

## A Newly Recorded Species of the Genus *Socarnes* (Crustacea, Amphipoda, Lysianassidae) from Korean Waters

Jun-Haeng Heo, Young-Hyo Kim\*

Department of Life Sciences, Dankook University, Cheonan 31116, Korea

### ABSTRACT

The species *Socarnes bidenticulatus japonicus* Gurjanova, 1962 belonging to the family Lysianassidae Dana, 1849 has been collected from Namae, on the east coast of Korea. The genus *Socarnes* Boeck, 1871 has 12 species worldwide. However, only one *Socarnes* species had been reported in Korea until now: *S. tongyeongensis* Kim & Hendrycks, 2013. This genus is characterized by a longer article 2 of mandibular palp, unconstructed inner ramus of uropod 2, biarticulated outer ramus of uropod 3, and deeply cleft telson. A newly recorded species *S. bidenticulatus japonicus* is characterized by a posteriorly bidentated epimeron 3 and constricted inner ramus of uropod 2. The species is described and fully illustrated in this study.

**Keywords:** Lysianassoidea, Lysianassidae, *Socarnes*, Korea

### INTRODUCTION

The family Lysianassidae Dana, 1849 consists of 2 subfamilies (Lysianassinae Dana, 1849; Waldeckiinae Lowry and Kilgallen, 2014). The genus *Socarnes* Boeck, 1871 is one of 26 genera included in subfamily Lysianassinae Dana, 1849 and 12 species have been recorded worldwide (Horton et al., 2019b). *Socarnes* species are widely distributed throughout the Arctic to the South Pacific, and the Mediterranean to East Asia (Gurjanova, 1962; Kim and Hendrycks, 2013). They are found from shallow waters to deep seas, and are well known as scavengers (Lowry and Stoddart, 1994; Hall-Spencer and Bamber, 2007). The genus is closely related to *Concarnes*, *Socarnoides*, *Socarnella*, and *Socarnopsis*, by having a simple gnathopod 1 and cleft telson (Barnard and Karaman, 1991a, 1991b; Kim and Hendrycks, 2013). However, *Socarnes* is characterized by a longer article 2 of mandibular palp, unconstructed inner ramus of uropod 2, biarticulated outer ramus of uropod 3, and deeply cleft telson (Barnard and Karaman, 1991a, 1991b). Terminology of the setae of the mandibular palp follows Lowry and Stoddart (1993).

Specimens were collected by rinsing the fishing net from

the Namae port, Gangwon-do, located at the eastern waters of Korea. They have been deposited at the National Marine Biodiversity Institute of Korea (MABIK), Chungcheongnam-do, Korea and the Department of Biological Science, Dankook University (DKU), Cheonan, Korea.

### SYSTEMATIC ACCOUNTS

Order Amphipoda Latreille, 1816  
Superfamily Lysianassoidea Dana, 1849  
Family Lysianassidae Dana, 1849  
Genus *Socarnes* Boeck, 1871

**<sup>1</sup>*Socarnes bidenticulatus japonicus* Gurjanova, 1962  
(Figs. 1–3)**

*Socarnes bidenticulatus japonicus* Gurjanova, 1962: 305, figs. 101A, 101B.

**Material examined.** 9♀♀ (DKUAMP201904), Korea: Gangwon-do, Hyeonnam-myeon, Namae port, 37°56'32"N, 128°47'12"E, 23 Mar 1991, collected by Kim YH.

Korean name: <sup>1</sup>\*두돌기긴팔옆새우 (신칭)

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**\*To whom correspondence should be addressed**

Tel: 82-41-550-3442, Fax: 82-41-559-7861  
E-mail: yhkim@dankook.ac.kr

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**Fig. 1.** *Socarnes bidenticulatus japonicus* Gurjanova, 1962, adult female, 25.4 mm, habitus. Scale bar=2.0 mm.

**Description. Female (DKU-085):** body large, 25.4 mm long.

Body (Figs. 1, 2B) dorsally smooth; head, lateral cephalic lobe subacute, anteriorly produced; eye medium sized, black, narrowly reniform.

Epimeron 1 (Fig. 2B) smooth and subrectangular posteroventrally; epimeron 2 (Fig. 2B) weakly produced posteroventrally with small cusp; epimeron 3 (Fig. 2B) characteristic in form, with bidented cusps posterodistally.

Antenna 1 (Fig. 2C) short, 1.89 times as long as head; peduncular article 1 stout with a row of penicillate setae on ventral margin,  $0.63\times$  as wide as long; peduncular articles 2–3 telescoping, much shorter than peduncular article 1; length ratio of peduncular articles 1–3 = 1.00:0.21:0.16; flagellum long, 1.38 times as long as peduncle, 20-articulate; article 1 with strong callynophore, accessory flagellum 7-articulate, about half length of flagellum.

Antenna 2 (Fig. 2D) slender, moderately setose, subequal to antenna 1; peduncular article 4 slightly widened distally, 1.4 times as long as article 5, with 7 penicillate setae near ventral margin and clusters of simple setae distally; flagellum 15-articulate.

Left mandible (Fig. 2E), incisor smooth, lacinia mobilis simple, slender, and pointed apically; accessory setal row with 4 spines; molar elongate and forms a setose ridge; palp triarticulate, set below molar level, article 1 short, article 2 elongate, 1.43 times article 3, with 17 A2-setae, article 3 surrounded by patch of pubescence, with 2 B3-setae, 14 D3-setae, and 8 E3-setae.

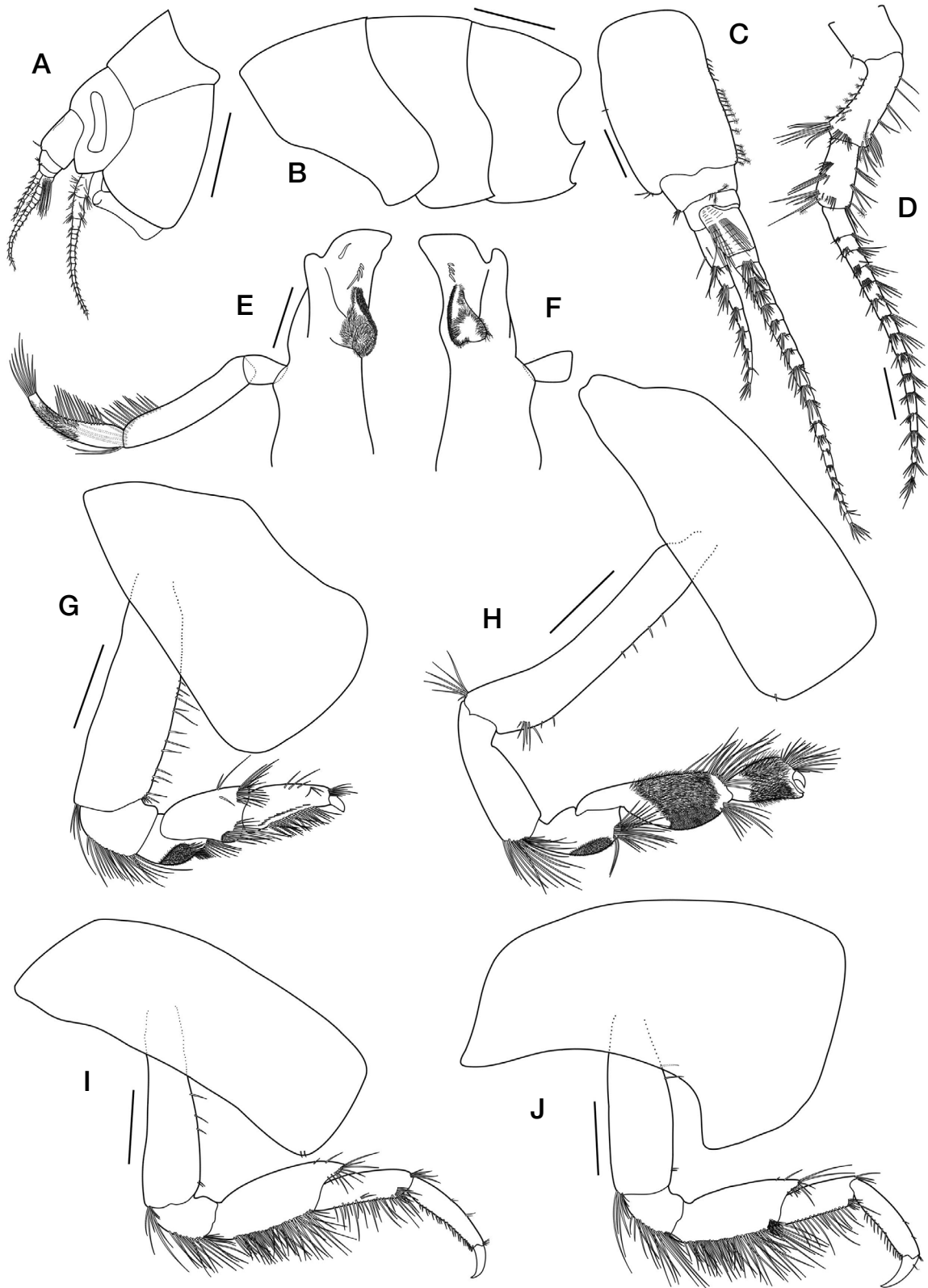
Right mandible (Fig. 2F) similar to left one, except lacinia mobilis absent.

Gnathopod 1 (Fig. 2G) simple; coxa large, roundly expanded anterodistally, 0.60 times as wide as long; basis subrectangular, with simple setae anteriorly; merus with patch of setules posteriorly and simple setae posterodistally; carpus with two clusters of simple setae distally and posterodistal setules; propodus narrowing distally, subequal in length to carpus, densely setose posteriorly; dactylus falcate, short.

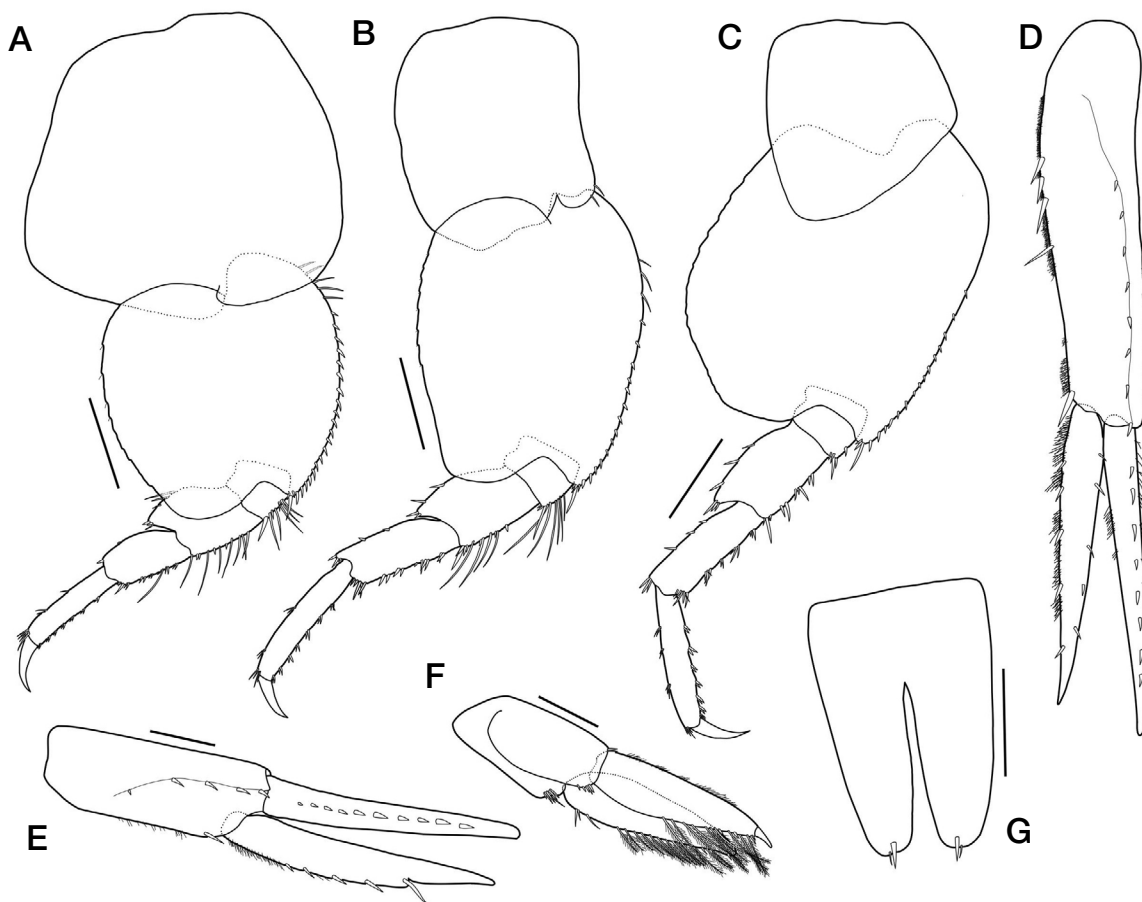
Gnathopod 2 (Fig. 2H) slender; coxa subrectangular, 0.36 times as wide as long; basis slender, elongate, with short setae anteriorly and posterodistally; ischium elongate, subequal in length to carpus, with cluster of simple setae posterodistally; carpus 0.54 times as long as basis, posterior margin convex, surface with patch of spinules and setules; propodus short, 0.45 times as long as carpus, widening distally, minutely chelate, obtusely angled posterodistally, surface covered by tiny setules, with cluster of setae anterodistally; dactylus small, acute, fitting palm.

Pereopod 3 (Fig. 2I), coxa similar to that of gnathopod 2, 0.36 times as wide as long; basis subrectangular, slightly widening distally, with 5 simple setae anteriorly; merus produced anterodistally, with densely simple setae posteriorly; carpus subrectangular, with simple setae posteriorly and distally; propodus subequal in length to carpus, with a row of short simple setae posteriorly; dactylus falcate.

Pereopod 4 (Fig. 2J) similar to pereopod 3 except coxa much broader than that of pereopod 3, posterior margin exca-



**Fig. 2.** *Socarnes bidenticulatus japonicus* Gurjanova, 1962, adult female, 25.4 mm. A, Head; B, Pleonites; C, Antenna 1; D, Antenna 2; E, Left mandible; F, Right mandible; G, Gnathopod 1; H, Gnathopod 2; I, Pereopod 3; J, Pereopod 4. Scale bars: A, B=2.0 mm, C-F=0.4 mm, G-J=1.0 mm.



**Fig. 3.** *Socarnes bidenticulatus japonicus* Gurjanova, 1962, adult female, 25.4 mm. A, Pereopod 5; B, Pereopod 6; C, Pereopod 7; D, Uropod 1; E, Uropod 2; F, Uropod 3; G, Telson. Scale bars: A–C=1.0 mm, D–G=0.4 mm.

vated, posterodistal lobe strongly produced.

Pereopod 5 (Fig. 3A), coxa large, unarmed, quadrangular, with rounded corners, 0.90 times as wide as long; basis subcircular, width subequal to length, with a row of spines along anterior margin; merus expanding posteriorly, anterior margin with 7 simple setae and 4 spines, posterior margin with 2 spines; propodus rectangular, 1.31 times as long as carpus, with 7 duad spines anteriorly; dactylus falcate.

Pereopod 6 (Fig. 3B), coxa quadrangular, 0.81 times as wide as long, bilobate, anterior lobe small, posterior lobe large; basis subovate, 0.79 times as wide as long, broadly rounded, expanded posteriorly, with a row spines along anterior margin, posterior margin weakly serrated; merus slightly expanding posteriorly, with 4 long simple setae and 7 spines anteriorly, posterior margin with 4 spines; carpus subequal in length to merus, with irregular spines anteriorly; propodus rectangular, 1.33 times as long as carpus, with 7 duad anteriorly; dactylus falcate.

Pereopod 7 (Fig. 3C) similar to pereopod 6, but coxa non-lobate; basis larger than that of pereopod 6, more broadly

rounded posteriorly; ischium and merus lacking long setae anteriorly.

Uropod 1 (Fig. 3D), peduncle subrectangular, 1.26 times as long as outer ramus, with 4 dorsolateral, 1 apicolateral, and 8 small dorsomedial spines; outer ramus slightly longer than inner one, with 8 dorsolateral spines; inner ramus with 5 lateral and 5 medial spines.

Uropod 2 (Fig. 3E), peduncle 0.86 times as long as outer ramus, with 1 apicolateral and 5 dorsomedial spines; outer ramus slightly longer than inner one, with 10 dorsolateral spines; inner ramus constricted and bearing a long spine at the level of the constriction, with 4 lateral spines.

Uropod 3 (Fig. 3F), peduncle short, 0.66 times as long as outer ramus; outer ramus biarticulate, 1.06 times as long as inner ramus, proximal article with 10 plumose setae and 2 spines along inner margin, outer margin with setules, distal portion with 2 spines; distal article small, 0.14 times as long as proximal one; inner ramus 1.42 times as long as peduncle, outer margin with 2 spines and 12 plumose setae.

Telson (Fig. 3G) longer than broad, cleft 64% of its length,

each lobe with 1 spine and 1 setule apically.

**Remarks.** *Socarnes bidenticulatus* (Spence Bate, 1858) is easily distinguished from related congeners by a constricted inner ramus of uropod 2 and bidentated epimeron 3 posteriorly. Our Korean specimens are well accorded with these characteristics. However, constriction of the inner ramus of uropod 2 is not characteristics of the genus *Socarnes*. Nevertheless, this species has been included in the genus *Socarnes* until now (Barnard and Karaman, 1991a, 1991b; Horton et al., 2019a). *Socarnes bidenticulatus* has one subspecies: *S. bidenticulatus japonicus* Gurjanova, 1962, and we follow the subspecies status of Gurjanova (1962). Our Korean specimens show similarity between *S. bidenticulatus* and *S. bidenticulatus japonicus* as following characteristics: (1) pereopods 5 and 7, basis less extended posteroventrally (similar to *S. bidenticulatus japonicus*); (2) telson cleft further than half of plate (similar to *S. bidenticulatus japonicus*); (3) gnathopod 2, propodus rather thin (similar to *S. bidenticulatus japonicus*); (4) antenna 1, accessory flagellum 7-articulate (similar to *S. bidenticulatus*); (5) antenna 1, peduncular articles 2–3 thinner than peduncular article 1 (similar to *S. bidenticulatus*). In conclusion, our specimen is considered to be close to the *S. bidenticulatus japonicus* given the morphological characteristics such as moderately expanded basis of pereopods 5, 7 and the degree of telson cleft more than 50% and the common distribution seas. In this study, we have added a new record *Socarnes* species that exists in Korean waters.

**Distribution.** Korea (Namae).

## ORCID

Jun-Haeng Heo: <https://orcid.org/0000-0003-0942-7126>

Young-Hyo Kim: <https://orcid.org/0000-0002-7698-7919>

## CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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