

New Record of a Squillid Species, *Oratosquilla fabricii* (Crustacea: Stomatopoda: Squillidae) from Korea

Hee-seung Hwang¹, Hyun Kyong Kim², Jongwoo Jung^{3,*}

¹Research Institute of EcoScience, Ewha Womans University, Seoul 03760, Korea

²Division of Zoology, Honam National Institute of Biological Resources, Mokpo 58762, Korea

³Department of Science Education, Ewha Womans University, Seoul 03760, Korea

ABSTRACT

A squillid stomatopod, *Oratosquilla fabricii*, collected from Jindo Island, is reported for the first time in Korea. The family Squillidae differs from other families by the presence of more than four intermediate denticles of telson. This species is distinguished from *O. oratoria*, another *Oratosquilla* species recorded in Korea, by the presence of an armed submedian carinae on the fourth abdominal somite and dark patches on the second abdominal somite. In the present study, detailed descriptions and illustrations of *O. fabricii* are provided. A key to the species of Korean *Oratosquilla* species is also presented. With this new record, the number of stomatopod species in the Korean fauna has increased to 16.

Keywords: Crustacea, Korean fauna, Korean stomatopod, mantis shrimp, *Oratosquilla*

INTRODUCTION

Stomatopods, commonly known as mantis shrimps, are aggressive marine predators with large and powerful raptorial appendages that can be used for ‘smashing’ or ‘spearing’ (Caldwell and Dingle, 1976). The family Squillidae Latreille, 1802 is the most diverse group in the order Stomatopoda Latreille, 1817. All squillids have spearing type of raptorial claw and its members are readily distinguished from other families by the presence of ovate propodi of the third and fourth maxillipeds and more than four telson intermediate denticles. More than 180 squillid species belonging to 47 genera have been described worldwide (see Ah Yong, 2001; Van Der Wal and Ah Yong, 2017). In Korea, six genera (*Levisquilla* Manning, 1977, *Anchisquilla* Manning, 1968, *Cloridopsis* Manning, 1968, *Kempella* Low and Ah Yong, 2010, *Oratosquilla* Manning, 1968, and *Squilloides* Manning, 1968) and seven species of the Squillidae family have been reported: *Levisquilla inermis* (Manning, 1966), *L. jurichi* (Makarov, 1979), *Anchisquilla fasciata* (de Haan, 1844), *Cloridopsis scorpio* (Latreille, 1828), *Kempella mikado* (Kemp and Chopra, 1921), *Oratosquilla oratoria* (de Haan, 1844), and *Squilloides leptosquilla* (Brooks, 1886) (Hwang et al., 2019). In the present study, *O.*

fabricii (Holthuis, 1941) was reported for the first time as a member of the Korean stomatopod fauna.

The specimen of *O. fabricii* was collected from the subtidal zone of Jindo Island by trawler and preserved in 95% ethyl alcohol. A stereomicroscope (MZ8; Leica, Wetzlar, Germany) was used for observations and sorting. Image was recorded using a digital camera (Model D7000; Nikon, Tokyo, Japan). Drawings were made with the aid of a camera lucida. All measurements are given in millimeters (mm). Body length, or total length (TL), was measured along the dorsal midline from the apex of the rostral plate to the apex of the submedian tooth on the telson. The morphological terminology of Ah Yong (2001) was adopted in this paper. The specimen examined herein was deposited at the Honam National Institute of Biological Resources (HNIBR).

SYSTEMATIC ACCOUNTS

Order Stomatopoda Latreille, 1817
Superfamily Squilloidea Latreille, 1802
Family Squillidae Latreille, 1802
Genus *Oratosquilla* Manning, 1968

© This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

***To whom correspondence should be addressed**
Tel: 82-2-3277-6879, Fax: 82-2-6937-0733
E-mail: jongwoo@ewha.ac.kr

¹**Oratosquilla fabricii* (Holthuis, 1941) (Figs. 1, 2)

Squilla fabricii Holthuis, 1941: 249, fig. 1.

Squilla calumnia Townsley, 1953: 410, figs. 8, 9.

Oratosquilla mauritania Liu and Wang, 1999: 579 [not *O. mauritania* (Kemp, 1913)].

Oratosquilla fabricii Ah Yong, 2000: 927, fig. 1; 2001: 283; Ah Yong et al., 2008: 143, figs. 112–114.

Material examined. Korea: 1♀, TL 52 mm, Jeollanam-do, Jindo-gun, Imhoe-myeon, Paengmok-gil-ri, Jindo port (34° 22'27.0"N, 126°08'03.0"E), by trawler, 21 May 2021 (HNIBR IV952), coll., Kim HK, Hwang H.

Description (female). Body (Fig. 1) depressed, compact; dorsal surface variously pitted.

Eye (Figs. 1, 2A) not reaching to end of first segment of antennular peduncle, with strongly bilobed cornea. Ocular scale truncate, separate.

Rostral plate (Figs. 1, 2A) trapezoid, distinctively broader than longer, without long apical spine.

Carapace (Figs. 1, 2A) with anterolateral spine extending base of rostral plate; with median, intermediate, lateral, marginal, and reflected marginal carinae. Median carina not interrupted at base of anterior bifurcation. Branch of anterior bifurcation distinct, opening anterior to dorsal pit.

Raptorial claw (Figs. 1, 2B) robust; ischiomeral articulation terminal; merus with outer inferodistal spine; dorsal margin of carpus tuberculate; occlusal margin of propodus densely pectinated, without movable spines. Dactylus slender, not inflated basally; inner distal margin with six teeth.

Lateral process of fifth thoracic somite (Figs. 1, 2C, D) bilobed; anterior lobe with spine directed anteriorly; posterior lobe short, directed laterally.

Sixth to eighth thoracic somites (Figs. 1, 2C) with submedian and intermediate carinae. Lateral processes of sixth and seventh thoracic somites distinctively bilobed. Lateral process of eighth thoracic somite slightly bilobed. Sternal keel (Fig. 2E) rounded.

Telson (Figs. 1, 2F) slightly broader than long, bearing a couple of three pairs of primary teeth (submedian with fixed apex, intermediate, and lateral), each with four–five submedian denticles, nine–ten intermediate denticles, and one lateral denticle; prelateral lobe present. Median carina interrupted anteriorly, with posterior spine. Dorsolateral surface with five curved rows of pits, without additional longitudinal carinae.

Uropod (Figs. 1, 2G) with protopod with crenulate inner margin; exopod having eight movable spines on proximal segment.

Distribution. Hawaii, French Polynesia, Fiji, New Caledonia, Indonesia, Guam, Philippines, Taiwan, and Korea (the



Fig. 1. *Oratosquilla fabricii* (Holthuis, 1941), female. Whole animal, 52 mm. Scale bar=5 mm.

present study).

Coloration. Entirely ivory to yellowish. Carinae and grooves of the carapace, thoracic and abdominal somites black.

Remarks. The present species, *Oratosquilla fabricii*, is the first record from Korean waters, and this study extends its geographical distribution northward.

Of the known three *Oratosquilla* species, *O. fabricii* is morphologically similar to *O. mauritania* (Kemp, 1913), sharing the following characteristics: (1) the presence of the outer inferodistal spine on the raptorial claw and (2) the presence of posterior spines on each submedian carina of the fourth to sixth abdominal somites. However, *O. fabricii* can be easily distinguished by the triangular shape of the anterior lobe of

Korean name: ¹*작은반점갯가재(신칭)

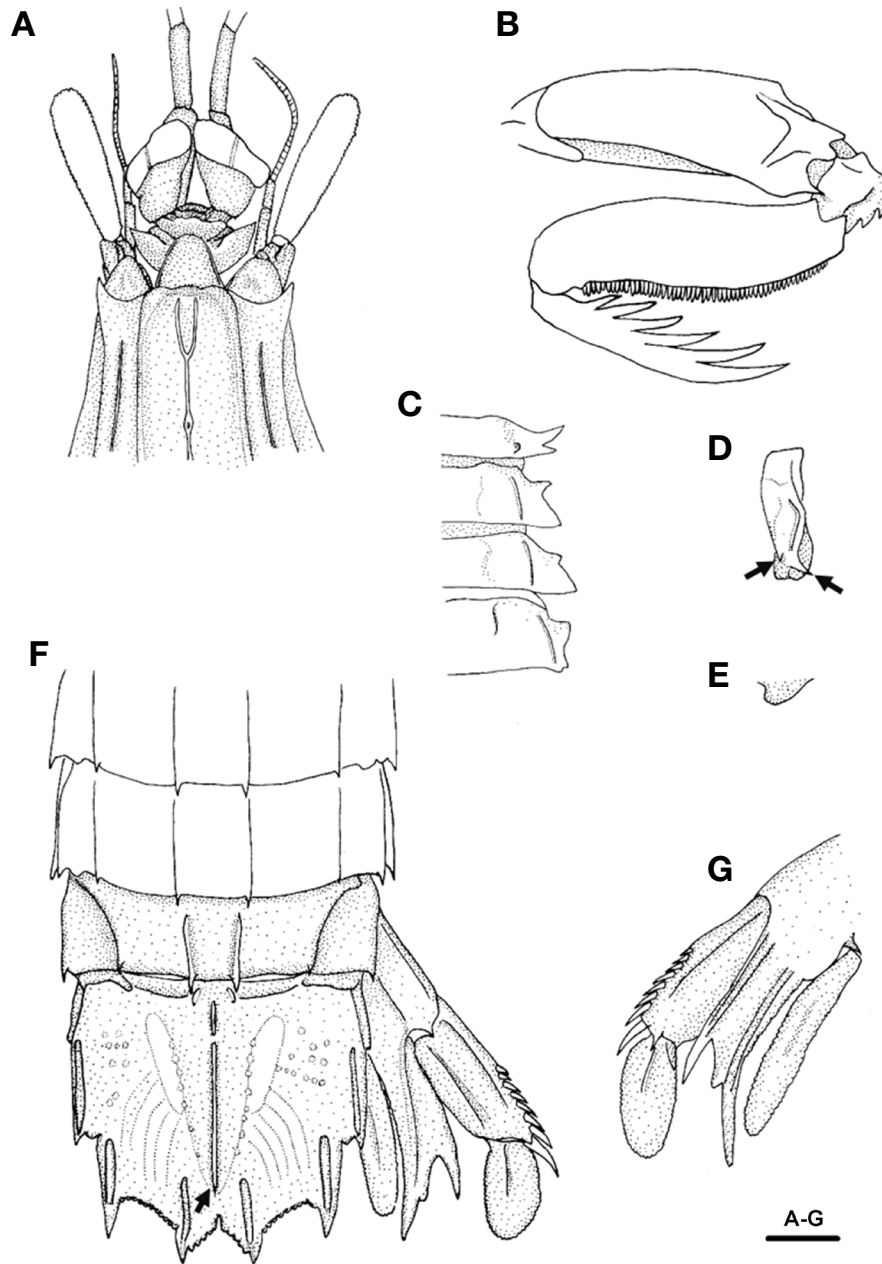


Fig. 2. *Oratosquilla fabricii* (Holthuis, 1941), female. A, Anterior cephalon, dorsal; B, Raptorial claw; C, Lateral processes of fifth to eighth thoracic somites, dorsal; D, Fifth thoracic somite, right lateral; arrows indicate bilobed lateral process; E, Sternal keel of eighth thoracic somite, right lateral; F, Fifth to sixth abdominal somites, telson, and uropod; arrow indicates posterior spine of median carina; G, Uropod, right ventral. Scale bar: A-G=2.5 mm.

the seventh thoracic somite; in *O. mauritania*, the lobe is distinctively blunt. In addition, *O. fabricii* is easily discriminated from *O. oratoria*, being reported from Korean waters, by the presence of an armed submedian carinae on the fourth abdominal somite and dark patches on the second abdominal somite. The Korean specimen generally agrees well with these characteristics, as well as with the original descrip-

tion and published accounts of this species (Holthuis, 1941; Ahyong, 2000, 2001; Ahyong et al., 2008), except for the presence of dark patches. Compared with the Taiwanese specimens (Ahyong et al., 2008), which have dark patches on both the second and fifth abdominal somites, the Korean specimen has dark patches only on the second abdominal somite. In this case, this difference might reflect degree of

development of this species. Because the size (TL 52 mm) of the Korean specimen is relatively smaller than those (64–149 mm) of the Taiwanese specimens.

Key to the species of the genus *Oratosquilla* from Korea

1. Submedian carinae of fourth abdominal somite armed.
Second abdominal somite with dark patches.....*O. fabricii*
- Submedian carinae of fourth abdominal somite unarmed.
Second abdominal somite without dark patches
.....*O. oratoria*

ORCID

Hee-seung Hwang: <https://orcid.org/0000-0003-0616-1975>

Hyun Kyong Kim: <https://orcid.org/0000-0002-9016-1582>

Jongwoo Jung: <https://orcid.org/0000-0003-1911-9485>

CONFLICTS OF INTEREST

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

ACKNOWLEDGMENTS

This research was supported by a grant from the Honam National Institute of Biological Resources (HNIBR), funded by the Ministry of Environment (MOE) of the Republic of Korea (HNIBR202101101), and by a National Research Foundation of Korea (NRF) grant funded by the Korean government (MSIT) (2021R111A2051574).

REFERENCES

- Ahyong ST, 2000. Redescription of *Squilla fabricii* Holthuis, 1941 (Crustacea: Stomatopoda), and its transfer to *Oratosquilla* Manning, 1968. Proceedings of the Biological Society of Washington, 113:926-930.
- Ahyong ST, 2001. Revision of the Australian stomatopod Crustacea. Records of the Australian Museum, Supplement, 26:1-326. <https://doi.org/10.3853/j.0812-7387.26.2001.1333>
- Ahyong ST, Chan TY, Liao YC, 2008. A catalog of the mantis shrimps (Stomatopoda) of Taiwan. National Taiwan Ocean University, Keelung, pp. 1-191.
- Caldwell RL, Dingle H, 1976. Stomatopods. Scientific American, 234:80-89. <https://doi.org/10.1038/scientificamerican0176-80>
- Holthuis LB, 1941. The Stomatopoda of the Snellius Expedition. Biological Results of the Snellius Expedition XII. Temminckia, 6:241-294.
- Hwang HS, Ahyong ST, Kim W, 2019. First records of six species of mantis shrimp (Stomatopoda) from Korea with a key to the Korean species. Crustaceana, 92:853-868. <https://doi.org/10.1163/15685403-00003911>
- Kemp S, 1913. An account of the Crustacea Stomatopoda of the Indo-Pacific region, based on the collection in the Indian Museum. Memoirs of the Indian Museum, 4:1-217.
- Liu JY, Wang Y, 1999. The stomatopod fauna of the China Seas. In: Crustaceans and the Biodiversity Crisis: Proceedings of the Fourth International Crustacean Congress (Eds., Schram FR, von Vaupel Klein JC). Brill, Leiden, pp. 569-582.
- Townsley SJ, 1953. Adult and larval stomatopod crustaceans occurring in Hawaiian waters. Pacific Science, 7:399-437.
- Van Der Wal C, Ahyong ST, 2017. Expanding diversity in the mantis shrimps: two new genera from the eastern and western Pacific (Crustacea: Stomatopoda: Squillidae). Nauplius, 25: e2017012. <https://doi.org/10.1590/2358-2936e2017012>

Received July 26, 2022
Revised July 29, 2022
Accepted August 1, 2022