

Occurrence of Alpheid Shrimp, *Alpheus paracrinitus* (Decapoda: Caridea: Alpheidae) in Korea

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ABSTRACT

Alpheus paracrinitus belonging to the diadema group of the genus *Alpheus* (Decapoda: Caridea: Alpheidae) is reported from Korean waters. This species is distinguished from other Korean congeneric species of the genus *Alpheus* by the following characteristics: major chela oval in section, lacking marked transverse or longitudinal grooves; movable finger of minor chela balaeniceps; dactylus of third pereopod simple. Korean Alpheidae fauna now consists of 23 species of seven genera.

Key words: Alpheidae, *Alpheus paracrinitus*, Korea

INTRODUCTION

The genus *Alpheus* is the most diverse group in the family Alpheidae. Seven groups (*macrocheles*, *sulcatus*, *obesomanus*, *crinitus*, *diadema*, *brevirostris*, and *edwardsii*) are at present recognized in the genus *Alpheus* (Decapoda: Caridea: Alpheidae) in the world. However, 14 species belonging to only four groups, *macrocheles*, *crinitus*, *brevirostris* and *edwardsii*, were previously reported in Korea (*A. albatrossae* of *macrocheles* group; *A. paralcycione* and *A. spongiorum* of *crinitus* group; *A. digitalis* of *brevirostris* group; *A. bisincisus*, *A. brevicristatus*, *A. euprosyne richardsoni*, *A. heeia*, *A. hoplocheles*, *A. japonicus*, *A. lobidens*, *A. malabaricus*,

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A. pacificus, *A. sudara* of *edwardsii* group) (Kim and Kim, 1997; Miya, 1997; Kim, 1998; Yang, 1999, 2003; Park and Han, 2000; Cha et al., 2001; Yang and Anker, 2003; Koo and Kim, 2003a, b, 2005; Yang and Ko, 2005). The continuous taxonomic study on shrimps collected from Korean waters revealed that *Alpheus paracrinitus* is new to Korean fauna. This species belongs to the *diadema* group and is described and illustrated herein. The specimen was collected by scuba diving at depth of 5-30 m and deposited in the Invertebrate Resources Bank of Korea (IRBK), Seoul National University.

SYSTEMATIC ACCOUNTS

Family Alpheidae Rafinesque, 1815

Genus *Alpheus* Fabricius, 1798

**Alpheus paracrinitus* Miers, 1881 (Fig. 1)

Alpheus paracrinitus Miers, 1881, p. 365, pl. 16: fig. 6.; Chace, 1972, p. 69; 1988, p. 45; Miya, 1974, p. 157; Banner and Banner, 1982, p. 129, fig. 36; Kim and Abele, 1988, p. 49, fig. 20; Hayashi, 1997, p. 126, figs. 321f, 323f, 324f, 325f.

Material examined. 1 ♂ (cl 5.8 mm), Munseom (Jeju-do), 10 Jul. 2003.

Description. Rostrum (Fig. 1A, B) triangular, acute, reaching to middle of visible part of first antennular segment; tip slightly directing downward.

Ocular hood slightly inflated dorsally; anterior margin rounded laterally and shallowly concave near base of rostrum. Orbitorostral groove weak, only scarcely seen near base of rostrum.

First antennular segment bearing shallowly triangular carina extending from ventral inner margin; ventral part ending in acute spine. Second segment less than 2 times as long as broad, slightly longer than visible part of first segment; first segment slightly longer than third segment. Stylocerite narrowing to long sharp point, reaching to distal margin of first segment.

Scaphocerite with lateral margin very slightly concave at middle. Distal spine directing slightly inward, scarcely reaching to distal end of antennular peduncle and falling short of distal end of carpocerite. Inner blade narrowly rounded distally, falling slightly short of tip of distal spine. Cleft between inner blade and distal spine shallow, arising from less than distal 0.2 of scaphocerite.

Carpocerite overreaching distal end of antennular peduncle by more than half length of third antennular segment. Basicerite with small, sharp lateral spine; spine broad at base.

Third maxilliped falling slightly short of distal end of carpocerite. Exopod slightly overreaching distal end of antepenultimate segment.

Major first pereopod (Fig. 1C, D) overreaching distal end of carpocerite by almost length of chela. Major chela slightly compressed laterally, oval in cross section, lacking sculpturing, only with a very slight concavity on inferior margin in region of dactylar articulation, about 3.7 times as long as broad with fingers occupying slightly less than distal 0.3. Movable finger shallowly arched in profile with tip blunt, slightly overreaching tip of immovable finger. Merus slender, more than 4 times as long as broad; inferior inner margin bearing 7 minute spinules and one acute spine behind

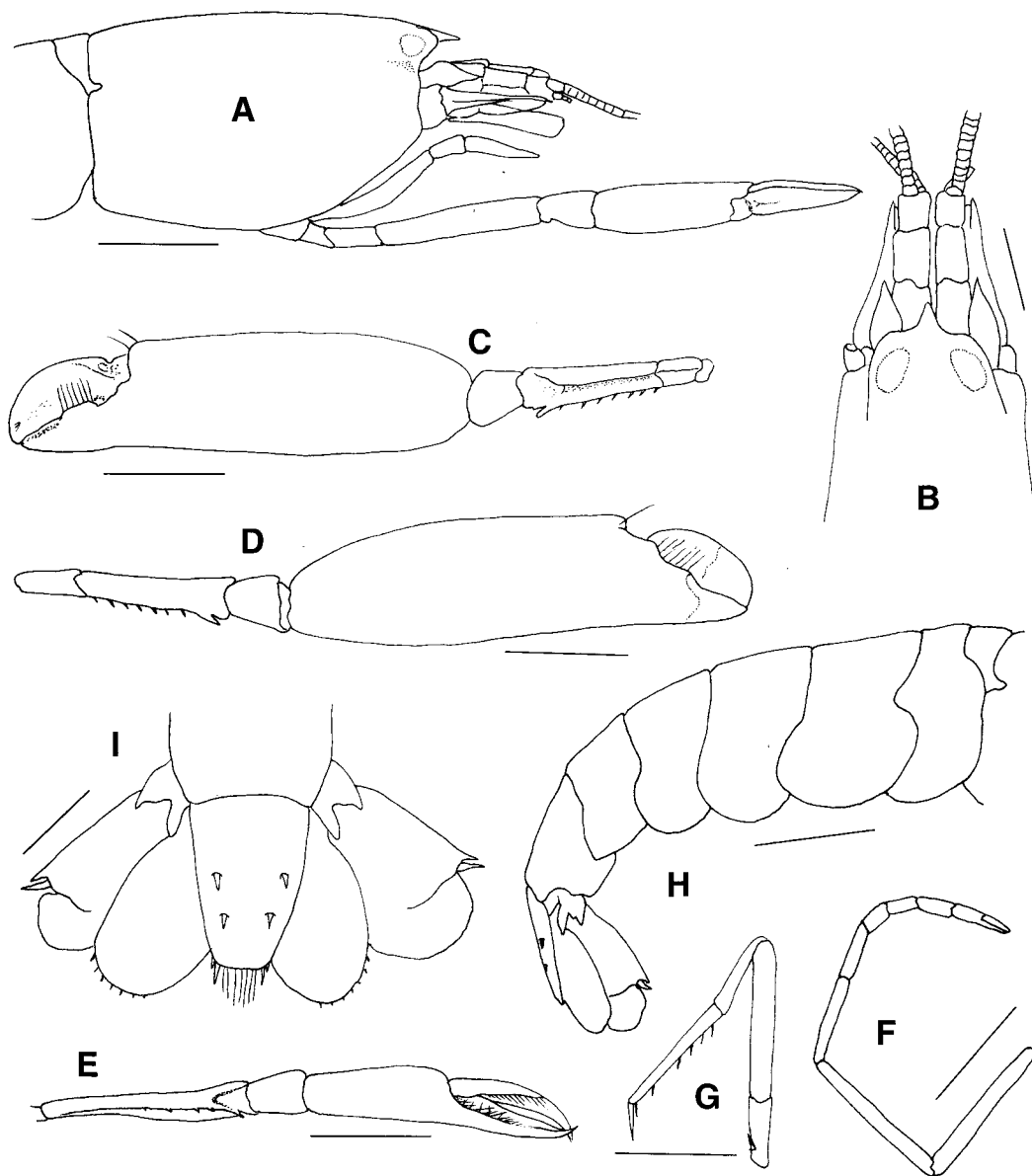


Fig. 1. *Alpheus paracrinitus*, male, cl 5.8 mm ("cl" refers to carapace length from the tip of rostrum to the posterior dorsal margin of the carapace): A, anterior region, lateral view; B, same, dorsal view; C, large (left) first pereopod, outer face; D, same, inner face; E, small (right) first pereopod, inner face; F, right second pereopod; G, left third pereopod; H, abdomen; I, telson and uropods. Scale bars = 1 mm (B), 2 mm (A, C-I).

distal end.

Minor chela of first pereopods (Fig. 1A, E) about 5 times as long as broad. Fingers occupying slightly less than 0.5 length of chela; movable finger balaeniceps. Merus with inferior inner margin

bearing 4 minute spinnules and one acute spine behind distal end.

Second pereopod (Fig. 1F) with fingers of chela about as long as palm. First segment of carpus about 1.5 times as long as second; second segment slightly less than 2.0 times as long as third; third segment subequal to fourth; fifth segment slightly longer than fourth.

Dactylus of third pereopod (Fig. 1G) simple, slightly curved and elongate, about 0.3 length of propodus. Propodus about 1.5 times as long as carpus and armed with 6 movable spines on inferior margin and pair at distal end. Merus more than 5 times as long as broad and 2 times as long as carpus. Ischium bearing movable spine.

Fourth pereopod almost same as third pereopod. Ischium bearing movable spine.

Ischium of fifth pereopod bearing movable spine.

Pleura (Fig. 1H) of abdominal somites broadly rounded. First four abdominal sternites of male with spine at midline of each sternite, but spines of third and fourth sternites less distinct. Appendix masculina slightly overreaching distal end of appendix interna.

Telson (Fig. 1I) about 1.5 times as long as broad at anterior end, armed with two pairs of dorsal spines and with no distinct longitudinal median depression on dorsal surface. Posterior margin very shallowly rounded, and armed with pair of spines at each lateral end; inner spine almost 2 times as long as outer one.

Uropodal endopod bearing seta-like spines on distal margin. Uropodal exopod bearing slender movable spine flanked laterally by very acute immovable tooth and internally by rounded lobe; movable spine not overreaching distal margin of uropodal exopod.

Distribution. Pantropical. Western Atlantic, Bermuda to Tobago; Flower Garden Reefs off Texas; eastern Atlantic, West Africa; Indian Ocean; tropical Indo-West Pacific to Hawaii; eastern Pacific from Gulf of California, western Mexico, Islas Clarion, Panama, Clipperton and Galapagos Islands (Kim and Abele, 1988). Japan (Miya, 1974, Hayashi, 1997). Jeju-do, Korea.

Remark. Banner and Banner (1982) noted that this species showed the extensive variation in the armature of the major and minor chelipeds, in the degree of balaeniceps development on the small chela of the male, in the ratio of the first two carpal segments of the second pereopod, and in the carpal-propodal length ratio of the third pereopod. They confirmed Chace's (1962) conclusion that there was but a single circumtropical species. The species reported herein shows some differences (concavity on anterior margin near base of rostrum, position of meral spine of first pereopods, setation on minor chela, in the ratio of the first two carpal segments of the second pereopod, etc.) from the description of Kim and Abele (1988). However present species agrees well with the description of Miya (1974).

DISCUSSION

The *diadema* group is recognized by the following characteristics: Ocular teeth usually lacking. Major chela is rounded to oval in section, usually with transverse groove proximal to fingers (not in the present species) and lacking marked longitudinal grooves. Movable finger of minor chela is often balaeniceps (balaeniceps in the present species). Third pereopod is with or without tooth on merus (not in the present species); dactylus is almost always simple (Kim and Abele, 1988). The

present specimen of *A. paracrinatus* shows the typical form of the *diadema* group. By the present study, five (*macrocheles*, *crinitus*, *brevirostris*, *diadema*, *edwardsii*) among seven groups of genus *Alpheus* are recognized in Korea. This species is distinguished from other known species of the genus *Alpheus* in Korea by the characteristics mentioned above. Now Korean Alpheidae fauna consists of 23 species of seven genera [*Alpheus* (15 species), *Athanas* (2), *Automate* (1), *Betaeus* (1), *Salmoneus* (1), *Stenalpheops* (1), *Synalpheus* (2); One species of *Alpheus* and one species of *Athanas* were reported through the larval studies without descriptions of adult morphology] (Koo and Kim, 2003a, 2005; Yang and Ko, 2005).

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한국미기록 긴원통발딱총새우 (*Alpheus paracrinitus*)
(십각목: 생이절: 딱총새우과)의 보고

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요 약

새우류의 분류학적 연구 결과로 딱총새우속의 7개 그룹 중 *diadema* 그룹에 속하는 긴원통발딱총새우 (*Alpheus paracrinitus*)를 한국에서 처음 보고 한다. 이 종은 한국산 딱총새우속의 다른 종들과 다음과 같은 특징에 의해 구분된다: 큰 제1가슴다리의 손바닥은 단면이 둥그스름한 원형이며, 어떤 홈도 존재하지 않는다. 작은 제1가슴다리의 손가락은 가동지가 “balaenicep” 모양이다. 제3가슴다리의 발가락마디는 단순하다. 이제 한국산 딱총새우류는 7속, 23종으로 구성된다.