

Short communication

The First Record of a Marriage Cone, *Conus sponsalis* (Conidae: Gastropoda) from Korea

Sang-Hwa Lee¹, Joong-Ki Park^{1,2,*}

¹Graduate Program in Cellular Biology and Genetics, College of Medicine, Chungbuk National University, Cheongju 361-763, Korea ²Department of Parasitology, College of Medicine, Chungbuk National University, Cheongju 361-763, Korea

ABSTRACT

The *Conus* Linnaeus, 1758 is a large genus of marine gastropod mollusks belonging to the family Conidae. The *Conus* species are mostly distributed in the tropical waters of the world, and they are especially abundant in the Indo-West Pacific region. To date, more than 600 species, most of which are predatory species, have been named worldwide in this genus and only six species have been recorded in the Korean waters. *Conus sponsalis* Hwass in Bruguière, 1792 was collected from Jeju Island and identified as a new Korean record. In this study, we report a description of the shell morphology of the species.

Keywords: Conus sponsalis, Conidae, redescription, Jeju Island, Korea

INTRODUCTION

The Conus Linnaeus, 1758 (also known as cone shell) is a large genus of marine gastropod mollusks that contains more than 600 extant species, most of which are predatory species (Tucker and Tenorio, 2009). They are mostly distributed in the tropical seas worldwide and especially abundant in the Indo-West Pacific region (Duda et al., 2008). The Conus species normally have a toxicant sting, which they use for their predatory activity on their prey, such as polychaete annelids, echiurans, small fishes, and other gastropods (Kohn et al., 1999). In recent years, the Conus species has drawn much attention due to their extraordinary diversity of venom component which has become a major target of research in drug discovery (Jones et al., 2001; Abdel-Rahman et al., 2013). To date, a total of six Conus species have been recorded from the Korean seas in previous studies (Choe et al., 1997; Lee and Min, 2002): Couns fulmen Reeve, 1843, C. capitanellus Fulton, 1938, C. flavidus Larmark, 1810, C. fulgetrum (Sowerby, 1834), C. lischkeanus Weinkauff, 1875 and C. orbignyi Audouin, 1831. In this study, we identified the marriage cone, Conus sponsalis Hwass in Bruguière, 1792, and hereto

report it as a new record from the Korean waters.

Only one individual was collected by scuba diving in a depth of 24 m from the Jeju Island in Korea on the 17th of March, 2013. The morphology of the specimen was observed under a stereomicroscope (Leica MZ12.5; Leica, Germany) and identified as *C. sponsalis* Hwass in Bruguière, 1792, the first record of the Korean fauna. The voucher specimen was deposited in the Marine Mollusk Resources Bank of Korea (MMRBK; MMRBK no. G00000210) at Chungbuk National University, Cheongju, Republic of Korea.

SYSTEMATIC ACCOUNTS

Class Gastropoda Cuvier, 1797 Order Caenogastropoda Cox, 1960 Order Hypsogastropoda Ponder & Lindberg, 1997 Order Neogastropoda Thiele, 1925 Superfamily Conoidea Fleming, 1822 Family Conidae Fleming, 1822 Genus *Conus* Linnaeus, 1758

*To whom correspondence should be addressed Tel: 82-43-261-2843, Fax: 82-43-272-1603 E-mail: jkpyou@chungbuk.ac.kr

[©] 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.



Fig. 1. Conus sponsalis Hwass in Bruguière, 1792. A, Ventral view; B, Dorsal view. Scale bar: A, B=10 mm.

^{1*}*Conus sponsalis* Hwass in Bruguière, **1792** (Fig. 1) *Conus sponsalis* Hwass in Bruguière, 1792: 635, Pl. 322, fig. 1 (cited from Kohn, 1959); Lamarck, 1810: 38; Adams and

Adams, 1858: 248; Okutani, 2000: 588, 589, 591, Pl. 293, fig. 19; Poppe, 2008: 520, 521, Pl. 555, figs. 3–5; Zhong-yan, 2004: 125, Pl. 075, fig. B.

Conus nanus Broderip, 1833: 53.

Coronaxis sponsalis Adams and Adams, 1858: 248.

Conus nana Paetel, 1887: 302 (cited from Kohn, 1959).

Type locality. Indo-West Pacific; Rowley Shoals, New South wales.

Material examined. 1 individual, Korea: Jeju-do, Seogwiposi, Bomok-dong, Supseom, 17 Mar 2013.

Measurement. Shell height 20 mm; shell width 11 mm.

Description. Shell is small, solid, obconic-cylindrical in shape, height up to 30 mm. Spire coronate, blunt, composed nearly of 1/5th of whole body. Shoulder broad, roundly tubercle on the edge; a fine beaded spiral on body whorl. One spiral band of pale-reddish brown spots on ivory background, anterior tip dark-purple. Aperture narrow, ivory in color; inner lip red-brown spot on white, outer lip yellowish-white in color. Spiral canal short and opened.

Remarks. This species resembles a *Conus nanus* (Sowerby I, 1833) in size and the external shape but differs from it in

the body whorl color: in *C. sponsalis*, the middle part of the body whorl is marked by one or two red-brown spots or spiral bands, whereas *C. nanus* has no such color pattern. In general, the identification of cone shells using the shell character alone often presents difficulties, because their shell character is so simple with no specific well-developed ornamentation and variable depending on the environmental factors (Duda et al., 2008). The comparison of a radular morphology can be used as an additional value for the correct species identification (Franklin et al., 2007). In this study, however, the radular morphology of *C. sponsalis* was not provided, requiring further study on their radular morphology.

Habitat. On rocks and pebbles in intertidal region, and sand floors and coral reefs in subtidal zones.

Distribution. Australian, Papua New Guinea, Philippine, China, Japan, Korea (Jeju-do).

ACKNOWLEDGMENTS

This work was supported by the Ministry of Oceans and Fisheries (Marine Mollusk Resource Bank of Korea; MMRBK) and a grant from the National Institute of Biological Resources (NIBR), funded by the Ministry of Environment (MOE) of the Republic of Korea (NIBR No. 2013-02-001).

Korean name: 1*갈색반점청자고둥(신칭)

REFERENCES

- Abdel-Rahman MA, Abdel-Nabi IM, El-Naggar MS, Abbas OA, Strong PN, 2013. *Conus vexillum* venom induces oxidative stress in Ehrlich's ascites carcinoma cells: an insight into the mechanism of induction. Journal of Venomous Animals and Toxins Including Tropical Diseases, 19:10.
- Adams H, Adams A, 1858. The genera of recent Mollusca: arranged according to their organization. Vol. 1. Woodfall and Kinder, London, pp. 1-484.
- Broderip WJ, 1833. Characters of new species of Mollusca and Conchifera, collected by Mr. Cuming. Proceedings of the Zoological Society of London, London, Part 1:52-54.
- Choe BL, Je JG, Lee TH, 1997. Classification and description of Conoidea (Gastropoda: Neogastropoda) from Korea waters. Korean Journal of Systematic Zoology, 13:103-140.
- Duda TF Jr, Bolin MB, Meyer CP, Kohn AJ, 2008. Hidden diversity in a hyperdiverse gastropod genus: discovery of previously unidentified members of a *Conus* species complex. Molecular Phylogenetics and Evolution, 49:867-876.
- Franklin JB, Fernando SA, Chalke BA, Krishnan KS, 2007. Radular morphology of *Conus* (Gastropoda: Caenogastropoda: Conidae) from India. Molluscan Research, 27:111-122.
- Hwass CH, Bruguière JG, 1792. Encyclopédie Méthodique. Histoire Naturelle des Vers. Paris, 1:586-757.

- Jones RM, Cartier GE, McIntosh JM, Bulaj G, Farrar VE, Olivera BM, 2001. Composition and therapeutic utility of conotoxins from genus *Conus*. Patent status 1996-2000. Expert Opinion on Therapeutic Patents, 11:603-623.
- Kohn AJ, 1959. The Hawaiian species of *Conus* (Mollusca: Gastropoda). Pacific Science, 13:368-401.
- Kohn AJ, Nishi M, Pernet B, 1999. Snail spears and scimitars: a character analysis of *Conus* radular teeth. Journal of Molluscan Studies, 65:461-481.
- Lamarck JBP, 1810. Sur la determination des especes. Annales du Museum d'Histoire Naturelle, Paris, 15:20-40.
- Lee JS, Min DK, 2002. A catalogue of molluscan fauna in Korea. Korean Journal of Malacology, 18:93-217.
- Okutani T, 2000. Marine mollusks in Japan. Tokay University Press, Tokyo, pp. 1-1173.
- Poppe GT, 2008. Philippin marine mollusks. Vol. 2. Gastropoda, Part 2. ConchBooks Co., Hackenheim, pp. 1-848.
- Tucker JK, Tenorio MJ, 2009. Systematic classification of recent and fossil Conoidean Gastropods. ConchBooks, Hankenheim, pp. 1-295.
- Zhongyan Q, 2004. Seashells of China. China Ocean Press, Beijing, pp. 1-418.

Received November 27, 2013 Revised December 24, 2013 Accepted December 28, 2013