

The first record of *Conchodytes nipponensis* (De Haan, 1844) (Crustacea: Decapoda: Palaemonidae) associated with pen shell *Atrina pectinata* (Linnaeus, 1767) (Mollusca: Bivalvia) from Korea

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Conchodytes nipponensis (De Haan, 1844), a caridean shrimp living in the mantle cavity of a pen shell (*Atrina pectinata*) is reported for the first time from Korea. It was collected from a depth of 15 m depth. Its morphology is described and illustrated, and a color image of a living specimen is provided. This is at the same time the first record of the genus *Conchodytes*, and the first record of a bivalve molluscs associated shrimp, from Korea.

Keywords: *Conchodytes nipponensis*, Korea, Palaemonidae, pen shell, Pontoniinae, shrimp

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INTRODUCTION

Pontoniine shrimps usually have a symbiotic relationship with a variety of marine invertebrates such as Porifera, Cnidaria, Mollusca, Echinodermata, and Tunicata (see Miyake and Fujino, 1967). At present, four species belonging to four genera of the pontoniine shrimps have been recorded from Korea (Lee and Ko, 2011): *Cuapetes grandis* (Stimpson, 1860), *Onycocharis callyspongiae* Fujino and Miyake, 1969, *Periclimenaeus gorgonidarum* (Balss, 1913), and *Periclimenes ornatus* Bruce, 1969. The genus *Conchodytes* Peters, 1852 is characterized by an acute or angular basal process of dactylus of the ambulatory leg, the third maxilliped lacking arthrobranch, no hepatic spine, and it is associated with Bivalvia (see Bruce, 1983). The genus currently contains eight species (De Grave and Fransen, 2011): *Conchodytes biunguiculatus* (Paul'son, 1875), *C. maculatus* Bruce, 1989, *C. meleagrinae* Peters, 1852, *C. monodactylus* Holthuis, 1952, *C. nipponensis* (De Haan, 1844), *C. philippinensis* Fransen, 1994, *C. pteriae* Fransen, 1994, and *C. tridacnae* Peters, 1852. However, none of the *Conchodytes* species has ever been reported from Korea.

During a systematic survey of the decapod crustaceans from Korean waters, *C. nipponensis* living in the mantle of pen shell (*Atrina pectinata*) was collected. Therefore, its morphology is described and illustrated with a color image of living specimen.

MATERIALS AND METHODS

Four specimens of *C. nipponensis* living in the mantle cavity of pen shells *Atrina pectinata* (Linnaeus, 1767) were collected from a depth of 15 m by SCUBA diving at Yeongdo (Busan). The examined specimens were preserved in 95% ethanol, and deposited at the corresponding author's collection in Silla University, Busan. They were observed under an MZ8 stereomicroscope (Leica, Wetzlar, Germany). Drawings were made with the aid of the camera lucida. Color image was taken by a digital camera (Nikon Imaging, Seoul, Korea).

The abbreviation "cl" refers to the postorbital carapace length measured from the posterior margin of the orbit to the posterior middorsal margin of the carapace and is used to indicate the size of the specimens. The classification follows that of De Grave and Fransen (2011).

SYSTEMATIC ACCOUNTS

Order Decapoda Latreille, 1803
Superfamily Palaemonoidea Rafinesque, 1815
Family Palaemonidae Rafinesque, 1815
Subfamily Pontoniinae Kingsley, 1879
Genus ¹**Conchodytes* Peters, 1852

²**Conchodytes nipponensis* (De Haan, 1844) (Figs. 1-3)
Hymenocera nipponensis De Haan, 1844, pl. 46, fig. 8.



Fig. 1. *Conchodytes nipponensis* (De Haan, 1844), an ovigerous female, in the mantle cavity of the pen shell *Atrina pectinata*.

Pontonia nipponensis: De Haan, 1849, p. 180.

Conchodytes nipponensis: Kemp, 1922, pp. 260, 279; Kubo, 1940, pp. 58 (key), 64-67, figs. 28-29; Suzuki, 1971, pp. 94-96, fig. 2, pl. 1; Bruce, 1977, pp. 97-100, fig. 1; Miyake, 1982, p. 36, fig. 13; Chace and Bruce, 1993, pp. 75, 76, fig. 19; Franssen, 1994, pp. 91-96, figs. 8, 9, 16-18, 24, 28, 32, 33, 36.

Material examined. 1 ♂ (cl 8 mm), 3 ♀ ♀ ♀ (cl 9, 9, 8 mm), Yeongdo (Busan), 30 Jun., 2010, Lee SH, SCUBA in 15 m depth (35.03.37N 129.04.34E).

Diagnosis. Body glabrous, slightly depressed. Rostrum (Fig. 2A, B) slightly curved ventrally, with bluntly rounded tip, slightly overreaching medial margin of second segment of antennular peduncle. Carapace (Fig. 2A, B) slightly depressed, produced posteriorly; supraorbital, hepatic, and antennular spines absent; inferior orbital angle produced. Abdomen (Fig. 2A, B) each somite with rounded pleuron; first to third somites large; fourth one smaller; fifth one smallest. Telson (Fig. 2A, C) with 3 pairs of dorsolateral and 2 pairs of posterior spines. Eye (Figs. 1, 2A, B) moderately short, stout, and globular; eyestalk subcylindrical; corneal diameter smaller than eyestalk width. Antennular peduncle (Fig. 2D) with 1 ventromedial spine

on basal segment. Scaphocerite (Fig. 2E) with lamella approximately 1.6 times longer than central width, lateral margin strongly convex, with sharp distolateral tooth. Third maxilliped (Fig. 3A) slender, with long setae on inner margin; ischium subrectangular, about 2.8 times longer than broad; exopod with long setae distally. First pereopod (Fig. 3B, B') long, slender, subcylindrical; fingers tapering, slightly longer than palm, with setae laterally, without teeth. Second pereopod (Fig. 3C, D) subequal, robust; palm subcylindrical, slightly swollen, approximately 3 times as long as width; fingers short, distally hooked, with 2 teeth on each cutting margin. Third to fifth pereopods (Fig. 3E-G) short, slender, slightly depressed; each merus, carpus and propodus unarmed; each dactyl compressed, biunguiculate with rounded proximoventral and bearing with pointed tip.

Color of in life. Generally pinkish red with white spots.

Habitat. *Conchodytes nipponensis* can be found in the mantle cavity of *Amusium balloti* (Bernardi, 1861), *Atrina japonica* (Reeve, 1858), and *Pecten albicans* (Schröter, 1802) (see Bruce, 1977). Our specimens were collected from *Atrina pectinata*.

Remarks. Yang and Ko (2004) reported the zoeal stages of *Conchodytes nipponensis*, but the a collecting locality

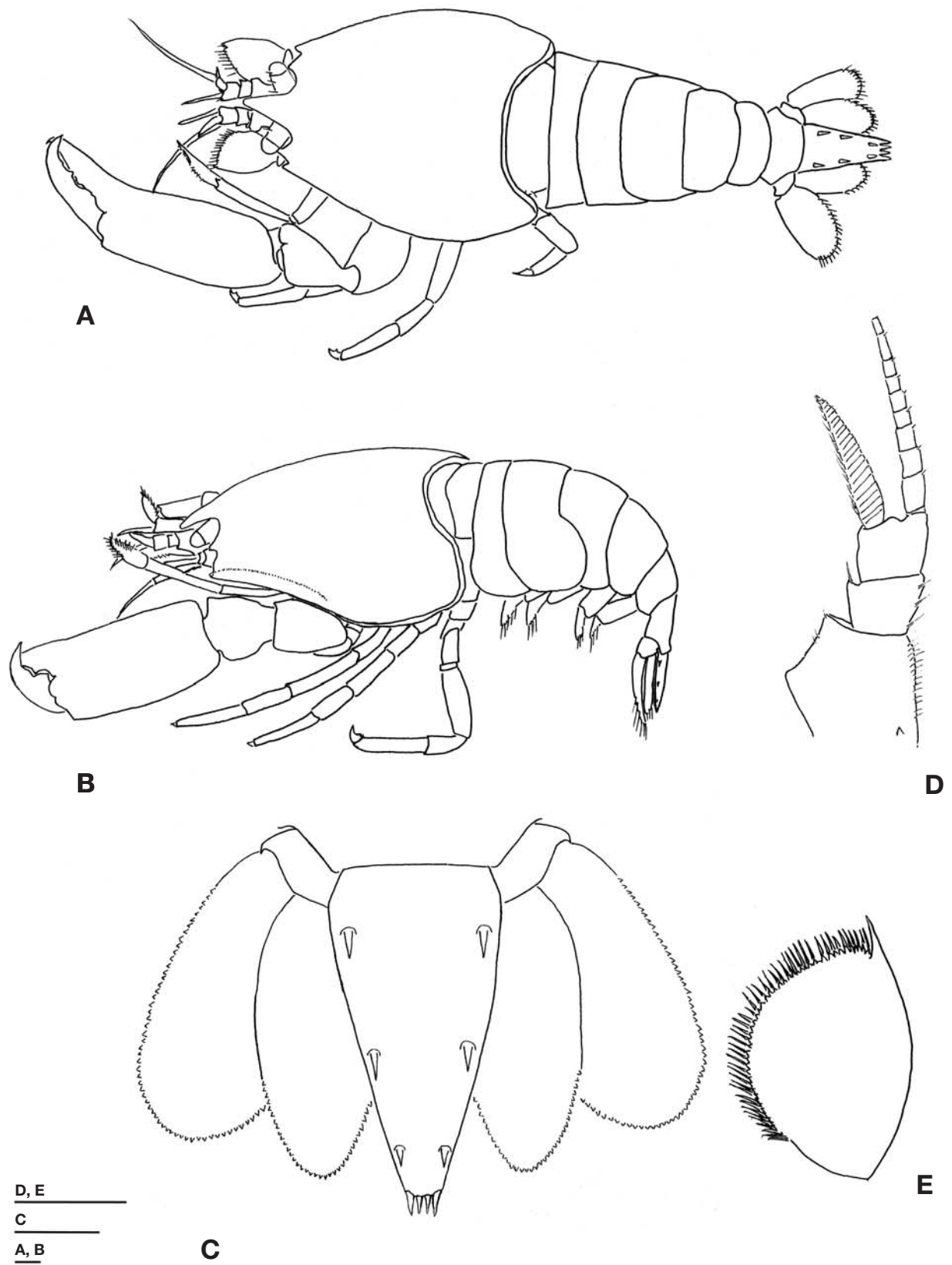


Fig. 2. *Conchodytes nipponensis*, male (cl 8 mm). A. Habitus, dorsal. B. Habitus, lateral. C. Telson and uropod, dorsal. D. Right antennules, ventral. E. Right scaphocerite. Scale bars=1 mm.

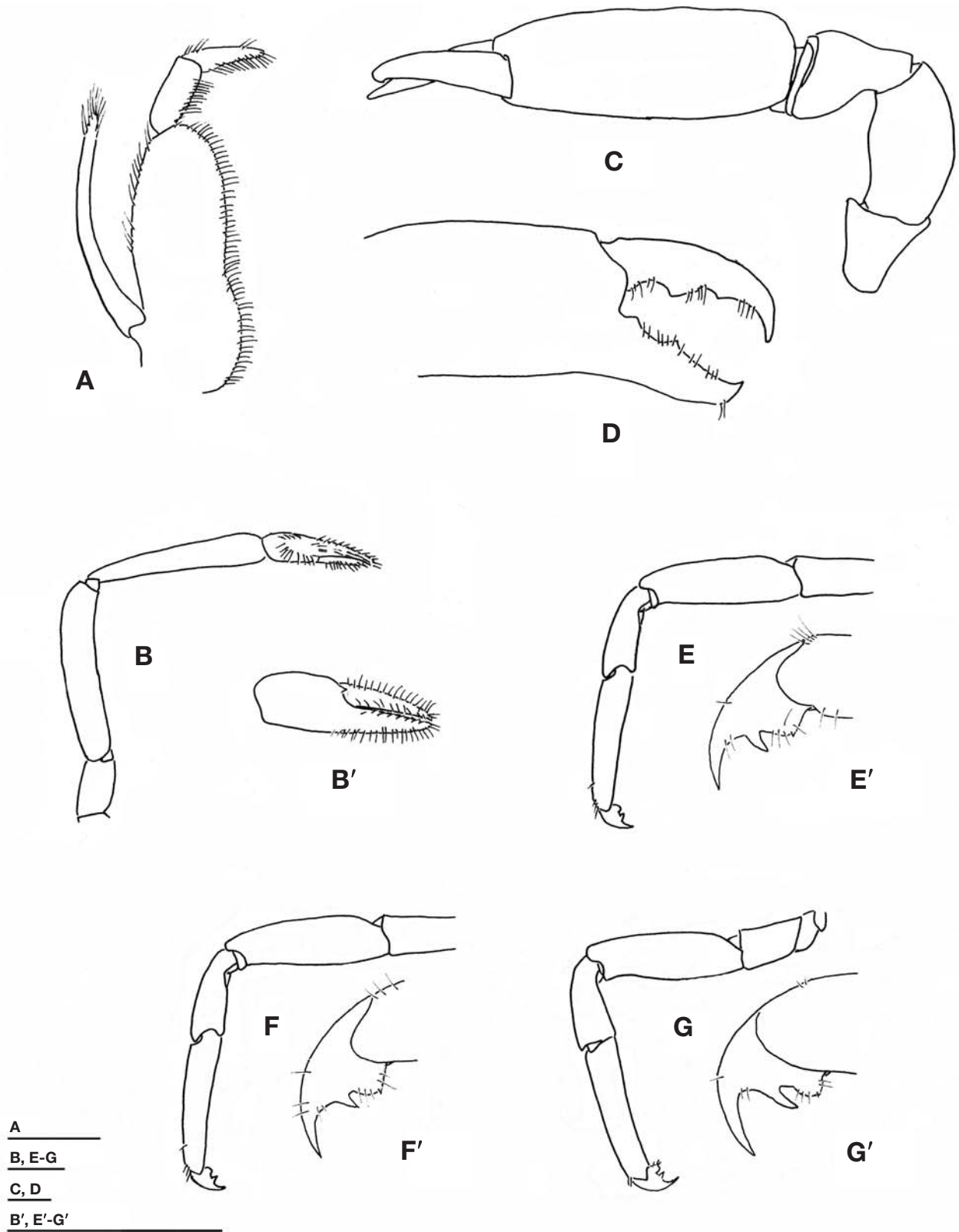


Fig. 3. *Conchodytes nipponensis*, male (cl 8 mm). A. Right third maxilliped, ventral. B. Left first pereopod, medial. B'. Chela of first pereopod. C. Left second pereopod, dorsal. D. Left second pereopod, lateral. E-G. Left third to fifth pereopods, lateral. E'-G'. Dactyls of third to fifth pereopods. Scale bars=1 mm.

of their ovigerous individuals remains uncertain because they were purchased at a fish market in Busan. Therefore, the present material is the first certain record of this species collected in the Korean territorial waters. Our specimens agree well with Bruce's description (1977), only the first pereopods are more slender. As we suggest that is due to a different developmental stage or sex. Bruce's (1977) illustration is for a juvenile female while an adult male is figured in this paper (Fig. 3B). *Conchodytes nipponensis* can be distinguished from other species of the genus by having the telson with 3 pairs of dorsolateral and 2 pairs of posterior spines, subequal length of carpus and merus of the first pereopod, and biunguiculate dactyli of third to fifth pereopods bearing a rounded proximoventral lobe with a small pointed tip (Chace and Bruce, 1993). Until now, only brachyuran species, such as pinnotherid crabs, living in the Bivalvia have been reported from Korea (Kim, 1973). Therefore, this species represents also the first finding of a caridean species living in the Bivalvia from Korean waters.

Distribution. Australia, Philippines, Japan (Chace and Bruce, 1993), and now Korea.

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