



Two new species of Tanaidacea of the genus *Kalliapseudes* Stebbing, 1910 (Crustacea: Apseudomorpha: Kalliapseudidae) from Australia

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Abstract

Two new species of kalliapseudid tanaidacea from Australia, *Kalliapseudes longisetosus* and *Kalliapseudes messingi*, are described from marine waters off Sydney, New South Wales and the Northwest continental shelf, respectively. *Kalliapseudes longisetosus* is distinguished from the other congeners by the presence of a single, very long simple seta on the anterior corners of the pereonites (about as long as the first pereonite) and several very long simple setae on the basis of the second and third pereopods (about as long as the basis). This new species is the second member of the genus to be reported from New South Wales. *Kalliapseudes messingi* is distinguished by having two small setae medially on the dactylus of pereopods 4 and 5, by the female having a tuft of sensory setae subterminally on the dactylus of pereopod 6, and by having three plumose setae on both the cheliped and pereopod 1 exopodite and is the first member of the genus to be reported from the Northwest continental shelf of Australia. Both species have a needle-like tip on the dactylus of the second and third pereopods. A table giving the distribution data for the species of *Kalliapseudes* and a key to the genera and species of Kalliapseudidae now known from Australia are presented.

Key words: Crustacea, Tanaidacea, new species, *Kalliapseudes longisetosus*, *Kalliapseudes messingi*, New South Wales, Northwest continental shelf, Australia

Introduction

Kalliapseudes obtusifrons (Haswell, 1882) represents the only member of the genus *Kalliapseudes* Stebbing, 1910 previously reported from the Australian coastal region of New South Wales. Recently, during an examination of tanaidacean material from the collections at the Australian Museum (AM), two undescribed species of *Kalliapseudes* were discovered, one from the shelf waters off New South Wales, while the second is the first member of the genus to be reported from the northwest continental shelf of Australia. Their descriptions are the subject of this report.

The terminology used follows Larsen (2003). Descriptions were generated from a DELTA (Dallwitz et al. 1993) database. The material has been deposited in the Australian Museum, Sydney (AM).

Systematics

Suborder Apseudomorpha Sieg, 1980

Family Kalliapseudidae Lang, 1956

Subfamily Kalliapseudinae Lang, 1956

Genus *Kalliapseudes* Stebbing, 1910

Kalliapseudes longisetosus, new species

Figs. 1–6

Material examined. Holotype: ovigerous female, AM P71872, Malabar, Sydney, New South Wales, Australia, depth unknown, 33°58'S, 151°16'E, EPA- Malabar Deep Ocean Outfall Study (DOOM). Allotype: adult male (partly dissected), AM P73643, Bass Point, New South Wales, Australia, 40 m depth, 34°36'S, 150°54'E, 1 Feb 1990. Paratypes: one ovigerous female (partly dissected), AM P71870, east of Malabar, Sydney, New South Wales, Australia, 83.70 m depth, 33°59'11"S, 151°17'54"E, Malabar Deep Ocean Outfall Study (DOOM), 18 Jan 1996, R1; one juvenile, AM P71871, same locality as holotype; one juvenile, AM P40497, same locality and collection date as allotype; one juvenile, AM P40500, same locality and collection date as allotype, 45 m depth; ten juveniles and five manca, AM P40493, same locality and collection date as allotype.

Description. Ovigerous female. Body (holotype, Fig. 1A): length 5.4 mm, 5.4 times as long as broad.

Carapace (Fig. 1A). Broader than long, one pair of mid-lateral setae; rostrum round.

Pereonites (Fig. 1A). Pereonites 4 and 5 longer than 1–3, 6 and pereonites 1 and 6 shorter than 2–5, all rounded laterally; one pair of longer than usual setae on anterior corners (about as long as first pereonite); hyposphaenia present on all pereonites.

Pleon (Fig. 1A). Pleonites subequal; rounded epimera, with several plumose setae and 2 pairs of simple setae on dorsal surface; hyposphaenia present on all pleonites. Pleotelson more than ½ length of combined length of pleonites 1–5, rounded, narrowing posteriorly to a rounded tip, with several lateral simple setae and two pairs of simple setae on dorsal surface.

Antennule (Fig. 1B). First article about 2.5 times as long as second and third articles combined and about 2.5 times as long as maximum width; inner flagellum with three articles; outer flagellum with nine articles; with one aesthetasc on each of articles 4, 5, and 7; three terminal simple setae.

Antennae (Fig. 1C). First article with medial extension bearing five plumose setae. Second article with minute scales on dorsal surface. Squama with six long simple setae. Distal (4th) peduncle article longer than flagellum, with double row of plumose setae. Flagellum with six articles; distal article with five terminal simple setae.

Labrum (Fig. 1D). Rounded, apex provided with hairs.

Mandibles. Right mandible (Fig. 1E) with incisor process having two denticles. Left mandible (Fig. 1F) with incisor process having eight to ten denticles; lacinia mobilis with six denticles. Both mandibles with setal row of five serrate spiniform setae. Mandibular palp uniaarticulate with row of long plumose setae and terminating in a sharp spine. Molar processes as illustrated (Figs. 1E, G).

Labium (Fig. 1H). Palp with long hairs on margins and spinulate on outer proximal margin; ending in an acuminate inner tip.

Maxillule. Inner endite (Fig. 1J) bearing four terminally setulate setae. Outer endite (Fig. 1I) with eleven distal spines, one short subterminal spine, and two subterminal setae and with long hairs on outer face.

Maxilla (Fig. 2A). Inner lobe of fixed endite with posterior row of four serrate setae. Outer lobe of fixed endite (Fig. 2B) with four multi-toothed spiniform setae on inner half and several serrate and simple setae on outer half. Inner lobe of moveable endite with spiniform setae terminating in three cusps. Outer lobe of moveable endite with two serrate and two plumodenticulate setae. Outer margin with dense rows of long hairs.

Maxilliped (Fig. 2C). Basal article fringed with plumose setae along outer margin. Palp with double row of long plumose setae on inner margin. Endite (Fig. 2D) with numerous long hairs on lateral margins and with plumose setae on distal margin, and with two coupling hooks.

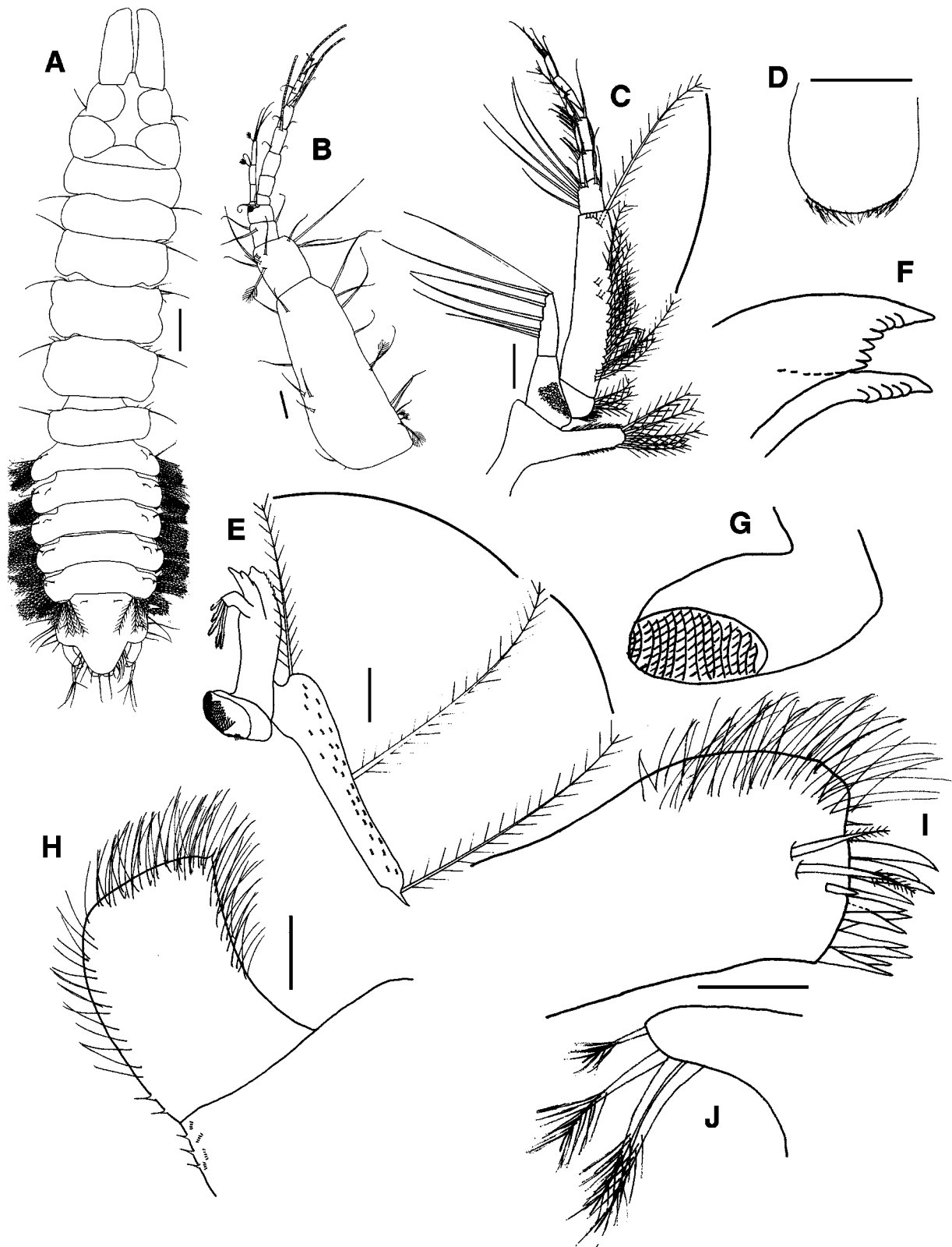


FIGURE 1. *Kalliapseudes longisetosus*, ovigerous female. A, dorsal view of body (holotype); B, antennule; C, antenna; D, labrum; E, right mandible; F, incisor process and lacinia mobilis of left mandible; G, molar process of left mandible; H, labial palp; I, outer lobe of maxillule; J, inner lobe of maxillule. Scale bars: A = 0.4 mm; B, C, D, E = 0.1 mm; H, I, J = 0.05 mm.

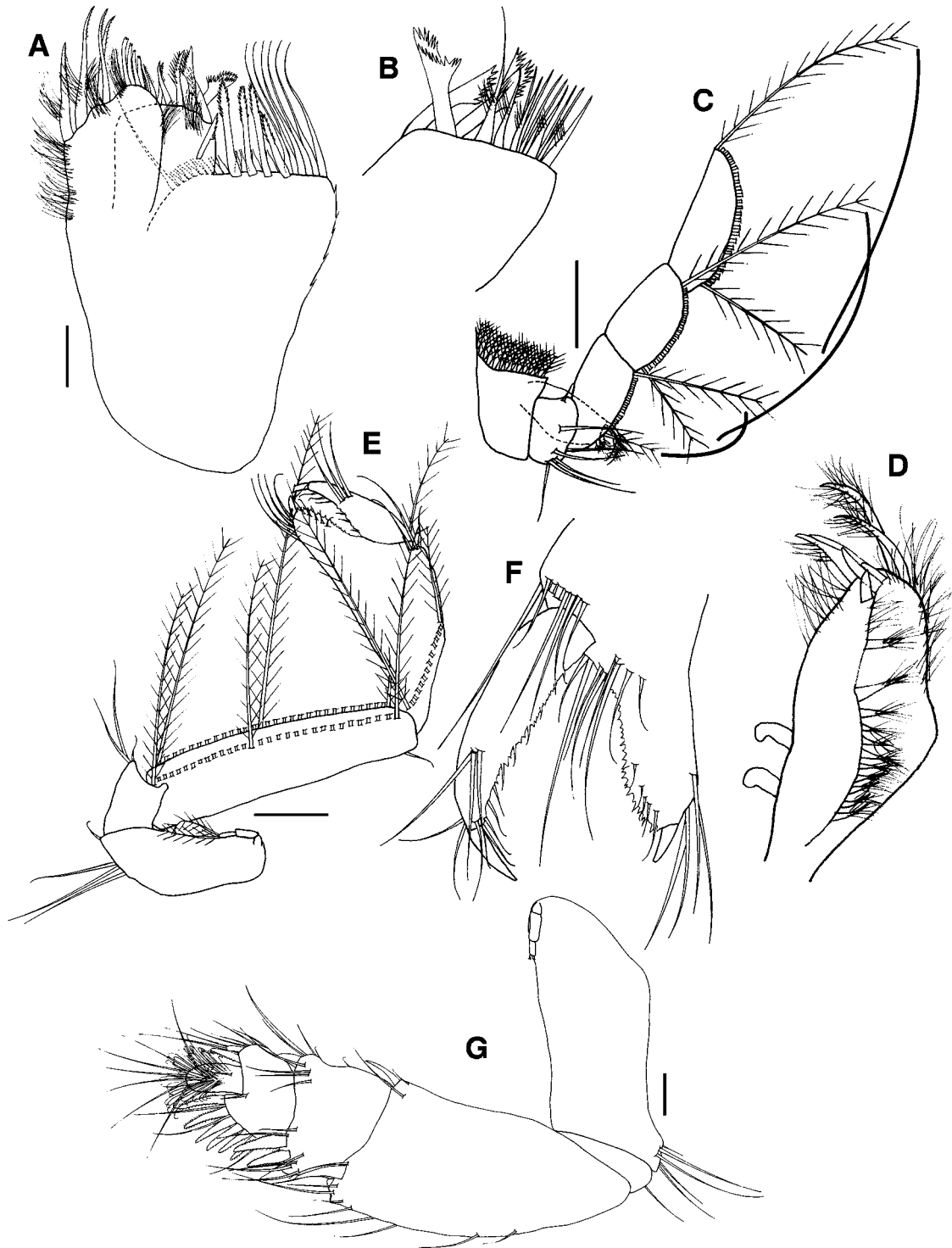


FIGURE 2. *Kalliapseudes longisetosus*, ovigerous female. A, maxilla; B, outer lobe of fixed endite of maxilla; C, maxilliped; D, maxillipedal endite; E, cheliped (inner view); F, chela (inner view); G, pereopod 1 (inner view). Scale bars: A = 0.05 mm; C, E = 0.2 mm; G = 0.1 mm.

Cheliped (Figs. 2E, F). Basis with three long simple setae on ventral margin and one short simple seta on ventrodistal corner. Merus longer than broad, with three simple setae on ventrodistal corner. Carpus about four times as long as broad, with double row of long, plumose setae ventrally and one short simple seta on dorso-distal corner. Propodus with diagonal row of long, plumose setae; fixed finger two-thirds or more length of

dactylus, with several simple setae just proximal to distal spine; cutting edge with numerous spinules; palm with several simple setae. Dactylus with three simple setae adjacent to claw and with three simple setae mid-way on inner surface; cutting edge with several setae increasing in length distally, interspersed with a few spinules; claw present. Exopodite present, with two plumose distal setae.

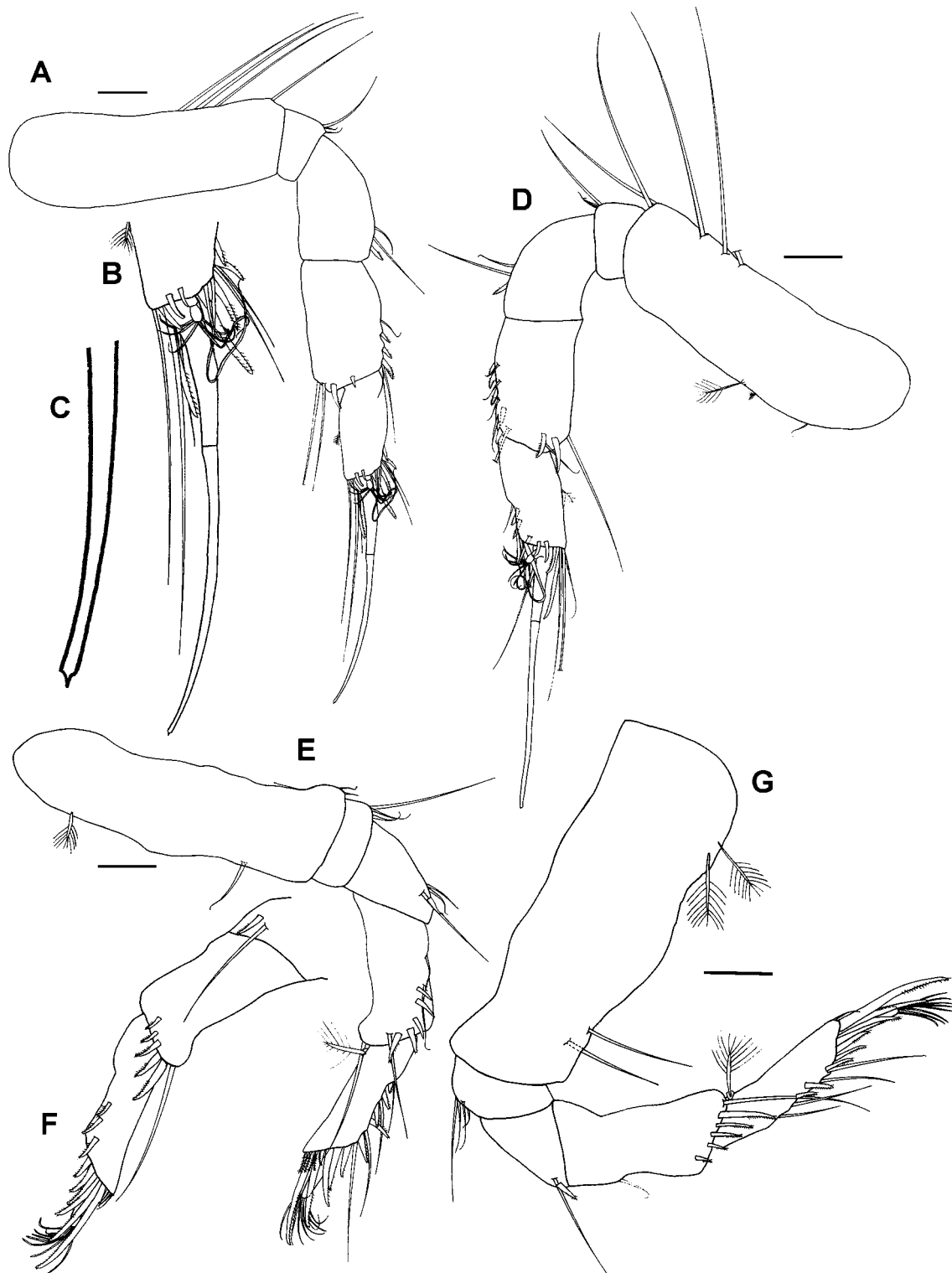


FIGURE 3. *Kalliapseudes longisetosus*, ovigerous female. A, pereopod 2 (outer surface); B, close-up of distal region of propodus and dactylus of pereopod 2 (outer surface); C, close-up of dactylus of pereopod 2; D, pereopod 3 (outer surface); E, pereopod 4 (outer surface); F, distal portion of pereopod 4 (inner surface); G, pereopod 5 (inner surface). Scale bars: 0.1 mm.

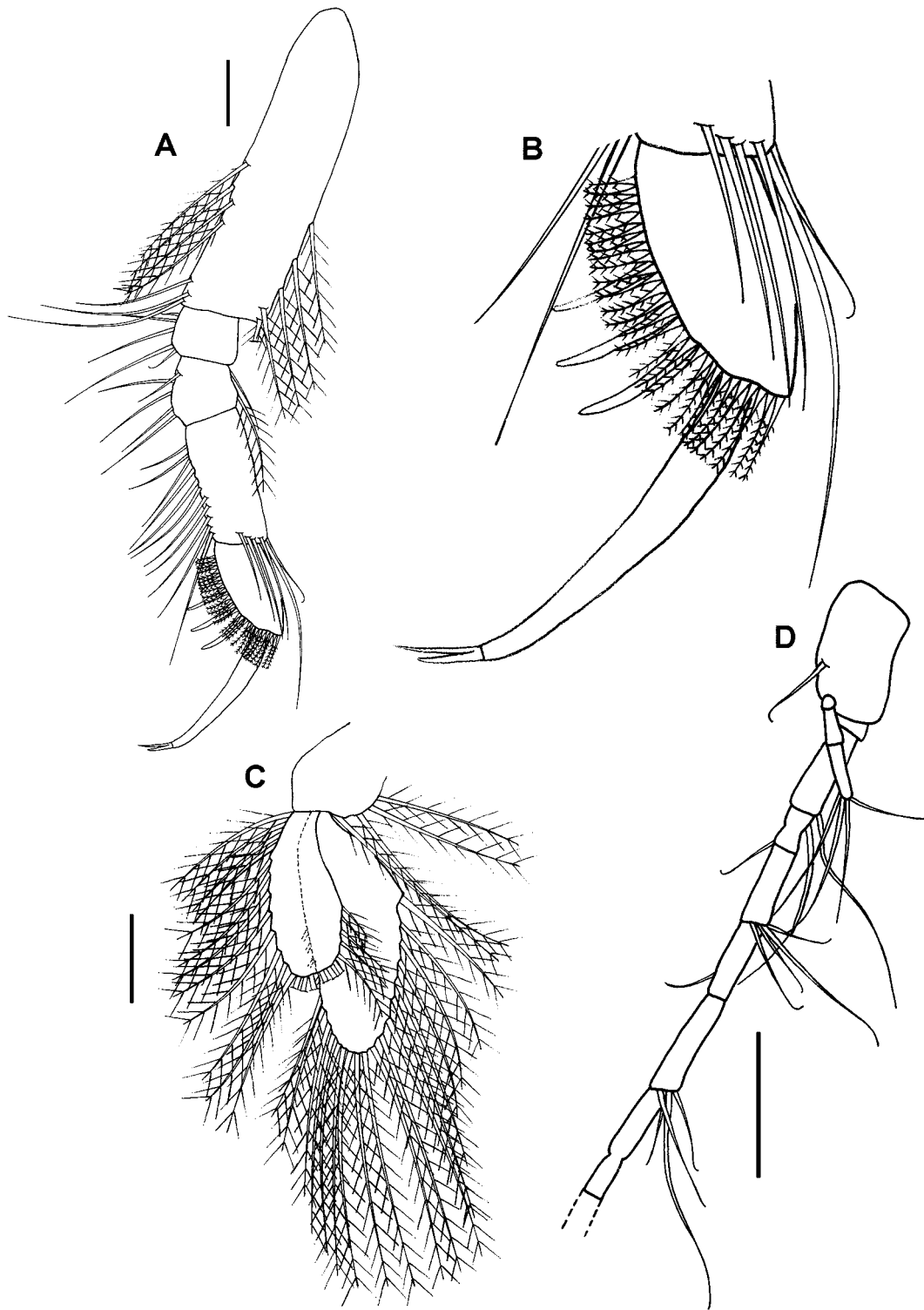


FIGURE 4. *Kalliapseudes longisetosus*, ovigerous female. A, pereopod 6 (outer surface); B, distal portion of pereopod 6; C, pleopod; D, uropod. Scale bars: A = 0.1 mm; C, D = 0.2 mm.

Pereopod 1 (Fig. 2G). Basis almost three times as long as broad, with several long simple setae on ventrodistal margin. Ischium with one simple seta on ventral margin. Merus longer than broad, broader than basis, with one dorsal and one ventral serrate spiniform seta and with several simple setae on ventral margin. Carpus about one-third length of merus, with two ventrodistal and one dorsodistal serrate spiniform setae. Propodus shorter than carpus, with six ventral and two dorsal serrate spiniform setae. Dactylus represented by a sensory

organ, about as long as propodus, with several long, terminal sensory setae and numerous short sensory setae and with one seta on inner surface; unguis absent. Exopodite present, with 2 plumose distal setae.

Pereopod 2 (Figs. 3A–C). Basis almost three times as long as broad, with four very long simple setae (almost as long as basis) on ventral margin. Ischium with one longer and one shorter simple setae on ventro-distal margin. Merus about same length as carpus, with one serrate spiniform seta on ventral margin. Carpus about 1.8 times as long as broad, with three serrate spiniform setae on ventral margin and two serrate spiniform setae on distal outer surface. Propodus about one-third length of basis, with two ventral and three distal serrate spiniform setae, and with three spiniform setae on outer surface. Dactylus shorter than basis; sensory organ present near base, with six aesthetascs; with short needle-like tip; unguis fused with dactylus.

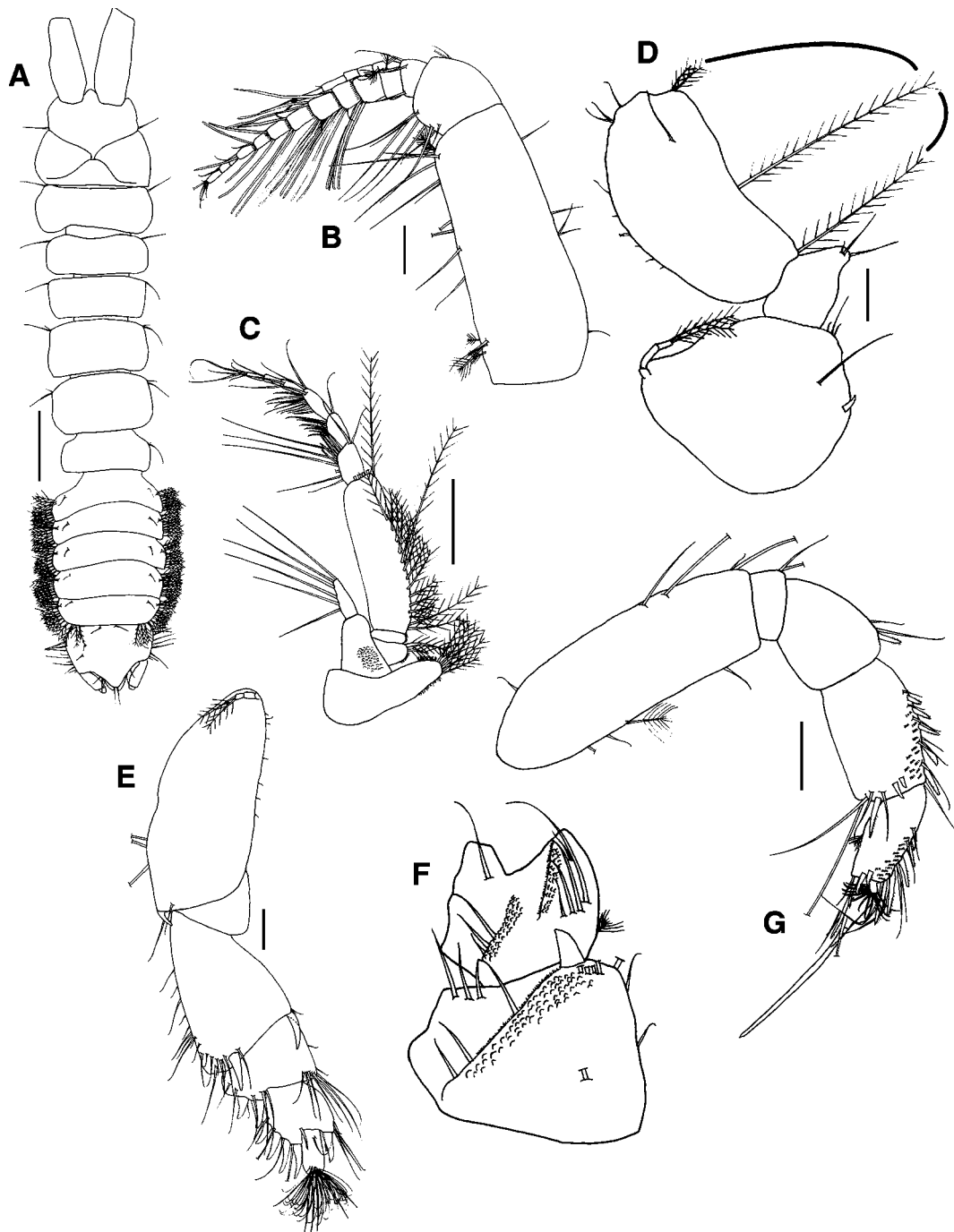


FIGURE 5. *Kalliapseudes longisetosus*, adult male (allotype). A, dorsal view of body; B, antennule; C, antenna; D, cheliped (propodus and dactylus broken off); E, pereopod 1 (inner surface); F, carpus and propodus of pereopod 1 (outer surface); G, pereopod 2 (outer surface). Scale bars: A = 1 mm; B, C, D, E, G = 0.2 mm.

Pereopod 3 (Fig. 3D). Similar to pereopod 2, but basis with five very long simple setae. Carpus with three serrate spiniform setae on ventral margin, one spiniform seta on inner surface, one spiniform seta on ventro-distal corner, and two serrate spiniform setae on outer surface.

Pereopod 4 (Figs. 3E, F). Basis about 3.5 times as long as broad, with a few distal simple setae. Ischium with one long and two short simple setae on ventrodistal corner. Merus shorter than carpus, with one spiniform seta distally on outer and inner surfaces and with several simple setae distally. Carpus with five spiniform setae on outer and inner surfaces. Propodus with 16 serrate spiniform setae increasing in length distally and terminally with several short, bipinnate setae. Dactylus shorter than propodus, with a tuft of terminal aesthetascs; unguis absent.

Pereopod 5 (Fig. 3G). Similar to pereopod 4. Basis broader than that of pereopod 4, about 2.7 times as long as broad. Carpus with five spiniform setae on inner surface and six spiniform setae on outer surface. Propodus lacking terminal short bipinnate setae.

Pereopod 6 (Figs. 4A, B). Basis with five plumose setae on dorsal margin and with four plumose and three simple setae on ventral margin. Ischium with several simple setae on ventral margin. Merus with one plumose and one simple seta on dorsal margin and several simple setae on ventral margin. Carpus with eleven simple setae on ventral margin and six simple setae distally on outer surface. Propodus with three long spiniform setae and 28 short bipinnate setae. Dactylus longer than propodus, with one distal seta; unguis small.

Pleopods (Fig. 4C). Basal article with four plumose dorsal setae, ventral margin naked. Exopodite with 23 plumose setae. Endopodite with 22 plumose setae.

Uropods (Fig. 4D). Basal article with one simple outer distal seta. Exopodite with three articles, distal article with four simple setae. Endopodite multiarticulated (exact number difficult to determine due to incomplete fusion in some of the articles).

Adult male (allotype). Similar to female but with the following major differences: Body (Fig. 5A) length approximately 8.5 mm.

Antennule (Fig. 5B). First article about 2.5 times as long as maximum width; inner flagellum with four articles and outer flagellum with ten articles. Outer flagellum with numerous aesthetascs on articles 1–6, and one aesthetasc on article 7.

Antennae (Fig. 5C). Peduncle with five articles (3rd and 4th articles not fused).

Cheliped (Fig. 5D). (Propodus and dactylus broken off). Basis and carpus much more robust. Basis very globular, about as long as broad, with one spiniform seta on outer surface.

Pereopod 1 (Figs. 5E, F). Basis about 2.3 times as long as broad, with one distal spiniform seta. Ischium smooth. Propodus with only four spiniform setae on ventral margin.

Pereopod 2 (Fig. 5G). Carpus with five spiniform setae on ventral margin and three spiniform setae on outer surface. Propodus with four spiniform setae on ventral margin.

Pereopod 3 (Fig. 6A). Carpus with six spiniform setae on ventral margin and three spiniform setae on outer surface. Propodus with four spiniform setae on ventral margin.

Pereopod 4 (Figs. 6B, C). Basis robust, about two times as long as broad. Merus with two spiniform setae distally on ventral margin and two spiniform setae on outer surface. Carpus with two spiniform setae on ventral margin, eight spiniform setae on outer surface, and four spiniform setae on inner surface.

Pereopod 5 (Figs. 6D, E). Carpus with nine spiniform setae on outer surface and seven spiniform setae on inner surface.

Pereopod 6 (Fig. 6F). Basis with seven plumose setae on dorsal margin and three plumose setae on ventral margin. Merus with three plumose setae on dorsal margin. Propodus with six spiniform setae.

Etymology. Alluding to the long simple setae on the anterior corners of the pereonites and basis of pereopods 2 and 3.

Remarks. *Kalliapseudes longisetosus*, **n. sp** occurs in the same general coastal region as *K. obtusifrons* and, although these two species are somewhat similar *K. longisetosus* is distinguished from *K. obtusifrons* by

the following characters: 1) the nature of the terminal spine of the mandibular palp (naked and not as long and narrow as in *K. obtusifrons*), 2) the armature of the chelae (more irregular spinulation on the cutting edges), and 3) the setation of the dactylus of pereopod 6 (only one distal seta). The new species differs from all other known species of *Kalliapseudes* by having very long setae on the anterior corners of the pereonites (about as long as the first pereonite) and the basis of the second and third pereopods (almost as long as basis), and by having a needle-like tip on the dactylus of pereopods 2 and 3 (Drumm and Heard, 2006a).

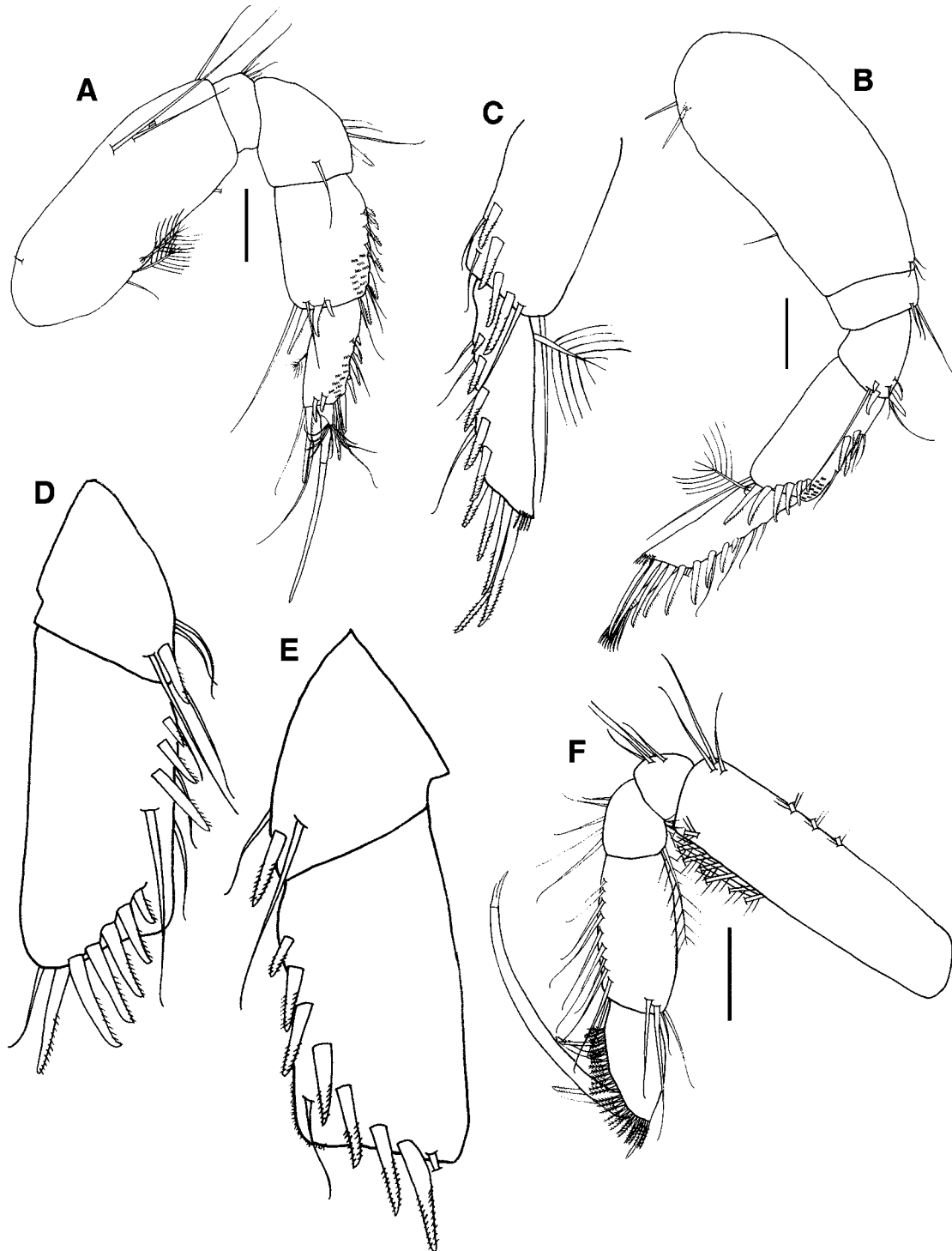


FIGURE 6. *Kalliapseudes longisetosus*, adult male (allotype). A, pereopod 3 (outer surface); B, pereopod 4 (outer surface); C, distal portion of pereopod 4 (inner surface); D, merus and carpus of pereopod 5 (outer surface); E, merus and carpus of pereopod 5 (inner surface); F, pereopod 6. Scale bars: 0.2 mm.

***Kalliapseudes messingi*, new species**

Figs. 7–12

Material Examined. Holotype: preparatory female (partly dissected, torn body), AM P74740, Northwest Shelf, Western Australia, 41m depth, 19°29.2'S, 118°52.5'E, station no. SO3-83-B8, 28 June 1983. Allotype: adult male (partly dissected), AM P74741, Northwest Shelf, Western Australia, 41m depth, 19°56.4'S, 117°53.9'E, station no. SO5-83-B2, 26 Oct 1983. Paratype: one subadult male, AM P74742, same locality and collection date as allotype.

Description. Preparatory female. Body (measurements of most segments unable to be made owing to torn body).

Carapace (Fig. 7A). Broader than long, one pair of mid-lateral setae; rostrum round.

Pereonites (Fig. 7A). Pereonites 4 and 5 longer than 1–3, 6 and pereonites 1 and 6 shorter than 2–5, all rounded laterally; one pair of simple setae on anterior corners; hyposphaenia present on all pereonites.

Pleon. Pleonites subequal; rounded epimera, with several plumose setae; hyposphaenia present on all pleonites. Pleotelson (Fig. 7B) more than ½ length of combined length of pleonites 1–5, rounded, with several lateral simple setae and two pairs of simple setae on dorsal surface.

Antennule (Fig. 7C). First article about 2.5 times as long as second and third articles combined; inner flagellum with four articles; outer flagellum with ten articles, with one aesthetasc each on articles 4, 5, 6, and 8.

Antennae (Fig. 7D). First article with medial extension bearing four plumose setae. Second article with minute scales on dorsal surface. Squama with five long simple setae. Distal (4th) peduncle article longer than flagellum, with double row of plumose setae. Flagellum with six articles.

Labrum (Fig. 7E). Rounded, with apex provided with short spinules.

Mandibles. Right mandible with incisor process having two denticles. Left mandible (Fig. 7F) with incisor process having about ten denticles; lacinia mobilis broken off. Both mandibles with setal row of five serrate spiniform setae. Mandibular palp uniaarticulate with row of long plumose setae and terminating in a sharp spiniform seta. Molar processes broken off.

Labium (Fig. 7G). Palp with long hairs on margins; ending in an acuminate inner tip.

Maxillule (Fig. 7H). Inner endite bearing four terminally setulate setae. Outer endite with eleven distal spines and two subterminal setae and with long hairs on outer face.

Maxilla (Fig. 8A). Inner lobe of fixed endite with posterior row of four serrate setae. Outer lobe of fixed endite (Fig. 8B) with four multi-toothed spiniform setae on inner half and several serrate and simple setae on outer half. Inner lobe of moveable endite with spiniform setae terminating in three cusps. Outer lobe of moveable endite with three serrate and two plumodenticulate setae. Outer margin with dense rows of long hairs and inner margin spinulate.

Maxilliped (Fig. 8C). Basal article fringed with plumose setae along outer margin. First article of palp with several long, simple setae. Last three articles of palp with double row of long plumose setae on inner margin of. Endite with numerous long hairs on lateral margins and with plumose setae on distal margin, and with two coupling hooks.

Cheliped (Figs. 8D, E). Basis with one ventral spiniform seta and simple setae on ventrodistal corner. Merus longer than broad, with three simple setae on ventrodistal corner. Carpus about four times as long as broad, with double row of long, plumose setae and two short simple setae on dorsodistal corner. Propodus with diagonal row of long, plumose setae; fixed finger two-thirds or more length of dactylus, with several simple setae just proximal to distal spine; cutting edge with numerous spinules; palm with one simple seta. Dactylus with three simple setae midway on inner surface; cutting edge with several spinules increasing in length distally, interspersed with one or two round protuberances; claw present. Exopodite (broken off) present, with three plumose setae.

Pereopod 1 (Figs. 8F, 9A). Basis about 2.2 times as long as broad, with one spiniform and one simple seta

on ventrodistal margin. Ischium naked. Merus longer than broad, about as broad as basis, with one dorsal and one ventral spiniform seta and with several simple setae on ventral margin. Carpus about one-third length of merus, with two ventrodistal and one dorsodistal serrate spiniform setae. Propodus shorter than carpus, with five ventral and two dorsal serrate spiniform setae. Dactylus represented by a sensory organ, about as long as propodus, with numerous long, terminal sensory setae and with one short simple seta on inner surface; unguis absent. Exopodite (broken off, Fig. 8G) present, with three plumose setae.

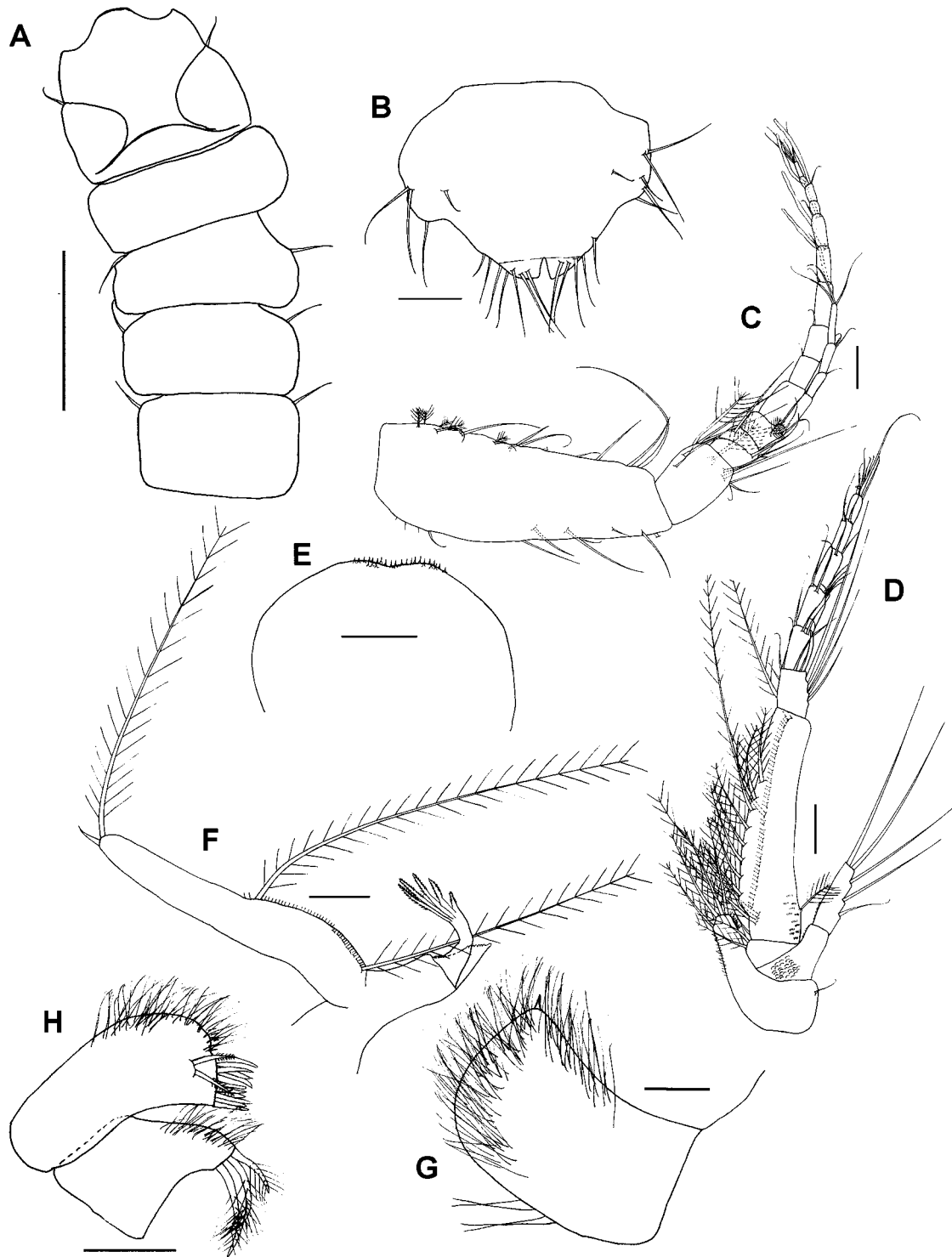


FIGURE 7. *Kalliapseudes messingi*, preparatory female (holotype). A, dorsal view of carapace and first 4 pereonites; B, pleotelson; C, antennule; D, antenna; E, labrum; F, left mandible (lacinia mobilis and molar process broken off); G, labial palp; H, maxillule. Scale bars: A= 1 mm; B= 0.2 mm; C, D, E, F, H= 0.1 mm; G= 0.05 mm.

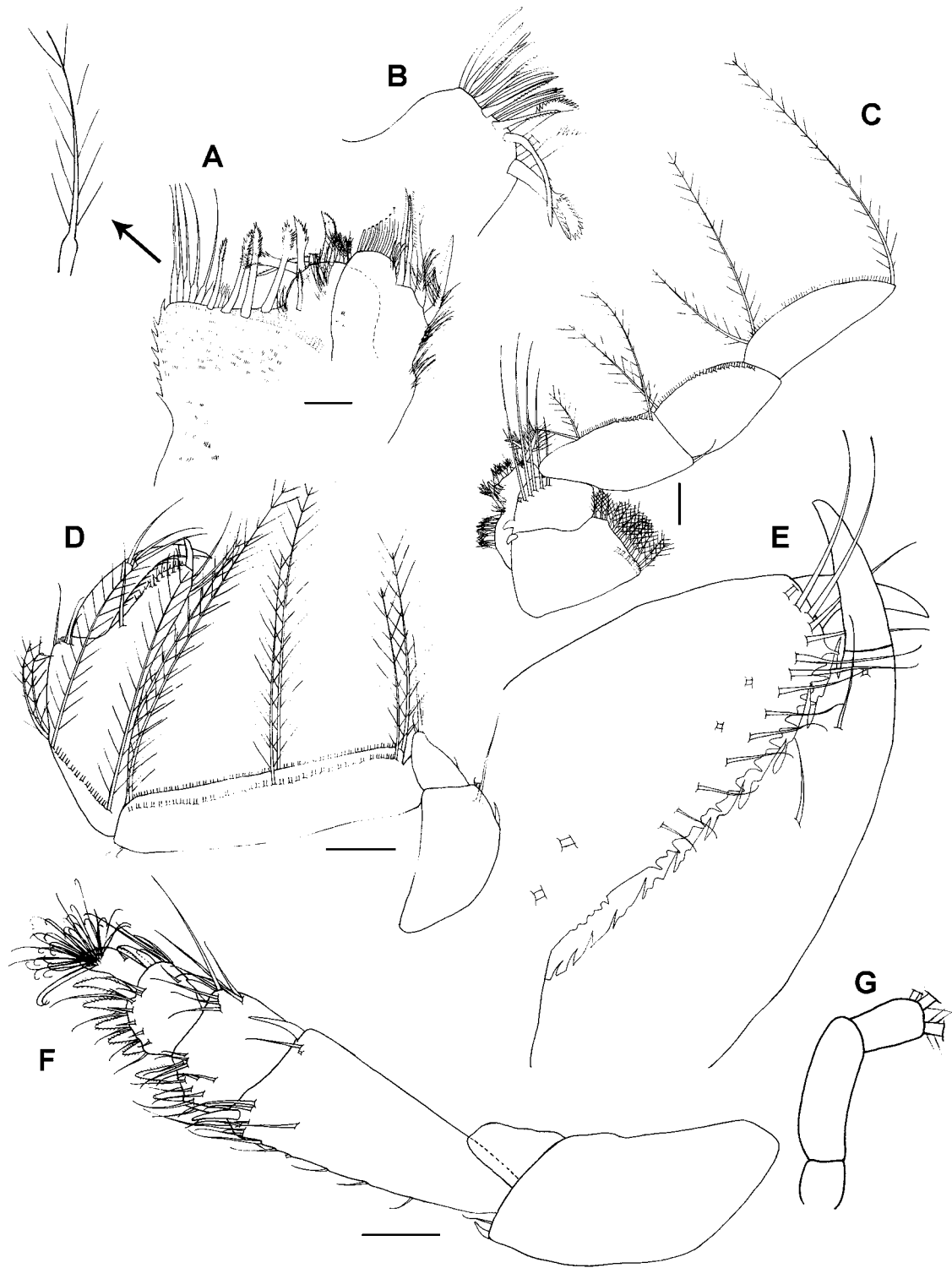


FIGURE 8. *Kalliapseudes messingi*, preparatory female (holotype). A, maxilla; B, outer lobe of fixed endite of maxilla; C, maxilliped; D, cheliped (inner view); E, chela (outer view); F, pereopod 1 (inner view); G, pereopod 1 exopodite. Scale bars: A= 0.05 mm; C= 0.1 mm; D, F= 0.2 mm.

Pereopod 2 (Fig. 9B). Basis more than three times as long as broad, with one long simple seta on outer surface and one simple seta on ventrodistal margin. Ischium with one long and one short simple seta on ventrodistal margin. Merus about same length as carpus, with one serrate spiniform seta. Carpus about 1.5 times

as long as broad, with seven serrate spiniform setae. Propodus about one-third length of basis, with nine serrate spiniform setae. Dactylus shorter than basis; sensory organ present near base, with eight aesthetascs; with short needle-like tip; unguis fused with dactylus.

Pereopod 3 (Fig. 9C). Similar to pereopod 2. Carpus with nine serrate spiniform setae. Propodus with ten serrate spiniform setae.

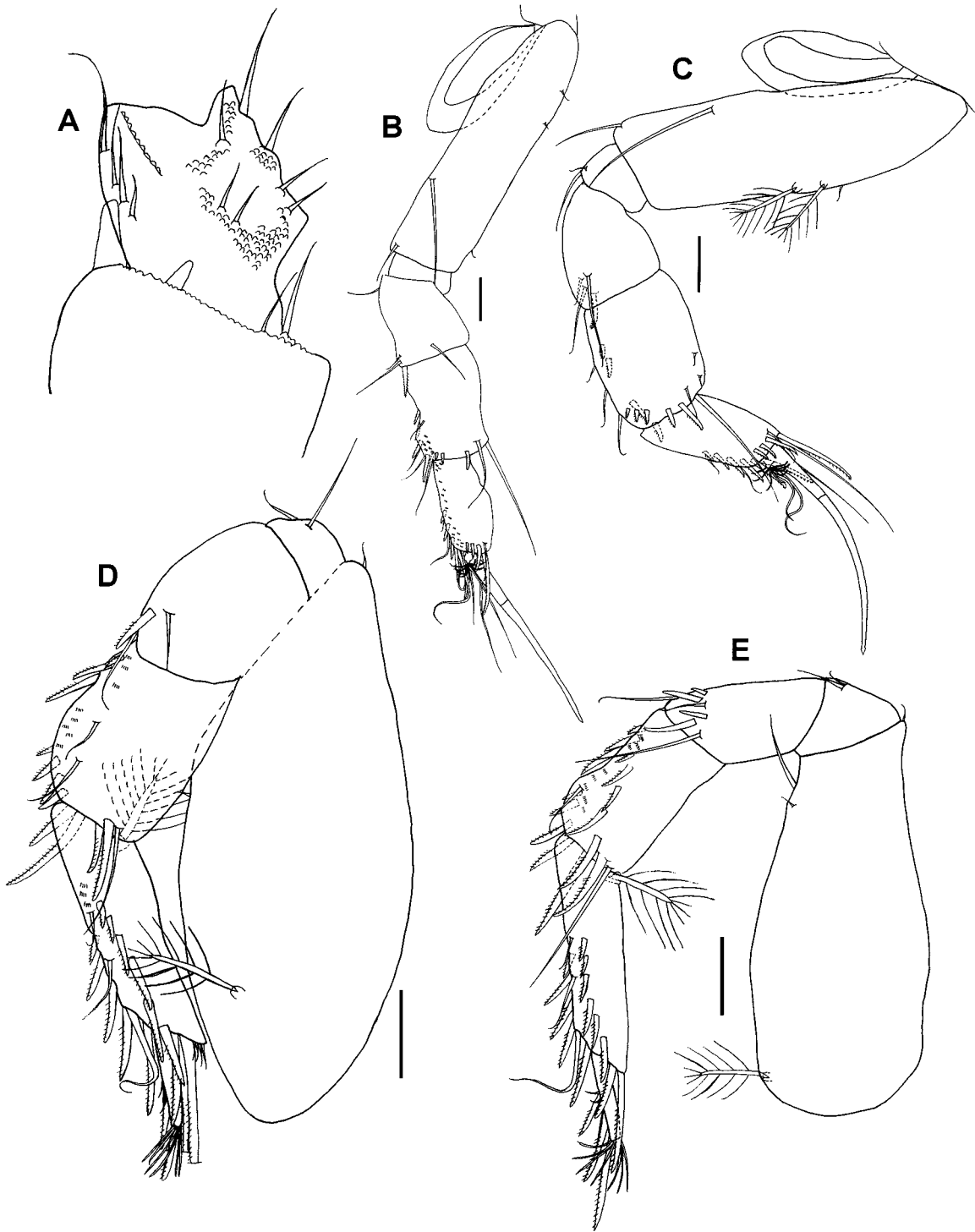


FIGURE 9. *Kalliapseudes messingi*, preparatory female (holotype). A, pereopod 1 propodus (outer view); B, pereopod 2 (outer view); C, pereopod 3 (outer view); D, pereopod 4; E, pereopod 5. Scale bars: B–E= 0.1 mm.

Pereopod 4 (Fig. 9D). Basis about 2.4 times as long as broad, with a few distal simple setae. Ischium with two simple setae. Merus subequal to carpus, with one spiniform seta and two simple setae distally. Carpus with eleven serrate spiniform setae. Propodus with 16 serrate spiniform setae increasing in length distally and terminally with several short, bipinnate setae. Dactylus shorter than propodus, with distal tuft of aesthetascs, and with two short simple setae midway (these setae are illustrated in detail in fig. 12C); unguis absent.

Pereopod 5 (Fig. 9E). Similar to pereopod 4. Basis narrower than pereopod 4, about 2.3 times as long as broad. Merus with four spiniform setae. Carpus with 14 serrate spiniform setae. Propodus lacking terminal short bipinnate setae.

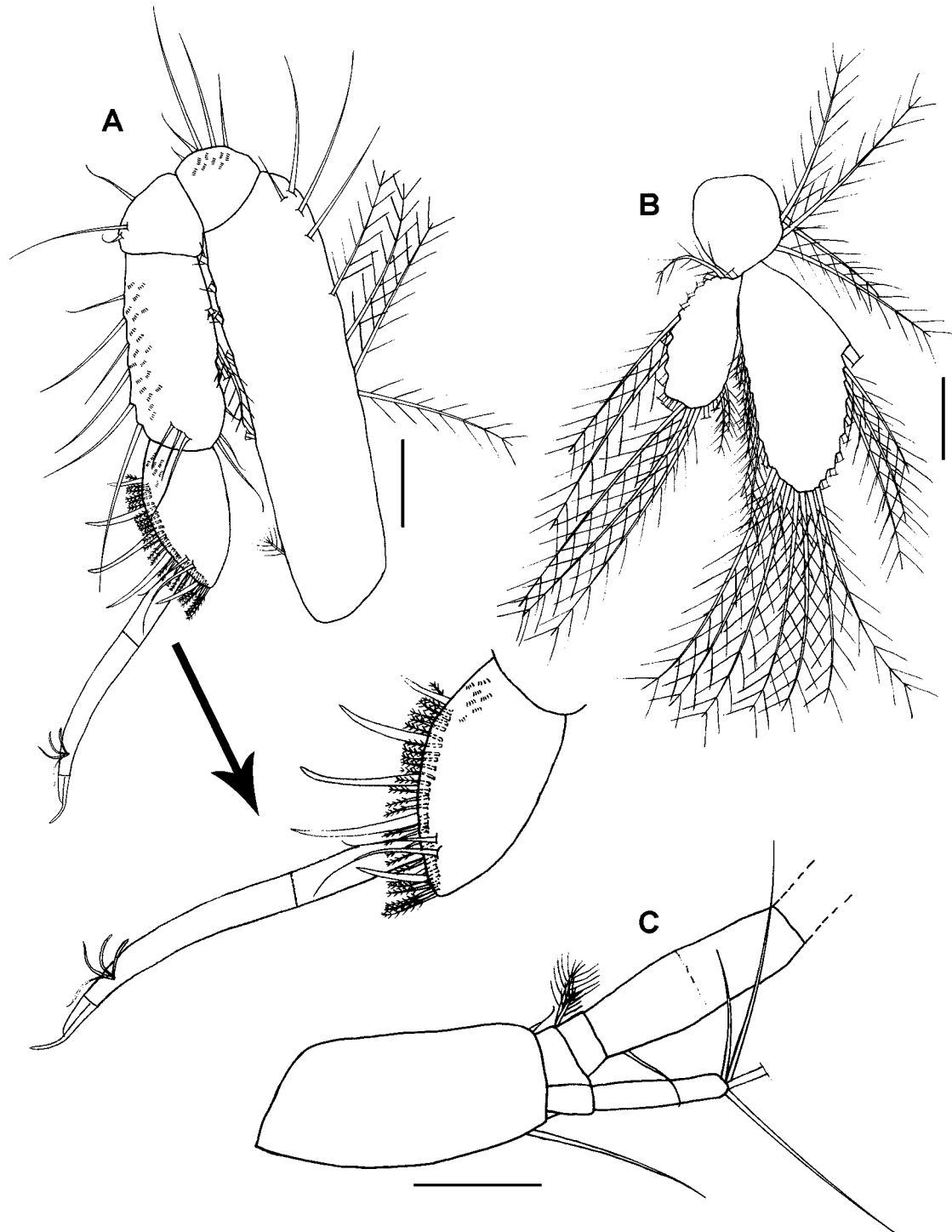


FIGURE 10. *Kalliapseudes messingi*, preparatory female (holotype). A, pereopod 6; B, pleopod; C, uropod. Scale bars: A, C= 0.1 mm; B= 0.2 mm.

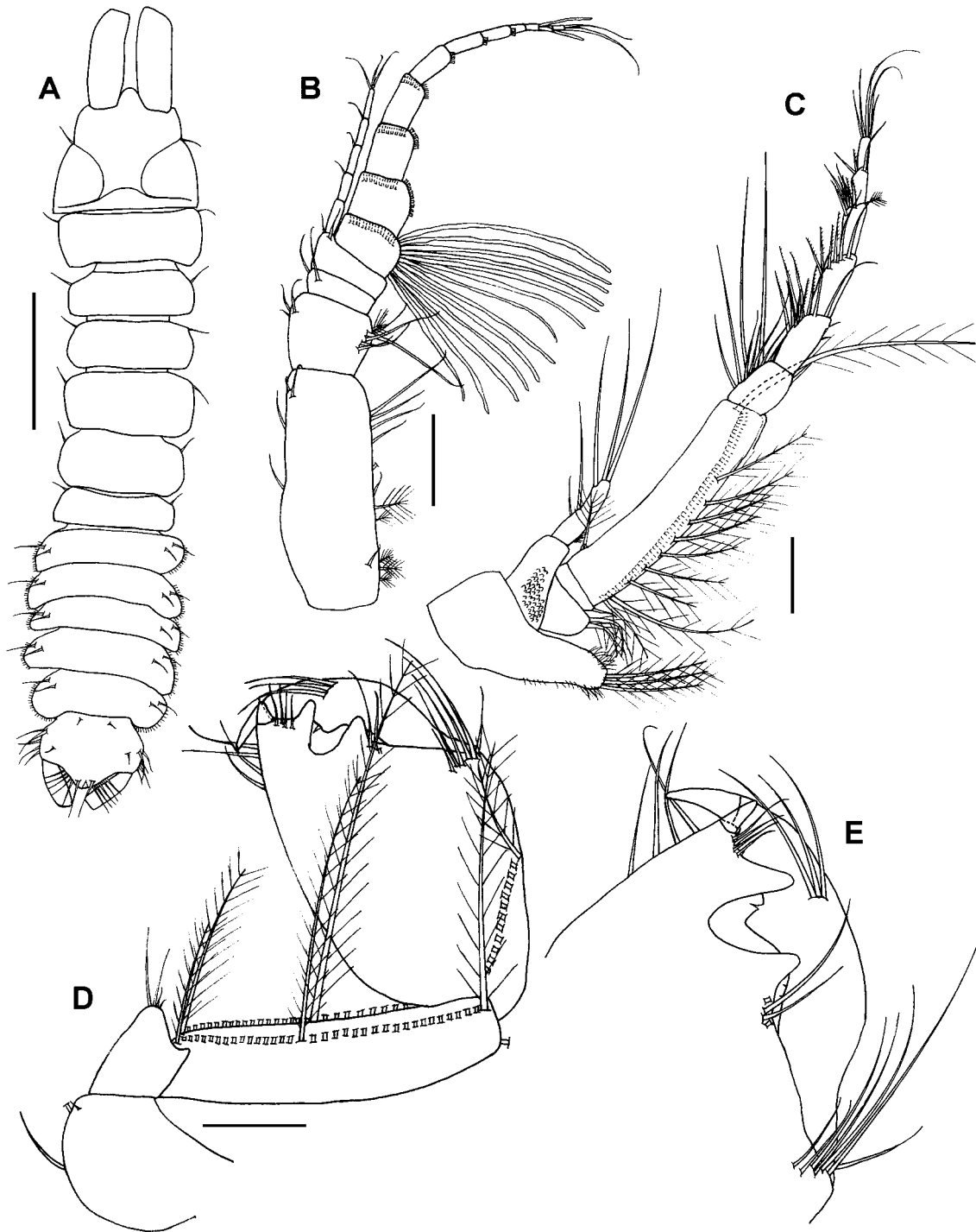


FIGURE 11. *Kalliapseudes messingi*, adult male (allotype). A, dorsal view of body; B, antennule; C, antenna; D, cheliped (inner view); E, chela (inner view). Scale bars: A=1 mm; B, D= 0.2 mm; C= 0.1 mm.

Pereopod 6 (Fig. 10A). Basis with five plumose setae on dorsal margin and with four plumose and three simple setae on ventral margin. Ischium with several simple setae on ventral margin. Merus with several simple setae on ventral margin. Carpus with three plumose setae on dorsal margin and several simple setae on ventral margin. Propodus with five long spiniform setae and 26 short bipinnate setae. Dactylus longer than propodus but shorter than basis, with a proximal incomplete line of fusion, and with one terminal seta and a tuft of four subterminal setae; unguis small.

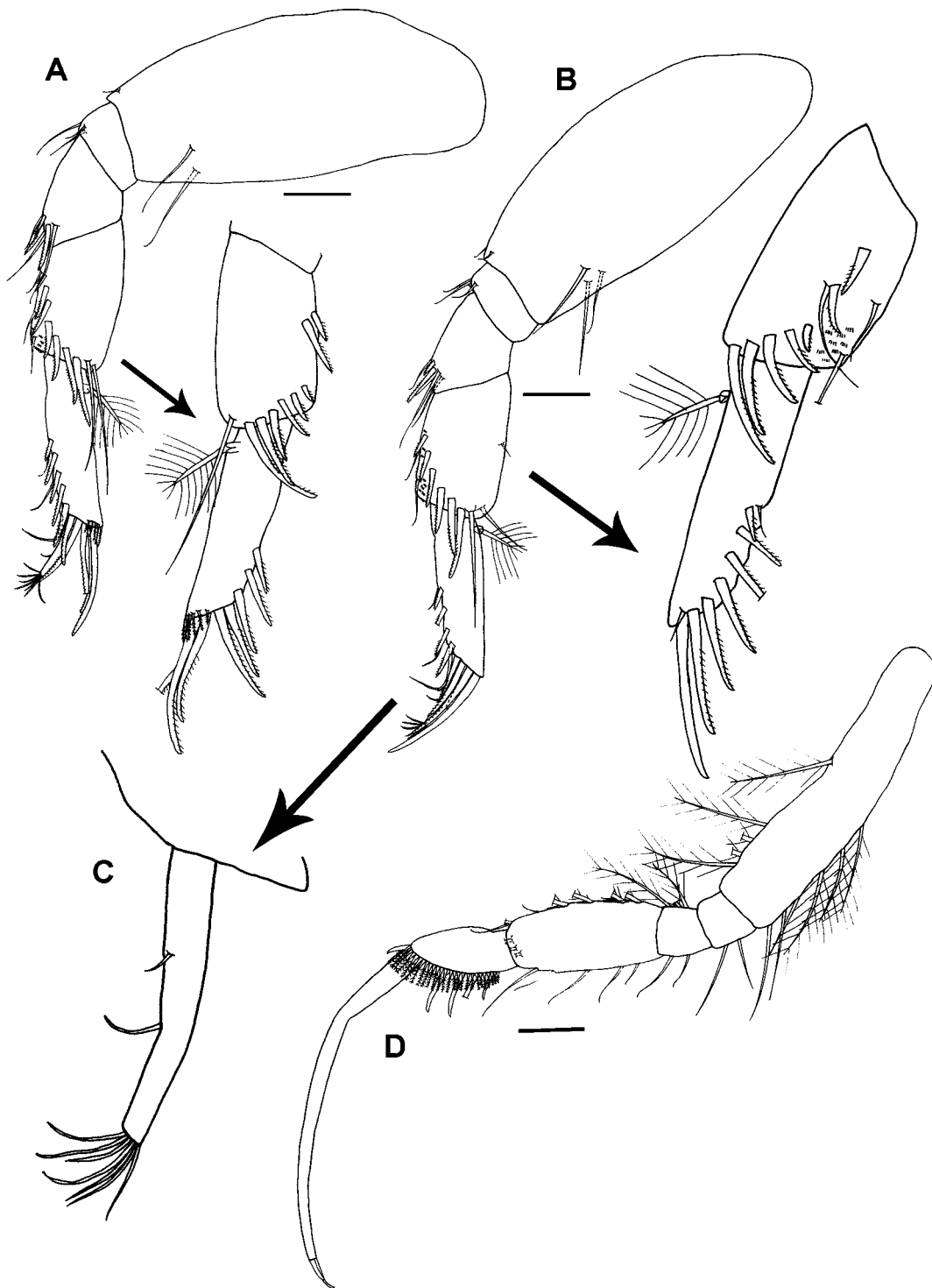


FIGURE 12. *Kalliapseudes messingi*, adult male (allotype). A, pereopod 4 (outer view); B, pereopod 5 (outer view); C, close-up of pereopod 5 dactylus; D, pereopod 6. Scale bars: 0.1 mm.

Pleopods (Fig. 10B). Basal article with four dorsal plumose setae, ventral margin naked. Exopodite with 20 plumose setae. Endopodite with 25 plumose setae.

Uropods (Fig. 10C). Basal article with one simple outer distal seta. Exopodite with two articles, last article with four simple setae. Endopodite multiarticulated (exact number difficult to determine due to incomplete fusion in some of the articles).

Adult male (allotype). Similar to female but with the following differences. Body (Fig. 11A) length approximately 5 mm, five times as long as broad.

Antennule (Fig. 11B). Last two peduncle articles very short (length to width ratio, 1:3); inner flagellum with five articles; outer flagellum with eleven articles, with most of the articles with numerous aesthetascs.

Antenna (Fig. 11C). First article with medial extension bearing three plumose setae. Peduncle with five articles.

Cheliped (Figs. 11D, E). Propodus more robust than that of female, about 1.2 times as long as broad (not including fixed finger), with a setal row increasing in length distally adjacent to dactylus attachment; cutting edge with two large teeth. Dactylus cutting edge with one medial triangular tooth, one spinule just anterior to tooth, and a few short spinules posterior to tooth.

Pereopod 4 (Fig. 12A). Merus with three serrate spiniform setae. Carpus with 15 serrate spiniform setae (seven outer and eight inner).

Pereopod 5 (Figs. 12B, C). Merus with three serrate spiniform setae. Carpus with 13 serrate spiniform setae (six outer and seven inner).

Pereopod 6 (Fig. 12D). More slender than other pereopods. Basis with three plumose setae on ventral margin. Merus with three plumose setae on dorsal margin. Carpus with four plumose setae on dorsal margin. Dactylus without tuft of subterminal setae.

Etymology. Named for Dr. Charles Messing, professor and mentor, who introduced the author to research in marine biology and to the study of Tanaidacea.

Remarks. *Kalliapseudes messingi*, n. sp. is the first member of the genus to be reported from the north-west continental shelf of Australia and is distinguished from all other congeners by (1) the presence of two small medial setae (Fig. 12C) on the dactylus of pereopods 4 and 5, (2) the female having a tuft of sensory setae subterminally on the dactylus of pereopod 6, and (3) having three plumose setae on the cheliped and pereopod 1 exopodite. Only one sixth pereopod remained intact on the adult male allotype and subadult male paratype and they did not have the subterminal tuft of sensory setae on the dactylus. It is not known whether this structure was lost or if it represents a sexually dimorphic character. Until further specimens can be studied, it is tentatively placed in *K. messingi*.

The antennal peduncles on the females of *K. longisetosus* and *K. messingi* appear to be composed of four articles; whereas, antennal peduncles on the males of these two species appear to have five articles. Shiino (1966) also recognized this phenomenon in *K. tomiokaensis*. The presence of a four or five-articulated peduncle has often been used as a diagnostic feature for distinguishing individual species within the Kalliapseudidae (Guțu, 1996; 2001). I therefore recommend that this character be interpreted with caution and that in future taxonomic and systematic studies on this family the antennae of both males and females be carefully examined to determine the number of articles present.

Table 1 lists the distribution of all the known members of the genus *Kalliapseudes*. A key for the separation of the known kalliapseudid genera and species from Australian waters is presented here.

Key to the species of the family Kalliapseudidae presently reported from Australian waters

1. Cheliped and pereopod 1 with exopodite *Kalliapseudes* Stebbing, 1910 (3)
Cheliped and pereopod 1 without exopodite (2)
2. Pereopods 2 and 3 with digitiform lobe on dactylus; basis of pereopods with numerous spinules.....
..... *Transkalliapseudes spinulata* Drumm and Heard, 2006
Pereopods 2 and 3 without digitiform lobe on dactylus; basis of pereopods without numerous spinules
..... *Cristapseudes unicus* Guțu, 2006
3. Pereonites 2 and 3 with anterolateral spiniform projection; exopodite of cheliped and pereopod 1 with

- four plumose setae..... *K. langi* Guțu, 2006
Pereonites 2 and 3 without anterolateral spiniform projection; exopodite of cheliped and pereopod 1 with two or three plumose setae(4)
4. Exopodite of cheliped and pereopod 1 with three plumose setae; dactylus of pereopods 4 and 5 with two short medial setae; dactylus of pereopod 6 with subterminal tuft of sensory setae (female)
..... *K. messingi* new species
Exopodite of cheliped and pereopod 1 with two plumose setae; dactylus of pereopods 4 and 5 without short medial setae; dactylus of pereopod 6 without subterminal tuft of sensory setae.....(5)
5. Dactylus of pereopods 4 and 5 without tuft of numerous aesthetascs
..... *K. struthi* Bamber, 2005
Dactylus of pereopods 4 and 5 with tuft of numerous aesthetascs(6)
6. Uropod exopodite with two articles; inner flagellum of antennule with seven articles
..... *K. multiarticulus* Guțu, 2006
Uropod exopodite with three articles; inner flagellum of antennule with three or four articles.....(7)
7. Dactylus of pereopod 6 with one distal seta; basis of pereopods 2 and 3 with very long, simple setae (almost as long as basis)*K. longisetosus* new species
Dactylus of pereopod 6 with two distal setae and two short spiniform setae on proximal half; basis of pereopods 2 and 3 without very long, simple setae (not almost as long as basis).....
..... *K. obtusifrons* (Haswell, 1882)

TABLE 1. Species list, geographic distribution, and depth ranges of the genus *Kalliapseudes* Stebbing, 1910.

Taxon	Known distribution	Depth (m)
<i>Kallapseudes</i> Stebbing, 1910		
<i>borceai</i> Băcescu, 1980	Western Indian Ocean (Gulf of Aden)	24
<i>gobinae</i> Bamber, 1998	South China Sea (Brunei)	60
<i>langi</i> Guțu, 2006	South Pacific (East Australia)	?
<i>longisetosus</i> sp. nov.	South Pacific (East Australia)	40,84
<i>macrothrix</i> Stebbing, 1910 , type species	Western Indian Ocean (Kenya)	18
<i>macrothrixoides</i> Băcescu, 1980	Western Indian Ocean (Gulf of Aden)	19,110
<i>magnus</i> Lang, 1956	SE Atlantic (Dakar, Africa)	7.5–9.5
<i>mauritanicus</i> Monod, 1923	SE Atlantic (Mauritania, Africa)	?littoral
<i>messingi</i> sp. nov.	Eastern Indian Ocean (Northwest Australia)	41
<i>multiarticulus</i> Guțu, 2006	IndoPacific (North Australia)	?
<i>obtusifrons</i> (Haswell, 1882)	South Pacific (East Australia)	?
<i>primitivus</i> Nierstrasz, 1913	IndoPacific (Ceram)	?littoral
<i>senegalensis</i> Guțu, 2006	SE Atlantic (Dakar, Africa)	1
<i>struthi</i> Bamber, 2005	Indian Ocean (SW Australia)	38,40
<i>tomiokaensis</i> Shiino, 1966	NW Pacific (Japan)	16

Discussion

Until recently, *K. obtusifrons* (Haswell, 1882) was the only known species from Australian waters attributable to the family Kalliapseudidae (see Drumm and Heard 2006a); however, six additional species, including one new genus, have been described in the past two years (see Bamber 2005, Drumm and Heard 2006b, and Guțu

2006). *Kalliapseudes longisetosus*, **n. sp.** and *K. obtusifrons* are the only two species of *Kalliapseudes* presently known from New South Wales and *K. messingi*, **n. sp.** is the only one reported from northwest Australia. With the description of *K. longisetosus* and *K. messingi* six (or over a third of the 15 species of the genus) are now known from Australian waters.

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Literature cited

- Bamber, R.N. (2005) The tanaidaceans (Arthropoda: Crustacea: Peracarida: Tanaidacea) of Esperance, Western Australia, Australia. In: Wells, F.E., Walker, D.I., & Kendrick, G.A., (Eds.), *The marine flora and fauna of Esperance, Western Australia*. Western Australian Museum, Perth, pp. 613–727.
- Dallwitz, M.J., Paine, T.A., & Zurcher, E.J. (1993) *User's guide to the DELTA System: a general system for processing taxonomic descriptions*, 4th edition. <http://biodiversity.uno.edu/delta/>.
- Drumm, D.T. & Heard, R.W. (2006a) Redescription of *Kalliapseudes obtusifrons* (Haswell, 1882), from Southeast Australia (Crustacea: Tanaidacea: Apseudomorpha: Kalliapseudidae), with the designation of a lectotype. *Zootaxa*, 1277, 29–38.
- Drumm, D.T. & Heard, R.W. (2006b) *Transkalliapseudes spinulata*, new genus, new species (Crustacea: Tanaidacea: Kalliapseudidae) from the northwest Australian shelf. *Zootaxa*, 1298, 17–27.
- Guțu, M. (1996) The synoptic table and key to superspecific taxa of recent Apseudomorpha (Crustacea, Tanaidacea). *Travaux du Muséum National d'Histoire naturelle "Grigore Antipa"*, 35, 135–146.
- Guțu, M. (2001) New changes in the systematics of the suborder Apseudomorpha (Crustacea: Tanaidacea). *Travaux du Muséum National d'Histoire naturelle "Grigore Antipa"*, 43, 65–71.
- Guțu, M. (2006) *New Apseudomorph taxa (Crustacea, Tanaidacea) of the world ocean*, Bucuresti: Curtea Veche, 318 pp.
- Haswell, W.A. (1882) Description of a new species of *Apseudes*. *Proceedings of the Linnaean Society of New South Wales*, 6, 748–749.
- Larsen, K. (2003) Proposed new standardized anatomical terminology for the Tanaidacea (Peracarida). *Journal of Crustacean Biology*, 23(3), 644–661.
- Shiino, S.M. (1966) On *Kalliapseudes (Kalliapseudes) tomiokaensis* sp. nov. (Crustacea: Tanaidacea) from Japanese waters. *Report of Faculty of Fisheries, Prefectural University of Mie*, 5, 473–488.