***Aega komai*, a new species of marine isopod crustacean (Aegidae: Flabellifera) from Japan**

Niel L. Bruce

Abstract. — *Aega komai* sp. nov. from Japanese waters, is described and figured from the single known specimen. Brief comments are given on the relationship of *Aega komai* sp. nov. to other species of the genus. The species is characterised by the plate-like expansion of antennule articles 1 and 2, the flattened and expanded antenna article 5, short, truncate and deeply serrate pleotelson, together with deeply serrate uropods, and the presence of a conspicuously large spine of pereopod 3 only.

Introduction

Knowledge of the Japanese marine isopod fauna, and that of the Aegidae in particular, results from three principal periods of activity. Contributions to knowledge of the Aegidae early this century are those of Thielemann (1910), and Richardson (1898, 1904, 1909), and much later, among the abundant contributions of Numomura (1981a, b, 1988, 1993). Also pertinent to this region is the monograph of Kussakin (1979). Currently there exists no guide to the isopods of Japan, nor is there a major review of the Aegidae of the region. The discovery of a new species of *Aega*, given the current state of knowledge, is therefore not altogether unusual.

The single holotypic specimen is, at the request of Dr. Tomoyuki Komai, deposited at the Zoological Museum, University of Copenhagen, Denmark (ZMUC). Abbreviations used: BL – body length; PMS – plumose marginal setae; PS – plumose setae.

Taxonomy

Family AEGIDAE White, 1850

Genus *Aega* Leach, 1815

Brusca (1983) and Kensley & Schotte (1989) have given diagnoses to the genus, and generic level characters have been omitted from the description, and are to be assumed. Brusca (1983) erected two subgenera, the nominate subgenus and *Ramphion*. The species described here conforms to neither diagnosis, and is therefore not placed into either of the subgenera, although it belongs with those species placed in *Aega* (*Aega*) by having antennule articles 1 and 2 both flattened and expanded, the terminal article of the maxillipedal palp with recurved (hooked) spines and a clear rostral point.

***Aega komai* sp. nov.**

Figs. 1–4

Material examined. — Holotype: ♂ (20.5 mm), off Choshi, Honshu, Central Japan, c. 14°50'E, 35°20'N, 18 January 1995, on the mantle of the squid *Loligo bleekeri* Keferstein, coll. T. Komai (ZMUC CRU1981).

Other material. — Specimens of *Aega angustata* Whitelegge, 1901 were examined for comparison to the Japanese material: ♀ (28 mm, non-ovig), off Lakes Entrance, Victoria, Australia (AM P12146). ♀ (22 mm, non-ovig), East of Sydney, New South Wales, Australia, Dec. 1980, coll. FRV *Kapala* (AM P43975).

Fig. 1. *Aega komai* sp. nov., holotype. A, dorsal view; B, lateral view; C, cephalon, dorsal view; D, frons; E, sternite 7, showing penial papillae; F, pleotelson and uropods; G, antennule; H, antenna. Scale 5.0 mm.

Etymology. — The species is named in honour of the collector, Dr. Tomoyuki Komai, and recognises his contribution to the knowledge of Japanese decapod crustaceans.

Description of male holotype. — Body about 3.3 times as long as greatest width, dorsal surfaces smooth, unornamented;

lateral margins subparallel; maximum width at pereonite 5. *Cephalon* with prominent median rostral process, in ventral view extending slightly anterior to frontal lamina; eyes large, separate, occupying 48% width of cephalon in dorsal view, each with about 8 ocelli across, 15 lengthwise. *Pereonites* 1 and 6 longest, subequal in length to cephalon; pereonite

Fig. 2. *Aega komai* sp. nov., holotype. A, maxilliped; B, maxilla; C, maxilla apex; D, mandible; E, mandible palp, terminal article; F, maxillule.

$1 > 2 = 3 < 4 < 5 = 6 > 7$; posteroventral angle of pereonite 1 and of coxae 2 and 3 each with acute process, coxae of pereonites 3–6 posteriorly rounded, each with distinct ventral ridge; coxae of pereonite 7 posteriorly subacute with an oblique ridge. *Pleon* about 20% BL, pleonite 1 largely concealed by pereonite 7, postero-lateral angles of pleonites 1–4 acute; pleonite 5 partially overlapped by 4 in lateral view. *Pleotelson* about 15% BL, 0.76 as long as greatest width, posterior margin subtruncate, deeply serrated with 6–7 marginal serrations on either side of me-

dian point; provided with short PMS on lateral margin of each serration, without spines; posteriorly with indistinct and incomplete longitudinal ridge.

Antennule peduncle articles 1 and 2 subequal in total length; article 1 slightly wider (0.9) than long, posterior margin with 2 posterodistal setae; article 2 as wide as long, with prominent anterior lobe, anterior margin 3 times as long as posterior margin; article 3 0.57 as long as articles 1 or 2, 2.5 times as long as wide; flagellum 0.23 as long as peduncle, with 5 articles, article 1 of which is longest,

about 2.4 times longer than article 2, extending to anterior of eye. *Antenna* peduncle articles 1–3 short; article 4 about 0.77 as long as combined lengths of articles 1–3, posteriorly deeply grooved, with cluster of simple setae at anterodistal angle; article 5 longest, more than twice (2.3) as long as article 4, 1.7 times as long as wide; flagellum slightly longer than peduncular article 5, composed of 10 articles, extending to pereonite 2.

Frontal lamina anteriorly rounded, about 0.8 times as wide as long, lateral margins converging posteriorly, ventral surface weakly concave. *Mandible* incisor simple, bluntly rounded; molar process not apparent; palp article 2 longest, 1.6 time as long as article 1, 2.9 times as long as article 3; article 2 with 1 long seta at distolateral margin and 3 shorter submarginal setae; article 3 with 18 stout marginal setae, terminal seta being longest. *Maxillule* without apparent medial lobe, lateral lobe with 8 flat falcate spines on medial and distal margin. *Maxilla* lateral lobe with 3 hooked and 1 simple distal spine, lateral lobe 2 weakly hooked spines. *Maxilliped* palp articles 2 and 3 with distinct distomedial lobes, article 2 with single simple spine at distal end, article 3 with 3 recurved spines, article 4 with 4 large recurved spines, and article 5 short and wide, with 4 simple spines; endite extending beyond palp article 2, with 2 short simple terminal setae.

Pereopods 1–3 robust, 5–7 moderately elongate, pereopod 4 intermediate between both sets. *Pereopod 1* basis 1.6 times as wide as long, anterior margin with 4 palmate setae and small simple setae; ischium less than half (0.44) as long as basis; merus short, 1.4 times as wide as long, anterodistal angle with 2 simple spines, posterior margin thickened, weakly lobate; carpus short half as long as propodus; propodus robust 1.7 times as long as wide, palm unornamented, with 3 short simple setae; dactylus robust, strongly and abruptly recurved, about as

long as propodus. *Pereopod 2* similar to pereopod 1 but slightly less robust; basis twice as long as wide; ischium with 2 spines and single seta at posterodistal angle, single spine at anterodistal angle; merus with 1 spine and 1 short seta at anterodistal angle, posterior margin with 3 spines half way along its length, further 3 and single seta at distal angle; carpus slightly longer than merus, 0.7 times as long as propodus, posterior margin concave, posterodistal angle with single spine and single seta; propodus with palm straight, somewhat produced distally, with 2 prominent simple setae; dactylus weakly curved, subequal in length to propodus. *Pereopod 3* similar to pereopod 2 but less robust, differing in having more spines on ischium, and slightly longer spines, and in having a massive blunt spine, slightly less (0.48) than half as long as propodus, slightly more (0.58) than half as long as dactylus, opposing slender and weakly curved dactylus. *Pereopod 6* basis 2.6 times as long as wide, posterodistal angle with 2 short spines, anterior margin with 9 palmate setae; ischium 0.7 times as long as basis, 2.4 times as long as wide, posterior margin with 3 clusters of 1, 4 and 4 spines, distal margin with 6 spines anteriorly and about 10 posteriorly; merus 0.6 times as long as ischium, about twice (2.1) as long as wide, posterior margin with 3 clusters of 2, 4 and 5 spines, distal margin 5 spines anteriorly and 6 posteriorly the longest of which extends more than half length of carpus; carpus 1.1 times as long as ischium, about 3 times as long as wide, posterior margin with 3 clusters of 1, 3 and 1 spines, distal margin 3 spines anteriorly and 5 posteriorly; propodus 1.2 times as long as ischium, about 6.4 times as long as wide, posterior margin with 2 clusters of 1 and 2 spines respectively, anterodistal angle with 1 small spine and 2 palmate sensory setae, posterodistal angle with 3 spines; dactylus 0.4 times as long as propodus, slender. *Pereopod 7* similar to 6, but more

Fig. 3. *Aega komai* sp. nov., holotype. A-E, pereopods 1-3, 6 and 7 respectively.

slender and more spinose; basis 3.3 times as long as wide, posterodistal angle with 1 short spine, anterior margin with 11 palmate setae; ischium 0.7 times as long as basis, 3.0 times as long as wide, posterior margin 3 clusters of 1, 3 and 3 spines, and further 3 submarginal spines, distal margin with 5 spines anteriorly and about 10 posteriorly; merus 0.7 times as long as is-

chium, 2.6 times as long as wide, posterior margin with 3 poorly defined clusters of 3, 4 and 4 spines, distal margin 6 spines anteriorly and 7 posteriorly; carpus 1.3 times as long as ischium, about 5 times as long as wide, posterior margin with 2 clusters of 2 and 3 spines and additional 5 marginal and submarginal spines, distal margin with 4 spines anteriorly and 7

posteriorly; propodus 0.9 times as long as ischium, about 6.8 times as long as wide, posterior margin with 3 clusters of 2, 2 and 2 spines, anterodistal angle with several small setae, posterodistal angle with 3 spines; dactylus about 0.3 times as long as propodus, slender.

Penial processes absent, the vasa deferentia opening flush on surface of sternite 7.

Pleopod 1 exopod 1.7 times as long as wide, slightly shorter (0.94) than endopod, distally sub-acute, lateral margin weakly convex, medial margin strongly convex, ventral exposed surface with scattered cuticular setules, with ~60 PMS on distal half of ramus; endopod twice as long as wide, distally rounded, lateral margin sinuate, medial margin straight, with ~55 PMS on distal two thirds of ramus; peduncle 1.5 times as wide as long, medial margin with 8 coupling hooks, lateral margin without distinct lobe. *Pleopod 2* 1.3 times as long as pleopod 1, exopod and endopod with ~110 and 70 PMS respectively; *appendix masculina* straight, 0.6 times as long as endopod, apex bluntly rounded, proximal half of lateral margin with small scales; peduncle medial margin with 7 coupling hooks and distally with ~10 PS, lateral margin with distinct small lobe, without PS. *Pleopods 3–5* endopods each with about ~134, ~110 and ~116 PMS respectively, each with distal point, each with transverse suture incomplete, each with lateral margin more strongly convex than medial margin; peduncle medial margins with 7, 5 and 0 coupling hooks and 11, 8 and 0 PS respectively, lateral margins distinctly lobate with submarginal row of PS. *Pleopods 3–5* exopods with 20, 14 and 0 PMS respectively, setae being on distal margin only; each with medial margin straight, lateral margin convex with sub-basal and disto-lateral small triangular process. *Uropod* with both rami subequal in length, extending clearly beyond posterior margin

of pleotelson; exopod about 4.3 times as long as proximal width, lateral margin with 5 large teeth, and apical point, medial margin with 1 large tooth; endopod lateral margin convex, indistinctly and deeply serrate with 3 large and 4–5 small teeth, bifurcate apical point, medial margin 1 or 2 large and 1 small teeth, continuous short PMS present on non-serrate margins and on lateral margins of teeth.

Remarks. — Several characters serve to immediately distinguish *Aega komai* sp. nov., from all other members of the genus. These are the plate-like expansion of antennule articles 1 and 2, the flattened and expanded antenna article 5, the short, truncate and deeply serrate pleotelson, together with the deeply serrate uropods, and the presence of conspicuously large spine of pereopod 3 only. There are two other species that are obviously closely allied to *Aega komai*, sharing the same general appearance, and most of the characters mentioned above. These two species are *Aega dofleini* Thielemann, 1910, and *Aega angustata* Whitelegge, 1901. Both of these species lack the truncate posterior margin to the pleotelson, as has been clearly illustrated by Thielemann (1910) and Hale (1925), and furthermore the uropod exopod is far more weakly serrated than in *Aega komai*. In *Aega angustata* (Australian specimen, see material examined) pereopods 6 and 7 are more slender, the width to length ratios for the species being in *A. angustata* for pereopod 6 carpus 1: 5.3, propodus 1: 11.3, for pereopod 7 carpus 1: 6.7, propodus 1: 11.6. The figures for *A. komai* are pereopod 6 carpus 1: 3.0, propodus 1: 6.4, for pereopod 7 carpus 1: 5.0, propodus 1: 6.8.

Stephenson (1980) recorded *Aega angustata* Whitelegge, 1901 from New Zealand, but did not give detailed figures. The dorsal and ventral views of the ani-

Fig. 4. *Aega komai* sp. nov., holotype. A-E, pleopods 1-5 respectively.

mal were illustrated by indistinct half-tone photographs, which do not clearly show the posterior of the pleotelson and the uropods, and it appears possible that these specimens may in fact be *Aega komai*. Currently, while it is easy to distinguish *Aega angustata* Whitelegge, 1901 and *Aega dofleini* from *Aega komai*, it is not easy to distinguish those two inadequately described species from each other.

The presence of a distinctive and very large spine on the dactylus of pereopod 3 is not unique to this group of species. As discussed by Barnard (1960), it is present

in *Aega chelipous* Barnard, 1960 and in at least three other species: *Aega concinna* Hale, 1940, *Aega crenulata* Lütken, 1859 and *Aega webbi* (Guérin, 1836). In these last three species, pereopod 2 also has an enlarged propodal spine. All of these four species, while possessing flattened antennule peduncles, are otherwise rather dissimilar to the *Aega komai* - *Aega angustata* species in lacking the deeply serrate pleotelson and uropods. Until such time as many more species of *Aega* are fully described, it is not possible to speculate about possible relationships within the genus.

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Address: Zoologisk Museum, Universitetsparken 15, Copenhagen Ø, DK 2100, Denmark.
E-mail: nlbruce@zmuc.ku.dk