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Short communication

Report on the Alpheid Shrimp, *Athanas parvus* (Decapoda: Caridea: Alpheidae) from Korea

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ABSTRACT

The genus *Athanas* is a member of alpheid shrimps living in temperate and tropical waters worldwide. Species of the genus *Athanas* are small and inhabit coral reefs, rock or muddy bottoms. As a result of continuous taxonomic research on shrimps collected from Korean waters, *Athanas parvus* is newly added to Korean fauna through the description of adult form. *Athanas parvus* is distinguished from *A. japonicus* by the biunguiculated dactyli of third, fourth and fifth pereopods and spines on ischium of first pereopod. The Korean Alpheidae fauna now consists of nine genera and 27 species including two species of the genus *Athanas*.

Keywords: Decapoda, Alpheidae, *Athanas parvus*, snapping shrimp, Korea

INTRODUCTION

The family Alpheidae Rafinesque, 1815 is very diverse, comprising 796 species in 54 genera (WoRMS, 2023a). Most of the members are common inhabitants of the coral reefs, seagrass flats, muddy bottoms, and oyster reefs. Most genera and species are found in tropical and temperate coastal oceans (Wicksten and McClure, 2007). Korean Alpheidae fauna consists of 26 species in nine genera [*Alpheus* (15 species), *Arete* (1), *Athanas* (1), *Automate* (1), *Betaeus* (2), *Prionalpheus* (1), *Salmoneus* (1), *Stenalpheops* (1), *Synalpheus* (3)] (Yang and Kim, 1999, 2003; Park and Han, 2000; Koo and Kim, 2003a, 2003b, 2004a, 2004b, 2005a, 2005b, 2009, 2014, 2017; Yang, 2003; Yang and Anker, 2003; Yang and Ko, 2005; Yang et al., 2007; Kim et al., 2022). *Alpheus heeia* Banner and Banner, 1975 and *Athanas parvus* De Man, 1910 were reported through larval studies without description of adult form and not listed on the list of nationally designated species (Yang and Kim, 1999, 2003; Yang, 2003; National Institute of Biological Resources, 2020). The genus *Athanas* currently includes 42 species in the world (WoRMS, 2023b). Most species of the genus are small and live on muddy or rocky bottoms, and on coral reefs (Banner and Banner, 1973; Anker, 2003). Some species live in association with other animals such as thalassinideans, stomatopods, and echinoderms (Gherardi, 1991; Froglia and Atkinson, 1998; Anker et al., 2001). *Athanas* species are characterized by a triangular articulated plate on the sixth abdominal segment and a well-developed rostrum (Anker and Jeng, 2007).

As a result of continuous taxonomic researches on shrimps collected from Korean waters, *Athanas parvus* is newly added to the Korean fauna through the description of adult form. Accordingly, the Korean Alpheidae fauna consists of nine genera and 27 species. The abbreviation "cl" refers to carapace length from the tip of rostrum to the posterior dorsal margin of the carapace. Drawings were made with the aid of a camera lucida.

SYSTEMATIC ACCOUNTS

Order Decapoda Latreille, 1802
Family Alpheidae Rafinesque, 1815
Genus *Athanas* Leach, 1814

[1]** *Athanas parvus* De Man, 1910 (Fig. 1)**

Athanas sibogae De Man, 1910: 314; 1911: 151, pl. 2, fig. 6; Miya and Miyake, 1968: 134, fig. 2; Banner and Banner,

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1973: 321, fig. 9; Sha and Liu, 2007: 753.

Athanas parvus De Man, 1910: 315; 1911: 148, pl. 1, fig. 4; Banner and Banner, 1960: 141, fig.1; Miya and Miyake, 1968: 134; Chace, 1988: 63; Hayashi, 1995: 109, figs. 272c, 273h, i, 274d–j; Sha et al., 2019: 175, fig. 2.103.

Material examined. Korea: 1♂, cl 5.0 mm (HNIBRIV 122), Jeollanam-do: Geomundo Island, 34°00′21.5″N, 127° 19′18.2″E, diving at a depth of 20 m, 15 Oct 2001, coll. Kim SH; 1♂, cl 3.8 mm (HNIBRIV123), Jeju-do: Chagwido Island, 33°18′34.4″N, 126°08′48.4″E, diving at a depth of 20 m, 8 Jun 2001, coll. Kim SH; 1♂, 1♀, cl 4.5, 5.5 mm (HNIBRIV120, 121), Seogwipo-si, north of Munseom Islet, 33°13′39.9″N, 126°33′57.8″E, night diving at a depth of 20 m, 16 Oct 2015, coll. Park JH; 1♀, cl 4.3 mm (HNIBRIV119), Beomseom Islet, 33°13′14.6″N, 126°30′56.8″E, diving at a depth of 25 m, 25 Feb 2009, coll. Lee KJ, Kil HJ, Park TS.

Description. Body small and glabrous, cl 5.0 mm long. Rostrum (Fig. 1A, B) lanceolate, carinate on dorsal surface, projecting straight forward; tip acuminate, reaching to middle of third antennular segment, slightly ascending upwards; rostral carina sharp, reaching to middle of eye posteriorly; orbitorostral groove present at anterior inner dorsal margin of carapace.

Carapace (Fig. 1A) smooth, not setaceous; dorsal margin almost straight. Extra-corneal tooth and infra-corneal tooth acute, reaching to anterior margin of eyes; base of infra-corneal tooth wider than that of extra-corneal tooth; supra-corneal tooth absent. Eyes exposed in dorsal and lateral views. Pterygostomial margin rounded. Cardiac notch well-developed.

First antennular segment with strong tooth-like carina extending from ventral inner margin; ventral part of carina acute anteriorly (Fig. 1C). Second segment 1.7 times as long as wide, very slightly longer than visible part of first segment and slightly longer than third segment. Stylocerite narrowly elongated, directing forwardly and sharp, slightly shorter than distal end of second antennular segment.

Scaphocerite with lateral margin almost straight; distal spine slightly overreaching distal end of antennular peduncle; fairly deep, V-shaped space present between distal spine and inner blade (Fig. 1A, B). Basicerite with sharp lateral spine. Carpocerite reaching to middle of third antennular segment.

Third maxilliped (Fig. 1D) overreaching distal end of antennular peduncle. Ultimate segment slender, 6.6 times as long as wide, about 2 times as long as penultimate segment, tapering distally; distal end bearing three movable spinules; superior and inferior margins bearing regular pattern of setae and inner face bearing dense setae. Penultimate segment elongated, about 3.7 times as long as wide at distal end, with one tiny spinule near end of inferior margin. Antepenultimate segment as long as two other segments combined.

Right and left first pereopods almost symmetrical. Chela of right first pereopod (Fig. 1E–H) subcylindrical, more than 3.6 times as long as broad at middle, folding back into expanded and deeply excavated merus; inferior margin concave below base of finger. Palm smooth without sculpturing. Fingers occupying distal almost 0.3 of chela, gaping when closed. Movable finger without molar-like tooth, tip directing downwards; superior margin regularly arched and inferior margin bearing short setae and 8–9 teeth longitudinally, directing downward. Immovable finger excavated dorsally, longitudinally, with tip deflecting inwards and with superior inner margin serrated, bearing 8–9 broad teeth directing upward. Carpus cup shaped, as long as ischium with one or two inferior depressions. Merus triangular in cross section with one superior, one inferior inner, and one inferior outer margin smooth and without spine at distal end; lateral surface expanded, as broad as 4/10 of length; ventral surface deeply excavated longitudinally. Ischium triangular in cross section bearing 8–9 movable spines on superior margin and 7 movable spines on inferior inner margin. In female, first pereopods almost symmetrical. Chela slender, 1.2 times as long as propodus, folding back; palm 2.2 times of finger. Merus excavated distally, sub-equal to chela, unarmed. Ischium bearing about 5–6 movable spines on superior margin.

Second pereopod (Fig. 1I) with fingers of chela almost as long as palm. Carpus with five segments; first segment about 4.5 times as long as second; second segment almost as long as third; third segment slightly less than fourth and 0.6 times as long as fifth.

Third pereopod with dactylus (Fig. 1J) slightly more than 0.2 times as long as propodus, biunguiculated; tip slightly directing downward. Propodus about 1.7 times as long as carpus, with 10–11 movable spines on inferior margin and one pair at distal end. Carpus bearing seta-like spinule on distal end of inferior margin. Merus about 4.7 times as long as broad and 1.6 times as long as carpus. Ischium with two movable spines on inferior margin.

Fourth pereopod almost same as third pereopod. Ischium with two movable spines.

Fifth pereopod much narrower than third pereopod. Ischium with no movable spine.

Pleura (Fig. 1K) of first four abdominal somites broadly rounded. Fifth somite pointed posteriorly. Sixth abdominal somite with articulated plate at posteroventral angle.

Telson (Fig. 1L) about 1.7 times as long as broad at anterior end, armed with two pairs of dorsal spines laterally. Lateral margin almost straight. Posterior margin rounded at middle, armed with a pair of spines at each lateral end.

Distribution. Red Sea, eastern Africa, Singapore, Indonesia, Philippine, Australia, Tonga, Samoa Island (Chace, 1988), Japan (Hayashi, 1995), Malay, South China Sea (Sha et al.,

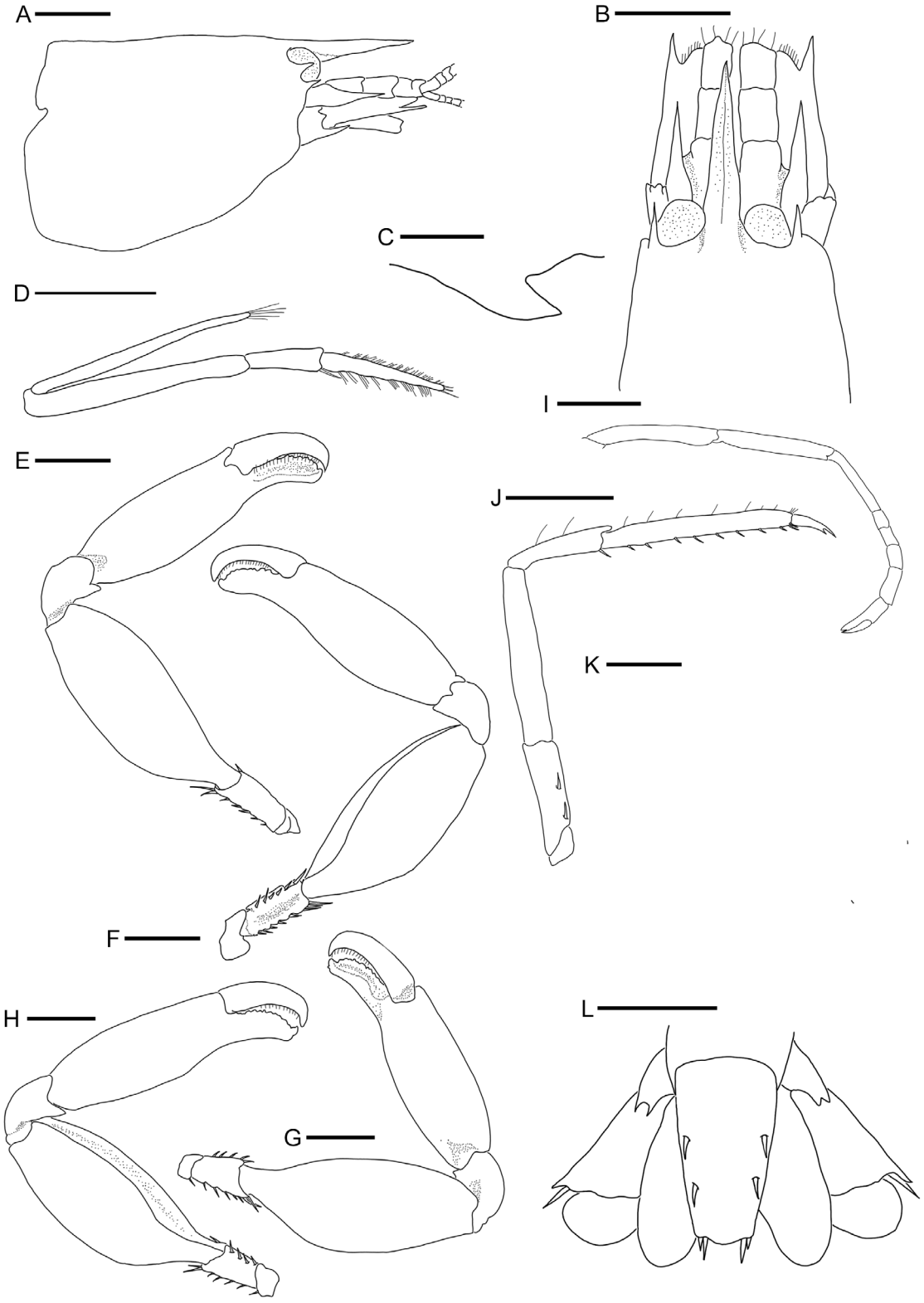

Fig. 1. *Athanas parvus* De Man, 1910, male (HNIBRIV122; cl 5.0 mm long). A, Anterior region, lateral view; B, Same, dorsal view; C, Carina below left first antennular segment; D, Right third maxilliped; E, Right first pereopod, outer face; F, Same, inner face; G, Left first pereopod, outer face; H, Same, inner face; I, Right second pereopod; J, Right third pereopod; K, Abdomen, lateral view; L, Telson and uropods. Scale bars: A, B, D, I, J = 2 mm, C, E–H, K, L = 1 mm.

2019), Geomundo Island and Jeju-do Island, Korea (the present study).

Remarks. Forty-two species at the present are recognized in the genus *Athanas* in the world (Tattersall, 1921; Anker and Ahyong, 2007; Anker and Jeng, 2007; Anker and Marin, 2007, Komai and Henmi, 2023). In Korea, *A. japonicus* has been reported (Park and Han, 2000). And in *A. parvus*, only its larval form has been described (Yang and Kim, 2003). We herein report the adult form of *A. parvus* collected from Korean waters. This species can be easily distinguished from *A. japonicus* by the following characters: (1) the rostrum reaching to mid-length of the third segment of the antennular peduncle (vs. slightly exceeding end of the second segment); (2) the palmar margins of the major and minor first chela being smooth without any lobes (vs. crenulate and with one distinct lobe); (3) the immovable finger excavated (vs. with distinct notch); and (4) the presence of the biunguiculated dactylus on the third to fifth pereopods (vs. simple dactylus). The Korean specimens generally agree well with these characteristics, as well as with the original description and published accounts of this species (De Man, 1910; Banner and Banner, 1973; Sha et al., 2019). However, we observed a minor difference in the other specimen collected at Mongdol Beach on the southern coast of Korea (retained in personal collection of the corresponding author). The left first pereopod in the Mongdol Beach specimen is slightly larger than the right, but shape was similar.

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CONFLICTS OF INTEREST

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

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