

First Record of Gobiid Fish, *Luciogobius parvulus* (Perciformes: Gobiidae) from Wando Island, Korea

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ABSTRACT Ten specimens of *Luciogobius parvulus* (42.8~49.0 mm SL) were collected from the coast of Wando-gun, Chollanam-do, Korea. This species is characterized by having 10~11 second dorsal fin rays, 11~13 anal fin rays, 11~12 pectoral fin rays, pelvic fin rays and free rays on pectoral fin absent. All specimens were collected from intertidal zone, rocky shore with gravel. It burrowed among moistened sediment composed of pebble. We propose the new Korean name, "Min-mi-kken-mang-dug", for the species.

Key words: Gobiidae, *Luciogobius parvulus*, first record, Korea

INTRODUCTION

The gobiid fishes of genus *Luciogobius* Gill 1859, are characterized by absent first dorsal fin, elongated body and depressed head, which are suitable for their habitats including gravel beach, tide pools and brackish water (Gill, 1859; Okiyama, 2001). With the addition of *L. yubai* (Ikeda *et al.*, 2019) there have been total 18 species in genus and these species are distributed in Eastern Asiatic region including China, Hong Kong, Japan, Korea, Russia, and Taiwan (Yamada *et al.*, 2009; Cho and Choi, 2014; Dyldin *et al.*, 2020).

In Korea, seven species of *Luciogobius* have been reported; *L. elongatus* Regan, 1905; *L. grandis* Arai, 1970; *L. guttatus* Gill, 1859; *L. koma* (Snyder, 1909); *L. pallidus* Regan, 1940; *L. platycephalus* Shiogaki and Dotsu, 1976; *L. saikaiensis* Dôtu, 1957 (Kim, 2012; Cho and Choi, 2014).

During fish survey of intertidal zones we collected *Luciogobius* species from rocky coast with intertidal gravel sediment in Wando-gun, Jeollanam-do, Korea. These specimens were identified as *Luciogobius parvulus* by

lack of pelvic fin. Therefore, we described this species as the first record from Korea.

MATERIALS AND METHODS

All specimens were founded in gravel beach areas with unaffected by fresh water. They are fixed in 5% formalin thereafter preserved in 70% ethanol. Methods of counting and measurements followed Hubbs and Lagler (2004) and are expressed in percentage of standard length (SL) or head length (HL). The vouchers are deposited at the SOKN Institute of Ecology and Conservation, Inc., Korea.

TAXONOMIC ACCOUNTS

Luciogobius parvulus (Snyder, 1909)
(New Korean name: Min-mi-kken-mang-dug)
(Figs. 1, 2; Table 1)

Expedio parvulus, Snyder, 1909: 606 (type locality: Misaki, Japan); Dôtu, 1957: 70 (Japan); Koumans, 1940: 128 (Japan); Lindberg and Krasnyukova, 1975: 520 (Japan).

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Fig. 1. *Luciogobius parvulus*, SOKN-P1001, 48.4 mm SL., from the Jongdo-ri, Wando-eup, Wando-gun, Jeollanam-do, Korea.

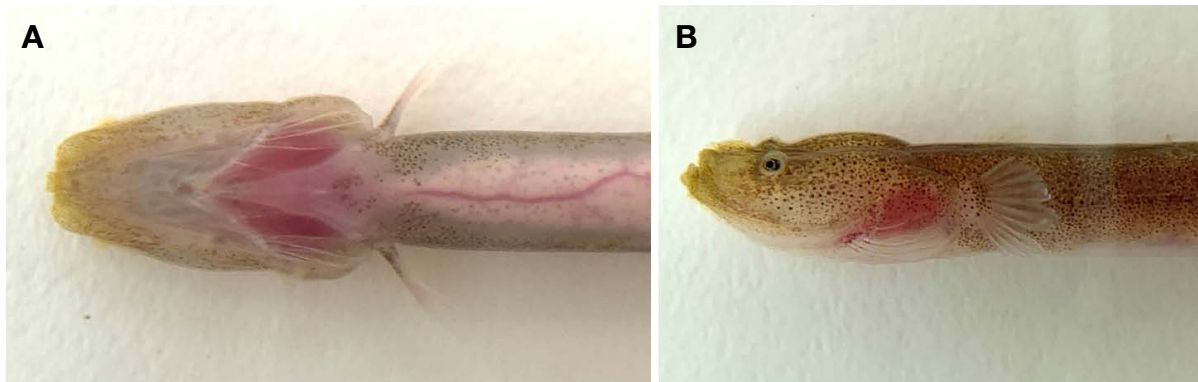


Fig. 2. Ventral (a) and lateral (b) view of head in *L. parvulus*, SOKN-P1001.

Table 1. Comparison of meristic counts of *Luciogobius parvulus*

	Present specimens	Snyder (1909)	Dôtu (1957)	Shibukawa (2019)
Standard length (mm)	42.9~49.0 (n = 10)	37.0~43.0 (n = 5)	37.0~49.0 (n = 3)	29.1~33.5 (n = 3)
Second dorsal fin rays	10~11	10	9~10	10~12
Anal fin rays	11~13	11	11~12	11~13
Pectoral fin rays	11~12	13	12~13	11~13
Pelvic fin rays	Absent	Absent	Absent	Absent
Free rays on pectoral fin	Absent	Absent	Absent	Absent

Luciogobius parvulus: Akihito, 1984: 283 (Japan); Okiyama, 2001: 147 (Japan); Chen *et al.*, 2008: 253 (Japan); Kanagawa *et al.*, 2011: 67 (Japan); Akihito *et al.*, 2013: 1376 (Japan); Shibukawa *et al.*, 2019: 29 (Shizuoka, Japan).

Material examined. SOKN-P1001, 1 specimen, 48.4 mm SL, Jeongdo-ri, Wando-eup, Wando-gun, Jeollanam-do, Korea (34°17'48.9"N 126°42'06.4"E), 5 June 2020; SOKN-P1002~P1010, 9 specimens, 42.9~49.0 mm SL, Mira-ri, Soan-myeon, Wando-gun, Jeollanam-do, Korea

(34°07'03.6"N 126°39'48.7"E), 6 June 2020, collected by Seung-Ho Choi and Min-Soo Kim, hand net at gravel beaches.

Description. Counts and measurements are shown in Table 1. Second dorsal fin rays 10~11; anal fin rays 11~13; pectoral fin rays 11~12. Measurements in % of SL: head length 16.0~18.7; body depth 5.9~7.3; pre-dorsal length 67.7~72.5; pre-anal length 64.4~66.9; second dorsal fin base 10.8~13.2; anal fin base 13.1~16.7; caudal peduncle length 18.2~20.0; caudal peduncle depth 5.5~6.8. Measurements in % of HL: snout length 21.5~26.4; eye dia-



Fig. 3. Habitat of *L. parvulus*, gravel beach. A. Jongdo-ri, Wando-eup, Wando-gun, Jeollanam-do, Korea. B. Mira-ri, Soan-myeon, Wando-gun, Jeollanam-do, Korea.

meter 4.8~6.2; interorbital width 16.5~23.7.

Body very elongated, naked, same depth throughout and overall cylindrical. No cephalic sensory pore on head. Mouth terminal; maxilla extending to posterior border of eye. Lower jaw more prominent than upper jaw. Small conical teeth on both jaws. Pectoral fin shape with rounded contour and small. Pelvic fin absent. First dorsal fin absent. Origin of anal fin in front of that of second dorsal fin. Caudal fin round.

Coloration when fresh. The body background color yellowish white with small dots of dark brown very densely covered to look brown. Head light brownish. Ventral area spotless. Dark brown spots increase at the caudal peduncle. Pectoral and anal fins transparent.

Coloration after preserved specimen. Generally body brown gray. Dorsum darker than ventral surface. The edge of the caudal fin white.

Ecological notes. This species inhabited intertidal zone, rocky shore with gravel. It burrowed among moistened sediment composed of pebble without water (Fig. 3).

Distribution. Known from Japan (Shibukawa *et al.*, 2019) and Korea (Wando-gun, Jeollanam-do: present study).

Remarks. The present specimens agree precisely with the description on *L. parvulus* presented by Snyder (1909), Dôtu (1957) and Shibukawa *et al.* (2019). Therefore we identified it as *Luciogobius parvulus* (Snyder, 1909). *L. parvulus* is the most similar to *L. elongatus* than other congeneric species in morphology, but easily distinguished by absent pelvic fin. Also *L. parvulus* having more number of second dorsal fin rays 11~12 (vs. 7~8), anal fin rays 11~13 (vs. 8~9) and pectoral fin rays 11~12 (vs. 6~8) (Cho and Choi, 2014). Additionally *L. parvulus* is well differentiated from *L. adapel* as presence of second dorsal

fin and anal fin (vs. absence of those) and lives in intertidal zone of rocky shore (vs. 20~50 m water depth) (Okiyama, 2001).

Genus *Expedio* was established by Snyder (1909) on account of lacking pelvic fin. After that Koumans (1940) suggested that *Expedio parvulus* be considered a subspecies of *L. guttatus*. However, Okiyama (2001) suggested that genus *Expedio* was not valid because pelvic fin of *E. parvulus* was sometimes vestigial or highly reduced, so genus *Expedio* was not qualified in generic definition. Also except for the absence of pelvic fin, *L. parvulus* well matched morphological features of *Luciogobius* (i.e., slender and elongated body, scaleless, lacking first dorsal fin, depressed head) (Gill, 1859; Okiyama, 2001). Therefore, it is considered that the genus *Luciogobius* is more valid than the genus *Expedio*.

We proposed a new Korean name, “Min-mi-kken-mang-dug” for *L. parvulus* referring to its absent of pelvic fin.

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우리나라 완도 연안에서 채집된 망둑어과 (농어목) 한국 첫기록종, *Luciogobius parvulus*

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요 약 : 우리나라 전라남도 완도군 연안의 조간대 조사에서 *Luciogobius parvulus* 10개체 (체장 42.8~49.0 mm) 를 채집하였다. 본 종은 제 2등지느러미의 기조수 10~11개, 뒷지느러미 기조수 11~12개, 가슴지느러미 기조수 11~12개, 가슴지느러미 상부의 유리기조와 배지느러미가 부재하는 특징이 있다. 본 조사에서 확인된 모든 개체는 조간대의 자갈해안에서 채집되었으며, 물이 고여 있지 않은 자갈틈에서 서식하였다. 본 종의 한국명으로 ‘민미끈망둑’을 제안한다.

찾아보기 낱말 : 망둑어과, *Luciogobius parvulus*, 한국 첫기록종