

## The Megalopa Stage of *Eplumula phalangium* (De Haan) (Crustacea, Brachyura, Latreilliidae)

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ミズヒキガニのメガロパ幼生 (甲殻上綱, 短尾下目, ミズヒキガニ科)

日本の沿岸に分布するミズヒキガニ科のカニ類のうち, *Latreillia* 属と *Eplumula* 属に属する種はそれぞれ1種ずつ生息している. この両属のいずれかに属すると思われるメガロパを, 東京大学海洋研究所の白鳳丸の研究航海 (KH 81-5) で, IKMT ネットを用いて, 四国沖の洋上で4個体得ることができた. この幼生と既知の幼生との外部形態の比較観察を行ったところ, 甲殻上の背棘や額棘の形態, さらに腹部の形態などは既報のオーストラリア産の *Eplumula australiensis* (Henderson) の幼生とその一般的な特徴は類似する点が多くみられた. このことから, この幼生はおそらく *Eplumula* 属に属し, しかも本属は日本の沿岸にはミズヒキガニ *E. phalangium* (De Haan) の1種のみ生息していることから考えて, このメガロパは本種の幼生ではないかと思われる. (村岡健作)

### Summary

Four specimens of megalopae of the family Latreilliidae were taken far off south of Shikoku using a IKMT net. They have a pair of long and divergent supra-orbital spines and a prominent acute dorsal spine on the carapace. They are referable to the same species, and closely allied to those which were attributed to *E. australiensis* Henderson by Williamson (1967). It may be assigned to the megalopa of *E. phalangium* (De Haan) rather than *Latreillia valida* (De Haan).

### Introduction

The family Latreilliidae comprise two related genera *Latreillia* and *Eplumula* (Williams, 1982). Each of them has five and two species respectively. From Japanese waters, *L. valida* De Haan and *E. phalangium* (De Haan) have been described. Two forms of megalopae described from Mediterranean (Cano, 1893) and the north Atlantic (Rice, 1982) was attributed to *L. elegans* Roux, and Williamson's (1967) megalopa obtained off south-eastern Australia was attributed to *E. australiensis* Henderson. From Japan, two forms of megalopae have been described: Aikawa's (1937) megalopa from Sagami Bay was attributed to *Homola* sp., and Takeda and Kurata's (1984) megalopa, found in stomach contents of the fish taken from the Ogasawara

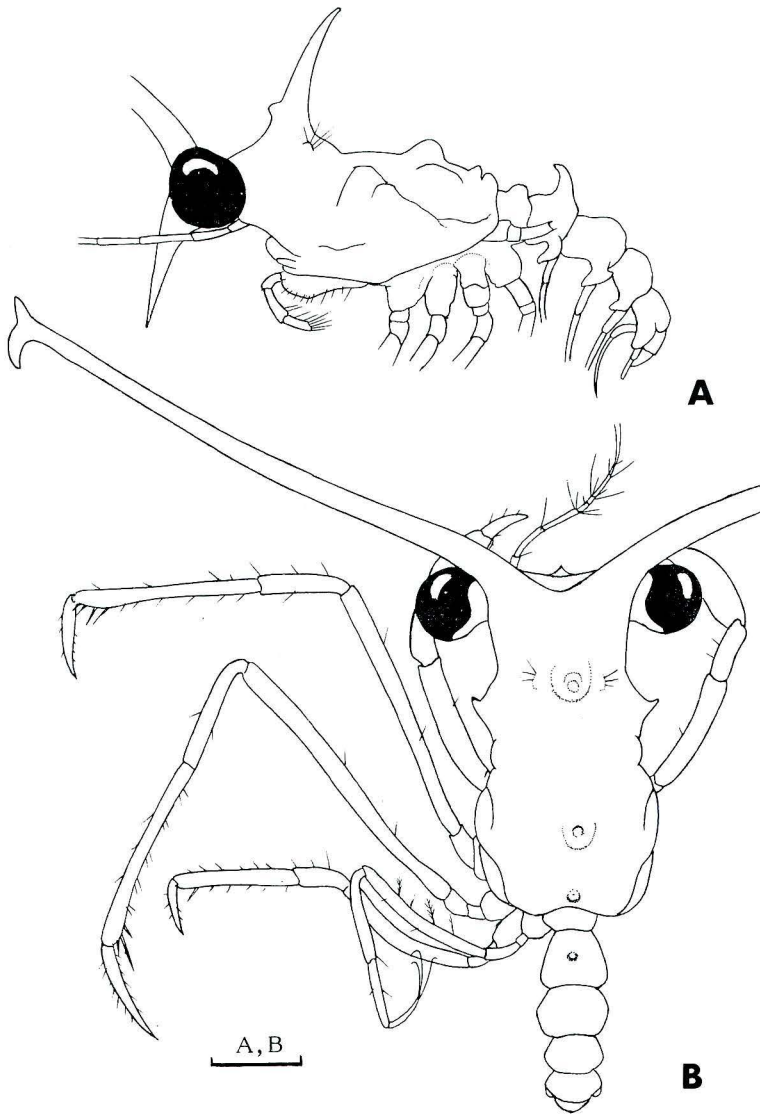


Fig. 1. Megalopa of *Eplumula phalangium* (De Haan).

A, lateral view; B, dorsal view. Bar scale represents 1 mm.

Islands, was assigned to *E. phalangium* (De Haan) (= *L. phalangium* de Haan), based upon a single damaged specimen. This paper deals with four specimens of megalopae referable to Latreilliidae, which were collected far off south of Shikoku, with IKMT net, during the cruise KH-81-5 of R.V. Hakuho-Marui of the Ocean Research Institute, University of Tokyo. On the critical examination, the specimens may be assigned to *E. phalangium* with some doubt.

I wish to express my sincere thanks to Prof. T. Nemoto, Ocean Research Institute, University of Tokyo, for providing the opportunity of this study. I am also grateful

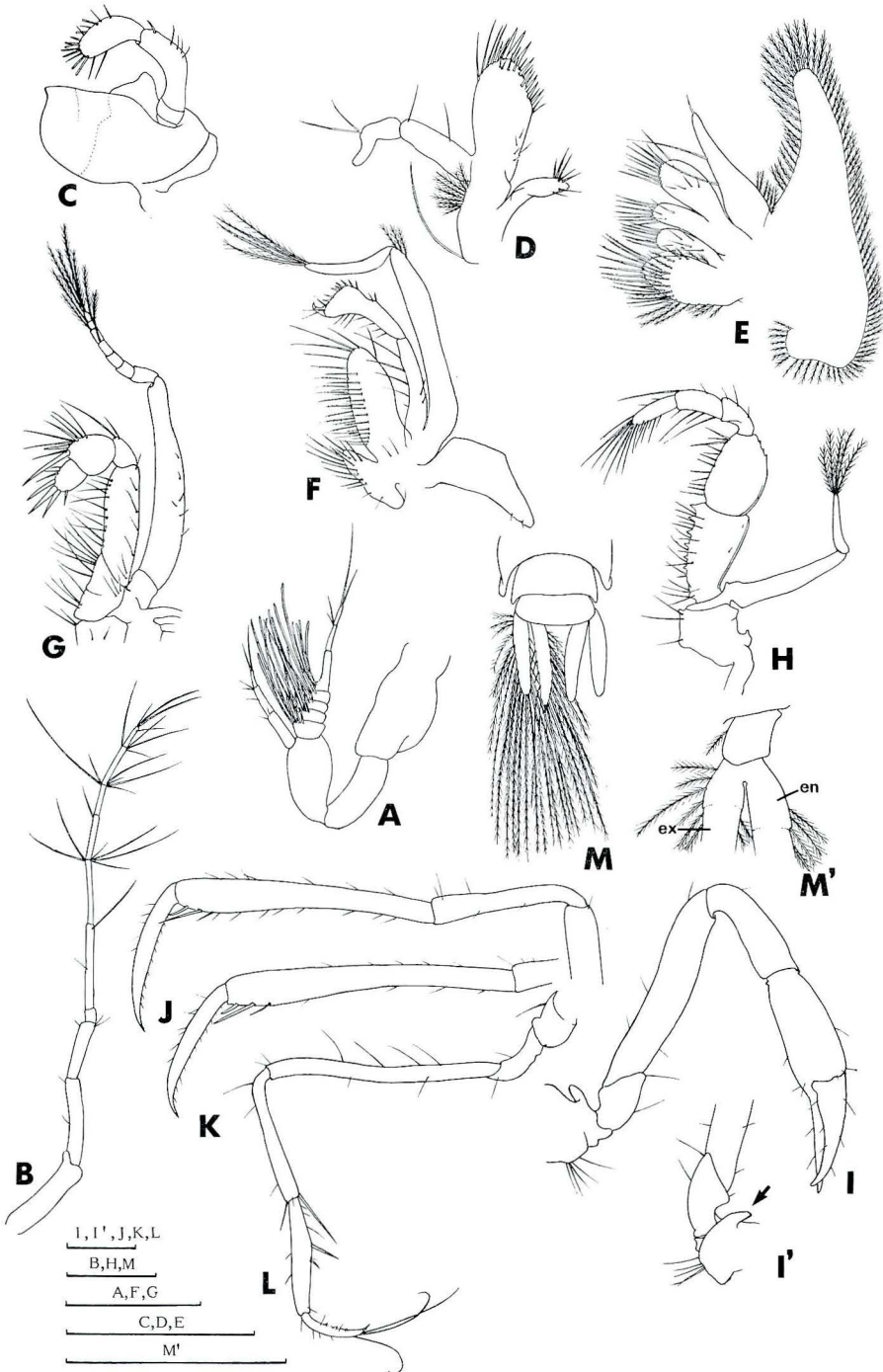


Fig. 2. Megalopa of *Eplumula phalangium* (De Haan) (A-M').

A, antennule; B, antenna; C, mandible; D, maxillule; E, maxilla; F, first maxilliped; G, second maxilliped; H, third maxilliped; I, cheliped; I', stout basal spine on basis of cheliped, ventral view; J-L, first, second and fourth walking legs; M, last two abdominal segments and telson with uropods, dorsal view; M', basal portion of uropod, ventral view (en, endopod; ex, exopod). Bar scales represent 0.5 mm.

Table 1. Comparison of main characters of megalopae of *Eplumula* and *Latreillia*

|                        | <i>E. phalangium</i><br>(Present author) | <i>E. austlariensis</i><br>(Williamson, 1967) | <i>Homola</i> sp.<br>(Aikawa, 1937) | <i>L. elegans</i><br>(Rice, 1981) |
|------------------------|------------------------------------------|-----------------------------------------------|-------------------------------------|-----------------------------------|
| Carapace length (mm)   | 3.5                                      | 3.9*                                          | 3.1*                                | 4.1                               |
| 1st Antenna            |                                          |                                               |                                     |                                   |
| endpod (segments)      | 3                                        | 2                                             | 2                                   | 3                                 |
| exopod (segments)      | 7                                        | 7                                             | 5                                   | 7                                 |
| 2nd Antenna (segments) | 10                                       | 10                                            | 12                                  | 10                                |
| Mandible               |                                          |                                               |                                     |                                   |
| palp (segments)        | 3                                        | 3                                             | 1*                                  | 3                                 |
| 1st maxilliped         |                                          |                                               |                                     |                                   |
| endpod (segments)      | 2                                        | 2                                             | ?                                   | 1                                 |
| Pleopods, 2-5          |                                          |                                               |                                     |                                   |
| endpod (hairs)         | 24-26                                    | ?                                             | ?                                   | 20-25                             |
| exopod (hairs)         | 5-7                                      | ?                                             | ?                                   | 4-5                               |
| Uropod                 |                                          |                                               |                                     |                                   |
| peduncle (hairs)       | 1                                        | ?                                             | ?                                   | 0                                 |
| endpod (hairs)         | 15-17                                    | 13                                            | 2 ?                                 | 11                                |
| exopod (hairs)         | 20-21                                    | 17                                            | ?                                   | 18                                |

Asterisk mark (\*); calculated from the figures.

to Prof. S. Gamô, Yokohama National University, for his valuable suggestions and critical reading of the manuscript.

### Materials and Methods

Four specimens of megalopae Latreilliidae available for the study were collected at St. 1, (31°31.0'N, 133°29.9'E), far off south of Shikoku with an oblique towing IKMT (Isacs-Kidd mid-water trawl) net, sampling layer 0-350 m, on 9 September 1981, during the KH-81-5 cruise (7 September to 20 November, 1981) of the R.V. Hakuho Maru of the Ocean Research Institute, University of Tokyo.

They were fixed in about 3% buffered formalin made up with seawater and transferred to 60% ethanol for preservation. The specimens were dissected with the aid of the dissecting fine needles and binocular microscope while the specimens were immersed 50% ethylene glycol.

### Description: Megalopa of *Eplumula phalangium* (De Haan)

(Figs. 1, 2)

The four specimens available for the study are similar in every respect.

Dimension: Carapace length as measured along the mid-line, 3.5mm; length of the supra-orbital spine, about 6.0 mm; carapace width, 2.0 mm.

Carapace (Fig. 1, A, B) is almost rectangular in shape as seen from the dorsal side, and slightly wider posteriorly. Rostrum bends downward, and is pointed and hardly

visible in dorsal view. There are a pair of very long and widely divergent supra-orbital spines. Their distal end is provided with a small anchor-like process. Prominent acute-tipped dorsomedian spine arising from the gastric region is provided with a smaller anterior subsidiary knob process; the dorsal spine is flanked by a few small setae. There is a swollen process on the cardiac region.

Abdomen (Fig. 1, A, B) is rather slender. First somite is shorter than the second, and bears a small tubercle on dorsal surface. Second somite has a large stout acute dorsal process, which is slightly directed forward at its end.

Telson (Fig. 2, M) is ellipsoidal in shape, almost three times as broad as long, and furnished with no marginal spines or setae.

Eye (Fig. 1, A) is very large and has short peduncle.

Antennular peduncle (Fig. 2, A) is three-segmented; endopod consists of three segments, each carrying a few short setae; exopod seven-segmented, and provided with a tuft of aesthetascs on each of the first five segments.

Antennal peduncle (Fig. 2, B) is three-segmented; the proximal segment carries a minute scale; the flagellum is seven-segmented; the proximal segment is very small and without setae; distal five segments are rather slender and bear long setae.

Mandibular palp (Fig. 2, C) consists of three segments, the distal one armed with about sixteen stiff spines.

Maxillular endopod (Fig. 2, D) has two segments, each carrying two setae.

Maxillary endopod (Fig. 2, E) consists of one segment and carries about six plumose hairs on the lateral margin; scaphognathite is provided with more than 80 marginal plumose hairs.

First maxilliped (Fig. 2, F) has large epipod; endopod is two-segmented, the distal segment with a terminal expansion; exopod consists of two segments, the distal segment carrying four plumose hairs.

Second maxilliped (Fig. 3, G) is furnished with a slender setose epipod; endopod of has five segments, each of which carries a number of setae; the ischium not clearly separated from the basis; exopod armed with eight plumose hairs marginally on the distal portion.

Third maxilliped (Fig. 2, H) has a setose epipod; endopod has five segments, the inner margin of the ischium is provided with setose and about six small teeth, and that of the merus with a series of long setae; exopod with five plumose hairs on its distal end.

Chelipeds (Fig. 2, I, I') is slender; the basis armed with a small hook-like spine.

First to three walking legs (Fig. 2, J, K) have sword-like dactylus, which carries a series of fine setae ventrally and dorsally; the propodus bears two or three strong spines distally on the inner margin.

Fourth walking leg (Fig. 2, L) is provided with three long sensory hairs distally on the dactylus.

Abdominal somites 2-5 bear a pair of biramous pleopods; the endopods each armed

with five to seven hooked hairs and the exopod of the pleopods 2 to 5 carrying 24, 24-26, 25-26, 25 plumose hairs, respectively. Uropod (Fig. 2, M, M') is furnished with subequal rami; basis bears a plumose hair on the outer margin; endopod has 15-17 and exopod carries 20-21 marginal plumose hairs.

### Remarks

The present four specimens of megalopae collected far off Shikoku are referable to the same species, and bear some superficial resemblance to those which were attributed to the following species; 1) *L. elegans* Roux (Cano, 1893; Rice, 1982). 2) *L. valida* De Haan or *E. phalangium* (De Haan) by Rice (1982) and Aikawa (1937: as *Homola* sp.). The main characters of the megalopae are listed in Table 1. They are distinguishable from one another by the use of some features, such as carapace length, and setal formulae of antennae, mouth parts and pleopods.

In general appearance, the megalopae designated as *Homola* sp. by Aikawa (1937) and as *E. phalangium* (= *L. phalangium*) by Takeda & Kurata (1984) are very like those of *L. elegans* described by Cano (1893) and Rice (1982). Whereas the present specimens are very closely allied to the megalopa which was designated as *E. australiensis* by Williamson (1967) in having a pair of very prominent and widely divergent supra-orbital spines, and an acuminate dorsal spine with a small anterior knob on the carapace, and also in having the similar segmentation of the first and second antennae. The present megalopae may be assigned to *E. phalangium* (De Haan) with some doubt. It will require more extensive collecting and more rearing in laboratory, to make more definite specific identification.

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