

## Two Penaeoid Shrimp (Crustacea: Decapoda) New to Korean Waters

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We describe two penaeoid shrimp, *Hymenopenaeus equalis* and *Metapenaeus ensis*, that were collected from an area northwest of Jeju Island and are new to Korean waters. *Hymenopenaeus equalis* is the first Korean representative of this genus. A brief distributional and morphological description of the two species is provided.

Key words: *Hymenopenaeus equalis*, *Metapenaeus ensis*, Penaeoidea, Decapoda, Korea, New record

### Introduction

The number of penaeoid shrimp described in Korean waters is continuously increasing, with 23 species from two families currently attributed to the Korean penaeoid fauna (Kim and Kim, 1997; Cha et al., 2001; Kim et al., 2002; 2003; 2006; Kim and Choi, 2003). Recently, two penaeoid species, *Hymenopenaeus equalis* (Bate, 1888) and *Metapenaeus ensis* (de Haan, 1844), were collected from waters northwest of Jeju Island, the former being the only known member of the genus *Hymenopenaeus* recorded in Korea. These shrimp species have been previously unrecorded from Korean waters. A morphological description and illustrations with color photographs are given for each species. The specimens examined have been deposited by the Fisheries Resource Research Team at the National Fisheries Research and Development Institute (NFRDI). Postorbital carapace length (CL) was used as the standard length of the specimens, and the terminology primarily follows that of Pérez Farfante and Kensley (1997).

### Systematic accounts

Family Solenoceridae

*Hymenopenaeus equalis* (Bate, 1888)

(New Korean name: *Juzak-daerong-suyeom-saewoo*)

(Figs. 1, 3A)

### Restricted synonymy

*Haliporus equalis* Bate, 1888: 285, pl. 41, fig. 1.

*Haliporus aequalis* - de Man, 1911: 32; 1913: pl. 2, fig. 8, 8a.

*Hymenopenaeus aequalis* - Kubo, 1949: 219, figs. 8A', 20R, 27O-P, 66M-N, 71H, 72D, J, 80I, 92D-I; Lee and Yu, 1977: 75, figs. 50, 51; Holthuis, 1980: 3; Liu et al., 1986: 67, fig. 28; Yu and Chan, 1986: 79, unnumbered fig.; Hayashi, 1986: 45, 233, fig. 4; 1992: 180, figs. 97-99; Miyake, 1998: 5, pl. 2, fig. 2.

*Hymenopenaeus equalis* - Crosnier and Forest, 1973: 264, fig. 86c-d, 87h; Crosnier, 1989: 45, figs. 1a-d, 2a, b, 3a, b (full synonymy); 1994a: 323; 1994b: 369; Pérez Farfante and Kensley, 1997: 172; Dall, 1999: 565, fig. 8A.

### Material examined

NW of Jeju Island, 33°34.5'N 125°19.5'E, 89 m, otter trawl, 9 Nov. 2006, 2 males (CL 12.9, 13.5 mm), 1 female (CL 18.3 mm), NFRDI.

### Description

Integument smooth, thin. Rostrum (Fig. 1A) straight, ascending, nearly reaching distal margin of second segment of antennular peduncle, 0.48 times as long as carapace, dorsal margin with eight or nine teeth, posterior tooth situated near epigastric spine and separated from remaining teeth by relatively long interval. Carapace (Fig. 1A) moderately long with postorbital, antennal, hepatic, and branchiostegal spines; cervical sulcus deep, extending to nearly mid-dorsal line, continuous with hepatic spine anteriorly;

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hepatic and branchiocardiac sulci prominent. Abdomen (Fig. 1A) with middorsal carina on posterior three somites, that of sixth somite ending in small spine, those of fourth and fifth somites with slit posteriorly. Telson (Fig. 1B) tapering, with longitudinal shallow sulcus; lateral margin with pair of fixed spines subapically. Lower antennular flagellum setose, longer than upper flagellum. Pereopods (Fig. 1A) slender; first pereopod with spine on ischium; fourth and fifth pereopods extremely long, flagella-form, especially meri and carpi longer than carapace. Exopod of uropod (Fig. 1A) longer than endopod, armed with distolateral spine. Petasma (Fig. 1C) with ventromedian lobule producing paired processes distally, inner process a slender flap and bifid distally, outer process oval, both with marginal denticles. Thelycum (Fig. 1D) with seventh thoracic sternum raised in median protuberance, eighth thoracic sternum bearing semicircular process.

#### Coloration in freshly preserved specimen

Whitish-red to pink with rostrum opaque white (Fig. 3A). Body deep-red to pink with rostrum transparent (Yu and Chan, 1986).

#### Distribution

Widely distributed in Indo-West Pacific from eastern Africa to India, Sri Lanka, Indonesia, the Philippines, Taiwan, and Japan, found at 200-1,368 m (Crosnier, 1989); Korean samples collected at 89 m.

#### Remarks

Two solenocerid genera, *Solenocera* and *Haliporoides*, are known from Korea. The genus *Hymenopenaeus* is easily distinguished from these two genera. The extremely long, flagelliform fourth and fifth pereopods (Fig. 1A) distinguish *Hymenopenaeus* from the two known genera, in which the last two pereopods are subequal to the other pereopods in length and thickness. *Hymenopenaeus* is represented by 15 species, occurring mainly in temperate and tropical regions of the world (Pérez Farfante and Kensley, 1997). *Hymenopenaeus equalis* is the first representative of this genus from Korea. It is generally found at depths of 200-1,368 m (Crosnier, 1989), but the Korean specimens were collected at 89 m, which extends the bathymetric range of this species into shallower waters.

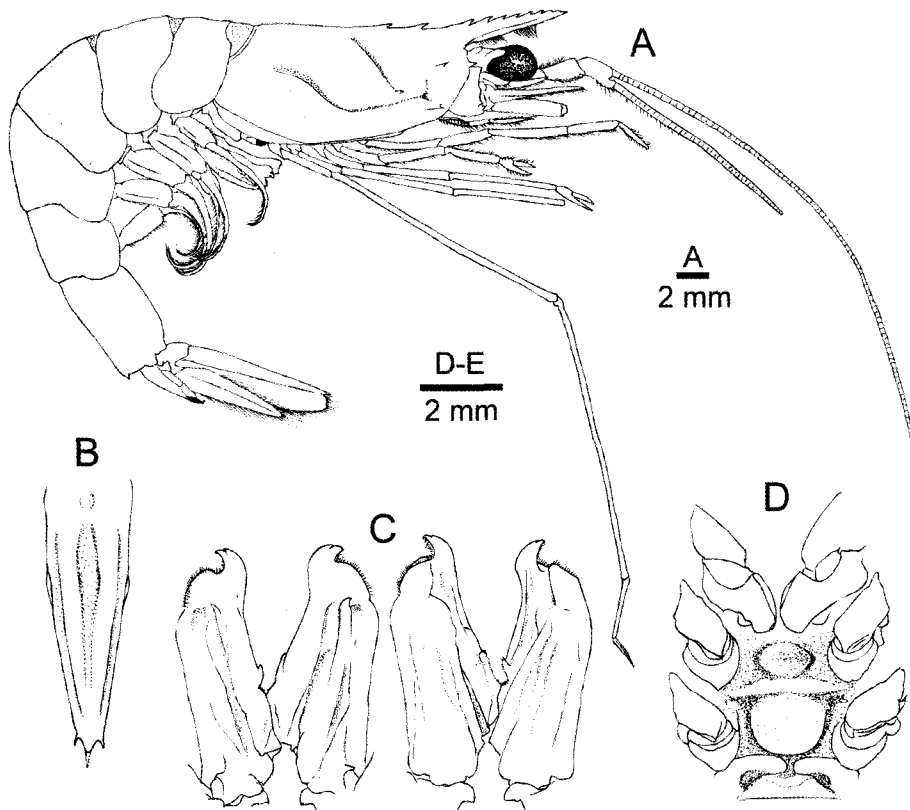


Fig. 1. *Hymenopenaeus equalis* (Bate, 1888) from NW of Jeju Island. A-C, male (CL 12.9 mm); D, female (CL 18.3 mm). A, entire animal, lateral; B, telson, dorsal; C, petasma, dorsal (left) and ventral (right); D, thelycum.

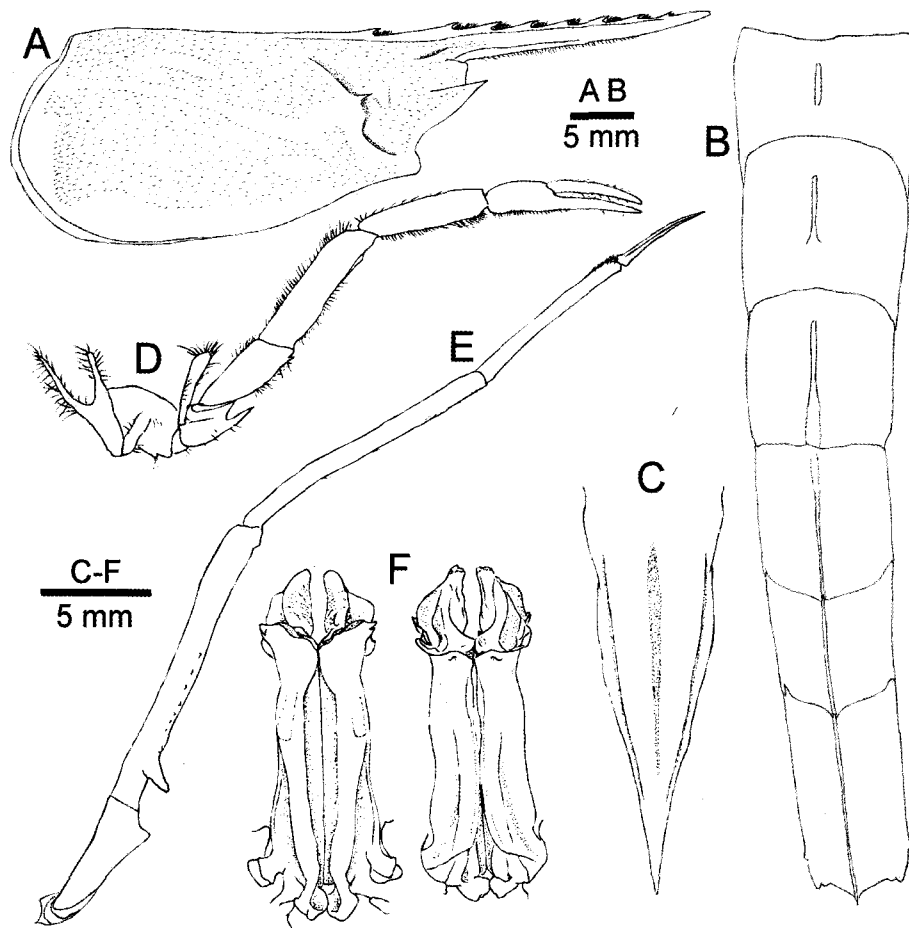


Fig. 2. *Metapenaeus ensis* (de Haan, 1844) from NW of Jeju Island. Male (CL 29.9 mm). A, carapace, lateral; B, first to sixth abdominal somites, dorsal; C, telson, dorsal; D, left first pereopod, lateral; E, left fifth pereopod, lateral; F, petasma, dorsal (left) and ventral (right).

Family Penaeidae

*Metapenaeus ensis* (de Haan, 1844)

(New Korean name: *Godun-pul-joong-ha*)

(Figs. 2, 3B)

**Restricted synonymy**

*Penaeus ensis* de Haan, 1844: 192, pl. 46, fig. 2.

*Metapenaeus ensis* - Racek and Dall, 1965: 58, pl. 2, fig. 4, pl. 3, figs. 1, 2 (full synonymy); Racek and Yaldwyn, 1971: 211; Holthuis, 1980: 24; Grey et al., 1983: 90, pl. 28; Motoh and Buri, 1984: 52, figs. 35, 36, 37A; Liu et al., 1986: 166, pls. 2, 4, text-figs. 98-104; Yu and Chan, 1986: 139, 4 unnumbered figs.; Hayashi, 1986: 65, 243, fig. 24; 1992: 97, figs. 52a, 53a, 54a, 55a,d; Pérez Farfante and Kensley, 1997: 111; Miyake, 1998: 11, pl. 4, fig. 2.

**Material examined**

NW of Jeju Island, 33°45'N 126°15'E, 110 m,

Danish seine, 1 male (CL 29.9 mm), NFRDI.

**Description**

Integument pubescent, moderately hard. Rostrum (Fig. 2A) straight, reaching distal margin of scaphocerite, 0.66 times as long as carapace, dorsal margin with seven teeth, epigastric spine conspicuously separated from posterior rostral tooth, adrostral sulcus narrow, extending backward to epigastric spine. Carapace (Fig. 2A) with antennal and hepatic spines, orbital angle produced but without spine; postocular, cervical, and hepatic sulci well defined and accompanied by carina. Abdomen (Fig. 2B) with middorsal carina on first to sixth somites, those of fourth and fifth somites bifid posteriorly, that of sixth somite ending in sharp spine. Telson (Fig. 2C) tapering, with longitudinal narrow sulcus; lateral margin without fixed spines. First pereopod (Fig. 2D) with small spine on ischium; first to third pereopods each with basal spine; fifth pereopod (Fig. 2E) with ischium

bearing lateral keel, merus exhibiting proximal notch followed by conspicuous knob and eight small protuberances. Petasma (Fig. 2F) oblong with pyramidal process apically.

#### Coloration in freshly preserved specimen

Pale yellowish brown, covered with dense, minute dark-brown spots (Fig. 3B).

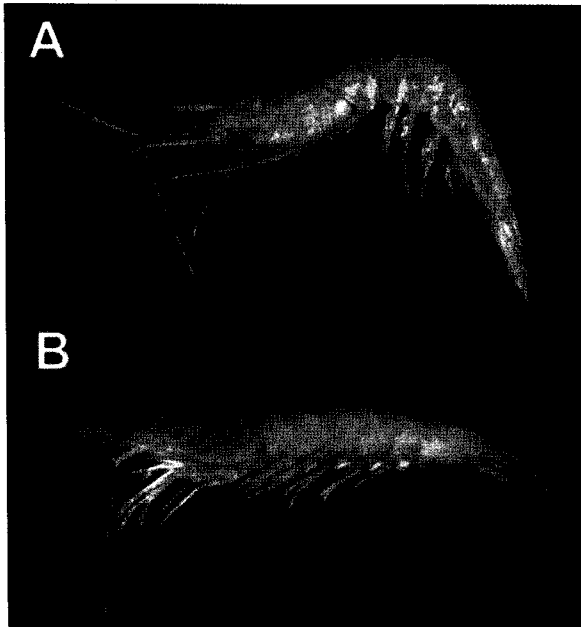


Fig. 3. A, *Hymenopenaeus aequalis* (Bate, 1888), male (CL 13.5 mm); B, *Metapenaeus ensis* (de Haan, 1844), male (CL 29.9 mm).

#### Distribution

Sri Lanka, Malaya to southeastern China, Malay Archipelago, Taiwan, Japan, New Guinea, and Australia, found at 8-64 m (Yu and Chan, 1986); Korean sample collected at 110 m.

#### Remarks

Although *M. ensis* is widely distributed in the Indo-West Pacific region, it is the second species of the genus to be described in Korea and is distinguished from its Korean congener *M. joyneri* (Miers, 1880) by the shape of the rostrum, the presence or absence of a small spine on the ischium of the first pereopod, the length of the spine on the base of the third pereopod, and the shape of the petasma. In *M. ensis*, the rostrum is straight (Fig. 2A), while it is slightly arcuate in *M. joyneri*. In *M. ensis*, the ischium of the first pereopod bears a small spine distally (Fig. 2D), while a spine is lacking in *M. joyneri*. In *M. ensis*, the basal spine of the third pereopod is short and does not reach the distal margin of the ischium,

while it is elongate and reaches the distal margin of the ischium in *M. joyneri*. In *M. ensis*, the petasma bears an apical pyramidal process (Fig. 2F), while it bears a long distomedian projection and a short distolateral projection in *M. joyneri*. *Metapenaeus ensis* is considered a shallow-water species, inhabiting depths of 8-64 m (Yu and Chan, 1986); however, the Korean specimen was collected at a depth of 110 m, which extends the bathymetric range of this species into deeper waters.

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