis* (Bleeker) Koumans, 1931 (Fig. 4)

*Callogobius liolepis* (Coll. Bleeker in Leiden Museum) Koumans, 1931: 75-76 (11).

*Callogobius liolepis*, Koumans, 1953: 97 (13).

*Callogobius sarta* Koumans, 1940: 138 (as synonym) (12).

**Material examined:** 2♂♂, 37.0 and 42.0 mm, Hengchun, III 5, 1970 (Chang), Lee

leg.

**Descriptions:** Body elongate, subcylindrical anteriorly and compressed posteriorly, covers with cycloid scales. Head depressed, naked on top and sides, with numbers of black papillae and dermal ridges on snout, cheeks, opercles and ventrolateral sides of head. Sensory canal pores: Itoa., Itop., Sot., Ota., Otp., Ite., Pop 1., Pop 2 and Pop 3. Snout slightly concaved, longer than eye. Mouth rather small, subvertically, maxilla not reaching to the anterior margin of orbit, lower jaw protruded. Tip of tongue rounded. Eyes small, interorbital flat about half of the eye length. Anterior nostril tube, posterior one pore-like. Gill-opening small, not continued forward below.

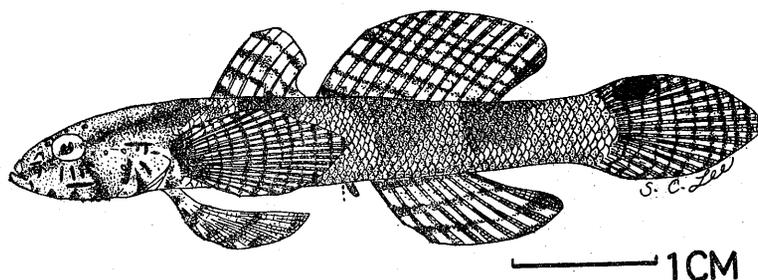


Fig. 4. *Callogobius liolepis* (Bleeker) Koumans, ♂.

First dorsal VI. Second dorsal I, 10-11. Anal I, 8. Pectoral 18, rather long, somewhat beyond the origin of second dorsal. Pelvic I, 5, bilobed posteriorly, Caudal lanceolate, slightly longer than head, branched rays 7+7=14. Lateral line absent, scales 50-55 in a longitudinal row. Vertebrae 10+16=26 including urostyle.

**Measurements:** Length of head 3.52-3.82 (3.67), depth of body 6.73-7.0 (6.87), distance from origin of first dorsal to snout tip 2.85-3.0 (2.93), to caudal base 1.48-1.53 (1.51), origin of anal to snout tip 1.68-1.75 (1.72), to caudal base 2.39-2.63 (2.51), all in standard length. Snout 3.67-3.75 (3.71), eye 5.0-5.25 (5.13), interorbital 17.33-8.75 (8.04), width of head 1.31-1.38 (1.35), width of body 2.19-2.20 (2.20), all in

length of head. Eye 1.36-1.40 (1.38) in length of snout. Interorbital 1.46-1.66 (1.56) in eye.

**Color in formalin:** Brownish body with three indistinct vertical dark-bars, the first one under first dorsal, the followed two bands under second dorsal. A black band running from upper corner of pectoral base toward snout tip. All fins except pelvics striped with black color. Upper basal part of pectoral and caudal fins with a black ocellus.

**Distribution:** This species was only reported in the Indo-Australian Archipelago.

**Remarks:** There are *Callogobius liolepis*, *C. hasseltii*, *C. centrolepis*, *C. sclateri*, *C. snelli* and *C. snyderi* belong to genus

*Callogobius*. The present species differs from other species by having all the body scales cycloid, cheeks and opercles naked and broader interorbital space.

*Callogobius snelli* Koumans, 1953

(Fig. 5)

*Callogobius snelli* Koumans, 1953: 102-103 (13).

**Material examined:** 1♂, 60 mm, Heng-chun, XI 8, 1970 (Lee), Lee leg.

**Descriptions:** Body cylindrical anteriorly, compressed posteriorly. Body covers with ctenoid scales except that the scales on predorsal, cheeks and opercles are

cycloid. Head depressed, with several dermal folds on cheeks and opercles. Sensory canal pores: Itoa., Itop., Ota., Pop 1., and Pop 2. Snout slightly longer than eye. Oblique mouth small, maxilla not reaching to the front edge of orbit. Outermost row of teeth larger in both jaws. Lower jaw subequal to upper jaw, with one pair of longitudinal folds and three pairs of transversal folds close to the tip of lower jaw. Tongue rounded but slightly notched at tip. Interorbital space about half of eye length. Anterior nostril with a long tube, posterior one pore-like. Gill-openings small, not continued forward below. Isthmus broad.

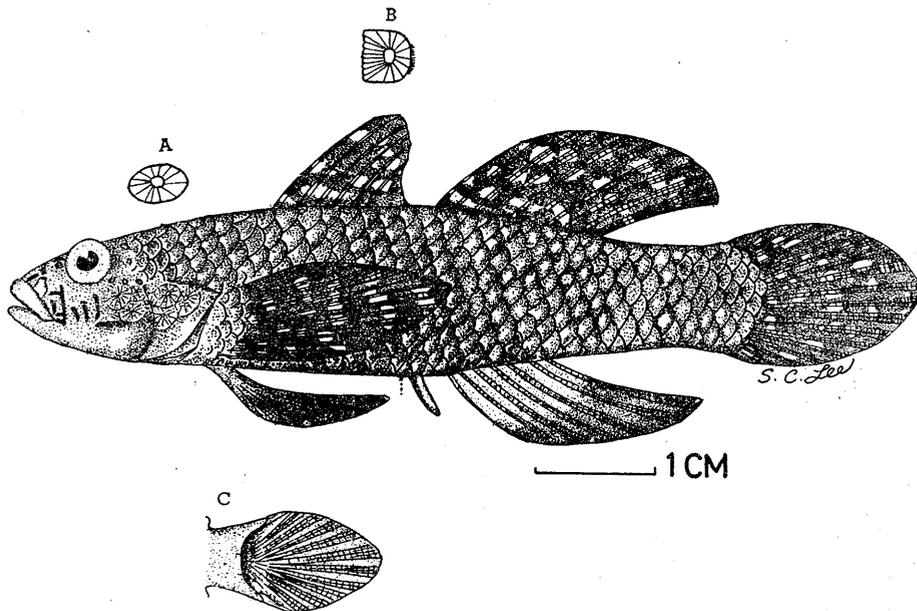


Fig. 5. *Callogobius snelli* Koumans, ♂.

- A. Scale on head
- B. Scale under first dorsal
- C. Ventral view of pelvic fins

First dorsal VI. Second dorsal I, 9. Anal I, 6. Pectoral 16, exceeds the origin of anal. Pelvic I, 5, shorter than head, anterior basal membrane well developed, fin rays fully united posteriorly. Caudal round, about same length as head, branched

rays  $8+7=15$ . Lateral line absent, 28 scales in a longitudinal row. Predorsal 8. Vertebrae  $10+16=26$  including urostyle.

**Measurements:** Length of head 3.53, depth of body 4.33, distance from origin of first dorsal to snout tip 2.93, to caudal

base, 1.54, origin of anal to snout tip 1.71, to caudal base 2.26, all in standard length. Snout 3.40, eye 4.47, interorbital 9.44, width of head 1.30, width of body 1.62, all in length of head. Eye 1.32 in length of snout. Interorbital 2.11 in eye.

**Color in formalin:** Uniformly dark brown. Pelvics and anal gray but black at distal halves. The rest fins black with white markings. Dermal folds black.

**Distribution:** This species was only reported from Morotai.

**Remarks:** This species is close to *C. sclateri* but it can be distinguished by having well developed basal membrane of pelvic fins and lesser predorsal scales.

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