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Redescription of *Ilyarachna zachsi* Gurjanova, 1933 (Crustacea: Isopoda: Munnopsidae) from the Sea of Japan, with the synonymisation of *I. starokadomskii* Gurjanova, 1933

OLGA A. GOLOVAN[1] & MARINA V. MALYUTINA[2]

Institute of Marine Biology, Far Eastern Branch, Russian Academy of Sciences, 17 Palchevsky St, Vladivostok, 690041, Russia.

[1] E-mail: *golovan_olga@mail.ru*

[2] E-mail: *m_malyutina@mail.ru*

Abstract

Ilyarachna zachsi Gurjanova, 1933, from the Sea of Japan, is redescribed and *I. starokadomskii* Gurjanova, 1933 is regarded as a junior subjective synonym of that species. *I. zachsi* is characterized by the cephalon having a transverse row of 6 dorsal spines, anterior margins of pereonites 1–3 with 4–14 dorsal spines and the male pleopods 2 stylet not reaching the distal end of protopod. The species displays significant intraspecific variability in the armament of pereonites 1–3. The smaller specimens with 4 long spines are generally males, these having been previously described as I. starokadomskii, while the larger, more spiny specimens are females (the specimen with extreme state of this character was previously described as *I. zachsi*).

Key words: Crustacea; Isopoda; Munnopsidae; *Ilyarachna*; Sea of Japan; taxonomy

Introduction

The genus *Ilyarachna* Sars, 1870 contains 38 species (Kensley *et al*. 2004), three of which are from Russian waters in the Sea of Japan, *I. zachsi* Gurjanova, 1933, *I. starokadomskii* Gurjanova, 1933 and *I. kurilensis* Kussakin & Mezhov, 1979. *I. kurilensis*, described from the Pacific coast of Kurile Islands was also collected from the Okhotsk Sea and in the Tatar Strait of the Sea of Japan. *I. zachsi* and *I. starokadomskii* occur in the north-western part of the Sea of Japan, from the Peter the Great Bay to the Tatar Strait and also in the Okhotsk Sea. Furthermore, Nunomura (1992) described an isopod specimen from the stomach of a zoarcid fish collected in the Sea of Japan off Iwasa, Toyama Prefecture,

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which he identified as Janiridae sp., possibly belonging to the genus *Janirella*. Nunomura's (1992) figures and description of a male specimen, suggest that the specimen is probably *I. starokadomskii.*

All these species are characterized by generally similar proportions of the body, the cephalon with a transverse row of 6 dorsal spines and the anterior margins of the pereonites 1–3 with well developed dorsal spines. The main differences between *I. zachsi* and *I. starokadomskii* in armament of pereonites 1–3. *I. zachsi* has about 12–14 low anterodorsal spines, while *I. starokadomskii* has four long ones. The spine pattern of *I. kurilensis* resembles that of *I. starokadomskii*, but *I. kurilensis* differs from the latter by the considerably longer endopod of the pleopod 2 in males.

After studying the type material and a large collection of both *I. starokadomskii* and *I. zachsi* (n = 84 specimens), we consider that these two species are actually the same, with the material described by Gurjanova (1933) being the two extremes of dorsal spine variation on the anterior pereonites. The dorsal arrangement of spines on all investigated specimens can range from those having four long spines on pereonites 1–3 to those with 14 spines. At one extreme, some specimens have small additional spines in between the main four spines, and then, there are those where the additional spines are more elongate, to finally these additional spines almost resembling the main four spines. It is possible to observe all these spine variations in one benthic sample. Smaller animals, either with just the four main spines or those with smaller additional spines in between, are generally males, whereas larger, more spiny specimens are females. The body shape, proportions of the natasome and the morphology of the limbs of all examined specimens are similar. Apart for the known sexual differences in pleopods 1 and 2 and antenna 1, we also found differences in the structure of the pereopods between males and females. In males, pereopods 1–3 are stouter and have more setae and pereopods 5 and 6 ventrally have additional stout flagellate setae on meri and carpi. According to our investigation we conclude that there is only one species, which displays significant intraspecific variability of the dorsal armament.

The similar variability of spine patterns on anterior body part was recorded for some other species of *Ilyarachna* (see Kussakin 2003). A similar situation exists for some species of *Echinozone* G. O. Sars, 1899 which resemble in appearance some spiny species of *Ilyarachna*, differing primarily in the absence of mandibular palp and presence of a uropodal exopod. Thus, *Notopais spicatus* Hodgson, 1910 and *N. quadrispinosa* (Beddard, 1886) recently transferred from *Echinozone* by Merrin (2004) were considered as synonyms by some authors and Schultz (1976) described specimens of *N. spicatus* as a new species (see synonymy of *N. spicatus* in Merrin 2004).

Gurjanova (1933) did not designate a holotype for either of her species, and as all the type material is badly fragmented, we could not designate a lectotype. Therefore, we have left all type specimens as syntypes.

We present here illustrations of the best fragments of these specimens (Fig. 1), but the

redescription is largely based on a number of intact specimens from the R.V. *Vitjaz* (available from ZIN) and TINRO collections (Figs. 2–6). No specimens have a complete set of limbs and thus we have illustrated these appendages from specimens of similar size and sex. These are identified in the figure captions. Description of body morphology is given according to all studied material.

Abbreviations:

This contribution is based on material held at the Museum of Zoological Institute (ZIN), St. Petersburg, and the collections of the Pacific Research Fisheries Center (TINRO-center), Vladivostok.

Family Munnopsidae Lilljeborg, 1864

Subfamily Ilyarachninae Hansen, 1916

Genus *Ilyarachna* G. O. Sars, 1870

Restricted synonymy: see Kussakin, 2003: 189 (non *Bathybadistes*).
Type species: *Mesostenus longicornis* G. O. Sars, 1864, by monotypy.

Ilyarachna zachsi Gurjanova, 1933 (Figs 1–6)

Ilyarachna zachsi Gurjanova, 1933: 83, fig. 7; 1936: 56, fig. 20.— Kussakin & Mezhov, 1979: 185.— Kussakin, 2003: 231, figs 165–167.
Ilyarachna starokadomskii Gurjanova, 1933: 84, fig. 8; 1936: 57, fig. 21.— Kussakin, 2003: 221, figs 155–157.
Janiridae sp.— Nunomura, 1992: 31, fig. 1.

Material examined. **Syntypes**. 2 females, 1 male (fragments), 1 fragment of damaged specimen, the Sea of Japan, Peter the Great Bay, 13 July 1928, stn 8, coll. Derzhavin (ZIN 1 N 9748). 1 male (fragments), the Sea of Japan, off Cape Sredniy, 20 October 1931, R.V. *Rossinante*, stn. 8 (ZIN 14 N 49764). 1 male (fragments), 1 fragment of damaged specimen, the Sea of Japan, Peter the Great Bay, 11 August 1949, 117 m, R.V. *Toporok*, stn 10, coll. Gordeev (ZIN 13 N 49763).

Additional material. 26 females, 6 males, the Sea of Japan, 42°51´N, 134°19´E, 7 June 1972, 212–219 m, R.V. *Vitjaz*, stn. 6647, Sigsby trawl. 14 females, 1 male, the Sea of Japan, 39°37´N, 135°12´E, 17 June 1972, 865–950 m, R.V. *Vitjaz*, stn. 6660. 1 female, 37°53´N, 136°15´E, 20 June 1972, 470 m, R.V. *Vitjaz*, trip 52, stn. 6666, Sigsby trawl. 10 females, 2 males, the Sea of Japan, 42°17´N, 131°0´E, 26 May 1976, 174 m, R.V. *Vitjaz*, trip 59, stn. 7456, Sigsby trawl. 5 females, 2 males, the Sea of Japan, 42°17´N, 131°0´E, 26 May 1976, 174 m, R.V. *Vitjaz*, trip 59, stn. 7456, the “Ocean” dredge. 5 females, the Sea of Japan, 39°0´N, 134°7´E, 295 m, R.V. *Vitjaz*, trip 59, stn. 7491, Sigsby trawl. 1 male,

the Sea of Japan, 42°25´2´´N, 131°24´E, 17 June 2003, 112 m, silted medium-grained sand, TINRO, stn. 90, sample 1, the "Ocean" dredge. 1 male, the Sea of Japan, 42°17´N, 130°54´E, 12 June 2003, 137 m, silted sand, TINRO stn. 59, sample 1, the "Ocean" dredge. 1 male, the Sea of Japan, 42° 20´N, 131°12´E, 13 June 2003, 136 m, silted sand, TINRO, stn. 75, sample 2, the "Ocean" dredge. 1 male, the Sea of Japan, 42°27´N, 131°29´E, 12 June 2003, 100 m, silted sand, TINRO, stn. 91, sample 2, the "Ocean" dredge. 1 female, the Sea of Japan, 42° 23´N, 131°20´E, 13 June 2003, 220 m, sand, silt, fine gravel, TINRO, stn. 76, sample 2, the "Ocean" dredge. 1 male, the Sea of Japan, 42°27´N, 131°29´E, 12 June 2003, 100 m, silted sand, TINRO, stn 91, Sample 1, the "Ocean" dredge. 1 female, the Sea of Japan, 42° 29´N, 131°50´E, 19 June 2003, 123 m, medium-grained sand, TINRO, stn. 114, sample 1, the "Ocean" dredge.

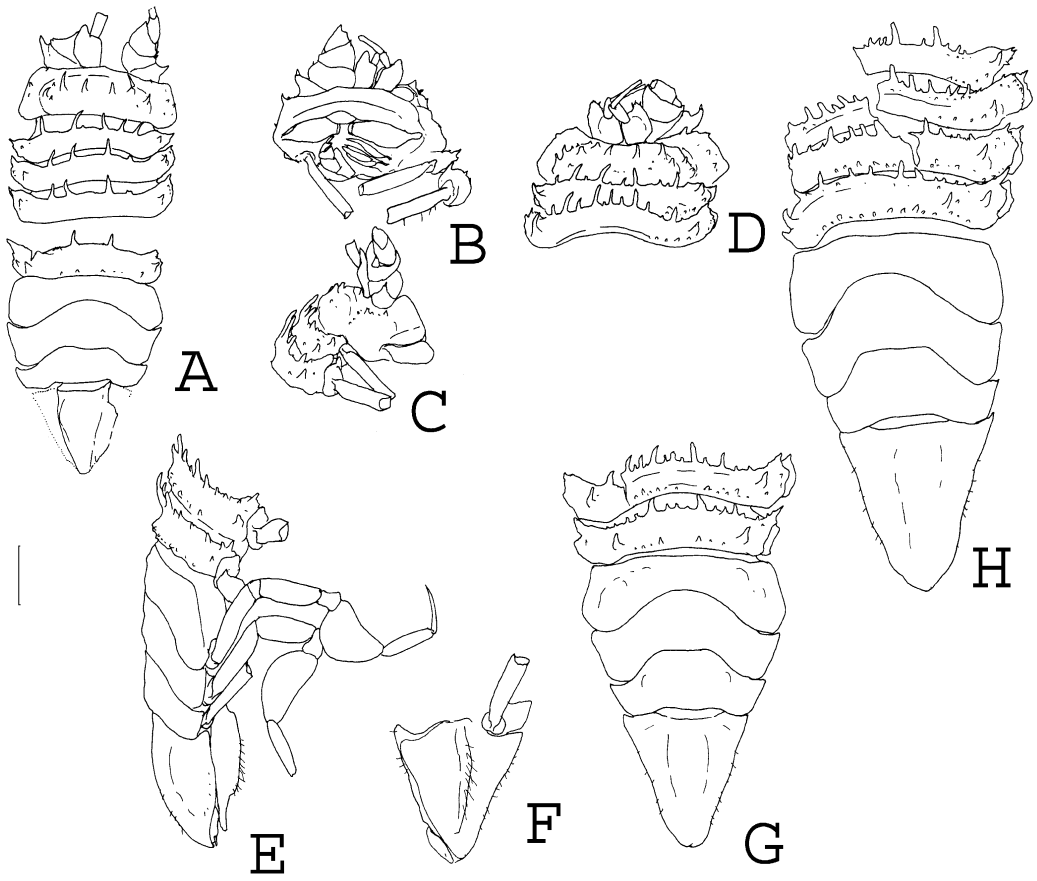

FIGURE 1. *Ilyarachna zachsi* Gurjanova, 1933. A, male, syntype, ZIN 14 N 497664; B–D, female (?), syntype, ZIN 1 N 9748; E–G, female syntype, ZIN 1 N 9748; H, female, syntype, ZIN 1 N 9748. A, E, G, H, body fragments, dorsal and lateral views; B–D, cephalon with pereonites 1–2, ventral, lateral and dorsal views; F, pleotelson, ventral view. Scale line = 1 mm.

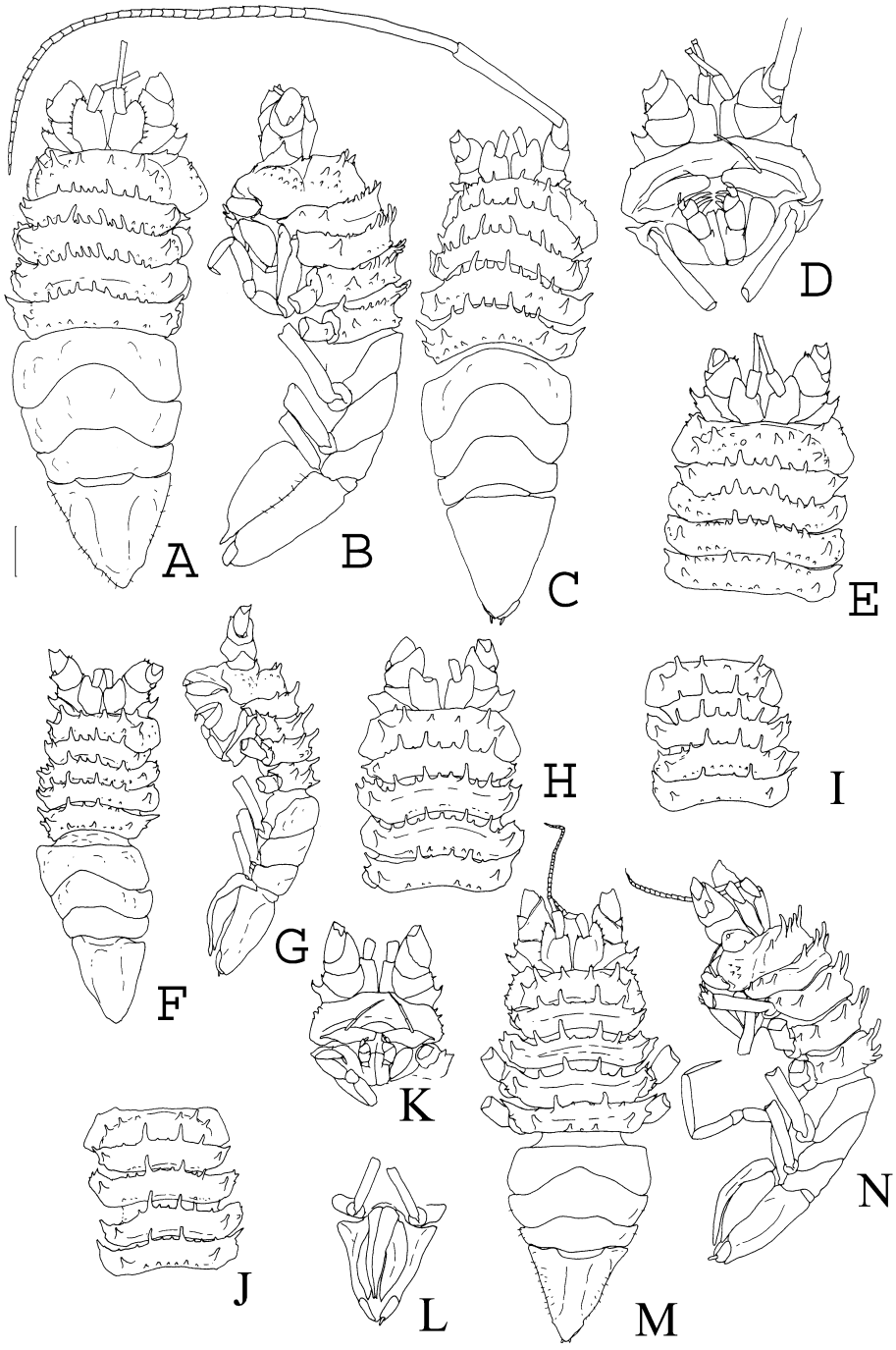

FIGURE 2. *Ilyarachna zachsi* Gurjanova, 1933. A, B, female, R.V. *Vitjaz*, stn. 6647; C, D, female, TINRO, stn 76, sample 2; E, female, R.V. *Vitjaz*, stn. 6647; F, G, male, TINRO stn. 91, sample 1; H, female, R.V. *Vitjaz*, stn. 6660; I, male, R.V. *Vitjaz*, Stn. 6647; J, female, R.V. *Vitjaz*, Stn. 6647; K–N, male, TINRO stn. 91, sample 2. A–C, F, G, M, N, dorsal and lateral views of body; D, K, cephalon, ventral view; E, H–J, cephalon and pereonites 1–4, dorsal view; L, pleotelson, ventral view. Scale line = 1 mm.

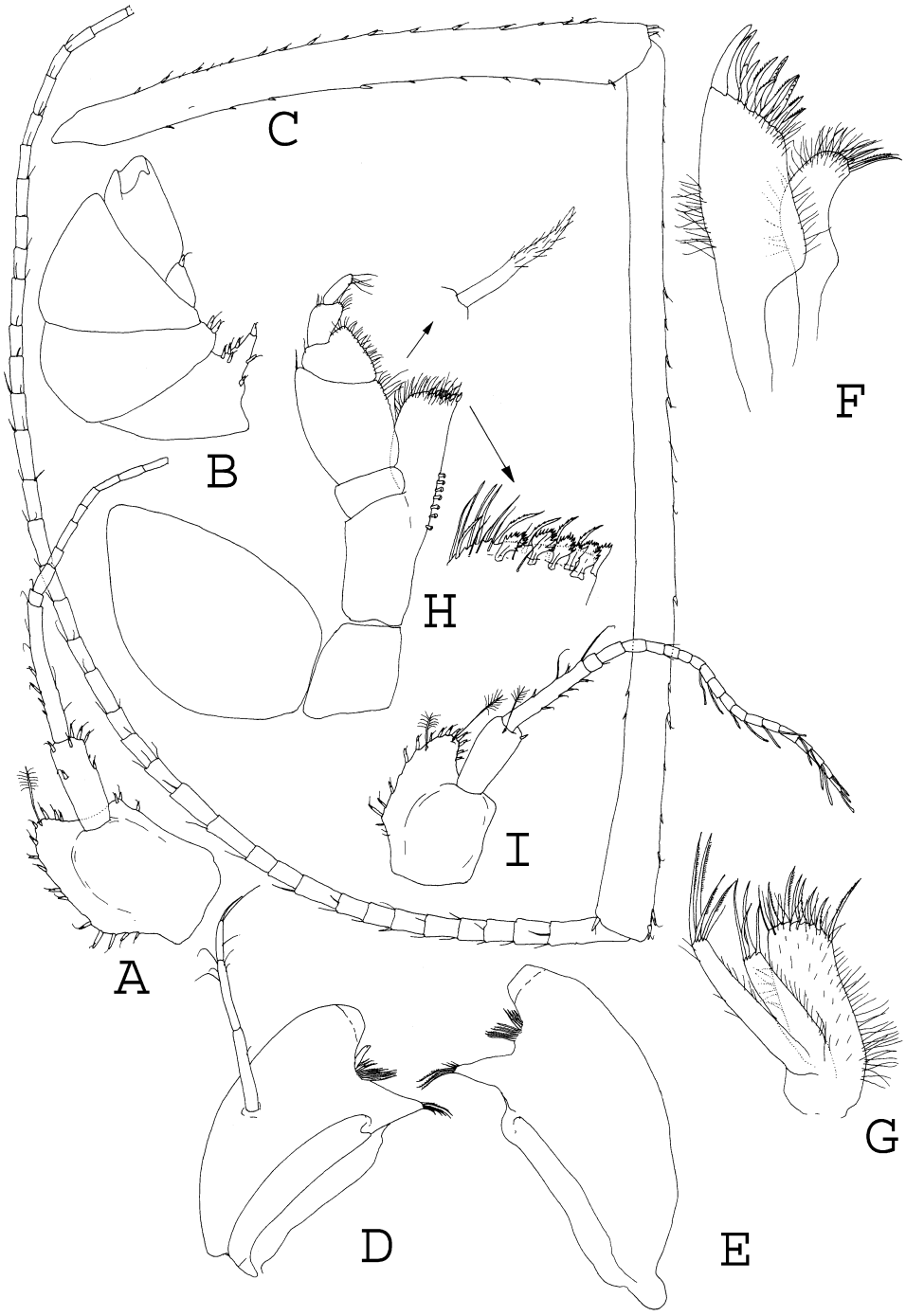

FIGURE 3. *Ilyarachna zachsi* Gurjanova, 1933. A, D–H, female 2, R.V. *Vitjaz*, stn. 6647; B, C, female 1, R.V. *Vitjaz*, stn. 6647; I, male 2, R.V. *Vitjaz*, stn. 7456. A, I, antenna 1; B, proximal part of antenna 2; C, distal part of antenna 2; D, left mandible; E, right mandible; F, maxilla 1; G, maxilla 2; H, maxilliped.

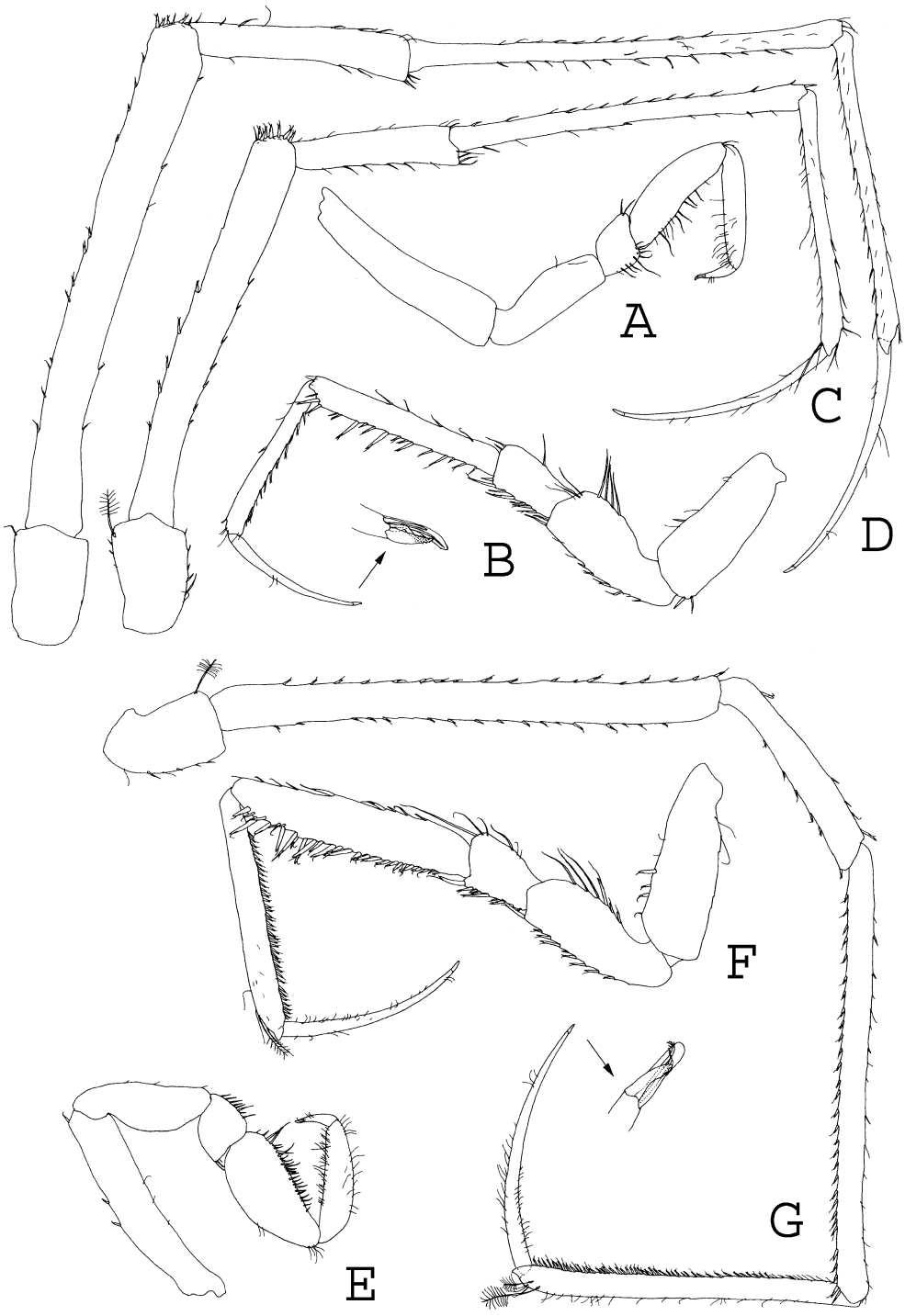

FIGURE 4. *Ilyarachna zachsi* Gurjanova, 1933. A–D, female 1, R.V. *Vitjaz*, stn. 6647; E–G, male 1, R.V. *Vitjaz*, stn. 7456. A–C, E–G, pereopods 1–3; D, pereopod 4.

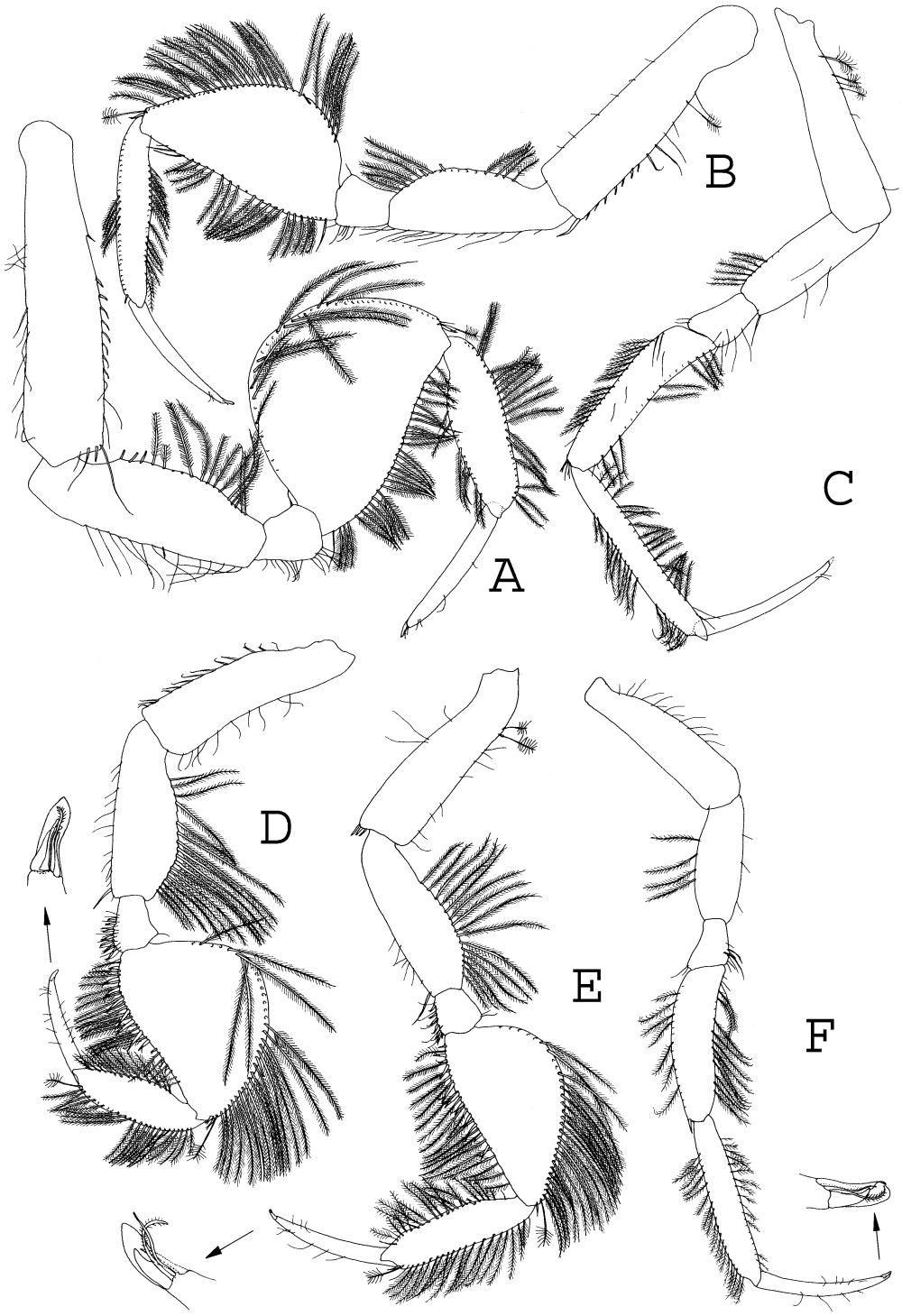

FIGURE 5. *Ilyarachna zachsi* Gurjanova, 1933. A, female 2, R.V. *Vitjaz*, stn. 6647; B, C, female 1, R.V. *Vitjaz*, stn. 6647; D–F, male 2, R.V. *Vitjaz*, stn. 7456. A–C, D–F pereopods 5–7.

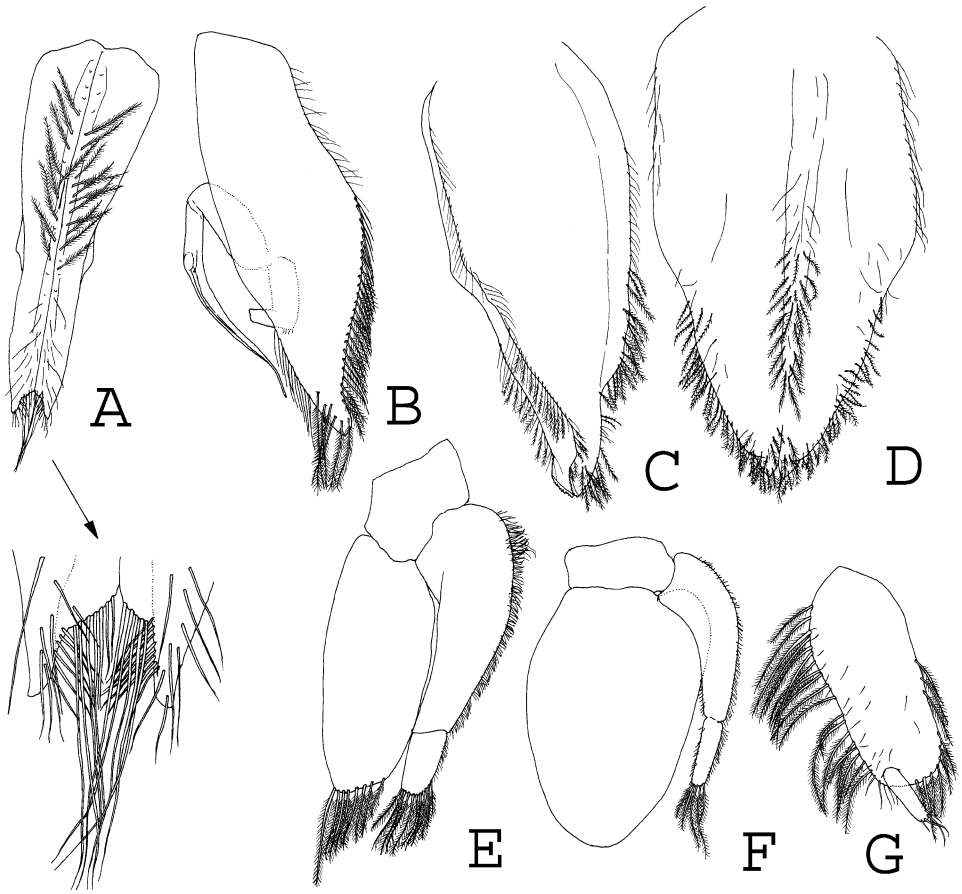

FIGURE 6. *Ilyarachna zachsi* Gurjanova, 1933. A, B, male 2, R.V. *Vitjaz*, stn. 7456; C–G, female 2, R.V. *Vitjaz*, stn. 6647. A, B, pleopods 1, 2; C, D, operculum, ventral and lateral views; G, uropod; E, F, pleopods 3, 4.

Description

Female. Body (Figs 1, 2) from 6 to 9 mm long, 2.1–2.7 (on average 2.4) times as long as greatest width at pereonites 2–3.

Cephalon about 4.5 times as wide as long and 1.1 times as wide as pereonite 1; frontal border in dorsal view almost straight, frontolateral angle with moderately developed spine, posterolateral margins rectangular; dorsal domed central part generally with a transverse row of 6 well developed spines and some small irregularly arranged ones.

Pereonites 1–4 anterior margin with 8–14 spines (generally 4 long spines and some shorter between), pereonites 3–4 with row of low spines or tubercles posteriorly; pereonite 1 lateral margins with a spine, pereonites 2–3 with low spines or tubercles laterally;

pereonite 4 anterolateral angle produced into spine-like process; pereonites 1–4 with 1 sublateral spine on each side; pereonites 5–7 dorsal surface slightly rugose. Coxae 1–4 narrow, with short spines or tubercles or smooth.

Pleon 1.1 times as long as wide, slightly setose.

Antenna 1 (Fig. 3A) article 1 1.6 times as long as wide, lateral margin and distolateral lobe with 14 flagellate robust marginal setae and 1 distal broom seta, medial margin with 3 distal flagellate robust setae; article 2 2.2 times as long as wide and 0.4 times as long as article 1, with 9 flagellate robust setae on distal half of article; article 3 8.9 times as long as wide and 1.8 times as long as article 2, with several simple and 3 flagellate setae along article; article 4 0.1 times as long as article 3; remaining articles in flagellum (more than 8) all longer than article 4.

Antenna 2 (Fig. 3B, C) articles 1–3 triangular; article 1 distolateral horn-like projection ending with flagellate robust seta, 6 additional robust flagellate setae on the horn; article 2 subequal to article 1 in length, with 2 distolateral flagellate robust setae; article 3 1.7 times as long as article 2, squama with distal flagellate robust seta; article 4 smaller than article 3; article 5 2.4 times as long as articles 1–4 together, article 6 1.5 times as long as article 5, with flagellate setae; flagellum of 27 articles, with simple distal setae each.

Mandible (Fig. 3D, E) spine row of 10 serrate spines on left mandible and 9 on right; molar process with 6 serrate distal setae; palp 0.7 times as long as mandibular body, article 1 with 2 tiny setae, article 2 0.8 times as long as article 1, with 3 simple setae, article 3 0.5 times as long as article 1, with 1 simple medial seta and 2 long terminal setae.

Maxilla 1 (Fig. 3F) lateral lobe 2.3 times as long as wide and 2 times as wide as mesial lobe, lateral and mesial margins with fine simple setae proximally, distal margin with 12 robust setae, some of them serrate, and many simple setae; mesial lobe with fine simple distolateral setae and 2 long serrate setae on distomedial angle.

Maxilla 2 (Fig. 3G) margins with fine simple setae; lateral lobe longest, with 2 long and 2 smaller comb-like and 1 simple setae; middle lobe shortest, 1.2 times as long as lateral one with 4 distal comb-like setae; mesial lobe 1.9 times as long as middle one, with 1 long comb-like, 6 robust serrate setae and numerous simple setae.

Maxilliped (Fig. 3H) coxa 1.2 times as long as wide; basis about 3.5 times as long as wide, endite reaching distal margin of palp article 2, with 7–8 retinacules, distally with 6 fan setae, 5 elongate serrate setae and many simple setae; palp article 1 shortest, 0.5 times as long as wide, articles 2–5 decrease in size from proximal to distal, article 2 1.4 times as long as wide, lateral margin 1.4 times as long as medial one, with 1 distolateral simple and 7 distomedial setulose setae, article 3 medial margin 0.7 times as long as that of article 2, with setulose setae, article 4 twice as long as lateral margin of article 3, with 9 distomedial setae, article 5 distally with 6 simple setae; epipod 1.5 times as long as wide, with rounded lateral margin.

Pereopod 1 (Fig. 4A) length ratios of ischium-dactylus to basis are 0.6, 0.2, 0.6, 0.6,

0.7; basis 4.1 times as long as wide; ischium 2.9 times as long as wide, with simple dorsal setae; merus 0.9 times as long as wide, with some simple ventral and flagellate distal setae; carpus 3 times as long as wide, with row of simple ventral setae and 2 distodorsal setae; propodus 8 times as long as wide, with simple ventral setae; dactylus 4.4 times as long as wide, with 3 simple distodorsal setae.

Pereopod 2 (Fig. 4B) length ratios of ischium-dactylus to basis are 0.9, 0.5, 1.2, 1.05, 0.9; basis 2.6 times as long as wide, with 1 dorsal and 2 distoventral flagellate robust setae and dorsally with some additional simple setae; ischium 2.4 times as long as wide, with 4 long dorsal and 7 distal simple setae ventrally with many flagellate setae; merus 1.8 times as long as wide, with a long simple dorsal seta, 6 flagellate robust ventral setae and some simple distal setae; carpus 7.3 times as long as wide, with 4 simple dorsal and 15 ventral flagellate robust setae; propodus 10 times as long as wide, ventrally with flagellate robust setae, distally and dorsally with simple setae; dactylus 11.9 times as long as wide, with 1 ventral and 4 distal simple setae.

Pereopod 3 (Fig. 4C) length ratios of ischium-dactylus to basis are 3.5, 1.3, 3.0, 2.1, 2.0; basis 1.7 times as long as wide, with 1 distodorsal broom and some simple setae; ischium 8.6 times as long as wide, with 7 simple ventral and 5 flagellate robust dorsal setae and distally 8 flagellate robust setae; merus 4.2, carpus 13.8, propodus 11.3 and dactylus 16.3 times as long as wide, all articles with simple setae.

Pereopod 4 (Fig. 4D) similar to 3 but slightly longer; length ratios of ischium-dactylus to basis are 4.2, 1.7, 3.5, 2.5, 2.0; basis 1.7 times as long as wide; ischium 9.1, merus 5.5, carpus 16.4, propodus 13.5 and dactylus 18.1 times as long as wide.

Pereopod 5 (Fig. 5A) length ratios of ischium-dactylus to basis are 0.7, 0.2, 0.7, 0.5, 0.4; basis 4 times as long as wide with simple setae; ischium 3 times as long as wide, ventral margin with simple setae; merus 0.8, times as long as wide, ventral margin with simple setae, 1 simple seta on dorsal margin; carpus 1.4 times as long as wide, propodus 3.5 times as long as wide; dactylus 7.6 times as long as wide, with 4 simple dorsal setae.

Pereopod 6 (Fig. 5B) similar to 5; length ratios of ischium-dactylus to basis are 0.7, 0.2, 0.8, 0.7, 0.5; basis 3.9, ischium 2.8, merus 1, carpus 1.9, propodus 3.6, dactylus 9.1 times as long as wide.

Pereopod 7 (Fig. 5C) length ratios of ischium-dactylus to basis are 0.6, 0.3, 0.8, 0.9, 0.6; basis 4 times as long as wide, with ventral broom setae; ischium 3.1 times as long as wide, with ventral simple setae; merus 1.8 times as long as wide, with simple setae; carpus 4.4 times as long as wide, propodus 7.7; dactylus 9.7 times as long as wide.

Operculum (Fig. 6C, D) 1.8 times as long as wide, distally with medial slit and lamellar extension; proximolateral margins and proximal half of medial carina with long setae, distolateral margins, distal tip and distal part of medial carina with long plumose setae.

Pleopod 3 (Fig. 6E) protopod 1.3 times as wide as long; endopod 2.2 times as long as wide, distally with some scale and 8 plumose setae; exopod lateral margin with fine simple

setae, proximal article almost as long and almost as wide as endopod, narrowing, distal article 0.3 times as long as proximal article, with 11 plumose distal setae.

Pleopod 4 (Fig. 6F) protopod 2.6 times as wide as long; endopod oval, 1.5 times as long as wide; exopod not reaching distal margin of endopod, margins with fine simple setae, distal article narrow, 0.4 times as long as proximal article, with 5 plumose distal setae.

Uropod (Fig. 6G) protopod 2.4 times as long as wide, with marginal plumose setae and dorsally with simple and scale setae, distolateral angle with 4 simple setae; endopod 3.5 times as long as protopod, with 7 terminal simple setae.

Male. Body (Fig. 1, 2) relatively shorter, from 5.3 to 6.5 mm long, 2.2–2.5 (in most cases 2.4) times as long as greatest width, widest at pereonite 5, rarely 3.

Cephalon narrower than of female; frontolateral angle with moderately developed spine; lateral extension with some low spines or tubercles, dorsal surface of domed central part with a transverse row of 6 long spines, submedial longest.

Pereonites 1–3 anterior margin with 4 straight long spines, medial longer than lateral (in some specimens small spines between); pereonite 4 anterior margin with 2–4 spines, posterior margin with some small spines and (or) some tubercles; lateral margin of pereonite 1 with a spine, of pereonites 2–3 with 2–3 spines, of pereonite 4 with a spine; pereonite 4 anterolateral angle produced into spine-like process; pereonites 1–4 with sublateral midlength spine on each side; pereonite 5–7 dorsal surface slightly rugose. Coxae 1–3 narrow, with small, sometimes inconspicuous spines.

Pleon almost as long as wide, slightly setose.

Antenna 1 (Fig. 3I) article 1 1.4 times as long as wide, distolateral lobe with 10 flagellate robust setae and 1 distal broom seta, lateral margin with 4 flagellate robust setae; article 2 2.2 times as long as wide and 0.5 times as long as article 1, with flagellate robust seta on distal half of article; article 3 6 times as long as wide and 1.2 times as long as article 2, with several simple and 3 flagellate setae along article; article 4 0.1 times as long as article 3; flagellum of 17 articles, all longer than article 4.

Mouth parts are similar to those of female.

Pereopods stouter than of female.

Pereopod 1 (Fig. 4E) length ratios of ischium-dactylus to basis are 0.6, 0.2, 0.6, 0.5, 0.2; basis 4.9 times as long as wide with 3 ventral flagellate setae; ischium 3 times as long as wide, with simple ventral setae; merus 0.7 times as long as wide, with some simple and flagellate ventral and 3 simple distal setae; carpus 2.2 times as long as wide, ventral margin almost straight, with numerous flagellate and simple setae, dorsal margin convex; propodus 4.1 times as long as wide, with numerous ventral and some dorsal simple setae; dactylus 3 times as long as wide.

Pereopod 2 (Fig. 4F) length ratios of ischium-dactylus to basis are 0.9, 0.4, 1.3, 1.3, 1.0; basis 2.8 times as long as wide, with 3 dorsal flagellate robust setae and some simple

setae; ischium 2.7 times as long as wide, with 3 long dorsal simple setae, 3 dorsal and 9 ventral flagellate setae; merus 1.3 times as long as wide, with simple dorsal setae and 8 flagellate robust ventral setae; carpus 5 times as long as wide, dorsal margin with 5 simple setae, ventral margin with numerous flagellate robust setae (short on proximal half and long on distal half); propodus 8.9 times as long as wide, slightly setose, with 5 simple and 1 broom distodorsal setae, ventral margin densely covered with short flagellate robust setae; dactylus 12.4 times as long as wide, with 6 dorsal and many ventral simple setae.

Pereopod 3 (Fig. 4G) length ratios of ischium-dactylus to basis are 4.3, 1.9, 3.9, 2.9, 2.7; basis 1.7 times as long as wide, with 2 distodorsal broom setae and some simple ventral setae; ischium 11.8 times as long as wide, with 18 dorsal and about 20 ventral flagellate robust setae; merus 5.8, carpus 14.3, propodus 13.7 times as long as wide, ventral margins with numerous short flagellate robust setae, dorsal margins with some flagellate and simple setae, propodus with 1 distodorsal broom seta; dactylus 15 times as long as wide, with simple setae.

Pereopod 4 missing.

Pereopod 5 (Fig. 5D) length ratios of ischium-dactylus to basis are 0.8, 0.3, 0.9, 0.7, 0.5; basis 3.4 times as long as wide, ventrally with simple and flagellate setae; ischium 2.7 times as long as wide, ventral margin with simple setae; merus 1.2, times as long as wide, ventral margin densely covered with simple and 7 flagellate robust setae, 1 simple seta on dorsal margin; carpus 1.4 times as long as wide, dorsal margin with 1 broom and 2 distal flagellate robust setae, ventral margin with 12 flagellate robust setae; propodus 3 times as long as wide, with 1 broom distodorsal setae; dactylus 6.4 times as long as wide, with simple setae.

Pereopod 6 (Fig. 5E) length ratios of ischium-dactylus to basis are 0.8, 0.2, 0.9, 0.7, 0.7; basis 4 times as long as wide, with simple, 3 distoventral robust and 2 proximodorsal broom setae; ischium 3 times as long as wide, ventrally with small simple setae; merus 1.0 times as long as wide, with some simple and 7 flagellate robust ventral setae and 2 distodorsal setae; carpus 1.8 times as long as wide, ventral margin with 12 flagellate robust setae; propodus 3.7 as long as wide, with 1 simple seta and 1 broom distodorsal seta, ventrally with 1 short flagellate and some simple setae; dactylus 8 times as long as wide with simple setae.

Pereopod 7 (Fig. 5F) length ratios of ischium-dactylus to basis are 0.7, 0.3, 0.9, 0.9, 0.8; basis 3.5 times as long as wide, with ventral simple setae; ischium 2.9 times as long as wide, with 3 simple small ventral setae; merus 1.4 times as long as wide, with small ventral and distodorsal setae; carpus 3.7 times as long as wide, with 1 distodorsal flagellate seta; propodus 6.6 times as long as wide, with 1 robust distodorsal seta; dactylus 8.2 times as long as wide, with simple setae.

Pleopod 1 (Fig. 6A) 2.9 times as long as proximal width, distally with a notch; inner lobes of distal margin subrectangular, with 5–7 long simple setae each; outer lobes produced, bearing simple setae; proximal half of medial ridge with many evenly spaced

plumose setae, distal half with numerous simple setae.

Pleopod 2 (Fig. 6B) protopod 3.1 times as long as wide, proximal half of lateral margin with simple setae, tip of protopod and distal half of lateral margin with plumose setae; endopod proximal article 2.1 times as long as wide and 0.2 times as long as protopod, stylet elongate, curved, 0.5 times as long as protopod; exopod hooked, 0.2 times as long as protopod.

Uropod as seen in female.

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