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

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ABSTRACT

Continuous taxonomic study on shrimps collected from Korean waters revealed that an alpheid shrimp, *Alpheus albatrossae* occurs in Korean waters. This species belongs to the *macrocheles* group of the genus *Alpheus*. This species is distinguished from other known species of the genus *Alpheus* in Korea by having orbital teeth and palm of large chela with three heavy longitudinal ridges and grooves terminating distally in (1) a heavy tooth above dactylar articulation, (2) the adhesive plaque, and (3) a heavy tooth below dactylar articulation. Korean Alpheidae fauna now consists of 21 species of seven genera.

Key words: Alpheidae, *Alpheus albatrossae*, 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* in the world. Twelve species belonging to only three groups, *crinitus, brevirostris* and *edwardsii*, however, were reported in Korea (*A. paralcyone* and *A. spongiarum* of *crinitus* group; *A. digitalis, A. brevicristatus* of *brevirostris* group; *A.*

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bisincisus, A. japonicus, A. hoplocheles, A. lobidens, A. sudara, A. malabaricus, A. euprosyne richardsoni, A. heeia 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, 2003, 2004). Continuous taxonomic studies on shrimps revealed that *Alpheus albatrossae* is new to Korea. This species belongs to the *macrocheles* group. Korean Alpheidae fauna now consists of 21 species of seven genera. The specimens were collected by scuba diving at depth of 5-30 m. 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

Family Alpheidae Rafinesque, 1815

Genus *Alpheus* Fabricius, 1798

***Alpheus albatrossae* (Banner, 1953) (Fig. 1)**

Crangon albatrossae Banner, 1953, p. 60, fig. 18.

Alpheus albatrossae: Miya, 1974, p. 121, pl. 20; Hayashi, 1998, p. 43, figs. 341, 342a, 343a, 344a, e, f.

Material examined. 1♂ (cl 7.9 mm, no first pereopods), Juk-do (Ulreung-do), 27 Jul. 2001; 1 ♀ (cl 8.9 mm, no first pereopods), Daepungchwi (Ulreung-do), 28 Jul. 2001; 1 specimen (cl 4.9 mm, no second pleopods), Munseom (Jeju-do), 8 Jul. 2003.

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

Ocular hood produced anteriorly, separated from rostrum by almost indistinct dorsal depression near base of rostrum and armed with sharp tooth directing anteriorly and downward. Ocular tooth slightly overreaching distal 1/3 of rostrum.

First antennular segment with distinct sharp carina extending from ventral inner margin. Second segment longer than visible part of first segment and about 2 times as long as third segment. Stylocerite narrowing to long sharp point, almost reaching to distal margin of first segment.

Scaphocerite slightly more than 3 times as long as broad. Lateral margin very slightly concave at middle. Distal spine directing forward, overreaching distal end of antennular peduncle and reaching short of distal end of carpocerite. Inner blade small, less than proximal 1/3 of distal spine.

Carpocerite overreaching distal end of antennular peduncle by entire length of third antennular segment. Basicerite with narrow sharp lateral spine.

Third maxilliped (Fig. 1C) slender overreaching distal end of carpocerite by 1/4 length of ultimate segment which slightly less than 2 times as long as penultimate. Exopod not overreaching distal end of antepenultimate segment.

Major first pereopod (Fig. 1D, E) overreaching distal end of carpocerite by almost entire length of chela. Major chela slightly tapering distally, less than 3 times as long as broad. Fingers narrower than palm, occupying less than distal 1/3 of chela. Movable finger opening and closing in obliquely horizontal plane, superior margin almost straight at middle part, tip broad, bulbous and overreaching tip of immovable finger. Immovable finger with tip slightly deflexed downward and

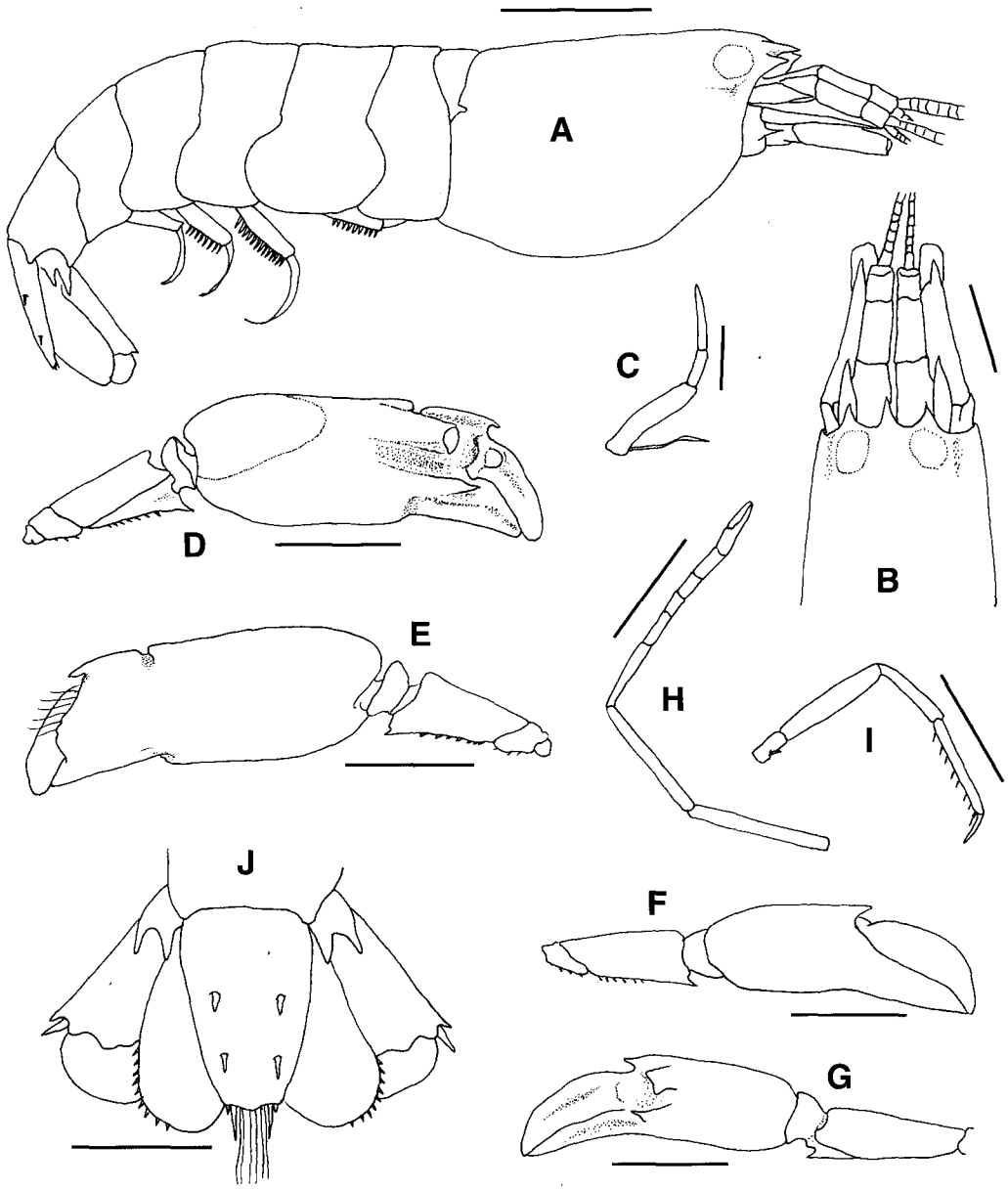

Fig. 1. *Alpheus albatrossae*, cl 4.9 mm: A, whole body without third maxilliped and pereopods, lateral view; B, anterial region, dorsal view; C, left third maxilliped; D, large (right) first pereopod, outer face; E, same, inner face; F, small (left) first pereopod, inner face; G, same, outer face; H, right second pereopod; I, right third pereopod; J, telson and uropods. (Scales: A, D, E-I, 2 mm; B, C, J, 1 mm)

outward. Palm with superior and inferior transverse grooves. Superior transverse groove deep, connecting to very slight, short round depression on inner palmar face and connecting to shallow longitudinal groove (superior groove), groove spreading from distal 1/3 of superior margin of palm

and leading to dactylar articulation on outer palmar face; proximal shoulder slightly produced distally. Superior crest distal to transverse groove terminating distally in strong tooth flanking dactylar articulation; tip directing downward. Ridge to palmar plaque on outer palmar face demarked on inferior side by distinct longitudinal groove (palmar groove), groove reaching proximally to midlength of palm. Inferior crest rounded on surface and terminating in acute tooth flanking dactylar articulation. Inferior transverse groove deep, broad, connecting to deep, broad longitudinal depression (inferior groove) distal to groove on outer palmar face; inferior margin distal to groove fairly sinuous. Merus about 2.5 times as long as broad; inferior inner margin bearing 8 to 10 small movable spines and strong, acute immovable spine at distal end. Ischium bearing 3 to 4 small movable spines on inferior inner margin.

Minor chela of first pereopod (Fig. 1F, G) about 3.3 times as long as broad, with fingers occupying distal 0.45. Palmar sculpturing same as that of major chela, but less distinct. Movable finger working at horizontal direction, laterally compressed and forming lamellar expansion; inferior margin concave proximally. Immovable finger slightly deflexed downward and with superior margin broadened proximally. Merus about 2.9 times as long as broad with inferior inner margin bearing 10 to 11 movable spines and strong, acute immovable spine at distal end. Ischium bearing 3 small movable spines on inferior inner margin.

Second pereopod (Fig. 1H) very slender, overreaching distal end of carpocerite beyond distal part of merus. Fingers of chela longer than palm. First segment of carpus about 1.9 times as long as second; second segment about 1.8 times as long as third; third segment slightly shorter than fourth; fifth segment slightly shorter than second and 1.6 times as long as third.

Third pereopod (Fig. 1I) rather slender. Dactylus conical, slightly deflexed downward. Propodus about 2.8 times as long as dactylus and 1.4 times as long as carpus, with 7 movable spines and 2 or 3 irregular adjacent movable spines on inferior margin and pair at distal end; distalmost spine long, reaching to middle of dactylus. Merus very slender, more than 5 times as long as broad and 1.6 times as long as carpus. Ischium with rather strong movable spine.

Fourth pereopod almost same as third pereopod. Ischium with rather strong movable spine.

Ischium of fifth pereopod with movable spine.

Pleura (Fig. 1A) of first four abdominal somites broadly rounded in both sexes. Pleuron of fifth somite slightly produced on posterior ventral margin. Abdominal sternite with no spine at midline. First four pleopods bearing a row of pale yellow, styliform bristles (around 15) along lateral posterior margins of protopodite. Appendix masculina slightly overreaching distal end of appendix interna.

Telson (Fig. 1J) slender, about 1.6 times as long as broad at anterior end, bearing two pairs of rather stout dorsal spines and with no distinct longitudinal median depression on dorsal surface. Lateral margin slightly produced at middle. Posterior margin shallowly triangular, armed with pair of spines on each lateral end, inner spine very strong, more than 3 times as long as outer one.

Uropodal endopod bearing conspicuous small spines on distal margin. Uropodal exopod bearing slender movable spine flanked laterally by acute immovable tooth and internally by acutely triangular immovable tooth; movable spine reaching to distal margin of uropodal exopod.

Distribution. Hawaii, Japan, and East China Sea (Banner, 1953; Miya, 1974, Hayashi, 1998). Ulreung-do, and Jeju-do, Korea. From shallow water down to 187 m in depth (Miya, 1974)

Remarks. The present species agrees well with the description of Miya (1974), especially in the

presence of a row of pale yellow, styliform bristles along the lateral posterior margin of the protopodites of first four pleopods. According to Miya (1974), Japanese form is at least subspecifically distinct compared with type specimen of this species.

DISCUSSION

The *macrocheles* group is recognized by the following characteristics: Always with ocular teeth. Palm of major chela moderately compressed, somewhat twisted, with three heavy longitudinal ridges and grooves, at times interrupted, terminating distally in (1) heavy spine on superior crest, (2) adhesive plaque, and (3) usually heavy spine on inferior crest; movable finger frequently high and thin, often with bulbous tip. Movable finger of minor chela never balaeniceps, often laminate. Third pereopod with or without meral tooth; dactylus usually with additional tooth on margin (Kim and Abele, 1988). *A. albatrossae* shows the typical form of the macrocheles group. Four of seven groups in the genus *Alpheus* are now recognized in Korea.

Among three specimens of *A. albatrossae* mentioned in this paper, one was collected from Munseom (Jeju-do), and two from Juk-do (Ulreung-do). The collection sites of these specimens suggest again that the southern parts of Jeju-do and Ulreung-do are affected by the same Kuroshio warm current (Kim et al., 1996).

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한국미기록 알바트로스딱총새우 (*Alpheus albatrossae*) (십각목: 생이절: 딱총새우과)의 보고

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요 약

새우류의 지속적인 분류학적 연구 결과 딱총새우류 1종이 한국에서는 지금까지 보고 되지 않은 종으로 밝혀졌다. 알바트로스딱총새우 (*Alpheus albatrossae*)를 재기재하고 한국에서 처음 보고한다. 이 종은 딱총새우속의 *macrocheles* 그룹에 속하며, 알려진 한국산 딱총새우류와는 안와뿔을 가지고 있고, 큰 쪽 제1 가슴다리의 손바닥에는 세로로 달리는 3개의 큰 마루와 홈이 있는데 이 마루는 (1) 가동지와의 관절 위의 억센 이, (2) 접착면, (3) 가동지와의 관절 아래의 억센 이로 끝난다는 점에서 구별된다. 이제 한국산 딱총새우류는 7속, 21종으로 구성된다.