

New Record of *Alpheus pacificus* Dana (Decapoda: Alpheidae) from Korea

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An alpheid shrimp, *Alpheus pacificus* Dana, 1852, is recorded from Korea for the first time based on the specimens collected from the intertidal zone in Jeju-do, Korea. *A. pacificus* is readily distinguished from *A. malabaricus* by having the inferior shoulder on the lateral face of the major chela with a very deep, rounded notch, and by the simple, non-spatulate dactylus of the third pereopod. The Korean Alpheidae now includes 19 species representing 7 genera.

Key words: new record, *Alpheus pacificus*, Alpheidae, Korea

Introduction

In his major publication on the caridean shrimps of Korea, Kim (1977) reported four species of *Alpheus*: *A. brevicristatus* De Haan, 1844, *A. japonicus* Miers, 1879, *A. rapax* Fabricius, 1798, and *A. bisincisus* De Haan, 1844. The latter two species were misidentified. As pointed out by Hayashi and Nagata (2002), Kim's (1977) *A. rapax* represents *A. digitalis* De Haan, 1844. The identity of *A. bisincisus* reported by Kim (1977) remains unknown because of the absence of the minor chela in both sexes in Kim's description; it is assumed that this species belongs to Edwardsii group. Cha et al. (2001) provided a color photograph of the entire animal in dorsal view and illustrations of the major and minor chelae of *A. bisincisus*. However, *A. bisincisus* of Cha et al. (2001) appears to be *A. hoplocheles* Coutiere, 1897, because the dactylar articulation of the major chela is flanked by a strong tooth in illustration.

Since Kim (1977), eight more species of *Alpheus* had been reported from Korea: *A. digitalis*, *A. hoplocheles*, *A. lobidens* De Haan, 1850 (*s. lat.*), *A. malabaricus* (Fabricius, 1775) (*s. lat.*), *A. paralcione* Coutière, 1905, *A. richardsoni* Yaldwyn, 1971 (as *A. euphrosyne richardsoni*), *A. spongiarum* Coutiere, 1897, and *A. sudara* Banner and Banner, 1966 (Miya, 1995; Park and Han, 2000; Yang and Anker, 2003; Koo and Kim, 2004a). A recent larval study showed that *A. heeia* Banner and Banner, 1975 also occurs

in Jeju-do, southern Korea (Yang and Kim, 1999). Thus, excluding two records of *A. bisincisus* provided by Kim (1977) and Cha et al. (2001), 11 species of *Alpheus* were previously known from Korea.

During the ongoing survey of Korean alpheid fauna, *Alpheus pacificus* Dana, 1852 was collected from the intertidal zone in Jeju-do, southern Korea. It is a new record for the Korean alpheid fauna. The Korean material of *A. pacificus* is described and illustrated herein.

The carapace length (cl) was measured from the tip of the rostrum to the postero-median margin of the carapace. The specimens used in this study were deposited in the Laboratory of Zoology, Silla University (SUZ), Busan, Korea.

Systematic Account

Alpheus pacificus Dana, 1852 (Fig. 1)

Korean name: *Taepyeong-ddakchong-Sewoo*

Alpheus pacificus Dana, 1852: 544, pl. 34, fig. 5; Coutiere, 1905: 909, fig. 47; Gurney, 1938: 47, figs. 204-214 (larvae); Gohar and Al-Kholy, 1957: 178, figs.1-94 (larvae); Tiwari, 1963: 315, fig. 30; Banner and Banner, 1966: 79 (in key), 143, fig. 54; Banner and Banner, 1982: 31 (in key), 217, fig. 68; Chace, 1988: 13 (in key), 45; Miya, 1995: 287 (list); Hayashi, 1998a: 289 (in key); Hayashi, 1998b: 395, figs. 356f, 1, 358f, 359f, 1.

Alpheus gracilidigitus Miers, 1884: 287.

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Material examined

Seongsanpo (Jeju-do), June 20, 1993, intertidal zone, coll. C.H. Kim - 1♂ (cl 9.3 mm), 1♀ (cl 12.5 mm) (SUZ Cr. 10118).

Description

Species of *Edwardsii* group. Rostrum (Fig. 1A, B) acute, triangular, overreaching middle of first segment of antennular peduncle; lateral margin with pair of short setae. Orbital hoods (Fig. 1A) rounded, unarmed, moderately swollen; orbitorostral grooves moderately deep, reaching posteriorly beyond eyes. Pterygostomian angle (Fig. 1B) rounded. Second segment of antennular peduncle (Fig. 1A) 3.12 times as long as broad; 2.50 times longer than visible part of first segment; stylocerite distally pointed, falling short of end of first segment of antennular peduncle. Scaphocerite (Fig. 1A) with lateral margin slightly concave; distolateral tooth strong, not reaching end of third segment of antennular peduncle. Carpocerite (Fig. 1B) as long as distolateral tooth of scaphocerite.

Third maxilliped (Fig. 1C) with ultimate article about 1.63 times as long as penultimate article.

Major chela (Fig. 1D, E) about 2.26 times as long as broad; superior saddle well defined; proximal shoulder rounded, overhanging transverse groove; distal shoulder strong, rounded; lateral palmar depression well defined, quadrangular, extending to linea impressa; mesial palmar depression triangular; inferior shoulder blunt inferior notch very deep; merus 1.75 times as long as broad, lacking teeth on inferior margin.

Minor chela (Fig. 1F, G) similar in male and female, 3.75 times as long as broad; inferior margin of palm with rounded shoulder below dactylar articulation; fingers about 2.40 times as long as palm, curved with acute tips; dactylus not balaeniceps; cutting edge of fingers laterally with dense series of long, forward-sweeping setae; merus about 2.52 times as long as broad, lacking teeth on inferior margin.

Second pereopod (Fig. 1H) with proximal carpal article 1.50 times as long as second; second article 2.75 times as long as third; third article as long as fourth; fifth article shorter than first article, about 0.53 times as long as fourth.

Third pereopod (Fig. 1I) with movable spine on ischium; merus about 3.72 times as long as broad; carpus about 0.5 times as long as merus; propodus 1.38 times as long as carpus, with 9 spines; dactylus simple, conical, acute, about 0.37 times as long as propodus.

Abdomen (Fig. 1J) with pleura rounded.

Telson (Fig. 1K). Telson about 2.94 times as long as broad at posterior margin, with 2 pairs of dorsolateral spines; posterior margin convex, with pair of spines at each lateral end.

Distribution

Widely distributed in Indo-West Pacific from Red Sea and eastern Africa to Clipperton Island, eastern Pacific (Banner and Banner, 1982; Chace, 1988). In Korea known only from Jeju-do.

Remarks

The length of the fingers of the minor chela in *Alpheus pacificus* varies from 1.2-2.0 times as long as the palm (Banner and Banner, 1982). However, a greater variation in this ratio (2.5 times) was reported for males from Queensland, Australia and northern Indian Ocean (Banner and Banner, 1982). This ratio is believed not to be correlated to the size of the specimens (Banner and Banner, 1982). In the male specimen from Jeju-do, the fingers of the minor chela are approximately 2.40 times as long as the palm. The differences in morphology and color patterns suggest that *A. pacificus* is a species complex, as are *A. malabaricus*, *A. lobidens* and possibly *A. bisincisus* (*A. Anker*, pers. comm.).

Within the species of *Edwardsii* group, only two Korean species are characterized by the minor chela lacking balaeniceps ridges on the dactylus in both sexes: *A. malabaricus* and *A. pacificus*. In *A. malabaricus* the inferior shoulder on the lateral face of the major chela lacks a medial depression, while the dactylus of the third pereopod is subspatulate. *A. pacificus* is readily distinguished from *A. malabaricus* by having the inferior shoulder on the lateral face of the major chela with a very deep, rounded notch, and by the simple, non-spatulate dactylus of the third pereopod.

With the record of *A. pacificus* from Jeju-do, the Korean Alpheidae consists of 7 genera and 19 species: *Alpheus* (12 species); *Athanas* (1 species); *Automate* (1 species); *Betaeus* (1 species); *Salmonaeus* (1 species); *Stenalpheops* (first reported as *Chelomalpheus*, 1 species); and *Synalpheus* (2 species) (Miya, 1995; Kim and Kim, 1997; Kim, 1998; Park and Han, 2000; Cha et al., 2001; Koo and Kim, 2003a,b, 2004a,b; Yang and Anker, 2003).

Acknowledgments

The authors are grateful to Dr. A. Anker for sug-

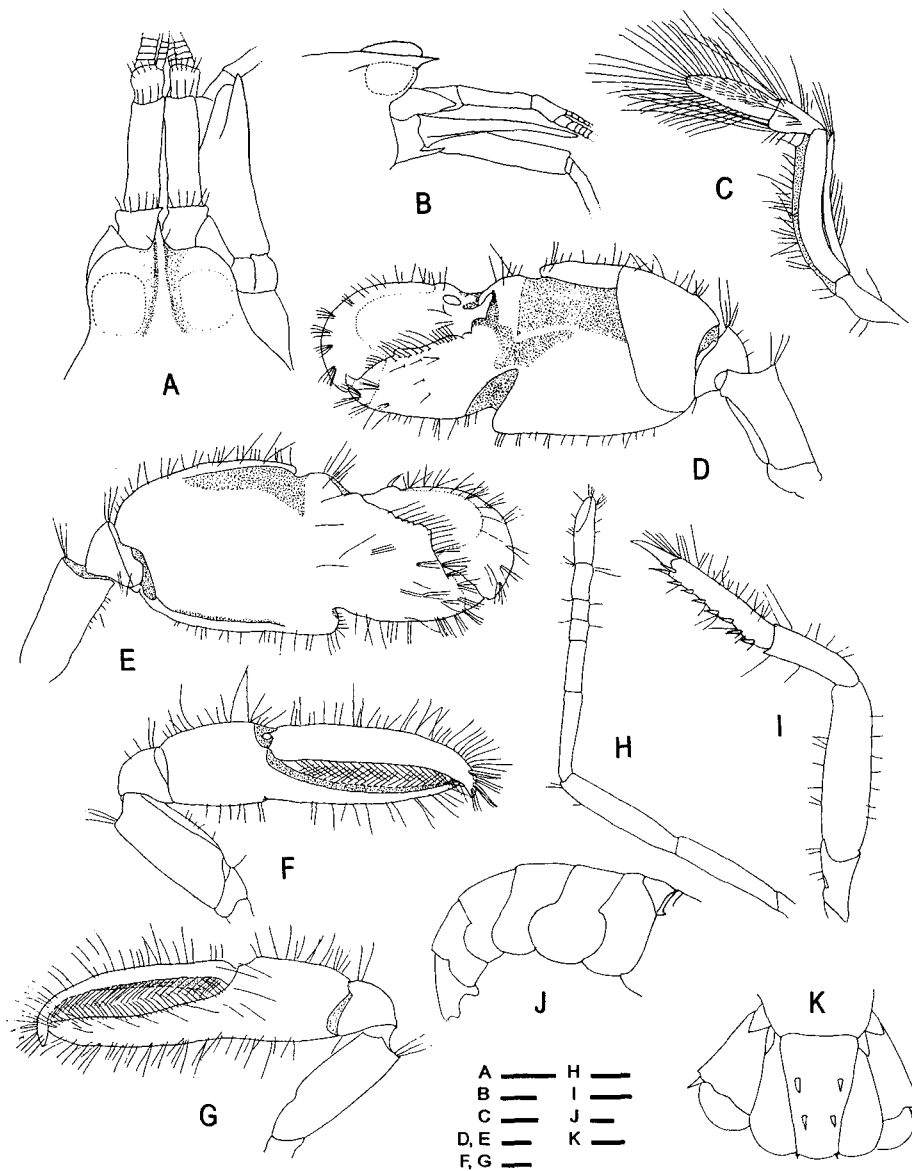


Fig. 1. *Alpheus pacificus* Dana, 1852. A-C, female (cl. 12.5 mm, SUZ Cr. 10118); D-K, male (cl. 9.3 mm, same lot). A, anterior carapace and cephalic appendages, dorsal; B, same, lateral; C, third maxilliped; D, major chela, lateral; E, same, mesial; F, minor chela, lateral; G, same, mesial; H, second pereopod; I, third pereopod; J, abdomen, lateral; K, tail fan, dorsal. Scales=1 mm.

gestion and comments on the first version of the manuscript. Special thanks go to Dr. C. H. Kim for collecting specimens of *A. pacificus*.

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(Received October 2004, Accepted March 2005)