

REDESCRIPTIONS AND NEW RECORDS OF ISOPODA BOPYRIDAE (CRUSTACEA) FROM THAILAND

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ABSTRACT. - Three species of bopyrid isopods, parasites of decapod crustaceans, previously known from elsewhere in the western Pacific, are reported for the first time from Thailand. In order to overcome deficiencies in the existing descriptions, all species are figured in detail and redescribed or partly to completely diagnosed. *Probopyrus giardi* Weber infests *Macrobrachium sintangense* (de Man), a new host record; *Dactylokepon richardsonae* Stebbing infests *Portunus tuberculosus* (A. Milne Edwards), a new host record; and *Eophrixus shojii* Shiino infests *Alpheus* sp. The total number of bopyrids now known from Thailand is 34.

INTRODUCTION

After the preparation of a report on the bopyrid isopods of Thailand (Markham, 1985b), representatives of three more species belonging to that fauna came to light. Though this material contains no undescribed species, each sample constitutes a noteworthy extension of the known range of its species, all of the species needed further description, and two are from species of decapods not previously reported as bopyrid hosts. These discoveries raise the documented bopyrid fauna of Thailand (still mostly from Phuket and environs) to 34 species.

SYSTEMATICS

Family Bopyridae Rafinesque, 1815

Subfamily Bopyrinae Rafinesque, 1815, emend. R. Codreanu, 1967

Genus *Probopyrus* Giard & Bonnier, 1888

Probopyrus giardi Weber, 1892
(Fig. 1)

Probopyrus Giardi Weber, 1892: 535, 557, 561, 571, Text-fig. 2, Pl. XXX, Fig. 1 [Type-locality, near Kaja Tanam, Sumatra, Indonesia; infesting *Palaemon placidus* de Man [= *Macrobrachium placidum* (de Man)]]; Bonnier, 1900: 48, 62, 159, 171, 222, 342, 459, 460, Pl. 32, Figs. 1-6.

Probopyrus giardi - Stebbing, 1893: 416; Chopra, 1923: 507, 508, 509, 510, 512; Nierstrasz & Brender à Brandis, 1923: 95, Lemos de Castro & Brasil Lima, 1974: 210.

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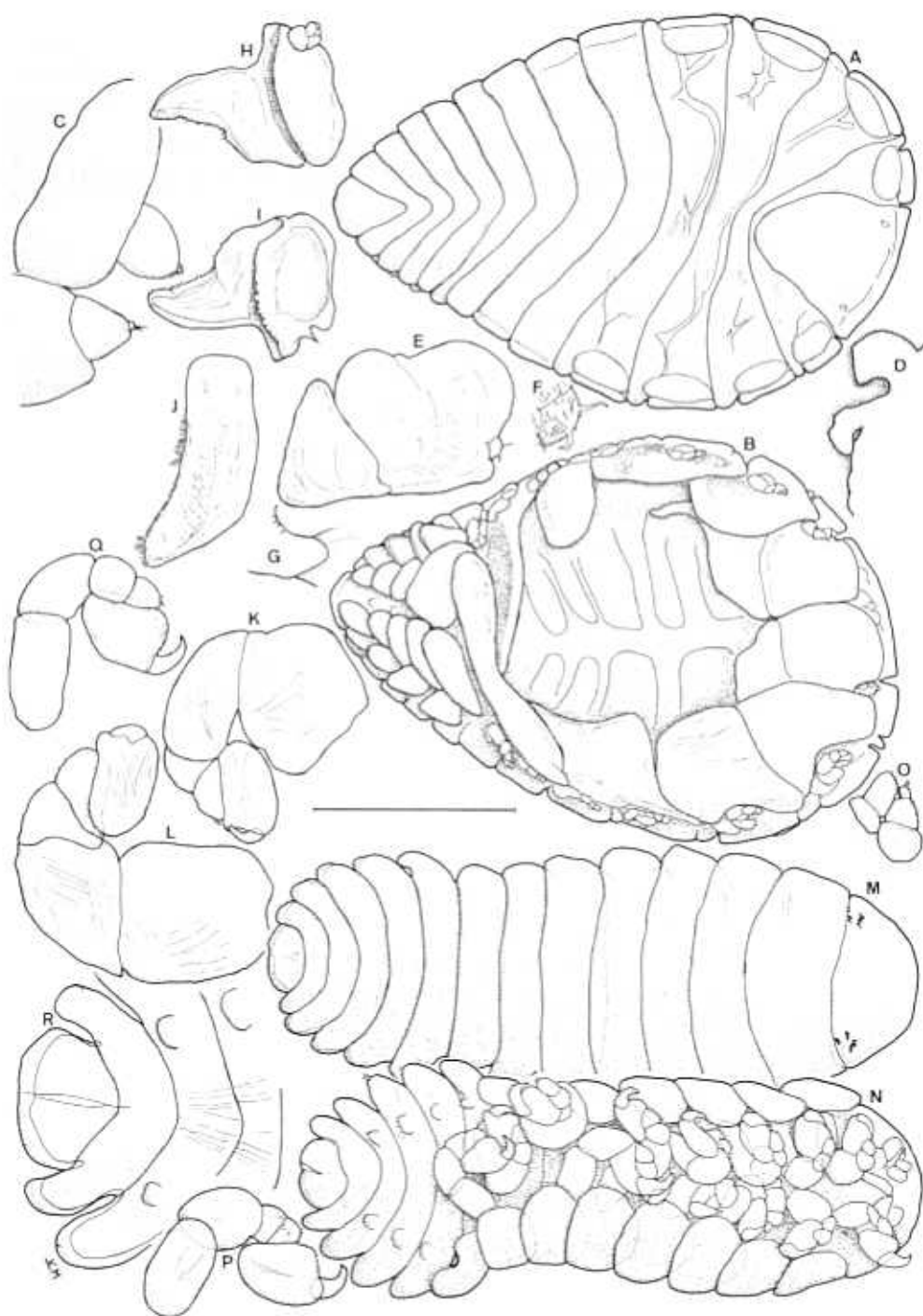


Fig. 1. *Probopyrus giardi* Weber, 1892. A-L, female; M-R, male. A, dorsal view; B, ventral view; C, right antennae; D, right side of barbula; E, right maxilliped; F, palp of same; G, plectron of same; H, right oostegite 1 in external view; I, same in internal view; J, right oostegite 5 in external view; K, right pereopod 1; L, right pereopod 7; M, dorsal view; N, ventral view; P, left pereopod 1; Q, left pereopod 7; R, end of pleon in ventral view. Scale: 2.2 mm for A, B, H-J; 1.1 mm for D, E; 0.4 mm for F, G, K-N; 0.2 mm for C, O-R.

Material examined. - Infesting *Macrobrachium sintangense* (de Man), L. B. Holthuis, det. of host. Lumpun Lake, Phatalung Province, S. Thailand, Phaibul Naiyanetr coll., 22.v.1979: 1 male, 1 female, RMNH Crust 1.

Diagnosis. - Female (Fig. 1A-L): Head about $\frac{1}{4}$ of body length, not extending beyond pereonal margin (Fig. 1C); distal articles of antennae greatly reduced (Fig. 1C), barbula broad and short (Fig. 1D). First oostegite falcately pointed (Fig. 1H, I). Pleopods proportionately broad and final one unclleft; uropods obscure (Fig. 1A, B).

Male (Fig. 1M-R): Head non-extended (Fig. 1M); second antennae with only two articles (Fig. 1O). Pereon broad relative to length, pereomeres not separated. Pleon short (Fig. 1M, N); only four pairs of incompletely tuberculiform pleopods (Fig. 1R).

Remarks. - Weber's (1892) original description of *Probopyrus giardi* was extremely brief, and his drawings, of the female with the male attached and the pleon of the male, while good, were too few to permit a reliable identification. Bonnier (1900), evidently using Weber's type-specimens (though he does not explicitly say so), presented little more verbal description but adequate illustrations. On the basis of Bonnier's illustrations, the present material is assignable to *P. giardi* and thus becomes only the second record for the species. The type female of *P. giardi*, as depicted by Bonnier (1900), differs from the present material in having a more extended non-articulating maxilliped palp, and the outer process of its barbula laterally dentate; the type male has only five distinct pleomeres.

The fauna of southeastern Asia contains several species of *Probopyrus*, all parasites of palaemonids, especially *Macrobrachium* spp., and frequently difficult to distinguish (Markham, 1985a). The diagnosis above may help solve this problem.

This is the first reported record of infestation of *Macrobrachium sintangense* (de Man) by a bopyrid.

Subfamily Ioninae H. Milne Edwards, 1840, emend. R. Codreanu, 1967

Genus *Dactylokepon* Stebbing, 1910

***Dactylokepon richardsonae* Stebbing, 1910**

(Fig. 2)

Dactylokepon richardsonae Stebbing, 1910: 85, 113, Pl. 11C [Type-locality Seychelle Islands; infesting *Trapezicepon cymodoce* (Herbst)]; Nierstrasz & Brender à Brandis, 1923: 83; Shiino, 1942: 444, 447; Markham, 1975: 61, 64, 66, Table I.

Dactylokepon richardsonae - Bourdon, 1967: 122; 1980: 243; 1983: 855-857, 859, Fig. 7 [Marsegu Island, Moluccas; infesting *T. cymodoce*].

Material examined. - Infesting *Portunus tuberculatus* (A. Milne Edwards), L. B. Holthuis det. of host. Naklua and Si Racha, Bangkok Bight, ca. 100 km SE of Bangkok, Thailand. A. C. J. Burgers & L. B. Holthuis colls., 14.iii.1985: 1 male, 1 female, RMNH Crust I.

Redescription. - Female (Fig. 2A-L). Length 8.71 mm, maximal width 5.57 mm, head length 1.93 mm, pleonal length 2.36 mm. Body axis distortion 35°. Body nowhere abruptly narrowing (Fig. 3A, B).

Head about as broad as long, extending somewhat beyond pereonal margin, faintly bilobate. No eyes visible. Antennae (Fig. 2C) of two and four articles respectively, first antenna much reduced. Barbula (Fig. 2D) with two rather broad truncate projections on each side, each bearing some irregular teeth. Maxilliped (Fig. 2E) nearly triangular, its anterior article much longer; prominent non-articulating falcate palp arising just lateral to anteromedial corner; plectron only slightly developed.

Pereon broadest across third pereomere. Pereomeres indistinctly defined. No midventral tubercles. Brood pouch not completely covered by oostegites. Oostegite 1 (Fig. 2F, G) bluntly rounded anteriorly, produced into sharp extended point posterolaterally; internal ridge deeply digitate. Pereopods (Fig. 2H-K) markedly increasing in length posteriorly; each with all articles distinct; first one (Fig. 2H) with prominent basal carina and (Fig. 2I) serrated ridges on end of propodus receiving dactylus; pereopods 4-7 with coxae produced into extended knobs; pereopod 7 (Fig. 2J) elongate, except propodus (Fig. 2K) small in proportion to other articles and minutely setose distally.

Pleon (Fig. 2L) completely covered laterally by appendages. Lateral plates and uniramous pleopods extended and deeply digitate, anterior lateral plates extending far forward. Uniramous uropods similar in size and structure to pleopods.

Male (Fig. 2M-R). Length 3.13 mm, maximal width 0.89 mm, head length 0.33 mm, pleonal length 1.13 mm. Body broadest across pereomere 4 and tapered evenly both ways from there. Head medially fused with pereomere 1, but all other segments distinct (Fig. 2M, N).

Head oval, broader than long. Small but conspicuous dark eyespots near posterior edge. Antennae (Fig. 2O) of three and five articles respectively, both distally setose.

Pereomeres deeply separated by anterolateral notches, bearing scattered pigment spots dorsally. Small midventral tubercle on each pereomere. Pereopods (Fig. 2P, Q) all of about same size, but dactyli of first pair very large and pointed, dactyli of second pair shorter, equal-sized dactyli of pairs 4-7 smaller yet.

Pleon elongate, extending to blunt point. Pleomeres less separated than pereomeres, some dorsally spotted. Five pairs of flaplike pleopods extending somewhat beyond posterior margins of all pleomeres. Final pleomere (Fig. 2R) truncate, lacking uropods but with tufts of setae on posterolateral corners.

Remarks. - The original description of *Dactylokepon richardsonae* by Stebbing (1910) was so brief that it became difficult to be certain of the identification of subsequent specimens. The shape of the maxilliped and its palp, however, are especially diagnostic. Bourdon's (1983)

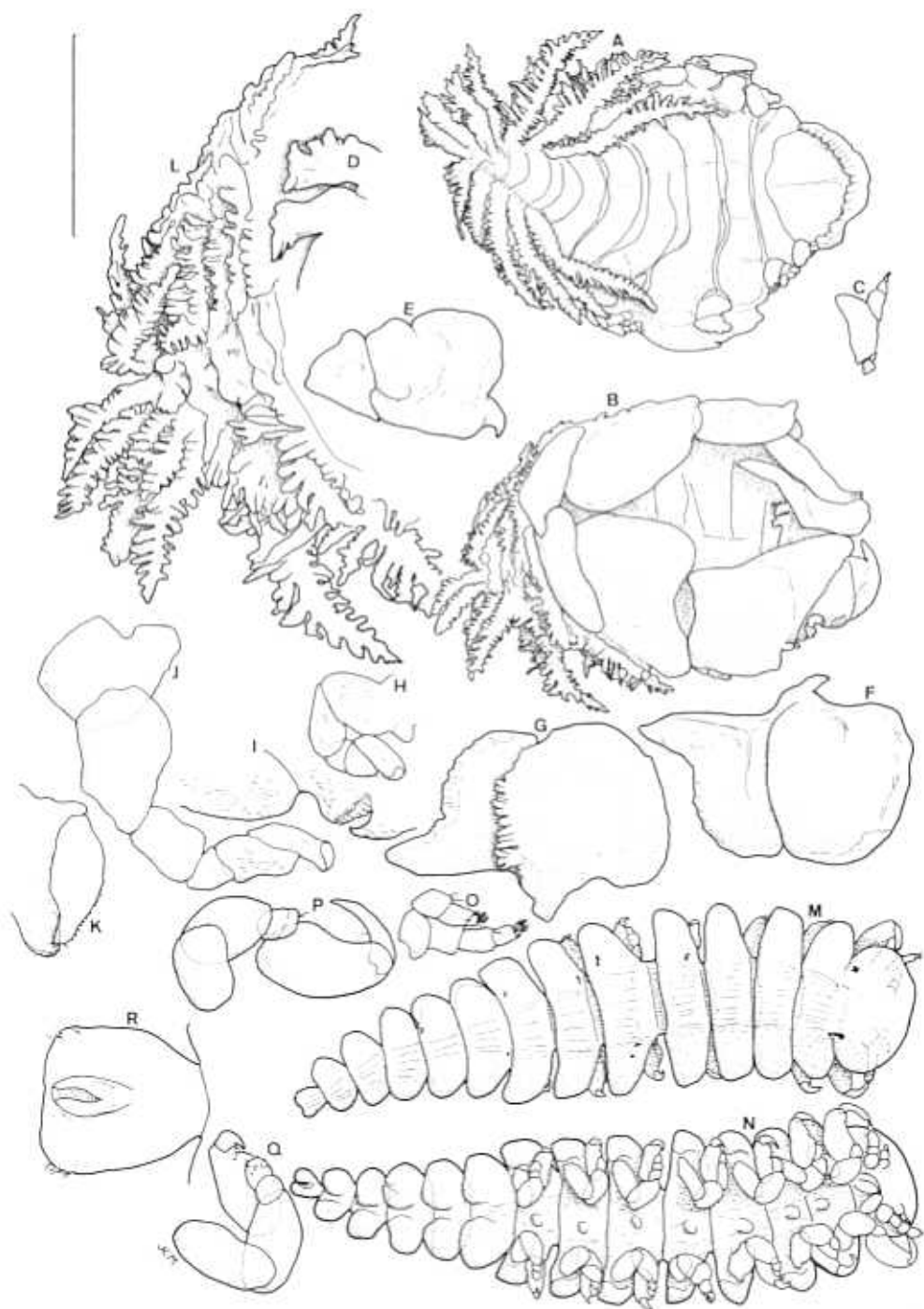


Fig. 2. *Dactylokepon richardsonae* Stebbing, 1910. A-L, female; M-R, male. A, dorsal view; B, ventral view; C, right antennae; D, right side of barbula; E, right maxilliped; F, right oostegite 1 in external view; G, same in internal view; H, right pereopod 1; I, distal region of same; J, right pereopod 7; K, distal region of same; L, pleon in ventral view; M, dorsal view; N, ventral view; O, left antennae; P, left pereopod 1; Q, left pereopod 6; R, final pleomere in ventral view. Scale: 4.5 mm for A, B; 2.2 mm for E-G, L; 1.1 mm for C, D; 1.0 mm for H, J, M, N; 0.4 mm for O-Q; 0.2 mm for I, K, R.

description and illustrations, though not quite complete, are clearly of the same species as here considered. This is only the second account of the male; that reported by Bourdon (1983) differs from the present one in being proportionately narrower, having a much longer pleon, and having the head separated from the pereon. Both males have the same distinctive peculiarly shaped anterior pereopods and midventral tubercles on all pereomeres. The host is a portunid, while previous ones were xanthids. It thus might have been expected that the present material would belong to *D. catoptri* Stebbing (1910), whose type infested another portunid, *Catoptrus nitidus* A. Milne Edwards at Amirante Island in the western Indian Ocean. *D. catoptri* was also inadequately described and illustrated and is known only from its type female, but the shape of its maxilliped palp is very different from that of the present female.

Subfamily Hemiarthrinae Markham, 1972

Genus *Eophrixus* Caroli, 1930

Eophrixus shojii Shiino, 1941

(Fig. 3)

Eophrixus shojii Shiino, 1941: 154-156, Figs. 1, 2 [Type-locality, Tomioka Bay, Amakusa, Japan; infesting *Alpheus japonicus* Ortmann]; Shiino, 1958: 71 [Momotori, Ise Bay, Mie Prefecture, Japan; infesting *A. rapax* de Haan]; Markham, 1982: 375-377, 385, Figs. 28, 29 [Tolo Harbour, Hong Kong; infesting *A. lobidens* de Haan?]; Page, 1985: 185, 205, 206-208 [New Plymouth, near Foxton and Foveaux Strait, New Zealand; infesting *A. socialis* Heller]; Markham, 1990: 555, 563 [Mirs Bay, Hong Kong; infesting *A. dispar* Randal].

Anisarthrus shojii - Codreanu & Codreanu, 1956a: 119; Codreanu & Codreanu, 1956b: 577; Codreanu, 1961: Fig. 1.

Eophryxus [sic] *shojii* - Shiino, 1972: 9.

Material examined. - Infesting *Alpheus* sp., L. B. Holthuis, det. of host. Ko Libong (= Pulau Talibong) southwest of Ban Kantang, Phuket Province, Thailand, C. Swensen coll., 24.x.1984: 1 male, 1 female, RMNH Crust 1.

Remarks. - The present material, especially the female (Fig. 3A-J), matches the type-specimens (Shiino, 1941) more closely than those from Hong Kong (Markham, 1982, 1990). Unlike the Hong Kong females, this one has all seven pereopods on each side fully developed, and it has broad pleonal appendages. The male (Fig. 3K-O), has the head fused with the first pereomere, as do the type male and that from New Zealand (Page, 1985), but, unlike those of other males, its final pereomere is separate from the pleon; its pleon, though of peculiar shape, lacks all indications of segmentation. The present host, like all the others, is a species of *Alpheus*, whose damaged condition prevented specific identification.

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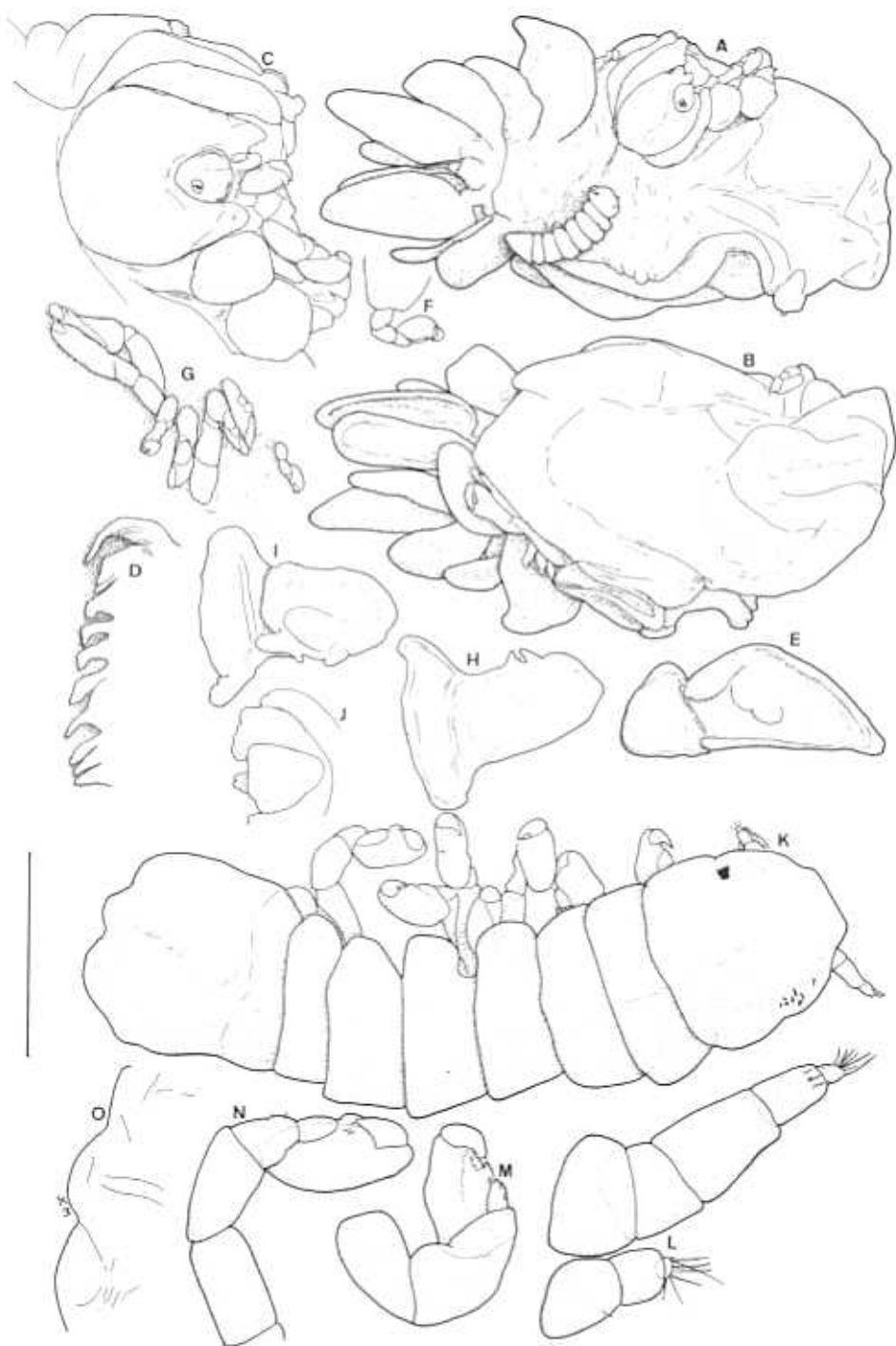


Fig. 3. *Eophrixus shojii* Shiino, 1941. A-J, female; K-O, male. A, dorsal view; B, ventral view; C, head and pereopods 1, 2 in dorsal view; D, barbula and pereopod 2 in ventral view; E, left maxilliped in external view; F, right pereopod 3; G, left pereopods; H, left oostegite 1 in external view; I, same in internal view; J, end of pleon in dorsal view; K, dorsal view; L, left antennae; M, left pereopod 1; N, left pereopod 7; O, end of pleon in ventral view. Scale: 2.2 mm for A, B, H, I; 1.1 mm for C-G, J; 0.4 mm for K; 0.2 mm for M-O, 0.1 mm for L.

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