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New genera and species of the marine isopod family Serolidae (Crustacea, Sphaeromatidea) from the southwestern Pacific

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Abstract

The marine isopod family Serolidae is reviewed for the oceanic regions of the tropical and subtropical southwestern Pacific, namely from off Lord Howe Island, Norfolk Island, northern Coral Sea, New Caledonia and Fiji. Two new genera are established: *Sedorolis* **gen. n.**, monotypic, from New Caledonia and *Myopiarolis* **gen. n.**, a widespread Southern Hemisphere genus with 11 (eight described) species. The following new species are described: *Heteroserolis pellucida* (New Caledonia), *Sedorolis simplex* (New Caledonia), *Myopiarolis koro* (Fiji), *M. systir* (New Caledonia), *M. norfanz* (Lord Howe Plateau and off Norfolk Island), *M. lippa* (northern Coral Sea), and *Thysanoserolis orbicula* (New Caledonia). Keys are provided to the serolid genera and the species of *Myopiarolis* from the southwestern Pacific. The genus *Caecoserolis* Wägele, 1994 is redefined and restricted to the type species.

Keywords

Isopoda, Serolidae, deep sea, Lord Howe Island, New Caledonia, Fiji, Norfolk Island, Queensland, Coral Sea, southwestern Pacific

Contents

Introduction

The Serolidae of the southwestern Pacific have received little attention, the most recent contributions being those of Bruce (2008), Harrison and Poore (1984), Holdich and Harrison (1980), Poore (1987) and Poore and Brandt (1997). This is in strong contrast to the state of knowledge for southern South America and Antarctica (summarised in Brandt 1988, 1991 and Wägele 1994; and see also Brandt 2003).

Prior to this present study only two species of serolid had been identified from the tropical and subtropical regions of Oceania, namely *Acutiserolis cidaris* Poore and Brandt, 1997 and *Caecoserolis novaecaledoniae* Poore and Brandt, 1997. The former species is also known from off the coast of Queensland, although none of the other tropical species described from Australia's eastern coasts have been recorded further east.

Examination of collections from the region of New Caledonia and other Pacific island nations, mostly held at the Muséum national d'Histoire naturelle in Paris, has revealed a hitherto unsuspected diversity of Serolidae in tropical and subtropical waters, there being at least ten species from New Caledonia and the Norfolk Ridge east to Fiji. One further species was present in collections from the northern part of the Australian Coral Sea. Use of fine-mesh collecting gear to capture small serolids would very likely further increase this number.

The family Serolidae has long been considered to be overwhelmingly Southern Hemisphere in its distribution being particularly rich in species in the Southern Ocean and Antarctic waters. This still remains the case, but clearly there are many more species in tropical and subtropical waters of the Southern Hemisphere that remain to be discovered. Five of the approximately 100 species of Serolidae are known from the Northern Hemisphere, namely *Heteroserolis carinata* (Lockington, 1877) and *H. tropica* (Glynn, 1976) from California and Pacific Panama respectively; *H. mgrayi* (Menzies and Frankenberg, 1966), *Atlantoserolis agassizi* (George, 1986) and *A. vemae* (Menzies, 1962) from the Atlantic and Caribbean (Hessler 1967; Müller 1993).

Species polymorphism or cryptic species?

Holdich and Harrison (1980), Wägele (1986) and Poore and Brandt (1997) considered that there could be widespread species polymorphism in the Serolidae. Holdich and Harrison (1980) found '*a marked potential for intraspecific morphological variation within the family*', their conclusion being extrapolated from the '*Serolis minuta* group', the species of which have since been transferred to *Heteroserolis* Brandt, 1991 and *Serolina* Poore, 1987. Poore (1987) demonstrated that much of the polymorphism reported by Holdich and Harrison (1980) for *Serolina minuta* (Beddard, 1884) was due to there being five species included under that name. In contrast, Poore and Brandt (1997) later also concluded (p 167) that there was '*possible widespread polymorphism in the Serolidae*'.

Held (2003) has shown that the supposed variation seen in *Ceratoserolis trilobitoides* (Eights, 1833) that had been reported by Wägele (1986) was better explained by the existence of cryptic species. Held and Wägele (2005) also demonstrated cryptic speciation in the large Antarctic isopod *Glyptonotus antarcticus* (Eights, 1833). Similar findings in the Asellota (e.g. Raupach and Wägele 2006; Raupach et al. 2007) suggest that cryptic species 'flocks' are to be expected, indeed commonplace, Brandt et al. (2007, supplement) stating that such flocks '*seems to be a common phenomenon in the deep ocean*'.

'Swarms' or 'flocks' of cryptic species are not phenomena restricted to the deep ocean, but are commonplace in the marine Isopoda at all depths and habitats. In the past, free-living species reported as highly variable or polymorphic were usually attributed wide distributions, both geographic and in terms of depth or habitat. In most such cases the variation attributed to the species in question proved to be due to multiple species being recorded and described as one. In the Serolidae examples are the mentioned species of *Serolina* and *Ceratoserolis trilobitoides*. In the Sphaeromatidae the reportedly polymorphic *Paracassidina pectinata* (Baker, 1911) (Holdich and Harrison 1981) proved to be six species (Bruce 1994), and a similar swarm of species exists within the genus *Oxinasphaera* (Bruce 1997). The purportedly highly variable *Cilicaeopis whiteleggei* (Stebbing, 1905) (see Harrison and Holdich 1984), known to occur throughout the Indo-West Pacific from East Africa to Fiji, will likely prove to be another such species complex. Within the Cirolanidae *Cirolana parva* Hansen, 1890 was once considered to be one world-wide species, but is a large swarm of 25 described species that have an extremely uniform morphology (e.g. see Bruce 2004a), and at some point it is probable that these exceedingly similar species of the *Cirolana* '*parva*-group' may be separable only by using molecular data. In Aegidae the supposedly highly polymorphic and globally distributed *Aega deshaysiana* (Milne Edwards, 1840) (Brusca 1983) proved to be numerous species which, in most cases, could readily separated using morphological criteria (Bruce 2004b). Clearly, species flocks in the marine isopods are a widespread phenomenon throughout.

The data presented here show that there is a group of superficially similar southwestern Pacific species related to *Myopiarolis novaecaledoniae* (Poore and Brandt, 1997). The overall body shape and appendage morphology are similar, but distinct and consistent differences separate the species, as is here shown. The observed polymorphism (Poore and Brandt 1997) for *M. novaecaledoniae* was due to four species being present in the material included under that name. The characters that can be used to distinguish these species are given in the 'remarks' for *Myopiarolis*.

It is likely that cryptic (morphologically near identical or identical) groups of species will be found to exist in the Serolidae as is the case in many other families of the Cymothoida and Sphaeromatidea. It is possible that there may be at least one cryptic species close to *Sedorolis simplex* (here identified only as *Sedorolis* sp.). It would seem, therefore, that species of Serolidae are no more (or less) prone to large-scale polymorphism than other groups of free-living isopods. Groups of sibling and cryptic species do exist within the family, and while there is species-level variation,

notably in dorsal spines and tubercles, setation of pereopods and degree of prolongation of coxae, polymorphism is likely to be at a finer resolution than has been previously considered.

Material and methods

Descriptions. Descriptions are based on the male holotype or male holotype and matched topotypic paratype unless otherwise stated. Measurements: greatest body width is always stated at the most posterior widest pereonite; body length measured dorsally from tip of rostral point to posterior of pleotelson; sternal plate of pleonite 1 is described; those of pleonites 2 and 3 are similar but less developed, and are only described by exception; seta/setae means simple setae, robust setae (RS) are always explicitly stated.

Discussion of the relationships of the new genera relate to the discussion and figures presented by Wägele (1994). That character set is smaller than that used by Brandt (1991), but contains all the genera known at that time. No matrix was presented, so the distribution of the characters used by Wägele (1994) cannot be assessed. Wägele's dendrograms provide a useful framework for discussion, but reference to them here does not imply acceptance of those results.

Generic diagnoses and species descriptions were prepared from Serolidae character sets (under development) using the program DELTA (Dallwitz et al. 1997). Setal terminology broadly follows Watling (1989).

Abbreviations. MNHN—Muséum national d'Histoire naturelle, Paris; MTQ—Museum of Tropical Queensland, Queensland Museum, Townsville; NIWA—National Institute of Water and Atmospheric Research Ltd, Wellington, New Zealand; NMV—Museum of Victoria, Melbourne, Australia; RS—robust seta/e; SAM–South African Museum, Cape Town.

Taxonomy

Family Serolidae. Key works are the major reviews of Brandt (1988, 1992) and Wägele (1994); Held (2000) discussed the phylogeny and biogeography of the family based on molecular data derived from 16 species; the generic discussions given by Poore and Brandt (1997) and Bruce (2008) are also relevant. The most recent diagnosis to the family is that of Brandt and Poore (2003).

Implicit character states in species description, in addition to stated family and genus level characters, are: *Coxae* of pereonites 2–4 articulated, with dorsal sutures; *ventral coxal plate*s 2–4 meeting midline; sternites 5–7 visible, fused; pleopod 4 exopod with complete transverse suture; uropods biramous (exceptions being *Spinoserolis* Brandt, 1988 and some species of *Atlantoserolis* Wägele, 1994).

Key to the genera of Indo-Pacific Serolidae

Since the publication of Brandt's (1988) review there has been a proliferation of genera within the Serolidae. Prior to that date five genera were recognised; the publication of six new genera by Wägele (1994) brought the total to 20 genera. The most recent key, to any region, is that of Brandt (1988), and that work no longer reflects the generic composition of the family. The key provided here is intended only to operate for the genera known to occur in the Indo-Pacific, the region bounded by East Africa in the west, eastwards to Hawai'i and the island nations of Oceania (e.g. see Briggs 1974). The key also serves to emphasize the character states now in use in defining genera.

1 Uropods on posterolateral angle of pleotelson, uropods and pleonites forming part of continuous body outline ..... ***Thysanoserolis*** **Brandt, 1991**

– Uropods mediolateral or anterolateral, not forming part of body outline **2**

2 Pleonites not extending posteriorly along pleotelson lateral margins; pleopod 2 endopod with distal stem; uropods greater than three-quarters length of pleotelson **3**

– Pleonites extending posteriorly along pleotelson lateral margins; pleopod 2 endopod without distal stem; uropods less than half length of pleotelson ... **5**

3 Pereonites 5–7 entire, with sutures distinct; pleotelson posterior margin broad, flat and truncate; uropodal mesial margin positioned in dorsal groove on pleotelson lateral margin ..... ***Sedorolis*** **gen. n.**

– Pereonites 5–7 medially fused; pleotelson posterior margin narrowly rounded or truncate; uropodal mesial margin positioned ventrally on pleotelson lateral margin **4**

4 Pleonite sternal plate 1 with prominent process; pleotelson posterior margin narrow, excavate or indented..... ***Heteroserolis*** **Brandt, 1991**

– Pleonite sternal plate 1 without prominent process; pleotelson posterior margin narrowly rounded ..... ***Serolina*** **Poore, 1987**

5 Coxae distally acute, those of pereonite 6 narrow, elongate, greatly extended posteriorly beyond pleotelson and pleonites; pleonites extending beyond pleotelson posterior margin ..... ***Brucerolis*** **Poore & Storey, 2009**[1]

– Coxae quadrate, not narrowed or greatly extended; pleonites extending along but not beyond pleotelson margin **6**

6 Coxae 6 overlapping and extending posterior to pleonites; antennal peduncle articles 4 and 5 slender (8.6–10.3 × as long as greatest width); uropods ventrolateral, inconspicuous in dorsal view..... ***Myopiarolis*** **gen. n.**

[1] Poore and Storey (2009) have redefined *Acutiserolis* and those species from the southwestern Pacific and New Zealand hitherto placed in that genus, notably *Acutiserolis cidaris* Poore & Brandt, 1977 from the Coral Sea, have been placed in *Brucerolis* (see Poore and Storey 2009 this issue; Storey and Poore 2009 in press).

– Coxae 6 overlapping but not extending posteriorly beyond pleonites; antennal peduncle articles 4 and 5 broad (<5 × as long as greatest width); uropods lateral, conspicuous in dorsal view..... ***Caecoserolis* Wägele, 1994**

Heteroserolis Brandt, 1991

Heteroserolis Nordenstam, 1933: 50 (nomen nudum, type species not designated).
Heteroserolis Brandt, 1991: 147.– Brandt 1992: 230; Wägele 1994: 52.

Type species. *Serolis australiensis* Beddard, 1884; by subsequent designation (Brandt 1991).

Species included. *H. australiensis* (Beddard, 1884), **type species**, South Australia, 2–124 m; *H. carinata* (Lockington, 1877), California 13–55 m; *H. elongata* (Beddard, 1884), New South Wales, Australia, 5–329 m; *H. levidorsata* (Harrison and Poore, 1984), Victoria, Australia, 13–14 m; *H. longicaudata* (Beddard, 1884), Bass Strait, Australia, 36–99 m; *H. mgrayi* (Menzies & Frankenberg, 1966), Caribbean to Georgia, USA, 5–95 m; *H. pallida* (Beddard, 1884), Bass Strait, Australia, 55–104 m; *H. pellucida* sp. n., New Caledonia, 557–792 m; *H. tropica* (Glynn, 1976), Pacific Panama, 5–40 m; *H. tuberculata* (Grube, 1875), Bass Strait, Australia, 5–91 m.

Remarks. The principal and diagnostic character states for *Heteroserolis* are the unique pleonal sternal plates 1 and 2 or 1–3, each with a strong posteriorly directed spine; long uropods that are inserted at mid-length on the pleotelson lateral margin, relatively broad pleonites that do not extend along the pleotelson lateral margins; and the narrow lacinia mobilis on the left mandible. A further character state, apparently common to all species of the genus is pleopod 4 exopod being comparatively elongate, approximately to 2.3 times as long as greatest width (compared to, for example, 1.8–1.9 for *Myopiarolis* gen. n.). *Heteroserolis* belongs within Wägele's (1994) 'Group B' characterised by having a stalked appendix masculina. A further characteristic of the 'Group B' genera that also includes *Serolina* and *Sedorolis* gen. n. is the quadrate and elongate pleopods 1–3 peduncles.

The new species described is here placed in *Heteroserolis* on the basis of the pleonal sternal plates having a strong spine, and agrees with most other characters for the genus. It does differ in having a wide lacinia mobilis on the left mandible, distally acute pleonites, weakly concave lateral margins of the head (compared to strongly convex in most species of the genus), and the robust setae of pereopod 1 propodus differ substantially from that illustrated for the type species (Brandt 1999).

The genus has an unusual and disjunct distribution, with six shallow-water species from Australia, a slope species from New Caledonia, two East Pacific species (Panama and California) and one North Atlantic species.

The most recent descriptive works on the genus are Harrison and Poore (1984, as *Serolis*), Müller (1993) and Brandt (1999); Brandt (1992) rediagnosed the genus.

Distribution. Species are known from shallow water, at depths between 18 and 140 m [with the exception of two records of *H. elongata* from the Bass Strait at 164–

273 and 73–329 m (Harrison and Poore 1984)]; the new species described here extends the known depth range for the genus to 792 metres.

***Heteroserolis pellucida* sp. n.**
urn:lsid:zoobank.org:act:9F6254B0-1B95-40DE-BEA4-3C17FF40A57C
Figs 1–4

Material
All material from New Caledonia.

Holotype: ♂ (10.6 mm), 'Sud Landsdowne', 21°05.254–04.244′S, 160°48.955–793′E, 21 Oct 2005, EBISCO stn CP2627, 736–711 m (MNHN Is.6016). *Paratypes:* ♂ (10.5 mm, dissected), 6♀ (4 ovig. 14.8 (drawn), 13.8, 13.5, 12.6, mm, 2 non-ovig. 12.4, 12.0 mm), 'Sud Landsdowne', 21°05.254–04.244′S, 160°48.955–793′E, 21 Oct 2005, EBISCO stn CP2627, 736–711 m (MNHN Is.6017). 2♀ (ovig. 14.6, 11.8 mm, 1 very damaged), 'Sud Landsdowne', 21°05.085–965′S, 160°47.425–510′E, 21 Oct 2005, EBISCO stn CP2628, 672–678 m (MNHN Is.6018). ♀ (ovig. 13.1 mm), 'Sud Landsdowne', 20°51.216–228′S, 161°00.528–160°59.336′E, 22 Oct 2005, EBISCO stn CP2643, 557–565 m (MNHN Is.6019). 6♀ (4 ovig. 13.2, 12.9, 12.6, 12.2 mm, 2 non-ovig. 11.2, 10.8 mm), 'Sud Landsdowne', 20°52.625–54.197′S, 160°58.687–568′E, 22 Oct 2005, EBISCO stn CP2644, 600–625 m (MNHN Is.6020). 2♀ (ovig. 13.5, 13.0 mm), 'Sud Landsdowne', 21°31.566–330′S, 162°32.069–33.008′E, 23 Oct 2005, EBISCO stn CP2649, 775–792 m (MNHN Is.6021).

Additional material: 2♀, Iles Chesterfields, 20°07.72′S, 160°55.76′E, 21 Jul 1988, CORAIL 2, stn DE15, 590–580 m, coll. ORSTOM, Richer de Forges (MNHN Is.6022; dissected ovig ♀ in separate tube). ♂ (pre-dissected), Iles Chesterfield, 21°00.69′S, 160°57.18′E, 21 Jul 1988, CORAIL 2, stn DE14, 650–660 m, ORSTOM, Richer de Forges (MNHN Is.6023).

Description. *Body* 1.2 as long as wide, widest at coxae 3, dorsal surfaces smooth. *Head* anterolateral lobes mesially concave, anterior submarginal 'ridge' entire; dorsally without tubercles, posterior margin with low rounded median tubercle. *Eyes* medium size (between 5 and 15% head width), reniform, ommatidia distinct. *Pereonite 1* anterolateral margin continuously convex; dorsal surfaces without tubercles. *Coxae* distal margins weakly convex; coxae 4 extending to mid-pleonite 2; coxae 5 extending posteriorly along 0.3 of pleotelson length; coxae 6 extending to mid-length of uropods, and along 0.6 of pleotelson length. *Ventral coxal plates* mesially flat, plates 2–4 mesially simple, smooth; plates 6 and 7 entirely separate. Sternal plate 1 with weak median ridge, with process extending to posterior of sternal plate 2. *Pleotelson* 1.2 times as long as anterior width, dorsal surface without median longitudinal carina, with paired sublateral carinae; lateral margins sinuate, posterior margin converging to angled caudomedial point, without distinct median excision.

Antennule peduncle article 2 3.6 times as long as wide; articles 3 and 4 2.0 times as long as article 2 (1.96); article 3 6.8 times as long as wide; flagellum 2.0 as long as pe-

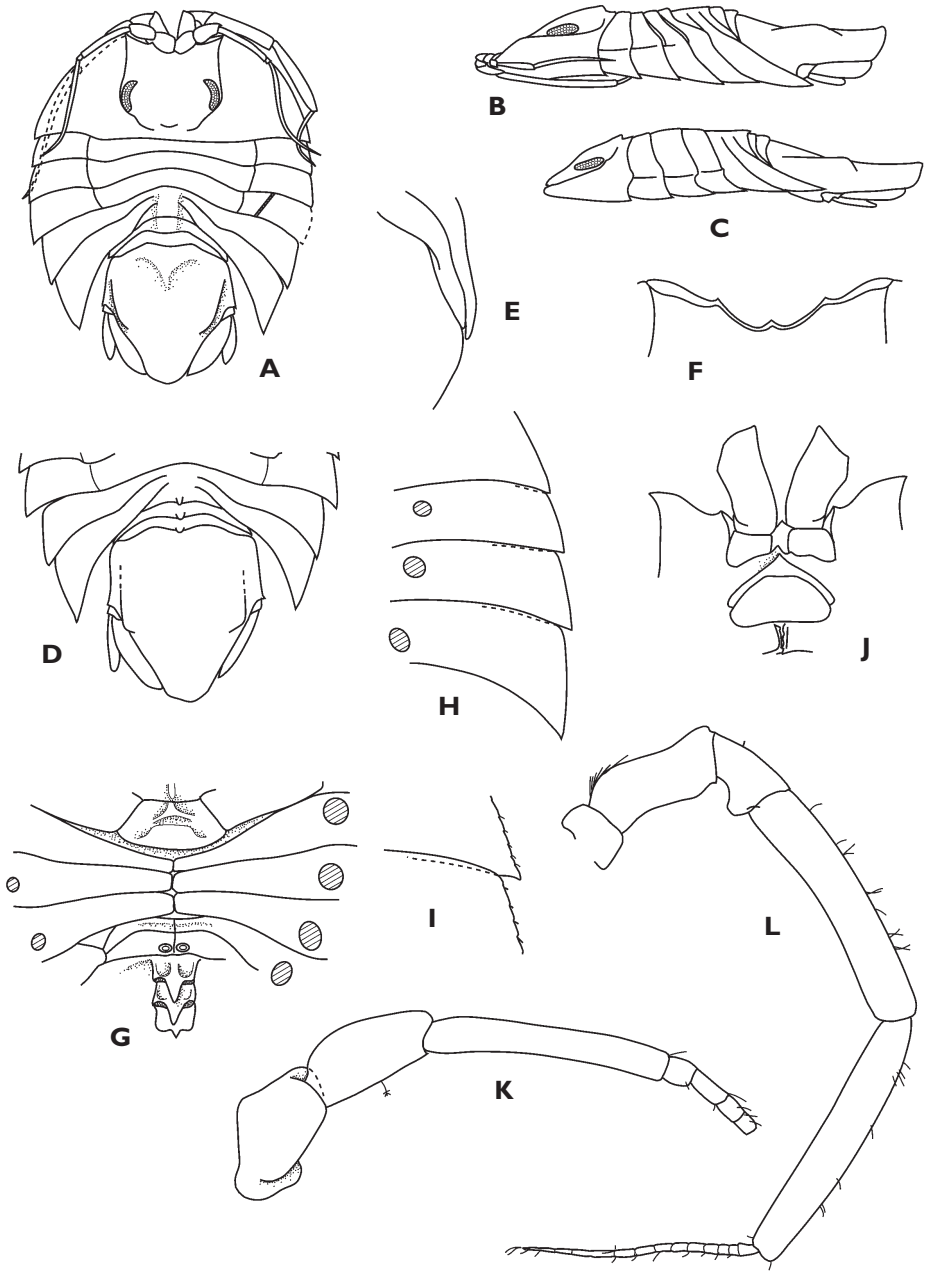

Figure 1. *Heteroserolis pellucida* sp. n. Holotype, except where indicated. **A** dorsal view **B** lateral view **C** lateral view (♀ 14.8 mm, Is.6017) **D** pleon and pleotelson, dorsal view (♀ 14.8 mm, Is.6017) **E** pleonites **F** head, anterior margin **G** sternites and ventral pleonites **H** ventral coxae 2–4 **I** ventral join pereonites 2 and 3 **J** frons; ♂ 10.5 mm, Is.6017 **K** antennule **L** antenna.

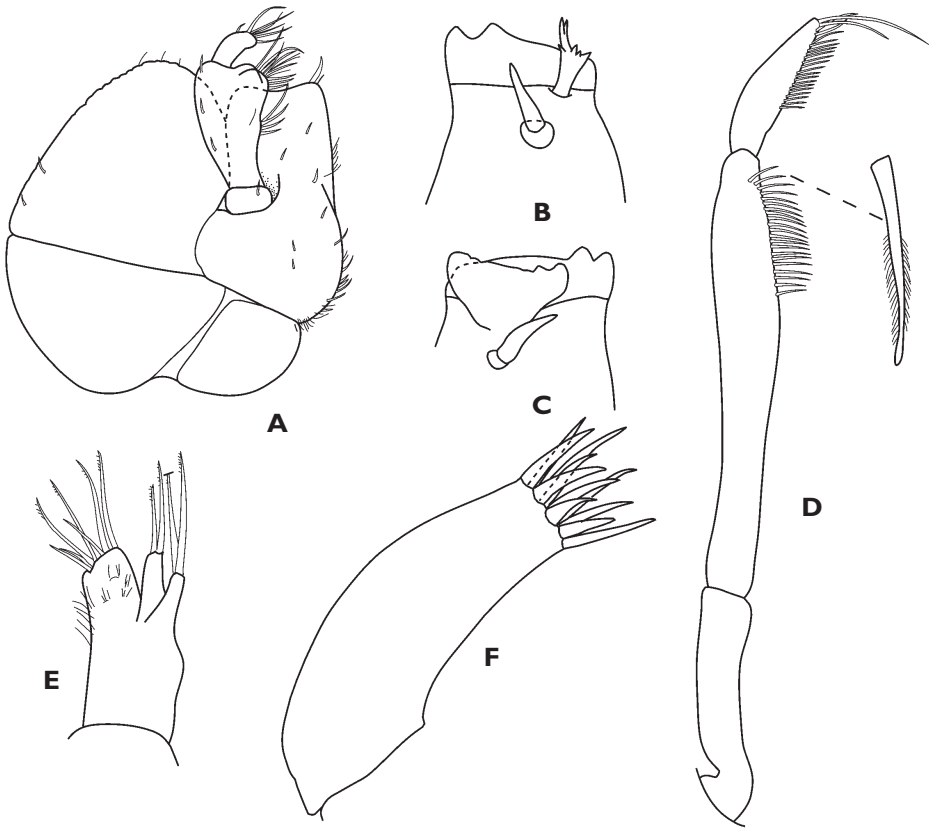

Figure 2. *Heteroserolis pellucida* sp. n. Paratype ♂ 10.5 mm, Is.6017. **A** maxilliped **B** right mandible **C** left mandible **D** mandible palp **E** maxillule **F** maxilla.

duncle articles 3 and 4, with ~34 articles, extending to pereonite 3. *Antenna* peduncle article 4 5.6 times as long as wide, 3.3 times as long as article 3; article 5 1.1 times as long as article 4, 6.3 times as long as wide; antennal flagellum 0.9 as long as peduncle article 5, with ~15 articles, extending to posterior of pereonite 3.

Epistome with acute median point. *Mandible incisor* with two distinct posterior cusps, left mandible lacinia mobilis 0.7 as wide as incisor, right mandible lacinia mobilis distally multicuspid (with prominent process), mandibular spine simple; palp article 2 with 21 distolateral setae, article 3 with 23 biserrate setae. *Maxilla* mesial lobe with 7 long, finely serrate setae; middle lobe with 2 long simple setae; lateral lobe with 2 distal simple setae. *Maxilliped palp* article 2 proximomesial margin with 4 setae, distomesial margin with 10 setae, lateral margin distally with 3 setae; article 3 lateral margin with 1 seta, distal margin with 8 setae; endite distal margin RS serrate.

Pereopod 1 propodus 2.1 times as long as wide, inferior margin with ~38 RS; wide RS with deeply serrate margins and ridged surface, narrow RS simple, deeply

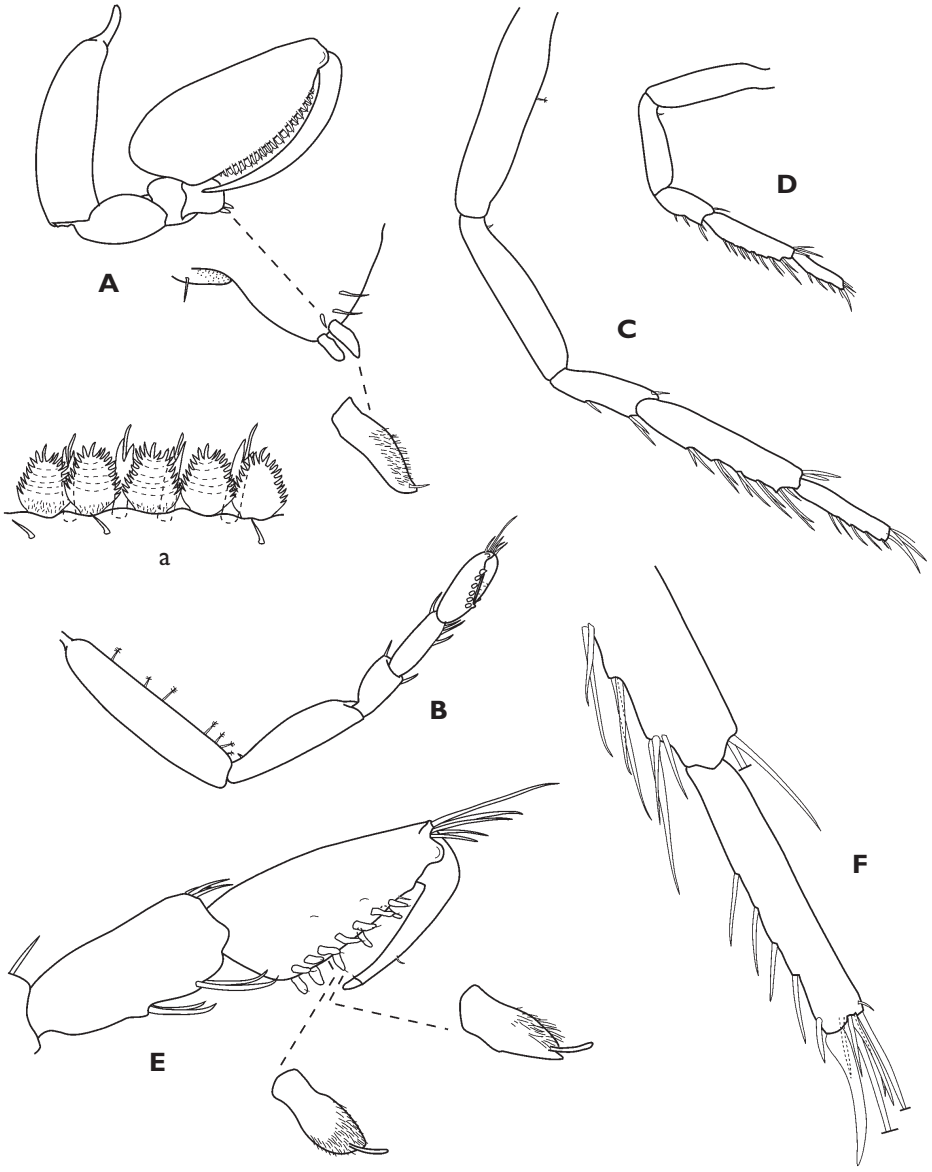

Figure 3. *Heteroserolis pellucida* sp. n. Paratype ♂ 10.5 mm, Is.6017. **A–D** pereopods 1, 2, 6 and 7 respectively; a, detail of pereopod 1 propodal palm setae **E** pereopod 2 distal articles **F** pereopod 6, distal articles.

bifid; dactylus with acute unguis. *Pereopod 2 basis* 5.1 times as long as greatest width; 0.7 times as long as basis, ischium 3.8 times as long as wide; *merus* 0.4 as long as ischium, 1.5 times as long as greatest width, inferior margin with 1 cluster of setae (of 1), superior distal angle with 1 seta; *carpus* 0.5 as long as ischium, 2.7

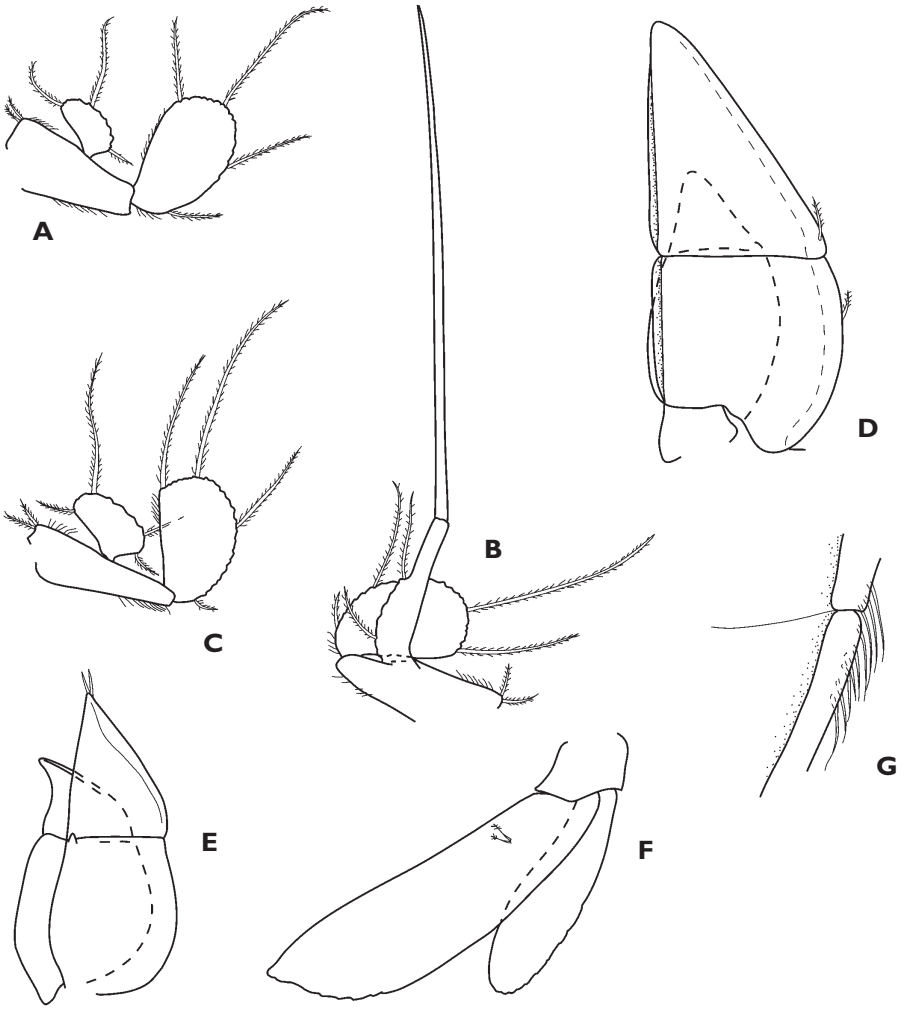

Figure 4. *Heteroserolis pellucida* sp. n. Paratype ♂ 10.5 mm, Is.6017. **A–E** pleopods 1–5 respectively **F** uropods **G** lateral margin, pleopod 1 exopod.

times as long as wide, inferior margin with 2 clusters of setae (as 2 and 2); *propodus* 0.5 as long as ischium, 2.0 times as long as wide, inferior margin with indistinct heel, palm straight, inferolateral margin with 6 RS, inferomesial margin with 5 RS, inferior margin RS both blunt and acute, distally pilose, distal margin with 5 setae; *dactylus* 0.8 as long as propodus, unguis simple, blunt. *Pereopod 6 basis* 4.5 times as long as greatest width; *ischium* 0.8 as long as basis, 4.9 times as long as wide, inferior margin with 0 clusters of setae, superior distal angle with 0 RS; *merus* 0.6 as long as ischium, 3.1 times as long as wide, inferior margin with 2 clusters of setae (as

1 and 2), superior distal angle with 1 setae; *carpus* as long as ischium, 5.1 times as long as wide, inferior margin with 5 clusters of setae (as 2, 2, 2, 2 and 3; setae stiff), superior distal angle with 2 setae; *propodus* 0.5 as long as ischium, 5.7 times as long as wide, inferior margin with 4 clusters of setae (as 1, 1, 1, 1; RS), distal margin with 6 setae, inferior distal angle with 1 RS; *dactylus* 5.4 as long as proximal width. *Pereopod 7* similar to, but 0.6 as long as pereopod 6. Setae on inferior margins of pereopods 4–7 distally rough or finely plumose. Inferior margins of pereopods 2–7 setulose fringe absent.

Penial openings narrowly separated, *penes* opening flush with surface of sternite 7.

Pleopod 1 peduncle 2.1 times as long as wide, mesial margin with 2 plumose slender setae; exopod 1.6 as long as wide, with 22 PMS; endopod 2.1 times as long as wide, 0.5 as long as exopod, with 12 PMS. *Pleopod 2* peduncle 2.5 as long as wide, mesial margin with 2 plumose slender setae; exopod 1.7 as long as wide, with 26 PMS; endopod 4.0 as long as greatest width, lamellar part 3.0 as long as wide, with 9 PMS; *appendix masculina* 3.5 times as long as endopod. *Pleopod 3* exopod with 28 PMS, endopod with 16 PMS. *Pleopod 4* exopod with complete transverse suture (lateral margin with conspicuously thickened rim), endopod without transverse suture. *Pleopod 5* exopod with complete transverse suture (lateral margin distal part with thickened rim), endopod with incomplete transverse suture.

Uropods (rami + peduncle) 0.6 as long as pleotelson, peduncle 0.2 as long as endopod. *Endopod* 3.6 as long as wide; distally with apical point. *Exopod* 0.6 as long as endopod, 3.5 times as long as wide, distally broadly rounded.

Female. As for male, but pleonites 1–3 each have a weak sub-carinate nodules on pereonite 1, and the median nodule on the posterior margin if the head is more developed.

Size. Two males measured 10.5 and 10. 6 mm; ovigerous females 11.8–14.8 mm (mean = 13.2 mm); non-ovigerous females 10.8–12.4 mm (mean = 11.6 mm).

Remarks. *Heteroserolis pellucida* sp. n. is characterised by the semi-transparent cuticle, lack of obvious dorsal nodules, the narrow and acute pleonite margins, a relatively short rostral point and the posterior margin of the pleotelson forming an angled medial point. In addition it is the only species of the genus with a wide lacinia mobilis on the left mandible. Most species of *Heteroserolis* show some degree of dorsal ornamentation, the exceptions being the East Pacific species *H. tropica* and two eastern Australian species, *H. longicaudata* and *Heteroserolis* sp. (Harrison and Poore 1984). *H. longicaudata* (southeastern Australia) has a nodular pleotelson and the pleotelson apex is excised, while *Heteroserolis* sp., known from two immature specimens from shallow water off Townsville, northern Queensland has a truncate pleotelson apex and obscure median nodules on pereonites 2 and 3.

Heteroserolis pellucida has a very distinctly thickened rim to the lateral margin of pleopod 4 exopod, and a slightly less prominent rim on the distal part of the exopod of pleopod 5. Pleopods 4 and 5, where illustrated for other species, have not appeared to show this character state, at present I regard this as a unique species character.

Distribution. New Caledonia; at depths of 557–792 metres.

Etymology. From the Latin adjective *pellucidus* 'admitting light' or semi-transparent.

***Sedorolis* gen. n.**
urn:lsid:zoobank.org:act:31C90C50-CE3E-4240-9A18-0539D38C5624

Type species. *Sedorolis simplex* sp. n., here designated.

Diagnosis. *Male.* Pereonites with all segments indicated by entire suture lines, coxae 2–4 articulating; distal margin truncate; coxae 6 wide, laterally or distally broad, extending to mid-length of uropod peduncle; pleonites 1–3 sternal plate trilobed, lobes gently rounded, without median ridge; pleotelson posterior margin broadly truncate; pereopod 1 propodal palm setae all slender, bifid, all similar; antennule peduncle article half as long as wide; antenna peduncle articles 4 and 5 broad (less than 5 times as long as wide); pleopods 1–3 peduncles sub-rectangular, without coupling setae; pleopod 2 endopod lamellar part about half as long as ramus (= stalked); uropods inserted on pleotelson at anterolateral angle; rami positioned in a dorsal groove on pleotelson lateral margin.

Description. Male. *Head* Lateral lobe mesial margin with single concavity; anterolateral lobes forming of continuous margin with pereonite 1; anterior submarginal 'ridge' on lateral lobes only; posterior margin without tubercle, or with prominent median spine. *Eyes* absent. pereonite 1 anterior margin not strongly bent dorsally, dorsally without tubercles. *Coxae* of pereonites 2–4 articulated, with dorsal sutures. *Ventral coxal plates* simple, smooth; plates 6 and 7 incompletely separated (sutures partly fused). *Pleonites 2 and 3* distally narrow or acute, laterally overlapped by coxae 6, not extending posteriorly along pleotelson. Sternites 5–7 visible, sternite 5 not mesially demarcated by suture. *Pleotelson* dorsal surface with median longitudinal carina (weak), without paired sublateral carinae; without distinct median excision.

Antennule flagellum 1.2–2.0 as long as peduncle articles 3 and 4, extending to between pereonite 3 (anterior). *Antenna* peduncle articles 4 and 5 broad, article 5 less than 5 times as long as greatest width; flagellum two-thirds as long as peduncle article 5.

Epistome with obtuse median point. *Mandible incisor* with two posterior cusps; left mandible lacinia mobilis two-thirds as wide as incisor, right mandible lacinia mobilis distally multicuspid, mandibular spine distally serrate. *Maxilla* lateral lobe with 2 distal simple setae, middle lobe with 2 long simple setae. *Maxilliped palp* with 3 articles, article 3 cordiform, longer than wide.

Pereopod 1 carpus RS with prominent pilose flagellum; propodal palm RS distally pilose. *Pereopod 2* propodus inferior margin with indistinct heel, palm straight; inferior margin RS distally bifid, smooth. *Pereopods 6 and 7* not sexually dimorphic.

Penial openings narrowly separated, *penes* opening flush with surface of sternite 7.

Uropods Biramous, uropods not forming part of continuous body outline, uropods more than half (0.8) as long as pleotelson. Uropod endopod distally rounded.

Remarks. Probable derived character states (putative apomorphies) that uphold *Sedorolis* and that also serve to distinguish the genus from both *Serolina* and *Heteroserolis* are the broad antennal articles 4 and 5 and the unique position of the uropodal rami, which sit on a dorsal groove on the lateral margin of the pleotelson. The robust setae on pereopod 1 are all slender, bifid, all similar. *Sedorolis* is the only serolid genus to have a weakly vaulted pleotelson with a broadly truncate and flat posterior margin.

Serolina is distinguished from *Sedorolis* by numerous derived states, including a narrow posterior margin to pleotelson; male pereopod 2 merus and carpus inferior margins with long plumose setae; clubbed pereopod 2 dactylar unguis; ischium and carpus of pereopods 6 and 7 highly setose or with acute robust setae, in having sexually dimorphic pereopod 7 and the maxilla mesial and middle lobes with 2+1 long terminal setae (rather than the more usual 2+2). *Heteroserolis* is distinguished by the uropods being inserted at a mid-lateral or just anterior to mid-lateral position on the pleotelson; pleonal sternite 1 with large posteriorly-directed median spine, a unique apomorphy for the genus; slender antennal peduncle articles 4 and 5 (most species); and a clearly excavate (Australian species) or rounded and medially indented (Northern Hemisphere species) pleotelson apex.

Relationships of *Sedorolis*. *Sedorolis* belongs in the group of two genera, *Heteroserolis* and *Serolina*, characterised in part (Wägele 1994, see dendrogram, figure 37) by having 'enlarged' uropodal rami (at least the endopod is long) which reach to about the posterior margin of the pleotelson. These two genera belong to Wägele's 'Group B' part of a group defined by the presence of a 'stalked' pleopod 2 endopod ('stalked appendix masculina' in Wägele's terminology). All of 'Group B' and 'Group C' are characterised by having the 'palm of pereopod 1 each second spine scale-like'. Wägele (1994) considered the large uropods to be potentially plesiomorphic, but also that it was 'a character secondarily acquired in the stem-line of the group.'

On the basis of uropod and pleopod 2 morphology *Sedorolis* belongs with this pair of genera. Further character states, not previously recognized by Brandt (2001) or Wägele (1994) is that the peduncles of pleopods 1–3 are quadrate, or slightly narrower distally, lacking the mesial projection (with coupling hooks) the presence of which creates a triangular shaped peduncle, as in all other Serolidae. Both the elongate quadrate state and triangular states can be recognised as derived from a short quadrate state as shown in the Basserolidae (Poore 1985, 1990). The quadrate pleopod peduncle further upholds the monophyly of this group of genera.

Species included. *Sedorolis simplex* sp. n., the type species and *Sedorolis* sp.

Distribution. The genus is known only from New Caledonia, at depths of 440–680 metres.

Etymology. *Sedorolis*–from the Latin *sedo* smooth, in combination with [Se]-rolis indicating family affinity.

***Sedorolis simplex* sp. n.**

urn:lsid:zoobank.org:act:8F2B963A-1115-46F5-A4DD-9F828AA5B921
Figs 5–8

Material

All material from New Caledonia.

Holotype: ♂ (4.7 mm), 22°47.30′S, 167°14.30′E, 30 Aug 1985, 440 m, BIOCAL stn DW44 (MNHN Is.6000). *Paratypes:* ♂ (4.8 mm; NLB dissect left side, mouth,

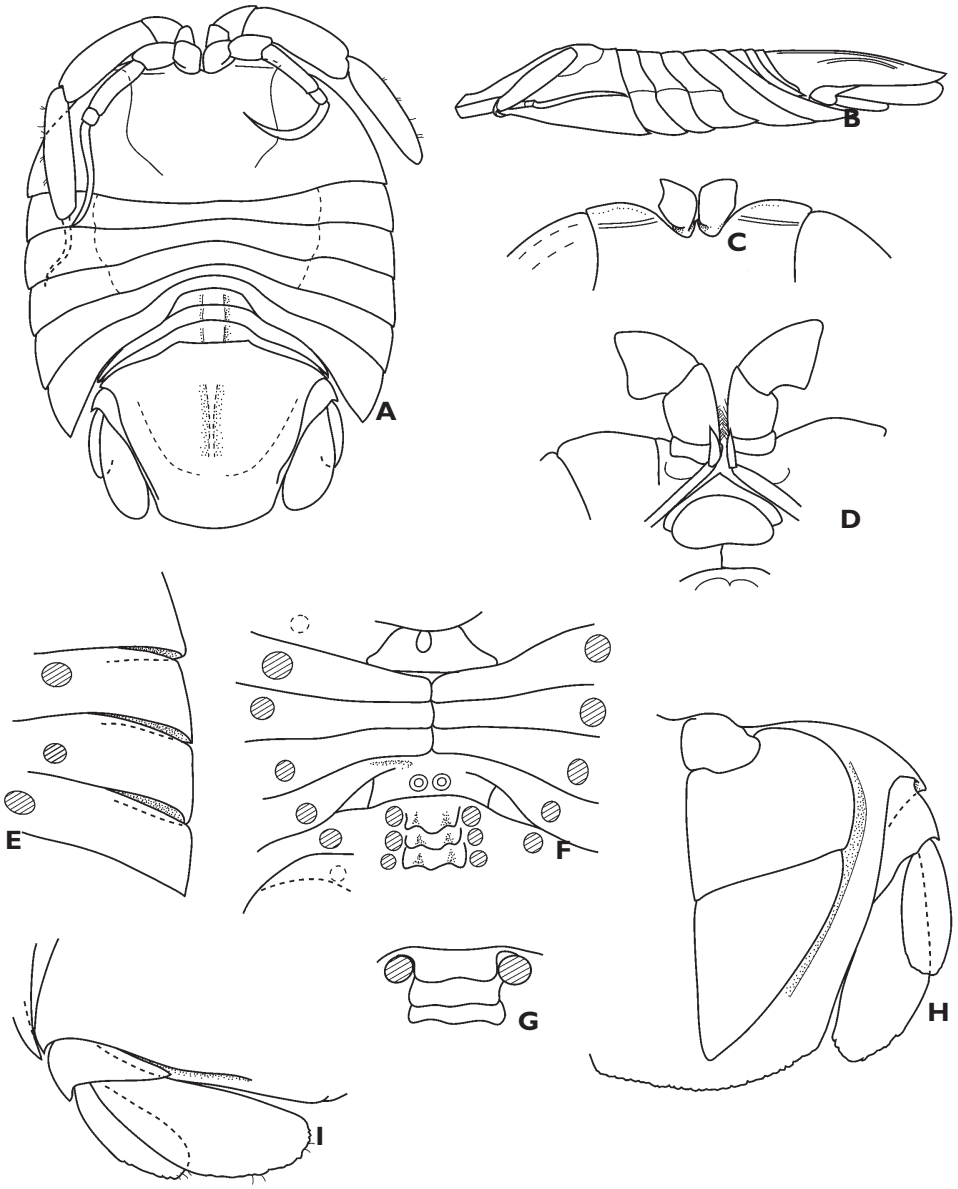

Figure 5. *Sedorolis simplex* sp. n. Holotype, except E. **A** dorsal view **B** lateral view **C** head, anterior margin **D** frons **E** ventral coxae 2–5 **F** male sternites and ventral pleonites **G** ventral pleonites, ♀ 5.3 mm, Is.6001 **H** pleotelson and uropods, ventral view **I** uropods, dorsal view in situ.

P1, P2, P6, P7, Plp 1, 2, 4, 5), ♀ (ovig. ~5.3 mm), same data as holotype (MNHN Is.6001, incl. 5 microslides). 2 ♂ (5.3, 5.5 mm), 22°15′S, 167°150′E, 05 Sep 1985, 440 m, BIOCAL, stn. DW 77, N.O. 'Jean Charcot' (MNHN Is.6002).

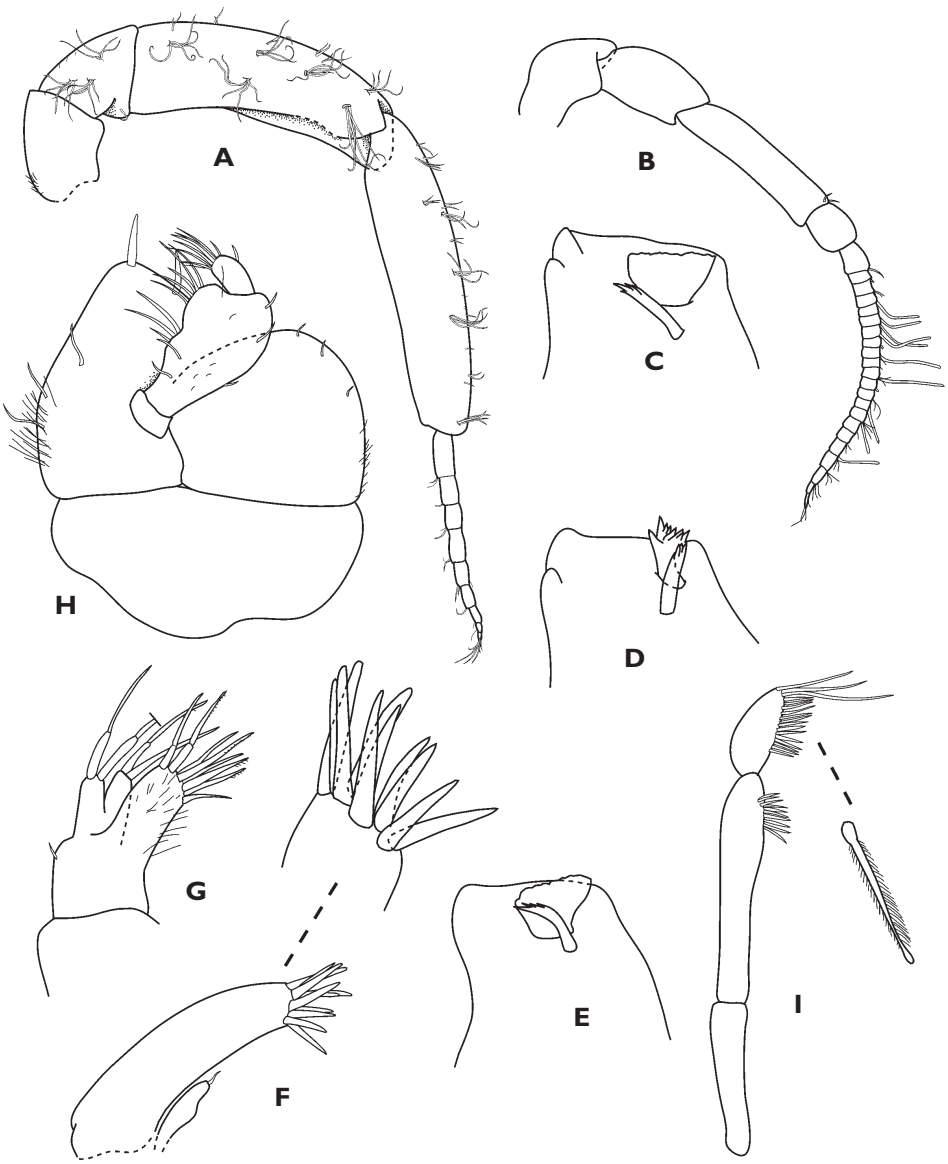

Figure 6. *Sedorolis simplex* sp. n. Paratype ♂ 4.8 mm, Is.6001, except C, D, ♀ ovig 5.3 mm, Is. 6001. **A** antenna **B** antennule **C** left mandible **D** right mandible **E** left mandible **F** maxillule **G** maxilla **H** maxilliped **I** mandible palp.

Additional material: All in poor condition, some specimens heavily dissected previously and extensively mutilated: 8 (all small <5 mm; one dissected), 440 m, BIOCAL, stn. DW 44 (MNHN Is.6003). ♂ (pre-dissected), ♀ (pre-dissected), 570 m, ex BIOCAL stn DW 46 (MNHN Is.6004). 5 (poor condition), 570, DW 46 m (MNHN

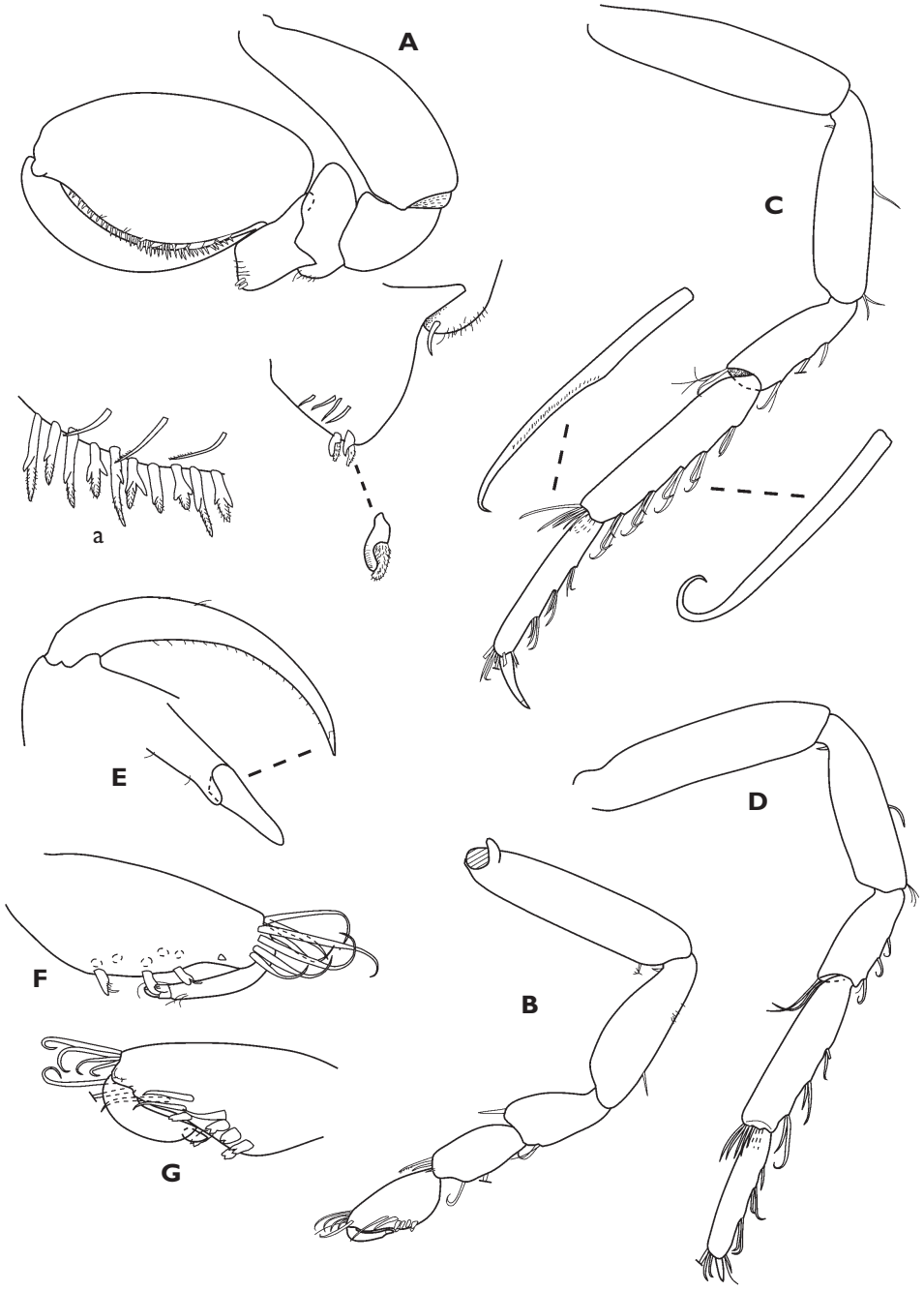

Figure 7. *Sedorolis simplex* sp. n. Paratype ♂ 4.8 mm, Is.6001, except E, F ♀ unmeasured, Is. 6004. **A–D** pereopods 1, 2, 6 and 7 respectively **a** detail of pereopod 1 propodal palm setae **E** pereopod 1 dactylus **F** pereopod 2 propodus, mesial **G** pereopod propodus, lateral.

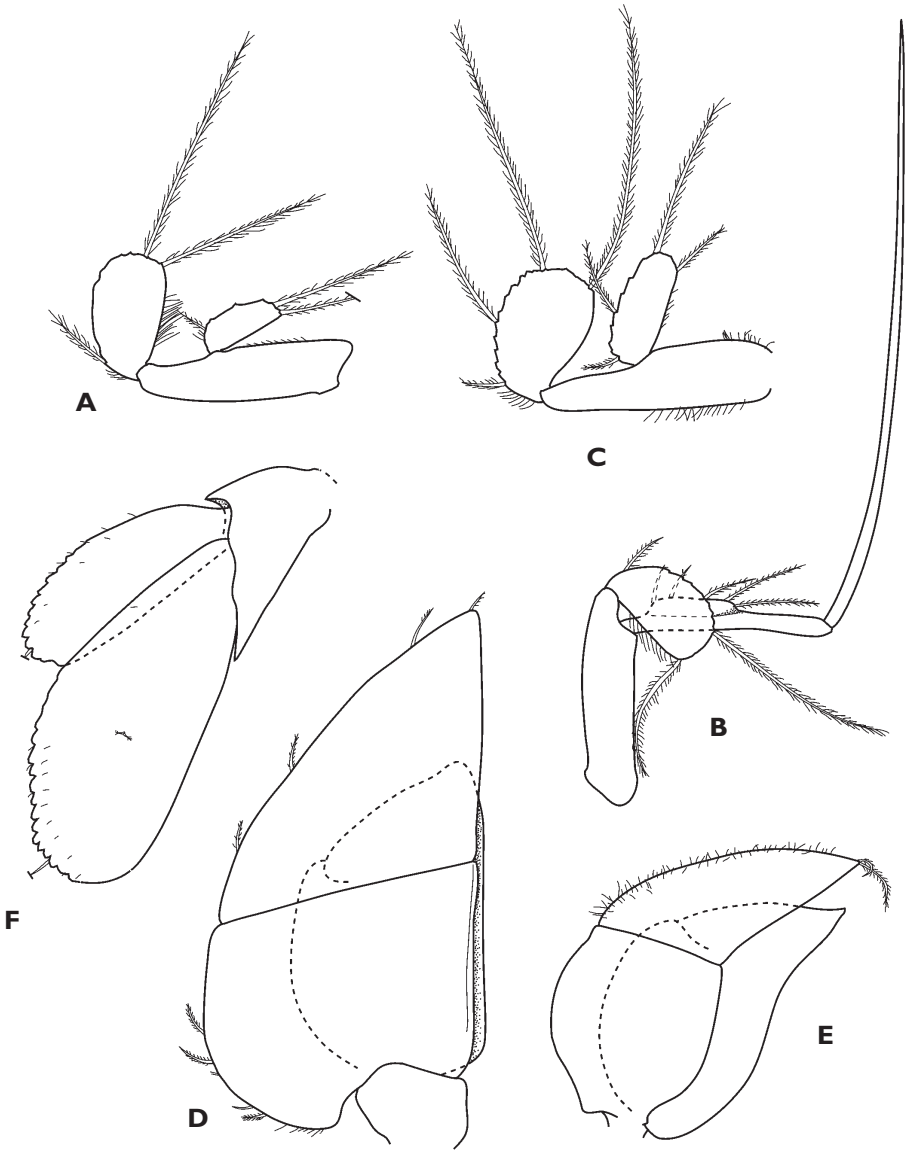

Figure 8. *Sedorolis simplex* sp. n. Paratype ♂ 4.8 mm, Is.6001. **A–E** pleopods 1–5 respectively **F** uropods.

Is.6005). 10 (condition very poor, possibly partly decomposed), 22°15′S, 167°150′E, 05 Sep 1985, 440 m, BIOCAL, stn. DW 77, N.O. 'Jean Charcot' (MNHN Is.6006). Appendages from the previously dissected ♂ DW46 (MNHN Is.6004) were not complete, missing one posterior leg, maxilliped and the maxilla; pleopod 5 lacked one ramus, and the maxillule lacked the endite.

Description. *Body* 1.3 as long as wide, widest at coxae 3 and coxae 4, *dorsal surfaces smooth. Head* anterolateral lobes *weakly convex,* anterior submarginal 'ridge' on lateral lobes only; dorsally without tubercles, posterior margin without median tubercle. *Pereonites* all with visible entire sutures, articulating, *pereonite 1* anterolateral margin continuously convex; dorsally without tubercles. *Coxae* of pereonites 2–4 articulated, with dorsal sutures (sutures weak), distal margins truncate; coxae 4 not posteriorly extended; 5 extending posteriorly along 0.3 of pleotelson length; coxae 6 extending to mid-length of uropod peduncle, and along 0.5 of pleotelson length. *Ventral coxal plates* 2–4 meeting midline, mesially flat, plates 2–4 mesially simple, smooth; plates 6 and 7 incompletely separated (partly fused). Sternites 5–7 visible, sternite 5 not mesially demarcated by suture. Pleonite 1 sternal plates trilobed, lobes gently rounded, sternal plate 1 without median ridge. *Pleotelson* 0.8 times as long as anterior width, dorsal surface with median longitudinal carina (weak), without paired sublateral carinae; lateral margins weakly sinuate, posterior margin broadly truncate, without distinct median excision.

Antennule peduncle article 2 1.6 times as long as wide; articles 3 and 4 2 times as long as article 2; article 3 4.2 times as long as wide; flagellum 1.4 as long as peduncle articles 3 and 4, with 22 articles, extending to anterior of pereonite 3. *Antenna* peduncle article 4 3.2 times as long as wide, 3.5 times as long as article 3; article 5 1.2 times as long as article 4, 4.3 times as long as wide; antennal flagellum 0.7 as long as peduncle article 5, with 9 articles, extending to posterior of pereonite 4.

Epistome with obtuse median point. *Mandible incisor* with 2 posterior cusps, left mandible lacinia mobilis 0.5 as wide as incisor, right mandible lacinia mobilis distally multicuspid, mandibular spine distally serrate; palp article 2 with 10 distolateral setae, article 3 with 19 biserrate setae. *Maxilla* mesial lobe with 28 long, finely serrate setae; middle lobe and lateral lobe each with 2 distal simple setae. *Maxilliped palp* article 2 proximomesial margin with 3 setae, distomesial margin with 7 setae, lateral margin distally with 2 setae; article 3 lateral margin with 1 setae, distal margin with 9 setae; endite distal margin RS simple.

Pereopod 1 carpus RS with prominent pilose flagellum; propodus 1.9 times as long as wide, inferior margin with ~38 RS; narrow RS trifid, distally pilose. *Pereopod 2 basis* 4.5 times as long as greatest width; 0.7 times as long as basis, ischium 3.2 times as long as wide; *merus* 0.5 as long as ischium, 1.8 times as long as greatest width, inferior margin with 1 cluster of setae (2), superior distal angle with 1 seta (RS); *carpus* 0.6 as long as ischium, 1.4 times as long as wide, inferior margin with 2 clusters of setae (as 1 and 1); *propodus* 0.6 as long as ischium, 2.1 times as long as wide, inferior margin with indistinct heel, palm straight, inferolateral margin with 4 RS (and 3 simple setae), inferomesial margin with 3 RS, inferior margin RS distally bifid, smooth, distal margin with 6 setae, *dactylus* 0.5 as long as propodus, unguis offset to axis of dactylus. *Pereopod 6 basis* 4.0 times as long as greatest width; *ischium* 0.8 as long as basis, 3.5 times as long as wide, inferior margin with 1 cluster of setae (1); *merus* 0.7 as long as ischium, 2.8 times as long as wide, inferior margin with 3 clusters of setae (as 1, 1, and 2), superior distal angle with 3

setae; *carpus* 1.1 as long as ischium, 4.6 times as long as wide, inferior margin with 5 clusters of setae (as 2, 2, 2, 3 and 3), superior distal angle with 7 setae; *propodus* 0.8 as long as ischium, 5.8 times as long as wide, inferior margin with 3 clusters of setae (as 2, 3 and 3), distal margin with 8 setae, inferior distal angle with 2 RS; *dactylus* 6.0 as long as proximal width. *Pereopod 7* similar to, but 0.7 as long as pereopod 6. Setae on inferior margins of pereopods 4 to 7 simple and distally flexible. Inferior margins of pereopods 2–7 setulose fringe absent.

Pleopod 1 Peduncle 3.5 times as long as wide; exopod 1.7 as long as wide, with 16 PMS; endopod 2.3 times as long as wide, 0.6 as long as exopod, with 6 PMS. *Pleopod 2* peduncle 4.0 as long as wide; exopod 1.7 as long as wide, with 19 PMS; endopod 6.1 as long as greatest width, lamellar part 4.7 as long as wide, with 5 PMS; *appendix masculina* 2.9 times as long as endopod. *Pleopod 3* exopod with 22 PMS, endopod with 12 PMS. *Pleopod 4* exopod with complete transverse suture, endopod with incomplete or weak transverse suture. *Pleopod 5* exopod with complete transverse suture, endopod with incomplete transverse suture.

Uropods (rami + peduncle) 0.8 as long as pleotelson, peduncle 0.6 as long as endopod. *Endopod* 2.3 as long as wide; distally broadly rounded. *Exopod* 0.6 as long as endopod, 2.3 times as long as wide, distally broadly rounded.

Size. 4.8 to 5.5 mm.

Colour: No chromatophores; pale cream–yellow.

Remarks. The species is identified by the characters of the genus. See *Sedorolis* sp. for comments on potential species character differences.

Distribution. New Caledonia, in the vicinity of the type locality; 440–570 m.

Etymology. From the Latin *simplex*, simple–in the sense of smooth, not ornamented.

***Sedorolis* sp.**

Material ♂ (8.0 mm), ♀ (ovig. 9.2 mm, non-ovig. 8.2 mm), New Caledonia, 23°10′S, 167°10′E, 29 Aug 1985, 675–680 m, BIOCAL, stn. DW 33, N.O. 'Jean Charcot' (MNHN Is.6007). 1 ♀, N.O. 'Jean Charcot', BIOCAL, stn. DW 33, 23°10′S, 167°10′E, 29 Aug 1985, 675–680 m (MNHN Is.6008) [Previously dissected].

Remarks. These specimens are exceedingly similar to *Sedorolis simplex* sp. n., differing only in being larger (*S. simplex* is consistently less than 6 mm), the anterior head lobes a slightly different shape (weakly sinuate vs convex), the penial openings are mutually adjacent (narrowly separate in *S. simplex*) and the sternites of pleonites 1–3 seem to have slightly more developed lobes. The specimens are also from a slightly greater depth than *Sedorolis simplex*.

These differences may be due to the *Sedorolis* sp. material being larger in size. The material has been mutilated (by previous dissection), so description is not possible.

***Myopiarolis* gen. n.**
urn:lsid:zoobank.org:act:F4F859DF-3982-4749-B42D-CD8F1AAF8C62

Caecoserolis.– Poore and Brandt 1997: 161 (part).

Type species. *Myopiarolis systir* sp. n., here designated.

Diagnosis. Eyes minute (less than 5% greatest width of head) elliptical (lenticular/ovoid) when present, or absent; coxae of pereonites 2–4 distal margin truncate; coxae 6 extending to between posterior of uropods and pleotelson posterior margin; pleonites 2 and 3 distally narrow or acute, laterally overlapped by coxae 6, extending posteriorly along pleotelson; antenna peduncle articles 4 and 5 slender (4.6–6.3 and 8.6–10.3 as long as wide respectively); left mandible lacinia mobilis three-quarters as wide as incisor or larger; propodal palm setae all RS, alternating straight and flattened; pleopod 2 endopod lamellar part slightly shorter than ramus; uropods biramous, inserted on pleotelson mid-laterally. Uropodal rami positioned ventrally, less than one-third as long as pleotelson (less than 0.3).

Description. *Head* lateral lobe mesial margin with two concavities; anterolateral lobes forming of continuous margin with pereonite 1; anterior submarginal 'ridge' entire; posterior margin with or without median tubercle. *Pereonites* 5–7 fused mid-dorsally; pereonite 1 anterior margin not strongly bent dorsally, dorsally with or without median tubercles on some or all of pereonites and pleonites. *Coxae* of pereonites 2–4 articulated, with dorsal sutures; 2–4 and pereonite 6 entirely lacking coxal keys; coxae 6 wide, posteriorly produced. *Ventral coxal plates* 2–4 meeting midline; simple, smooth, or with anterior and posterior ridge, or strongly punctate, or with mesial ridges forming X-shape; plates 6 and 7 entirely separate. *Sternites* 5–7 visible, fused. *Sternal plates* of pleonites 1–3 tri-cornered, with acute median point, with distinct median ridge (occasionally absent in plate 1). *Pleotelson* dorsal surface with paired sublateral carinae; posterior margin converging to caudomedial point, without distinct median excision.

Antennule flagellum 2.0–3.0 as long as peduncle articles 3 and 4, extending to between pereonites 3 and pereonite 5. *Antenna* peduncle articles 4 and 5 slender, article 5 8.6–10.3 times as long as greatest width; flagellum about as long as or longer (0.8–1.9) than peduncle article 5.

Epistome with blunt or acute median point. *Mandible incisor* even or minutely irregular; right mandible lacinia mobilis distally multicuspid, mandibular spine simple. *Maxilla* lateral lobe with 2 distal simple setae, middle lobe with 2–5 long simple setae. *Maxilliped palp* with 3 articles, article 3 cordiform, longer than wide.

Pereopod 1 carpus RS distally pilose; propodus wide, RS with finely ridged margins or with serrate margins, narrow RS distally bifid, with simple flagellum or distally bifid, with pilose flagellum. *Pereopod 2* propodus inferior margin with distinct heel, palm straight or angled or weakly concave; inferior margin RS simple, acute or simple, blunt, smooth or pilose; unguis simple, slender. *Pereopods 6 and 7* not sexually dimorphic.

Penial openings fused, *penes* opening flush with surface of sternite 7.

Pleopods 1–3 peduncles triangular, *pleopod 1–3* peduncles with coupling setae.

Uropods not forming part of continuous body outline, endopod distally rounded.

Remarks. *Myopiarolis* gen. n. can be distinguished from all other genera of Serolidae by the following combination of characters: small (<5% head width) lenticular eyes (when present), coxae 2–4 distally truncate forming continuous body outline, broad but posteriorly produced coxae 6 that extend laterally along the pleotelson, pleonites 2 and 3 that curve posteriorly and run along the side of the pleotelson, but are laterally overlapped by coxae 6, antenna with slender peduncle articles 4 and 5 (4.6–6.3 and 8.6–10.3 as long as wide respectively) and very short uropods (<0.3 pleotelson) that are ventrally inserted about halfway along the pleotelson lateral margins, the rami of which are consistently bluntly rounded. These character states are entirely consistent within the genus including several undescribed species from New Zealand (personal observation).

The most similar genus is *Caecoserolis* Wägele, 1994, known only from the south-western Indian Ocean, off the Natal coast of South Africa. That genus differs from *Myopiarolis* in having broad antennal articles 4 and 5 (less than 5.0 times as long as wide), all pereonites dorsally articulated and a weakly domed pleotelson that lacks sub-lateral carinae. Difference between the two genera are discussed in more detail under the remarks for *Caecoserolis*.

Unusually the setation of the maxilla middle lobe varies. This is a character that is generally consistent within serolid genera, with the middle and lateral lobes each having two apical setae. Two large species, *M. koro* sp. n. and *M. carinata* (Bruce, 2008) have the middle lobe with 5 or 6 long apical setae and one mid-length on the mesial margin.

Relationships of *Myopiarolis*. *Atlantoserolis* Wägele, 1994, *Caecoserolis* and *Glabroserolis* Menzies, 1962 form a monophyletic group according to Wägele (1994), to which *Myopiarolis* gen. n. also belongs. That group was characterised (Wägele 1994, Fig.36) by lack of eyes, oval body shape, body widest at pereonites 1 or 2 and, more basally, Wägele's 'group B' was defined by having a 'stalked appendix masculina'. Loss of eyes is a frequent homoplasious occurrence within the Isopoda, and cannot be reliably used to characterise genera or groups of genera (in contrast to eye shape which is usually consistent). Body width and where the body is widest varies considerably within larger genera (in *Myopiarolis* body width ranges from 1.1–1.4 as long as greatest width, and is widest at coxae 3 or 4). Neither *Myopiarolis* nor *Caecoserolis* are widest at pereonites 1 and/or 2, and neither genus has a stalked appendix masculina.

A character not used by Wägele's (1994) is the shape of the coxae of pereonites 2–4. All of Wägele's 'group B' is characterised by having approximately quadrangular coxae, that is with the anterior, posterior and distal margins clearly demarcated, with the exception of *Serolina*. Wägele's (1994) 'Group C' has coxae that are distally acute, in effect three sided. *Myopiarolis* (and *Caecoserolis*) then belongs with the 'Group B' genera, but with unclear affinities with the remainder of that group, differing from most of the Group B genera in having triangular peduncles to pleopods 1–3, the state for *Caecoserolis*; *Heteroserolis* and *Sedorolis* gen. n., being quadrate or sub-quadrate.

The minute lenticular eye shape is a unique, probably apomorphic, character for *Myopiarolis*. The state of short uropods (0.2–0.3 length of pleotelson), also probably

apomorphic, is shared only with *Caecoserolis* Wägele, 1994, that genus being distinguished by the broad antennal peduncle articles 4 and 5, separate penial openings, all pereonites unfused, coxae 6 not extending posteriorly beyond the pleonites and a weakly domed pleotelson that lacks sub-lateral carinae.

Taxonomically useful characters. Dorsal ornamentation, including pattern and size of pereonal and pleonal tubercles, and of the pleotelson carinae; ornamentation of the ventral coxal plates of pereonites 2–4; extent that coxae 4–6 are posteriorly produced; extent that pleonites are produced along the pleotelson; body length to width ratio; relative proportions of the antennule and antenna peduncle articles and their flagellae (the latter of which vary considerably in relative length); extent, number and morphology of robust setae on pereopod 2 palm; shape of pereopod 2 palm; number, size and morphology of setae on the inferior margins of posterior pereopods; relative size of uropods and uropodal rami; presence or absence of eyes. Minor differences can be seen in the proportions of the pereopod articles and the relative length of pereopod 7 in relation to pereopod 6.

Species included. In addition to the type species, *Myopiarolis antarctica* (Beddard, 1884, sensu lato) comb. n., southern Indian Ocean and tropical Brazil (Beddard 1884); *M. apheles* (Schotte, 1992) comb. n., Mozambique Channel, southwestern Indian Ocean; *M. bicolor* (Bruce, 2008) comb. n., northeastern New Zealand; *M. carinata* (Bruce, 2008) comb. n., northwestern New Zealand; *M. koro* sp. n., Fiji; *M. norfanz* sp. n., Lord Howe Plateau, Tasman Sea; *M. novaecaledoniae* (Poore and Brandt, 1997) comb. n., New Caledonia; and *M. lippa* sp. n., northern Coral Sea.

There are least three known undescribed species: one recorded here, one from off the South Island of New Zealand (Bruce 2008), and the species from off Norfolk Island recorded by Poore and Brandt (1997); a further six probable new species are known from around New Zealand (NIWA NIC collections, personal observation).

Distribution. The genus is known from the Western Indian Ocean eastwards to Fiji and New Zealand, the Southern Ocean and the northern Coral Sea in the Gulf of Papua; at depths from 700 to 3184 metres.

Etymology. From the Greek 'myopia' in combination with [Se]-rolis; alluding the tiny or absent eyes. Gender neuter.

Key to the southwestern Pacific species of *Myopiarolis*

The key allows identification of males and females. Size is significant in species differentiation and size is included for all species even if not diagnostic. Dorsal tubercles may be small or weakly defined and need to viewed laterally and obliquely with reflected lighting to be clearly seen.

1 Dorsal surfaces of pereonites and pleonites without tubercles..... **2**
– Dorsal surfaces of pereonites and pleonites with tubercles..... **4**
2 Male coxal sternites 2–4 not elevated, without mesial X-shaped ridge..... **3**

– Male coxal sternites 2–4 elevated, with mesial X-shaped ridge; average size of 11.6 mm (♂) and 12.7 mm (♀) ..... ***M. systir* sp. n.**

3 Body dorsal surfaces punctate; head with submedian tubercle anterior to each eye; size range 18.4–21.6 mm ..... ***M. koro* sp. n.**

– Body dorsal surfaces not punctate; head without submedian tubercles; size range of males 16.7–16.9 mm (♂), 18.5 mm (♀) ...***M. novaecaledoniae***

4 Posterior of pereonites 1–3 with row of fine submarginal tubercles; lateral margin of pereonites 3 and 4 with single small distinct tubercle; dorsum smooth; pleotelson without longitudinal median carina; average size 10.6 mm (♂), 12.8 mm (♀) .....***M. norfanz* sp. n.**

– Posterior margin pereonite 3, 4, 6, 7 and pleonites with single fine median tubercle; dorsum punctate; pleotelson with longitudinal median carina; size 14.5 mm (♂) ..... ***M. lippa* sp. n.**

***Myopiarolis koro* sp. n.**

urn:lsid:zoobank.org:act:93A1FB2C-15CB-4F55-8172-D0EAE37D5CB1

Figs 9–12

Material. *Holotype:* ♂ (18.4 mm), Fiji, Koro Sea, 17°22′S, 179°28′W, 5 Mar 1999, 1216–1226 m, BORDAU 1, stn CP 1458, N/O *Alis*, coll. Bouchet, Warren and Richer de Forges (MNHN Is.6009). *Paratype:* ♀ (ovig. 21.6 mm), same data as holotype (MNHN Is.6010).

Description. *Body* 1.3 as long as wide, widest at coxae 4, dorsal surfaces punctate. *Head* anterolateral lobes weakly convex, anterior submarginal 'ridge' laterally incomplete; dorsally with pair of low sub-median tubercles anterior to eyes, posterior margin with low rounded median tubercle. *Eyes* present. *Pereonite* 1 anterolateral margin continuously convex; dorsally without tubercles. *Coxae* 4 extending to mid-pleonite 1; 5 extending posteriorly along 0.2 of pleotelson length; coxae 6 extending to posterior of uropods, and along 0.6 of pleotelson length. *Ventral coxal plates* mesially flat, mesially simple, smooth. *Pleonites* extending posteriorly along 0.6–0.7 pleotelson lateral margin; pleonite 1 sternal plates with acute median point, sternal plate 1 with median ridge and 2 submedian depressions. *Pleotelson* 0.7 times as long as anterior width, dorsal surface with median longitudinal carina, with paired sublateral carinae; lateral margins straight, posterior margin converging to angled caudomedial point, without distinct median excision.

Antennule peduncle article 2 1.8 times as long as wide; articles 3 and 4 2.2 times as long as article 2; article 3 8.5 times as long as wide; flagellum 2.4 as long as peduncle articles 3 and 4, with ~36 articles, extending to pereonite 4. *Antenna* peduncle article 4 4.6 times as long as wide, 2.6 times as long as article 3; article 5 1.3 times as long as article 4, 9.1 times as long as wide; antennal flagellum 1.0 as long as peduncle article 5, with ~18 articles, extending to posterior of pereonite 4.

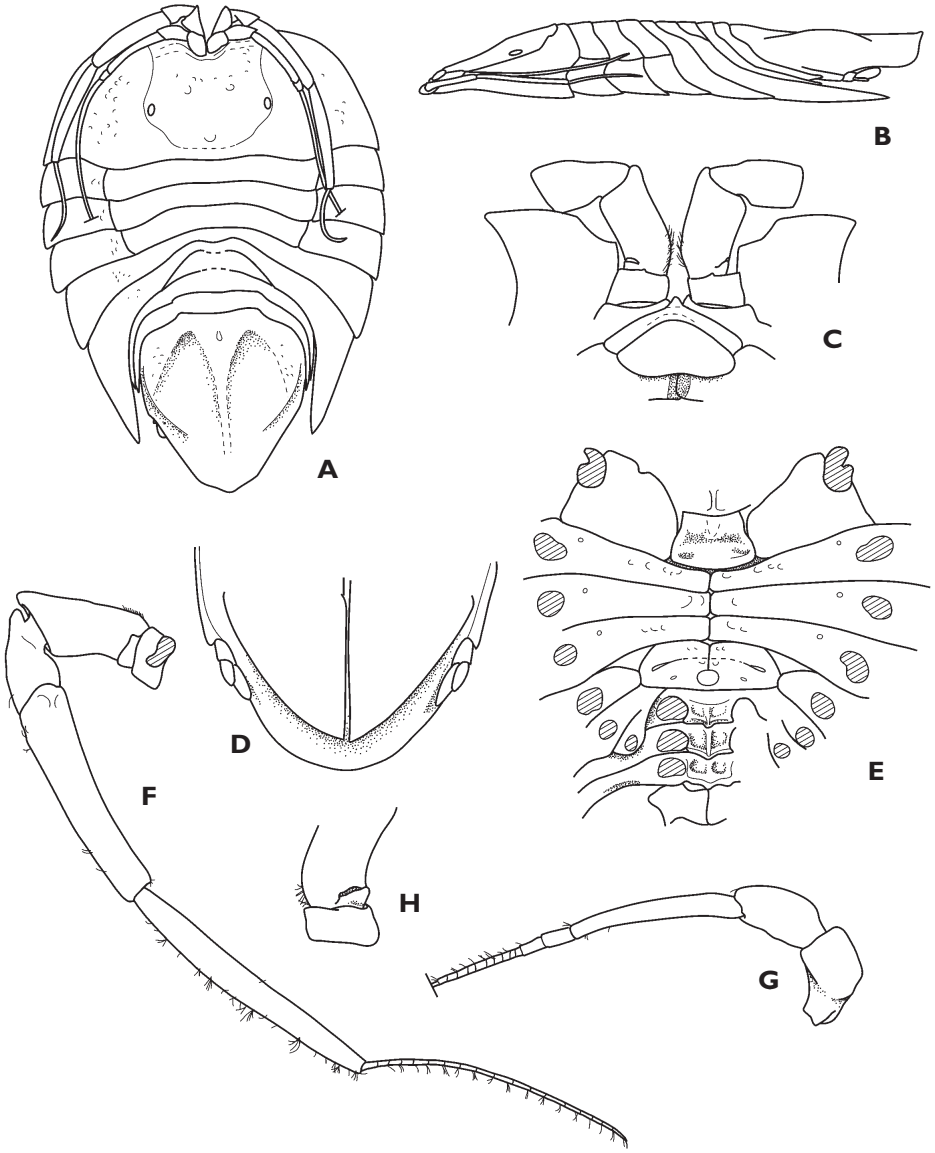

Figure 9. *Myopiarolis koro* sp. n. Holotype, except F–H, female paratype. **A** dorsal view **B** lateral view **C** frons **D** pleon and pleotelson, ventral view **E** sternites and ventral pleonites **F** antenna **G** antennule **H** antenna article 2, ventral side.

Epistome with acute median point. *Mandible incisor* with single posterior cusp, left mandible lacinia mobilis 1.0 (0.97) as wide as incisor, right mandible lacinia mobilis distally multicuspid, mandibular spine distally serrate; palp article 2 with 22 distolateral setae, article 3 with 40 biserrate setae. *Maxilla* mesial lobe with 18 long, finely serrate setae;

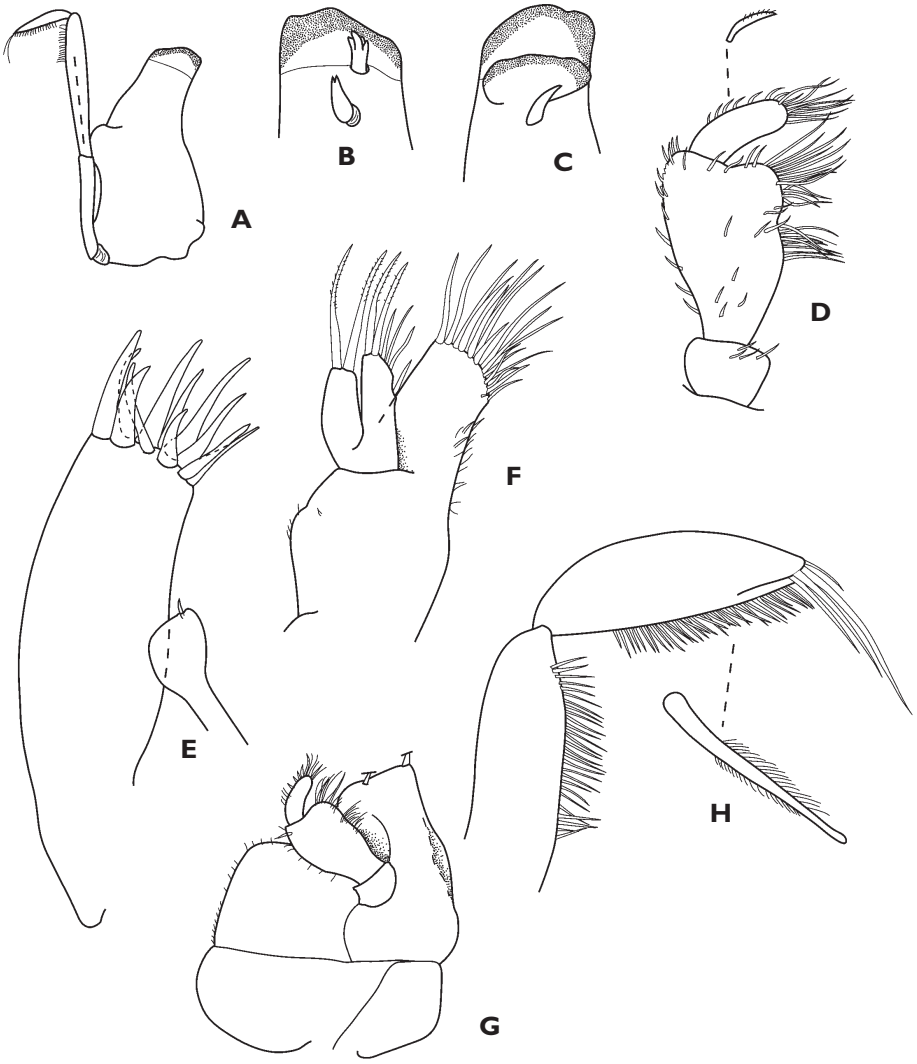

Figure 10. *Myopiarolis koro* sp. n. Female paratype, except D, holotype. **A** right mandible **B** right mandible **C** left mandible **D** maxilliped palp **E** maxillule **F** maxilla **G** maxilliped **H** mandible palp, distal article 2 and article 3.

middle lobe with 6 long simple setae (1 mesial, 5 terminal); lateral lobe with 2 distal simple setae. *Maxilliped palp* article 2 proximomesial margin with ~10 setae, distomesial margin with 16 setae, lateral margin distally with 12 setae (continuous along length); article 3 lateral margin with 6 setae, distal margin with 8 setae; endite distal margin RS simple.

Pereopod 1 carpus RS distally serrate; propodus 1.9 times as long as wide, inferior margin with ~66 RS, wide RS with finely ridged margins, narrow RS distally bifid,

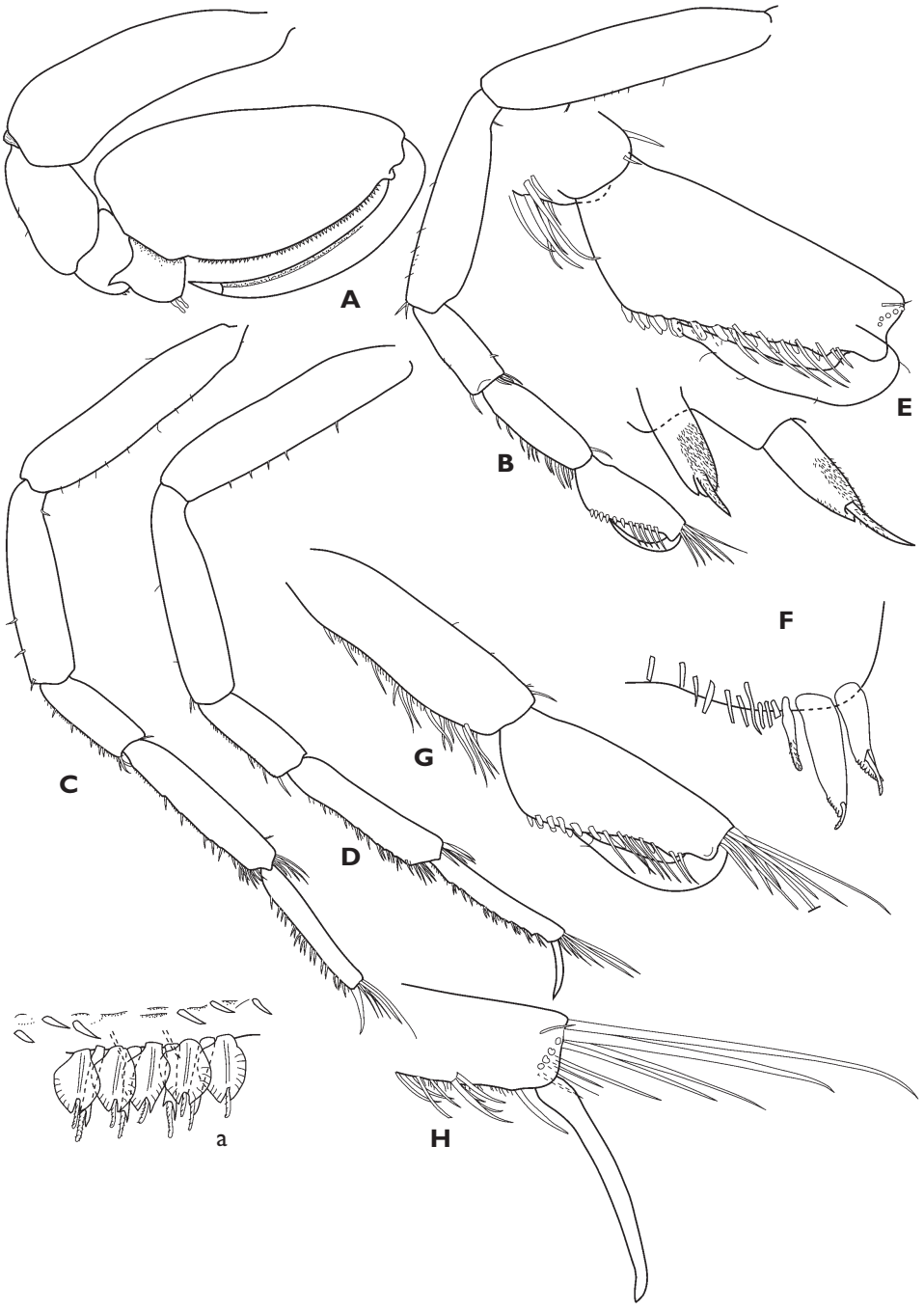

Figure 11. *Myopiarolis koro* sp. n. Holotype. **A–D** pereopods 1, 2, 6 and 7 respectively **a** detail of pereopod 1 propodal palm setae; **E** pereopod 2 propodus **F** pereopod 1 carpus, distal angle **G** pereopod 2 carpus and propodus **H** pereopod 7 propodus, distal margin and dactylus.

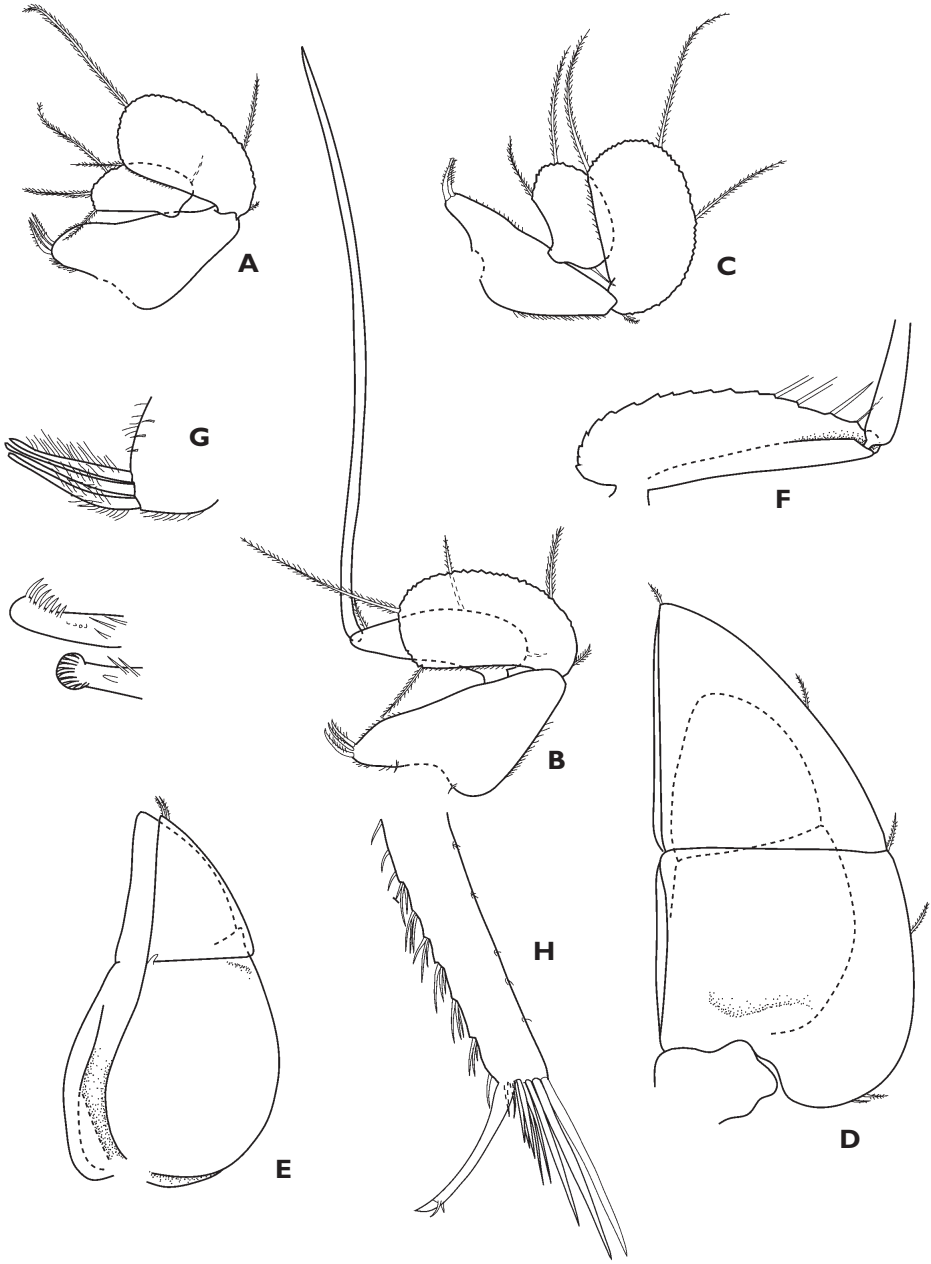

Figure 12. *Myopiarolis koro* sp. n. Holotype, except D, E, female paratype. **A–E** pleopods 1–5 respectively **F** pleopod 2 endopod detail **G** pleopod 1 peduncle **H** pereopod 7 propodus, distal margin and dactylus.

with pilose flagellum. *Pereopod 2 basis* 4.7 times as long as greatest width; 0.8 times as long as basis, *ischium* 3.8 times as long as wide; *merus* 0.5 as long as ischium, 2.7 times as long as greatest width, inferior margin with 1 cluster of setae (2), superior distal angle with 0 setae; *carpus* 0.6 as long as ischium, 3.1 times as long as wide, inferior margin with 8 clusters of setae (groups indistinct; as, 1, 1, 1, 2, 1, 2, 3, 4); *propodus* 0.5 as long as ischium, 2.4 times as long as wide, inferior margin with indistinct heel, palm weakly concave, inferolateral margin with 6 RS, inferomesial margin with 10 RS, inferior margin RS simple, blunt, distally pilose, distal margin with ~10 setae, *dactylus* 0.5 as long as propodus, unguis simple, blunt. *Pereopod 6 basis* 4.2 times as long as greatest width; *ischium* 0.9 as long as basis, 4.2 times as long as wide, inferior margin with 1 cluster setae (2), superior distal angle with 0 RS; *merus* 0.5 as long as ischium, 2.4 times as long as wide, inferior margin with 1 cluster of setae (1, 1 and 1), superior distal angle with 1 seta; *carpus* 0.8 as long as ischium, 4.7 times as long as wide, inferior margin with 10 clusters of setae (as 1, 1, 1, 2, 1, 2, 3, 3, 2, 7), superior distal angle with ~6 setae; *propodus* 0.6 as long as ischium, 7.0 times as long as wide, inferior margin with 9 clusters of setae (as 1, 1, 1, 3, 3, 3, 3, 3, 3), distal margin with ~11 setae, inferior distal angle with 1 RS; *dactylus* 8.7 as long as proximal width. *Pereopod 7* similar to, but 0.95 as long as pereopod 6. Setae on inferior margins of pereopods 4 to 7 finely plumose. Inferior margins of pereopods 2–7 setulose fringe prominent.

Pleopod 1 peduncle 1.4 times as long as wide, mesial margin with 3 coupling setae; exopod 1.8 as long as wide, with 44 PMS; endopod 2.2 times as long as wide, 0.7 as long as exopod, with 21 PMS. *Pleopod 2* peduncle 1.5 as long as wide, mesial margin with 3 coupling setae; exopod 1.5 as long as wide, with 48 PMS; endopod 3.0 as long as greatest width, lamellar part 4.2 as long as wide, with 16 PMS; *appendix masculina* 3.2 times as long as endopod. *Pleopod 3* exopod with 52 PMS, endopod with 20 PMS. *Pleopod 4* exopod with complete transverse suture, endopod with complete transverse suture. *Pleopod 5* exopod with complete transverse suture, endopod with incomplete transverse suture.

Uropods (rami + peduncle) 0.2 as long as pleotelson, peduncle 0.9 as long as endopod. *Endopod* 2.9 as long as wide; distally broadly rounded. *Exopod* 0.6 as long as endopod, 2.6 times as long as wide, distally broadly rounded.

Female. As for the male.

Remarks. *Myopiarolis koro* sp. n., the only serolid known from Fiji, is best identified by its large size, presence of small sub-median tubercles anterior to the eyes, a relatively wide posterior margin on the pleotelson and a lack of median tubercles on the pereonites and pleonites.

Myopiarolis novaecaledoniae is similar in general appearance, but is smaller (14.6–18.5 mm compared to 18.4–21.6 mm), the dorsum is smooth not punctate, the palm of pereopod 2 has 3+6 robust setae (compared to 5+10), and the maxilla has the lateral and mesial lobes each with 2 long setae compared to 2 and 6 setae.

Colour. Pale brown, pale cream on coxal margins;

Distribution. Fiji, Koro Sea; depths of 1216–1226 metres.

Etymology. Taken from the region of the type locality, the Sea of Koro; noun in apposition.

***Myopiarolis lippa* sp. n.**
urn:lsid:zoobank.org:act:FFD8404E-8B2B-4821-BE05-7999BE42E67A
Figs 13, 14

Material. *Holotype:* ♂ (14.5 mm), northern Coral Sea, between Cape York and Gulf of Papua, 11°33′S, 146°14′E, 14 Feb 1992, CIDARIS III stn 13-2, 2053–2012 m (MTQ W13697).

Description. *Body* 1.3 as long as wide, widest at coxae 3, dorsal surfaces punctate. *Head* anterolateral lobes weakly convex, anterior submarginal 'ridge' laterally incomplete; dorsally with (pair of weak submedial tubercles and weak tubercle mesial to eyes), posterior margin with low rounded median tubercle. *Eyes* present. *Pereonite* 1 anterolateral margin continuously convex; dorsal surfaces with small median tubercle on pereonites 2, 4, 6 and 7 and pleonites 1 and 2. *Coxae* of pereonites 2–4 distal margins truncate; coxae 4 extending to mid-pleonite 2; coxae 5 extending posteriorly along 0.3 of pleotelson length; coxae 6 extending to mid-length of uropods, and along 0.8 of pleotelson length. *Ventral coxal plates* 2–4 mesially elevated, with ridges forming X-shape; plates 6 and 7 entirely separate. *Pleonites* extending posteriorly along 0.6 pleotelson lateral margin; pleonite 1 sternal plates with acute median point, sternal plate 1 without median ridge, with process extending to posterior of sternite 2. *Pleotelson* as long (0.99) as anterior width; with distinct longitudinal median carina and paired sublateral carinae; lateral carinae entirely carinate, lateral margins convex; posterior margin narrowly rounded, without distinct median excision.

Antennule peduncle article 2 2.1 times as long as wide; articles 3 and 4 2.8 times as long as article 2; article 3 9.6 times as long as wide; flagellum 2.9 as long as peduncle articles 3 and 4, with ~56 articles, extending to pereonite 6. *Antenna* peduncle article 4 5.9 times as long as wide, 2.9 times as long as article 3; article 5 1.2 times as long as article 4, 12.8 times as long as wide; antennal flagellum 1.2 as long as peduncle article 5, with ~20 articles, extending to middle of pereonite 3.

Epistome with obtuse median point.

Pereopod 1 carpus RS simple; propodus 2.2 times as long as wide, inferior margin with ~68 robust setae; dactylus with acute unguis. *Pereopod 2 basis* 4.5 times as long as greatest width; 0.8 times as long as basis, ischium 4.5 times as long as wide; *merus* 0.4 as long as ischium, inferior margin with 2 clusters of setae (as 1 and 3), superior distal angle with 4 setae; *carpus* 0.5 as long as ischium, 2.9 times as long as wide, inferior margin with 3 clusters of setae (as 1, 3 and 4); *propodus* 0.5 as long as ischium, 2.5 times as long as wide, inferior margin with indistinct heel, palm weakly concave, inferolateral margin with 6 RS, inferomesial margin with 10 RS, inferior margin RS both blunt and acute (distal 3 acute), distally pilose, distal margin with ~9 setae; *dactylus* 0.7 as long as propodus, unguis simple, blunt. *Pereopod 6 basis* 3.9 times as long as greatest width; *ischium* 0.8 as long as basis, 3.2 times as long as wide, inferior margin with 0 clusters of setae, superior distal angle with 0 RS; *merus* 0.6 as long as ischium, 2.5 times as long as wide, inferior margin with 2 clusters of setae (as 1, 2 and 3), superior distal angle with 2 setae; *carpus* 0.8 as long as ischium, 4.4 times as long as wide, inferior margin with 8 clusters of setae (as 1, 3, 3, 3, 1, 3, 3 and 3), superior distal angle with

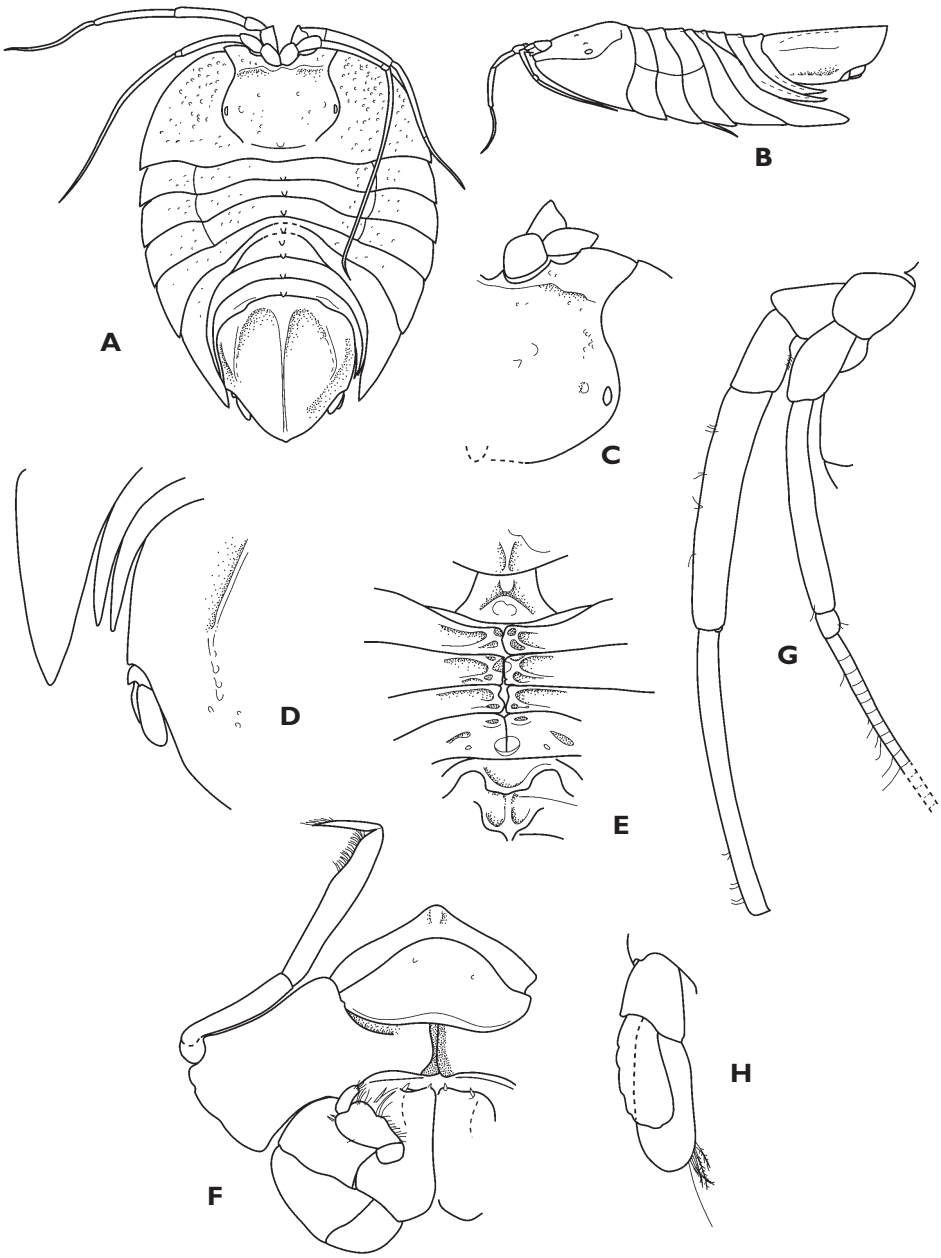

Figure 13. *Myopiarolis lippa* sp. n. Holotype. **A** dorsal view **B** lateral view **C** head, anterior margin **D** pleon and pleotelson, dorsal view **E** sternites and pleonites, ventral view **F** frons **G** antennule and antenna (in situ) **H** uropod(in situ).

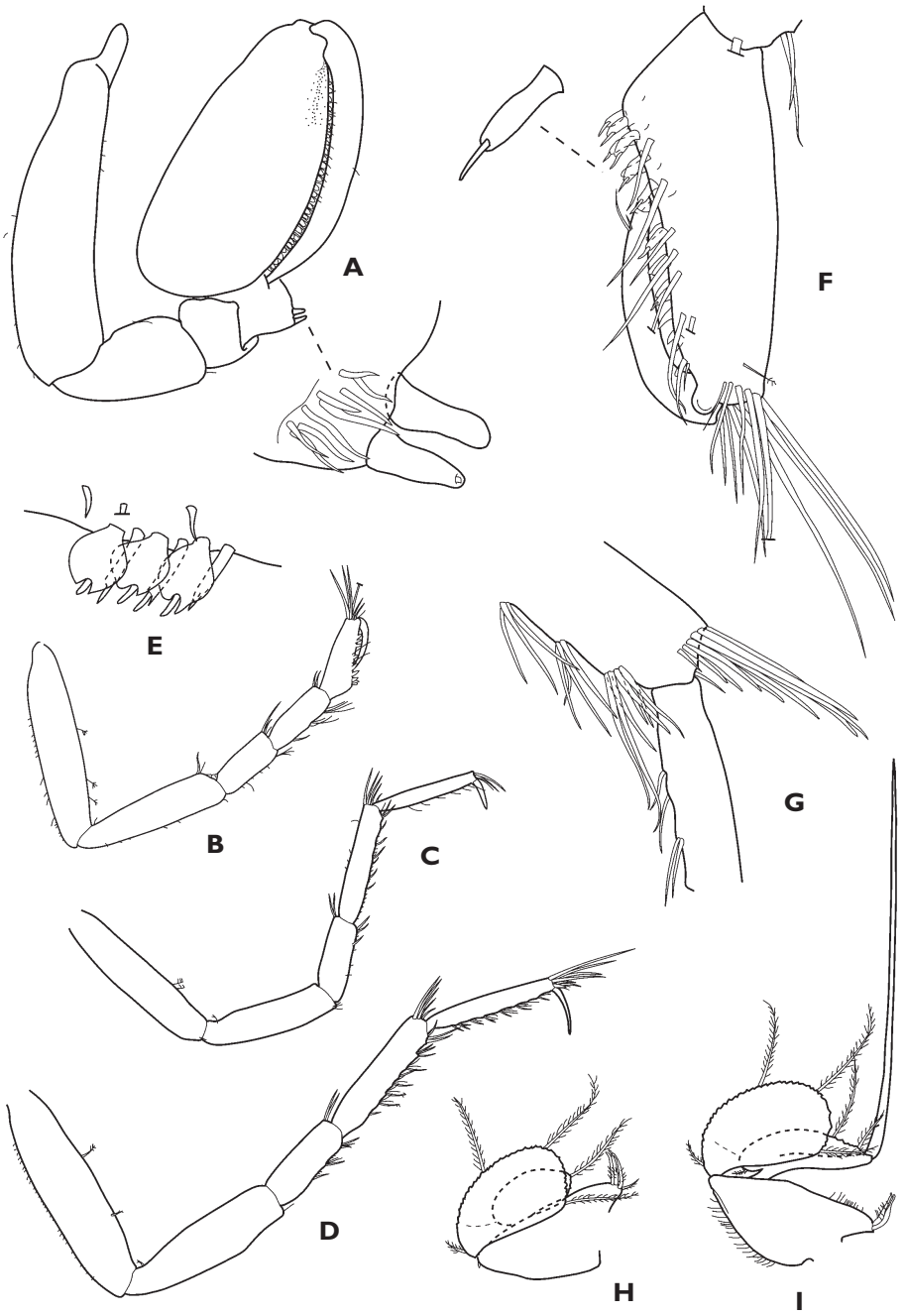

Figure 14. *Myopiarolis lippa* sp. n. Holotype. **A–D** pereopods 1, 2, 6 and 7 respectively **E** detail of propodal palm setae **F** pereopod 2 propodus **G** pereopod 6 distal articles **H** pleopod 1 **I** pleopod 2.

~9 setae; *propodus* 0.8 as long as ischium, 7.1 times as long as wide, inferior margin with 8 clusters of setae (as 1, 2, 3, 4, 4, 3, 1 and 2), distal margin with ~7 setae, inferior distal angle with 0 RS; *dactylus* 6.8 as long as proximal width. *Pereopod 7* similar to, but 0.8 as long as pereopod 6. Setae on inferior margins of pereopods 4–7 finely plumose. Inferior margins of pereopods 2–7 setulose fringe weakly developed.

Pleopod 1 peduncle 1.9 times as long as wide, mesial margin with 3 coupling setae; with 42 PMS; endopod 2.2 times as long as wide, 0.6 as long as exopod, with 22 PMS. *Pleopod 2* peduncle 2.2 as long as wide, mesial margin with 2 coupling setae; exopod 1.8 as long as wide, with 44 PMS; endopod 3.5 as long as greatest width, lamellar part 3.9 as long as wide, with 22 PMS; *appendix masculina* 3.0 times as long as endopod.

Uropods (rami + peduncle) 0.2 as long as pleotelson, peduncle 0.6 as long as endopod. *Endopod* 2.4 as long as wide; distally broadly rounded. *Exopod* 0.8 as long as endopod, 2.5 times as long as wide, distally broadly rounded.

Remarks. *Myopiarolis lippa* sp. n. can be identified by the presence of a distinct medial longitudinal carina and prominent long sublateral carinae on the pleotelson, small median nodules on pereonites 6 and 7 and the pleonites, and the coxae 6 not extending to the uropod peduncle. All other species in the region lack a distinct median pleotelson carina.

The most similar species, both with medially ornate coxal sternites, are *M. norfanz* sp. n. and *M. systir* sp. n. *M. norfanz* is at once distinguished by the nodular ornamentation of the head and of the posterior lateral margins of pereonites 1–4; *M. systir* appears similar in dorsal view, but is not dorsally punctate, lacks the median pereonal and pleonal tubercles and has far longer coxae on pereonite 6.

Dissection and therefore description was minimised in order to conserve the physical integrity of the holotype. The antennae and uropods were described in situ, and of the mouthparts only the maxilliped was dissected; pleopods within the genus are rather uniform and only pleopods 1 and 2 were dissected and described.

Distribution. Northern Coral Sea, depth of 2012–2053 metres.

Etymology. The epithet is a Latin word meaning 'dim-sighted, nearly blind' (Brown 1956), alluding to the small eyes.

Myopiarolis norfanz sp. n.

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Figs 15–18

Caecoserolis novaecaledoniae Poore & Brandt, 1997: 161 (part).

Material. *Holotype*: ♂ (10.7 mm), Lord Howe Plateau, 32°26.70′S, 161°46.95′E, 25 May 2003, 1130–1147 m, NORFANZ stn TAN0308/77, RV *Tangaroa* (NIWA 27940). *Paratypes*: 3 ♂ (10.4, 10.5 [uropod], 10.7 [dissected] mm), 2 ♀ (ovig. 12.2, 13.7 mm), same data as holotype (NIWA 27536).

Additional material. Misidentifed by Poore and Brand (1997) as *M. novaecaledoniae*. ♂ (11.8 mm), off Norfolk Island, 29°46.6′S, 167°58.9′E, 1 Jan 1976, 500 m, coll. J. E.

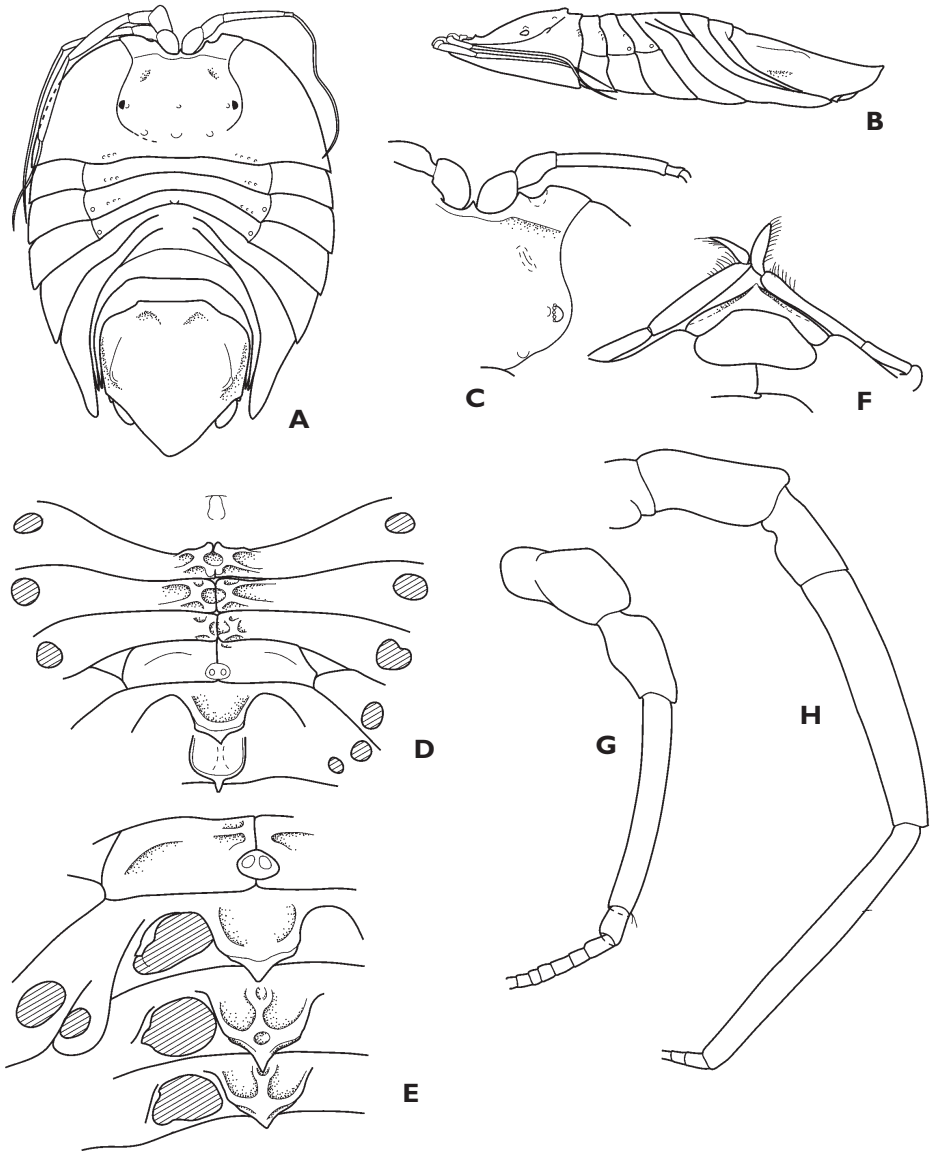

Figure 15. *Myopiarolis norfanz* sp. n. Holotype except E, paratype ♂ 10.7 mm. **A** dorsal view **B** lateral view **C** head, anterior margin **D** sternites and ventral pleonites **E** pleonites, ventral view **F** frons **G** antenna **H** antennule.

Watson on *Dmitri Mendeleev* (NMV J6796). ♂ (11.4 mm), off Norfolk Island, 30°31.1′S, 161°54.2′E, 29 Dec 1976, 1210 m, coll. J. E. Watson on *Dmitri Mendeleev* (NMV J7763)

Description. *Body* 1.4 as long as wide, widest at coxae 3, dorsal surfaces smooth. *Head* anterolateral lobes weakly convex, anterior submarginal 'ridge' entire; dorsally

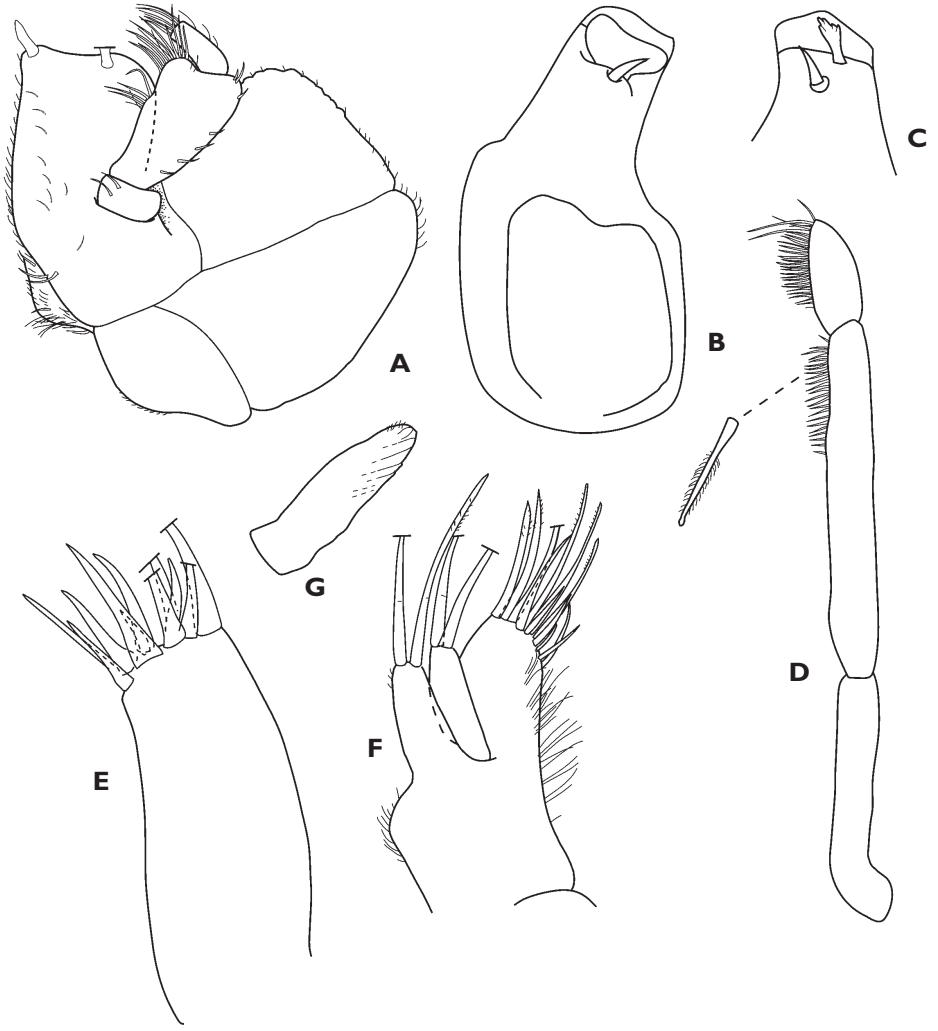

Figure 16. *Myopiarolis norfanz* sp. n. Paratype ♂ 10.7 mm. **A** maxilliped **B** left mandible **C** right mandible, distal margin **D** mandible palp **E** maxillule **F** maxilla **G** robust seta distal margin of maxilliped endite.

with central small tubercle, pair of sub-lateral tubercles on posterior margin and tubercle laterally adjacent to eye; posterior margin with low rounded median tubercle. *Eyes* present. *Pereonite 1* anterolateral margin continuously convex; dorsal surfaces posterolateral margins of pereonites 1–4 with row of small tubercles, pereonites 3 and 4 with single small tubercle at posterodistal corner. *Coxae* distal margins weakly convex; coxae 4 extending to mid-pleonite 1; coxae 5 extending posteriorly along 0.3 of pleotelson length; coxae 6 extending to mid-length of uropods, and along 0.8 of pleotelson length. *Ventral coxal plates* mesially elevated, plates 2–4 mesially with ridges forming

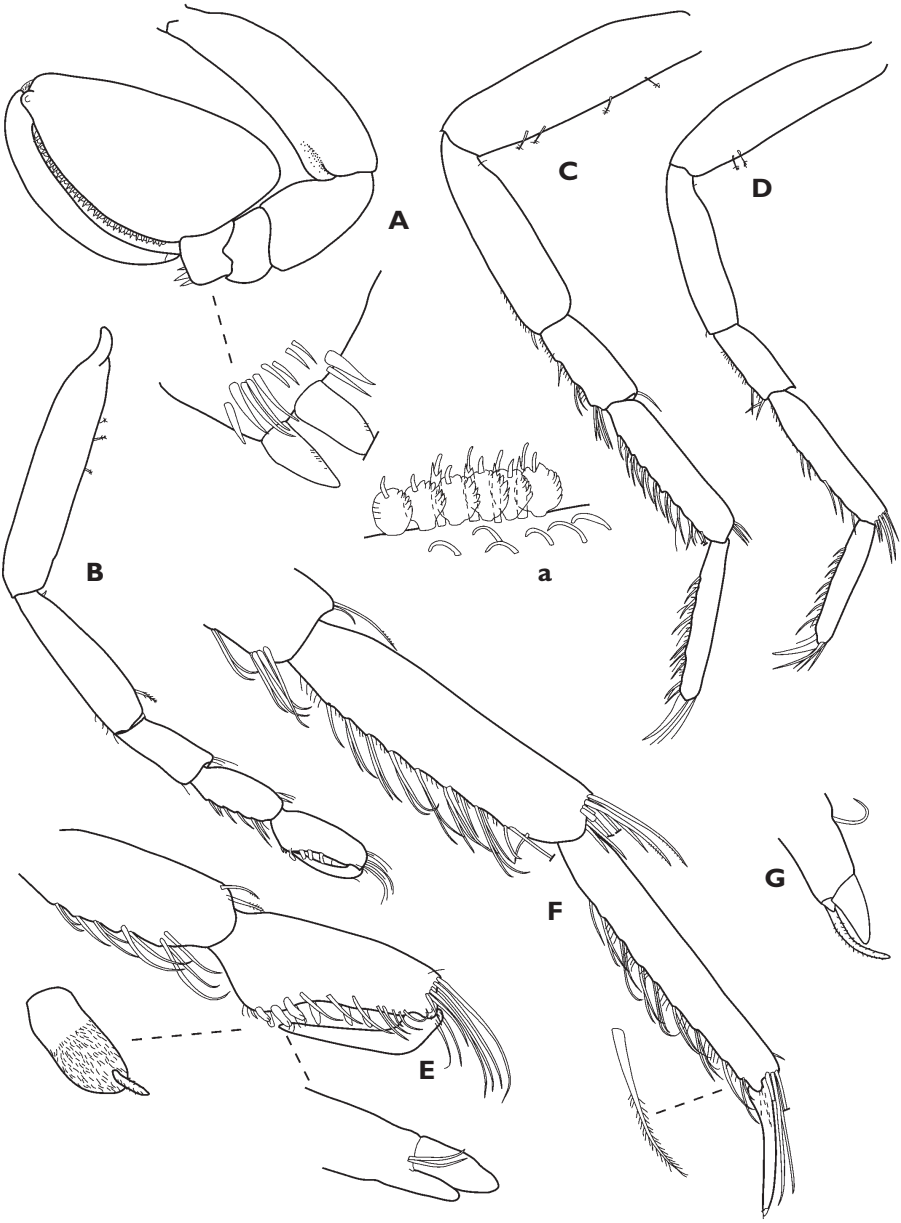

Figure 17. *Myopiarolis norfanz* sp. n. Paratype ♂ 10.7 mm. **A–D** pereopods 1, 2, 6 and 7 respectively **a** detail of pereopod 1 propodal palm setae **E** pereopod 2 carpus and propodus and detail of dactylus apex **F** pereopod 6 carpus and propodus **G** pereopod 7, dactylus apex.

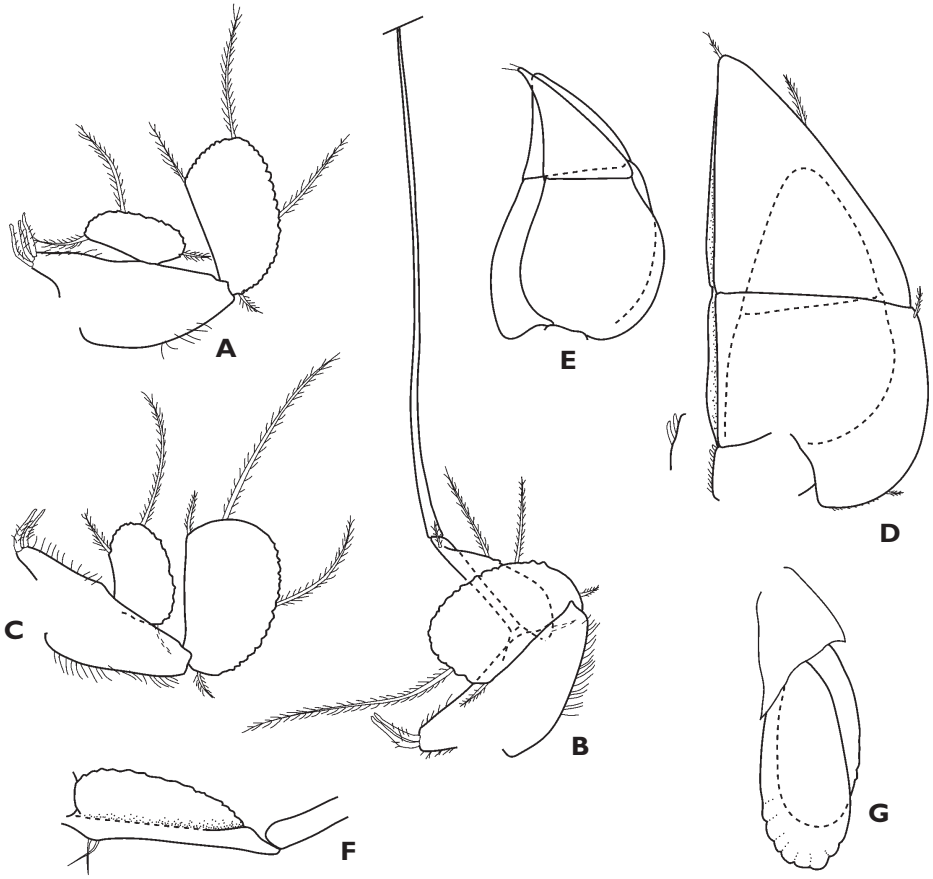

Figure 18 *Myopiarolis norfanz* sp. n. Paratype ♂ 10.7 mm, except G, paratype ♂ 10.5 mm **A-E** pleopods 1–5 respectively **F** pleopod 2 endopod detail **G** uropod.

X-shape; plates 6 and 7 entirely separate. *Pleonites* extending posteriorly along 0.9 pleotelson lateral margin; pleonite 1 sternal plates with acute median point, sternal plate 1 without median ridge (plates 2 and 3 with median ridge). *Pleotelson* 1.0 times as long as anterior width; dorsal surface without median longitudinal carina, with paired sublateral carinae; lateral carinae angle of inflexion raised, thickened; lateral margins straight; posterior margin converging to rounded caudomedial point, without distinct median excision.

Antennule peduncle article 2 2.1 times as long as wide; articles 3 and 4 2.3 times as long as article 2; article 3 8.2 times as long as wide; flagellum 2.7 as long as peduncle articles 3 and 4, with ~50 articles, extending to pereonite 4. *Antenna* peduncle article 4 6.3 times as long as wide, 1.9 times as long as article 3; article 5 1.2 times as long as article 4, 10.9 times as long as wide; antennal flagellum 1.9 as long as peduncle article 5, with ~20 articles, extending to posterior of pereonite 3.

Epistome with acute median point. *Mandible incisor* even or minutely irregular, left mandible lacinia mobilis 0.9 as wide as incisor, right mandible lacinia mobilis distally multicuspid, mandibular spine simple; palp article 2 with 24 distolateral setae, article 3 with 26 biserrate setae. *Maxilla* mesial lobe with 12 long, finely serrate setae; middle lobe with 2 long simple setae; lateral lobe with 2 distal simple setae. *Maxilliped palp* article 2 proximomesial margin with 6 setae, distomesial margin with 12 setae, lateral margin distally with 7 setae; article 3 lateral margin with 3 setae, distal margin with 8 setae; endite distal margin RS serrate.

Pereopod 1 carpus RS simple; propodus 2.0 times as long as wide, inferior margin with ~56 RS; wide RS with serrate margins, narrow RS distally bifid, with pilose flagellum; dactylus with acute unguis. *Pereopod 2 basis* 5 times as long as greatest width; 0.7 times as long as basis, ischium 3.7 times as long as wide; *merus* 0.5 as long as ischium, 2.1 times as long as greatest width, inferior margin with 1 cluster of setae (of 1), superior distal angle with 3 setae; *carpus* 0.5 as long as ischium, 2.4 times as long as wide, inferior margin with 5 clusters of setae (as 2, 1, 2, 2 and 3); *propodus* 0.6 as long as ischium, 2.3 times as long as wide, inferior margin with distinct heel, palm weakly concave, inferolateral margin with 3 RS, inferomesial margin with 5 RS, inferior margin RS simple, blunt, distally pilose, distal margin with 8 setae; *dactylus* 0.7 as long as propodus, unguis blunt, with prominent secondary unguis. *Pereopod 6 basis* 4.0 times as long as greatest width; *ischium* 0.7 as long as basis, 3.6 times as long as wide, inferior margin with 1 cluster of setae (of 1), superior distal angle with 0 RS; *merus* 0.5 as long as ischium, 2.4 times as long as wide, inferior margin with 3 clusters of setae (as 1, 2 and 4), superior distal angle with 1 seta; *carpus* 0.9 as long as ischium, 4.5 times as long as wide, inferior margin with 9 clusters of setae (as 1, 2, 2, 2, 2, 3, 4, 3, 4), superior distal angle with ~9 setae; *propodus* 0.8 as long as ischium, 6.9 times as long as wide, inferior margin with 9 clusters of setae (as 1, 2, 2, 2, 2, 2, 3, 1 and 2), distal margin with 8–10 setae, inferior distal angle with 0 RS; *dactylus* 6.7 as long as proximal width. *Pereopod 7* similar to, but 0.9 as long as pereopod 6. Setae on inferior margins of pereopods 4–7 finely plumose. Inferior margins of pereopods 2–7 setulose fringe weakly developed.

Pleopod 1 peduncle 1.4 times as long as wide, mesial margin with 3 coupling setae; exopod 2.0 as long as wide (1.96), with 37 PMS; endopod 2.2 times as long as wide, 0.6 as long as exopod, with 19 PMS. *Pleopod 2* peduncle 1.7 as long as wide, mesial margin with 2 coupling setae; exopod 1.7 as long as wide, with 40 PMS; endopod 3.1 as long as greatest width, lamellar part 3.5 as long as wide, with 14 PMS; *appendix masculina* 3.5 times as long as endopod. *Pleopod 3* exopod with 40 PMS, endopod with 21 PMS. *Pleopod 4* exopod with complete transverse suture, endopod with complete transverse suture. *Pleopod 5* exopod with complete transverse suture, endopod with complete transverse suture.

Uropods (rami + peduncle) 0.3 as long as pleotelson, peduncle 0.7 as long as endopod. *Endopod* 2.5 as long as wide; distally broadly rounded. *Exopod* 0.8 as long as endopod, 2.2 times as long as wide, distally broadly rounded.

Females. Similar to males, differing only in lacking the ocular nodules, the marginal nodules on the pereonites being slightly more distinct and an obscure, low longitudinal ridge on pereonite 7.

Variation. Not detailed for the small number of specimens. The pattern of nodules for males and females was consistent for all specimens within each sex.

Size. Males 10.4–10.7 mm (mean = 10.6 mm), ovigerous females 12.0 and 13.7 mm.

Colour. Dull brick red in preserved specimens; fresh specimens dark slate grey with broad white bands across posterior and lateral margins of coxae; eyes white.

Remarks. *Caecoserolis norfanz* sp. n. can be identified by the pattern of nodules on the head and pereonites 1–4, and the pleotelson lateral carinae being thickened at the point of inflection. The most similar species are *C. novaecaledoniae* and *C. systir* sp. n., both from the New Caledonian region. These species can readily be separated by the lack of small tubercles on the head and pereonites 1–4.

Distribution. East of Lord Howe Island, Lord Howe Plateau; depths of 1130–1147 metres.

Etymology. The epithet is the name of the joint NIWA–CSIRO–IRD-Nouméa RV *Tangaroa* expedition to the Norfolk Ridge and Lord Howe Rise in 2003; noun in apposition.

Myopiarolis novaecaledoniae (Poore and Brandt, 1997), comb. n.

Fig. 19

Caecoserolis novaecaledoniae Poore and Brandt, 1997: 161, figs 7–10 (part).

Material. *Holotype, paratypes* and all original non-type specimens: all re-identified as *M. novaecaledoniae* except as discussed below; details in Poore and Brandt (1997).

New material: ♂ (14.6 mm), New Caledonia, 24°16′S, 167°38′E, 21 Nov 1996, 1128–1150 m, HALIPRO 2, stn BT 75; 'photo 1-13-14-15', coll. RV *Tangaroa*, (MNHN Is.6011).

Description. *Body* 1.2 as long as wide, widest at coxae 3, dorsal surfaces smooth. *Head* anterior submarginal 'ridge' entire; dorsally without tubercles, posterior margin with low rounded median tubercle. *Eyes* present. *Pereonites* dorsally without tubercles. *Coxae* 4 extending to mid-pleonite 2; coxae 5 extending posteriorly along 0.3 of pleotelson length; coxae 6 extending to between posterior of uropods and pleotelson posterior margin, and along 0.9 of pleotelson length. *Ventral coxal plates* 2–4 mesially flat, plates 2–4 mesially with anterior and posterior ridges. *Pleonites* extending posteriorly along 0.8 pleotelson lateral margin; pleonite 1 sternal plates 3with acute median point, sternal plate 1 with median ridge and 2 sub-median depressions. *Pleotelson* dorsal surface with weak median longitudinal carina, with paired sublateral carinae; pleotelson lateral margins convex, pleotelson posterior margin converging to rounded caudomedial point.

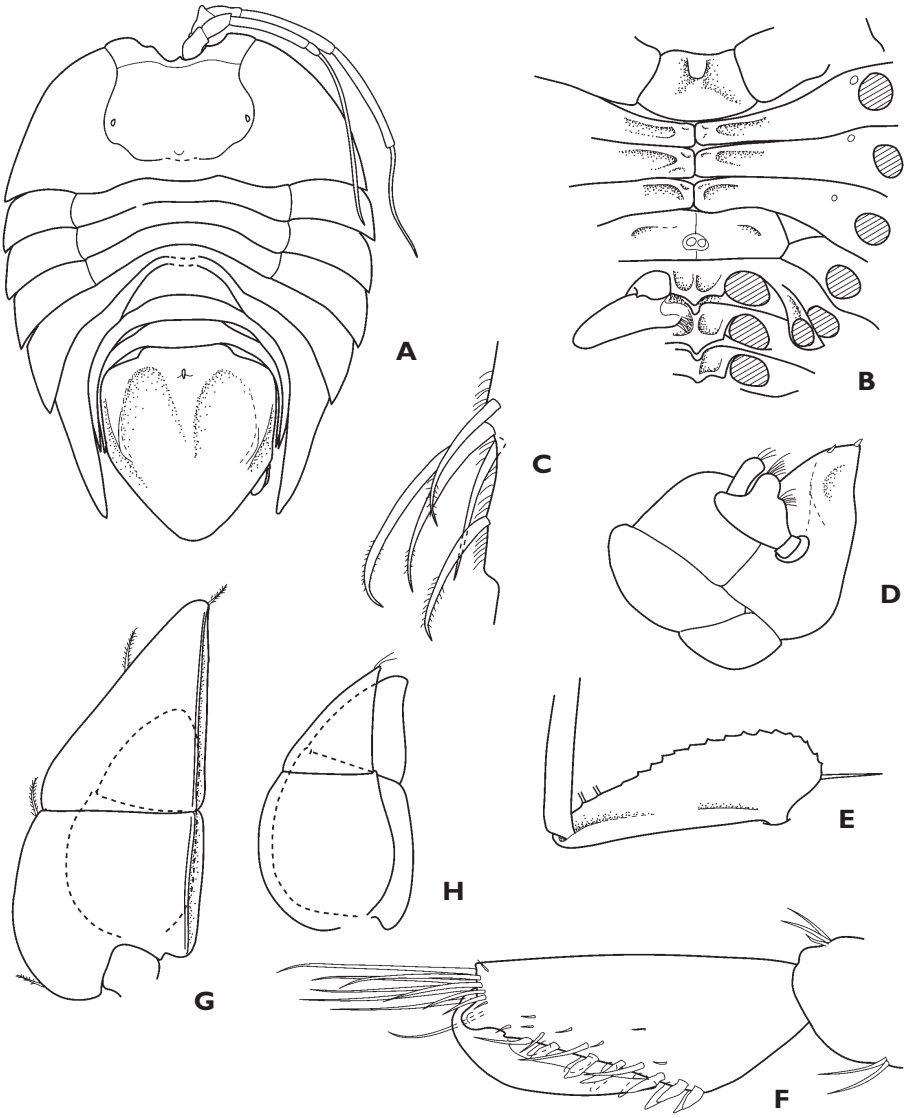

Figure 19. *Myopiarolis novaecaledoniae*. Holotype. **A** dorsal view **B** sternites and ventral pleonites **C** pereopod 6 carpus inferior margin setae **D** maxilliped **E** pleopod 2 endopod, detail **F** pereopod 2 propodus and dactylus **G** pleopod 4 **H** pleopod 5.

Antennule flagellum 2.0 as long as peduncle articles 3 and 4, extending to pereonite 3. *Antennal* flagellum 1.2 as long as peduncle article 5, extending to posterior of pereonite 4.

Pereopod 2 propodus 2.5 times as long as wide, inferior margin with indistinct heel, palm straight, inferolateral margin with 6 RS, inferomesial margin with 6 RS, inferior

margin RS simple, acute, smooth; *dactylus* 0.6 as long as propodus. *Pereopod 7* similar to, but 0.8 as long as pereopod 6.

Size. Males 14.6–16.9 mm, ovigerous females 18.5 mm.

Remarks. *Myopiarolis novaecaledoniae* may be identified by the flat sternal coxae that have mesial ridges that do not form a clear mesial 'X', the lack of dorsal ornamentation, long coxae 6 that extend to near the pleotelson apex, the pleonites 2 and 3 extending along the pleon to close to the point of insertion of the uropods, and the number, arrangement and shape of the robust setae on the male pereopod 2 palm. The most similar species, also from New Caledonia, but apparently occupying a more shallow depth range, is *Myopiarolis systir* sp. n. Both species lack dorsal tubercles, and have long coxae 6, but *M. novaecaledoniae* can be distinguished from *M. systir* by lacking the prominent X-shaped ridges on the sternal coxae, and having the pleonites extend much further along the pleotelson. The numerous differences between these two species are discussed in detail under the remarks for *M. systir*.

One immature paratype is here re-identified as *Myopiarolis* sp. (p. 48, Fig.24). Of the non-type material identified by Poore and Brandt (1997) one is an immature female of *M. systir*, and the specimens from off Norfolk Island are *Myopiarolis norfanz* sp. n.

Examination of the type material revealed some discrepancies between the specimens and the description, here emended. There are medial flanges on the mesial margin of pleopod 4 exopods, and lobes adjacent to sutures on pleopods 4 and 5; the pleotelson does have a longitudinal carina, but it is weak; pereonites 5–7 were figured as entire but are medially fused; there is a low rounded medial nodule on the posterior margin of the head; and the transverse ridge on the head is more anteriorly positioned.

Distribution. New Caledonia, 1128–1410 m.

Myopiarolis systir sp. n.

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Figs 20–23

Caecoserolis novaecaledoniae Poore & Brandt, 1997: 161 (part).

Material. *Holotype*: ♂ (11.6 mm), New Caledonia, 'sudest fairway', 21°27.008–24.374′S, 162°36.457–37.187′E, 23 Oct 2005, EBISCO stn CP2652, 1019–1147 m (MNHN Is.6012). *Paratypes:* 18 ♂ (11.0–12.5 mm; 2 immature 9.7, 9.9 mm; 11.4 mm [dissected]), ♀ (8 ovig. with eggs 12.5, 14.0, without eggs, 11.5–14.1 mm, 1 non-ovig. 10.5 mm), 1 manca (7.5 mm), same data as holotype (MNHN Is.6013; 1 microslide). 4♂ (11.3, 11.5, 11.5, 12.1 mm), 2♀ (ovig. 13.9, 14.5 mm), New Caledonia, 'sudest fairway', 21°29.187–26.855′S, 162°32.559–959′E, 23 Oct 2005, EBISCO stn CP2650, 825–894 m (MNHN Is.6014). 2♂ (11.0, 11.3 mm), ♀ (ovig. 14.5 mm), New Caledonia, 'sudest fairway', 21°28.134–711′S, 162°33.911–36.110′E, 23 Oct 2005, EBISCO stn CP2651, 883–957 m (MNHN Is.6015).

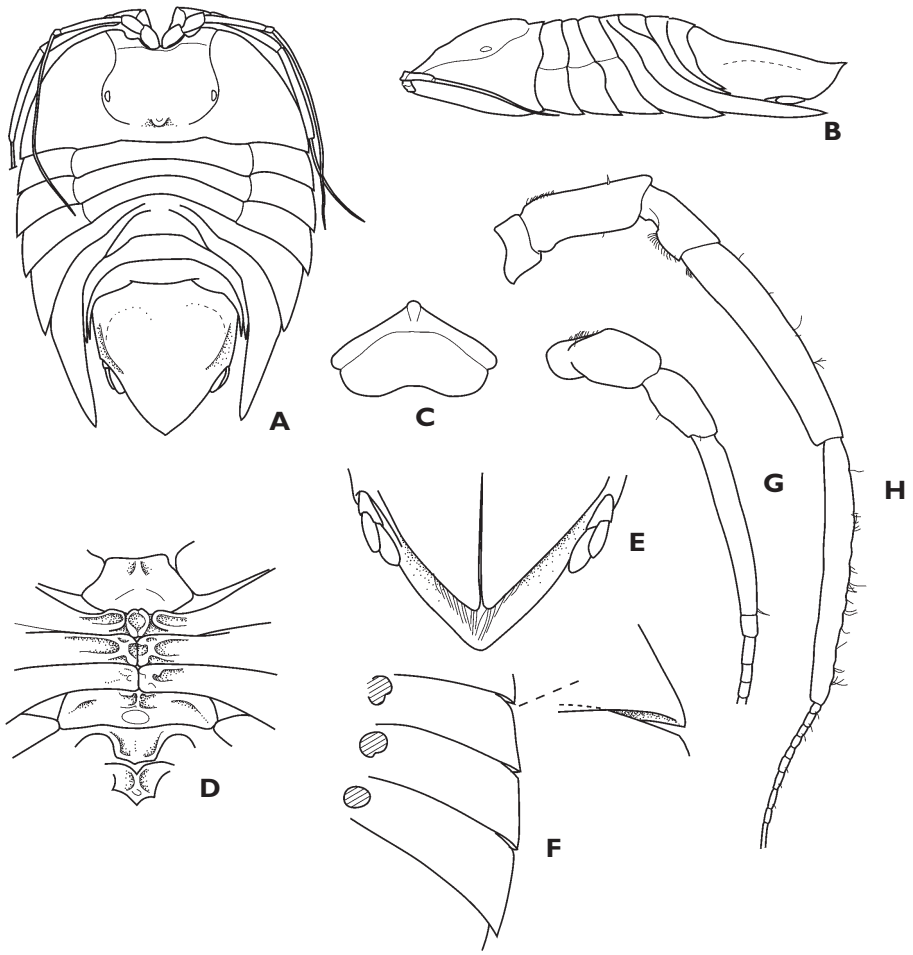

Figure 20. *Myopiarolis systir* sp. n. Holotype, except G, H, paratype ♂ 11.4 mm, Is.6013. **A** dorsal view **B** lateral view **C** frons (labrum and clypeus) **D** sternites and ventral pleonites **E** pleotelson, ventral view **F** coxae 2–5, ventral **G** antennule **H** antenna.

Additional material. ♀ (imm. 12.2 mm), Chesterfield Is., 21°02.77′S, 160°55.00′E, 21 July 1988, 700–705 m, CORAIL stn DE13 (MNHN Is.4083; part of non-type material of misidentified by Poore and Brandt (1997) as *Caecoserolis novaecaledoniae*).

Description. *Body* 1.3 as long as wide, widest at coxae 3, dorsal surfaces punctate. *Head* anterolateral lobes weakly convex, anterior submarginal 'ridge' entire; dorsally without tubercles, posterior margin without median tubercle. *Eyes* present. *Pereonite* 1 anterolateral margin continuously convex; dorsal surfaces without tubercles. *Coxae* distal margins truncate; coxae 4 extending to mid-pleonite 1; coxae 5 extending posteriorly along 0.3 of pleotelson length; coxae 6 extending to between posterior of uropods and pleotelson posterior margin, and along 0.7 (to 0.9) of pleotelson

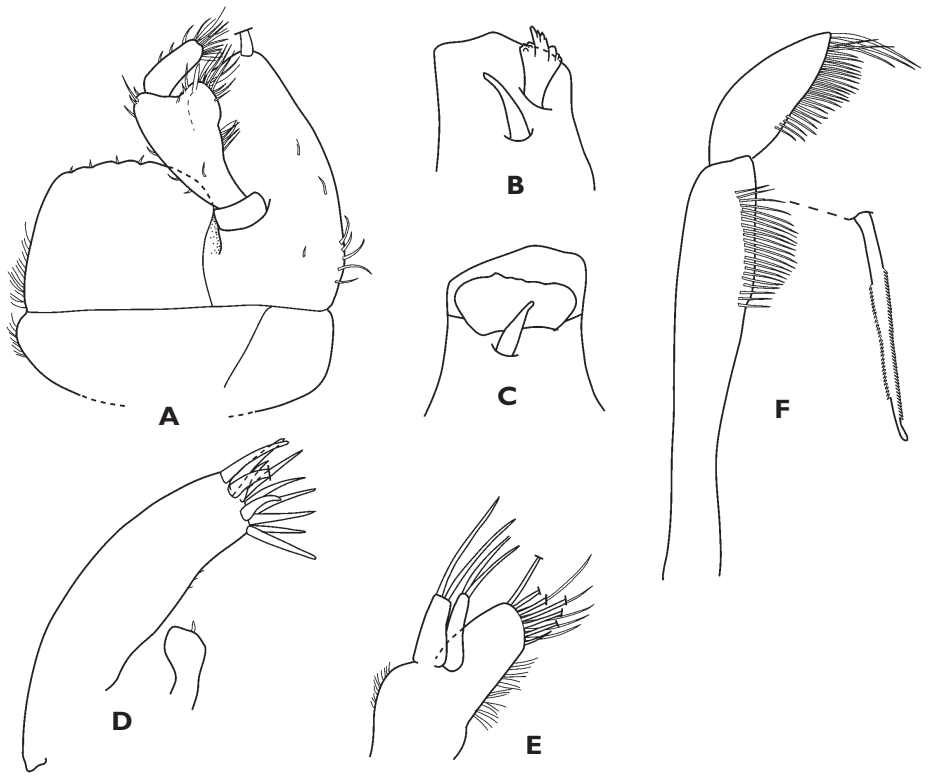

Figure 21. *Myopiarolis systir* sp. n. Paratype ♂ 11.4 mm, Is.6013. **A** maxilliped **B** right mandible, distal margin **C** left mandible, distal margin **D** maxillule **E** maxilla **F** mandible palp.

length. *Ventral coxal plates* 2 mesially elevated, plates 2–4 mesially with ridges forming X-shape; plates 6 and 7 entirely separate. *Pleonites* extending posteriorly along 0.5 pleotelson lateral margin; pleonite 1 sternal plates 3-cornered, sternal plate 1 without median ridge. *Pleotelson* 1.04 times as long as anterior width, dorsal surface without median longitudinal carina, with paired sublateral carinae (weak); lateral margins weakly sinuate, posterior margin converging to angled caudomedial point, without distinct median excision.

Antennule peduncle article 2 2.2 times as long as wide; articles 3 and 4 2.4 times as long as article 2; article 3 7.4 times as long as wide; flagellum 3.0 as long as peduncle articles 3 and 4, with ~60 articles, extending to pereonite 5. *Antenna* peduncle article 4 5.5 times as long as wide, 3.0 times as long as article 3; article 5 1.1 times as long as article 4, 9.6 times as long as wide; antennal flagellum 1.0 as long as peduncle article 5, with ~20 articles, extending to middle of pereonite 4.

Epistome with blunt median point. *Mandible incisor* even or minutely irregular, left mandible lacinia mobilis 0.9 as wide as incisor, right mandible lacinia mobilis distally multicuspid, mandibular spine simple; palp article 2 with 22 distolateral setae, article 3

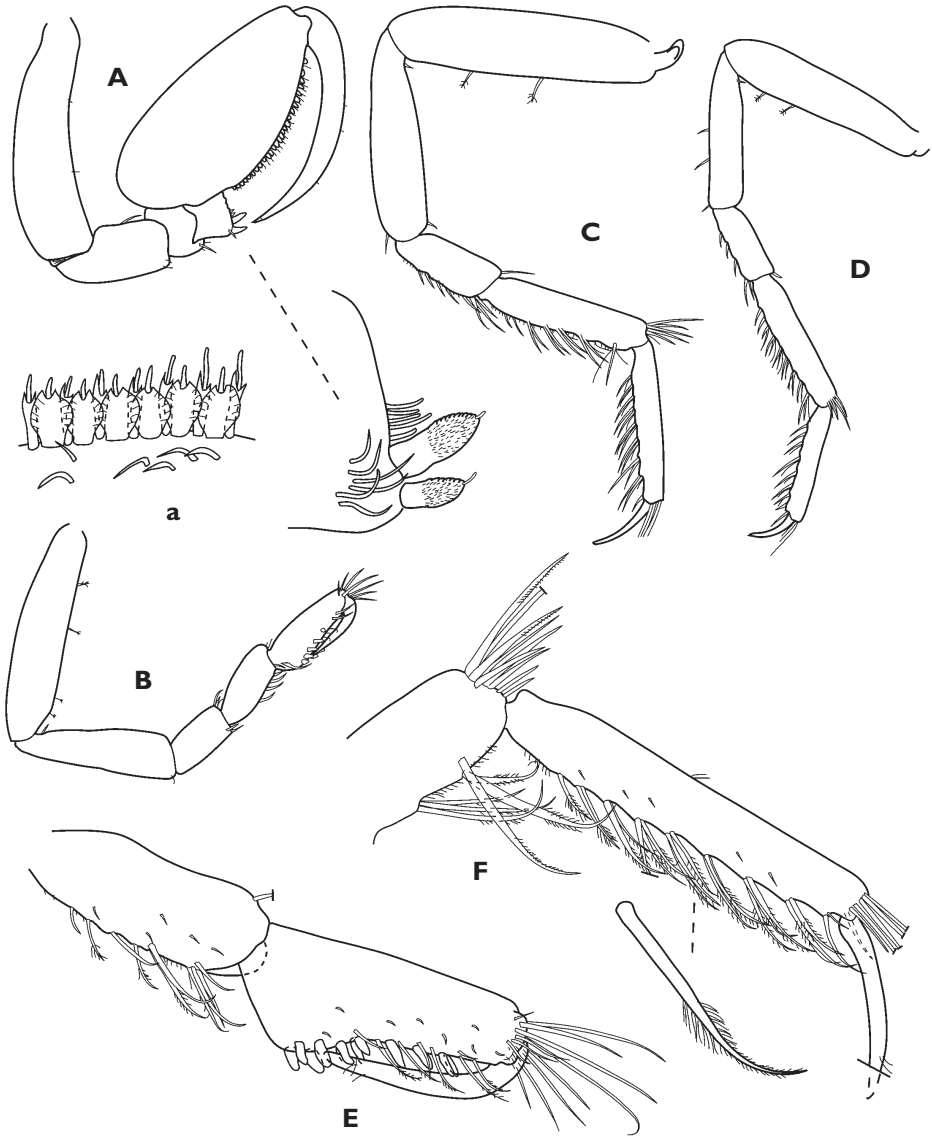

Figure 22. *Myopiarolis systir* sp. n. Paratype ♂ 11.4 mm, Is.6013, except H, holotype. **A–D** pereopods 1 2, 6 and 7 respectively **a** detail of pereopod 1 propodal palm setae **E** pereopod 2 carpus and propodus **F** pereopod 6 carpus and propodus.

with 26–27 biserrate setae. *Maxilla* mesial lobe with 11 long, finely serrate setae; middle lobe with 2 long simple setae; lateral lobe with 2 distal simple setae. *Maxilliped palp* article 2 proximomesial margin with 6 setae, distomesial margin with 18 setae, lateral margin distally with 4 setae; article 3 lateral margin with 3 setae, distal margin with 14 setae; endite distal margin RS simple.

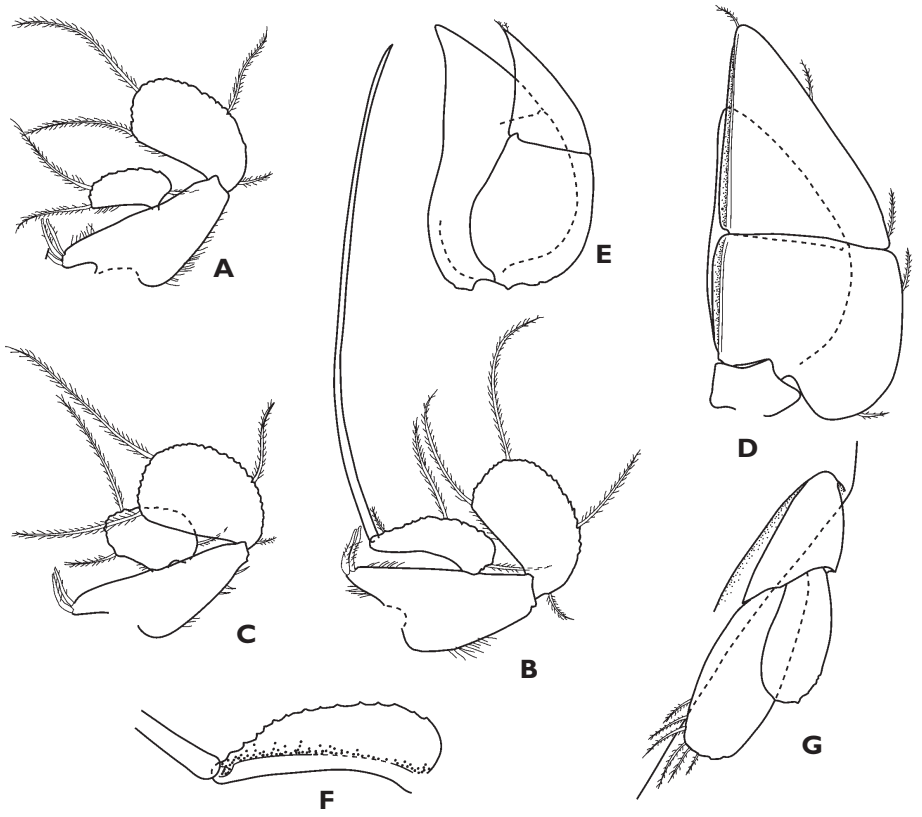

Figure 23. *Myopiarolis systir* sp. n. Paratype ♂ 11.4 mm, Is.6013. **A–E** pleopods 1–5 respectively **F** pleopod 2 endopod detail **G** uropod.

Pereopod 1 carpus RS distally pilose; propodus 2.1 times as long as wide, inferior margin with ~56 RS; wide RS with finely ridged margins, narrow RS distally bifid, with simple flagellum; dactylus with acute unguis. *Pereopod 2 basis* 4.5 times as long as greatest width; 0.7 times as long as basis, ischium 3.4 times as long as wide; *merus* 0.4 as long as ischium, 1.8 times as long as greatest width, inferior margin with 1 cluster of setae (as 2), superior distal angle with 3 setae; *carpus* 0.6 as long as ischium, 2.5 times as long as wide, inferior margin with 3 clusters of setae (as 1, 1 and 1); *propodus* 0.5 as long as ischium, 2.4 times as long as wide, inferior margin with distinct heel, palm angled, inferolateral margin with 4 RS, inferomesial margin with 7 RS, inferior margin RS simple, blunt, smooth, distal margin with ~12 setae; *dactylus* 0.8 as long as propodus, unguis simple, slender. *Pereopod 6 basis* 4.2 times as long as greatest width; *ischium* 0.8 as long as basis, 4.1 times as long as wide, inferior margin with 0 clusters setae, superior distal angle with 1 robust seta; *merus* 0.4 as long as ischium, 2.1 times as long as wide, inferior margin with 5 clusters of setae (as 1, 1, 1, 1 and 4), superior distal angle with 1 seta; *carpus* 0.8 as

long as ischium, 4.6 times as long as wide, inferior margin with 7 clusters of setae (as 1, 1, 2, 2, 3 and 3), superior distal angle with ~9 setae; *propodus* 0.8 as long as ischium, 6.2 times as long as wide, inferior margin with 9 clusters of setae (as 1, 2, 2, 3, 3, 2, 3, 3 and 1), distal margin with ~12 setae, inferior distal angle with 0 RS; *dactylus* 8.8 as long as proximal width. *Pereopod 7* similar to, but 0.8 as long as pereopod 6. Setae on inferior margins of pereopods 4–7 densely plumose. Inferior margins of pereopods 2–7 setulose fringe weakly developed.

Pleopod 1 peduncle 1.6 times as long as wide, mesial margin with 3 coupling setae; exopod 1.8 as long as wide, with 36 PMS; endopod 2.3 times as long as wide, 0.6 as long as exopod, with 18 PMS. *Pleopod 2* peduncle 1.6 as long as wide, mesial margin with 2 coupling setae; exopod 1.6 as long as wide, with 38 PMS; endopod 2.9 as long as greatest width, lamellar part 3.6 as long as wide, with 18 PMS; *appendix masculina* 4.2 times as long as endopod. *Pleopod 3* exopod with 42 PMS, endopod with 22 PMS. *Pleopod 4* exopod with complete transverse suture, endopod with complete transverse suture. *Pleopod 5* exopod with complete transverse suture, endopod with incomplete transverse suture.

Uropods (rami + peduncle) 0.3 as long as pleotelson, peduncle 0.8 as long as endopod. *Endopod* 2.4 as long as wide; distally broadly rounded. *Exopod* 0.7 as long as endopod, 2.2 times as long as wide, distally broadly rounded.

Females. Similar to males, slightly larger; coxae 6 not as produced as in males, rarely extending beyond the uropods.

Size. Males 11.0–12.5 mm, mean = 11.6 mm; immature males 9.7–9.9 mm (2 only); females–with eggs 12.5–14.5 mm (mean 13.7 mm), with oostegites only 11.4–14.5 mm (mean = 12.7 mm); non-ovig. 10.5 mm.

Colour. Dark grey–green, pale bands on dorsal somites and coxae noticeably broad.

Variation. Coxae 6 extends posteriorly to about the midpoint of the uropodal rami (tip of exopod) to a little beyond the rami (as in the holotype), with most (7 of 10) extending at least to the apex of the endopod or further. Ovigerous females have slightly shorter coxae, most (5 of 7) not extending beyond the uropodal exopod.

Setation of male pereopod 2 propodus (n=18) is variable, ranging from 3+6 RS (mesial + lateral margins) to 6+7 and 4+8, with no clear combination; lateral margin ranging from 5 to 8 RS, most frequently with 8 (16%), 7 (28%) and 6 (33%) (damaged limbs were discounted from the counts); mesial margin ranging from 3 to 6 RS, most frequently with 5 (22 %) or 4 (50%).

Remarks. *Myopiarolis systir* sp. n. can be identified by the lack of dorsal ornamentation, long coxae 6 which extend posteriorly to between the mid-point of the uropods to just short of the pleotelson apex, short pleonites that extend along the anterior one-third of the pleotelson, the strong sculpting of sternal coxae 2–4, and lack of median dorsal carina on the pleotelson.

Myopiarolis systir is similar in general appearance to *M. novaecaledoniae*, but differs consistently at least seven characters (state for *M. novaecaledoniae* in parentheses): small body size, with males averaging 11.6 mm, adult females 12.7 mm (males 16.9, 16.7 mm; females ovig. 18.5 mm); coxal sternites 2–4 are medially elevated and strongly

ornamented with ridges forming a prominent median excavation (not elevated, weakly ornamented); coxae 6 extend to and beyond uropods (not beyond uropods); pleonites extending posteriorly along anterior one-third of pleotelson (along anterior half of pleotelson); pleotelson without longitudinal median carina (longitudinal carina present) and pleotelson apex sub-acute (rounded); male pereopod 2 propodus with short, blunt robust setae (robust setae longer, acute) and a different pattern of robust setae (3–4+7–8 RS in *M. systir* vs. 6+6 in *C. novaecaledoniae*); pereopod 2 propodal 'heel' distinct (less distinct); and the setae on the inferior margins of pereopods 5–7 are prominently plumose from mid-length (weakly plumose). In addition the two species occupy somewhat different though potentially overlapping depth ranges: *M. systir* has been collected at depths from 500 to 1210 metres, while *C. novaecaledoniae* s. str. from 1395 to 1410 m

Distribution. New Caledonia, depths of 700–1147 metres.

Etymology. The Old Norse word for sister, alluding to the close 'relationship' between this species and *Caecoserolis novaecaledoniae* (noun in apposition).

Myopiarolis sp.

Fig. 24

Caecoserolis novaecaledoniae Poore & Brandt, 1997: 161 (part).

Manca (7.8 mm; paratype of *C. novaecaledoniae*), 23°56′S, 166°41′E, 1 Sep 1985, 2660–2750 m, BIOCAL stn CP58 (MNHN Is.4080).

Remarks. This specimen differs from the holotype and other paratypes of *M. novaecaledoniae* in a number of significant characters. The cuticle is heavily pitted,

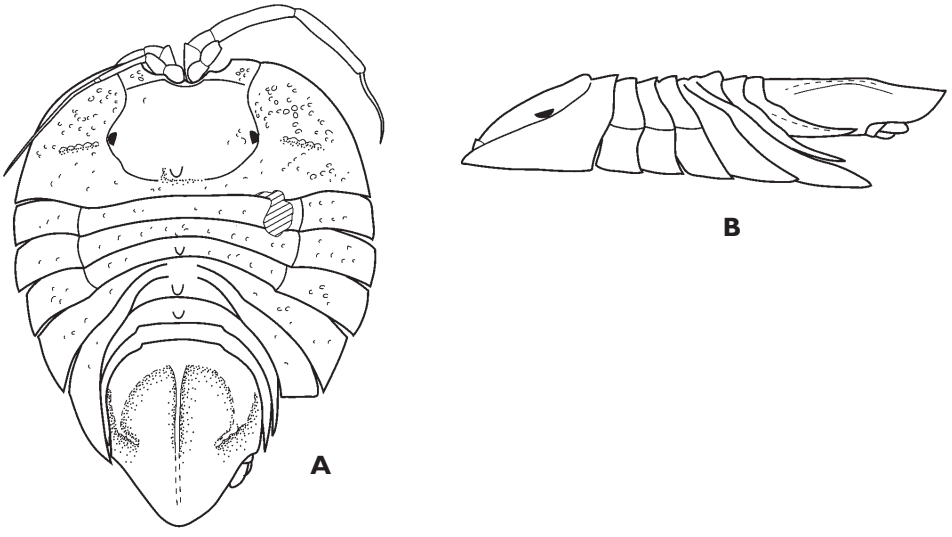

Figure 24. *Myopiarolis* sp. **A** dorsal view **B** lateral view.

the lateral margins of pereonite 1 are posteriorly nearly straight, the mid-dorsal region of pereonite 1 has an obscure transverse ridge, the eyes are set right against the lateral margin of the head, and the head, pereonites 4 and 7 and pleonite 1 each have a small but distinct median tubercle. This specimen is not *C. novaecaledoniae*, and is closer to large deep-water species such as *M. koro* sp. n. and *M. carinata* (Bruce, 2008).

Thysanoserolis Brandt, 1991

Thysanoserolis Brandt, 1991: 132, 146; 1992: 233.– Wägele 1994: 48.

Type species. *Serolis completa* (Moreira, 1971); original designation (Brandt 1991).

Species included. The type species, *T. completa* (Moreira, 1971), Brazil; *T. elliptica* (Sheppard, 1933), southwestern Atlantic, from southern Brazil to Straits of Magellan and the Falkland Islands; and *T. orbicula* sp. n., New Caledonia.

Remarks. The new species described here conforms well with genus with regard to somatic morphology, and the diagnostic uropod morphology. In comparison to the other species the antennule is short, and the antenna far more massive and broad forming a more continual part of the body outline.

In his analysis of the Serolidae Wägele (1994) placed *Thysanoserolis* and *Neoserolis* in the same group, a sister group to all other Serolidae, primarily (according to the dendrogram fig. 37) on the basis of the superior margin of the male pereopod 1 being setose, and the basipod and epipod of the maxilliped being fused. Setation of the male pereopod 1 is unknown for the new species.

Brandt (1992) diagnosed the genus as having 'big eyes', but eye size varies within the three species, with moderately small, round eyes in *T. completa* and *T. elliptica*, and ommatidia absent in the new species, though a reniform–seleniform eye lobe seems to remain. Large eyes in the sense of genera such as *Serolis* or *Acutiserolis* are not present in *Thysanoserolis*.

Pleopod 4, in most serolid genera, has a thin flap that runs along the mesial margin of the exopod, effectively creating a flexible seal to the contained pleotelson. This flap seems to be present in most species of most genera, but is often not figured in illustrations. *T. orbicula* sp. n. lacks this mesial flange.

Thysaneroserolis orbicula sp. n.

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Figs 25–27

Material. *Holotype:* ♀ (ovig., 7.0 mm), off Lord Howe Island, 23°51.30–31′S, 161°43.13–42.96′E, 5 Oct 2005, BBISCOL stn DW2482, 400–430 m, manganese (MNHN Is.6024, 2 microslides).

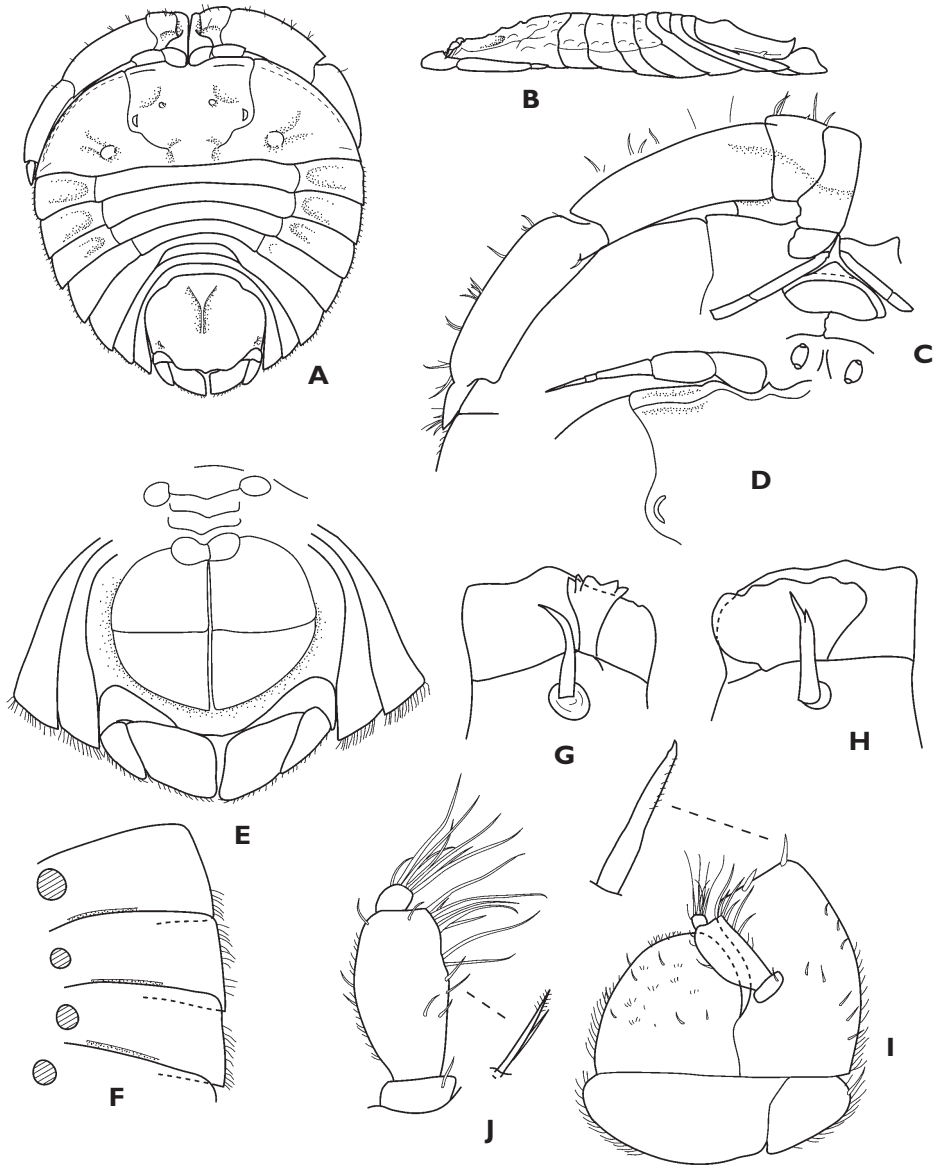

Figure 25. *Thysanoserolis orbicula* sp. n. Holotype. **A** dorsal view **B** lateral view **C** head, frons and antennae, ventral view **D** head, anterior margin **E** pleon and pleotelson, ventral view **F** coxae 2–5, ventral **G** right mandible **H** left mandible **I** maxilliped **J** maxilliped palp.

Description. *Body* 0.9 as long as wide (1.2 as long as overall length inclusive of antenna and uropods), widest at coxae 2, dorsal surfaces polished in appearance and irregularly nodular. *Head* anterolateral lobes straight, anterior submarginal 'ridge' entire; dorsally with pair of low sub-median tubercles anterior to eyes, posterior margin

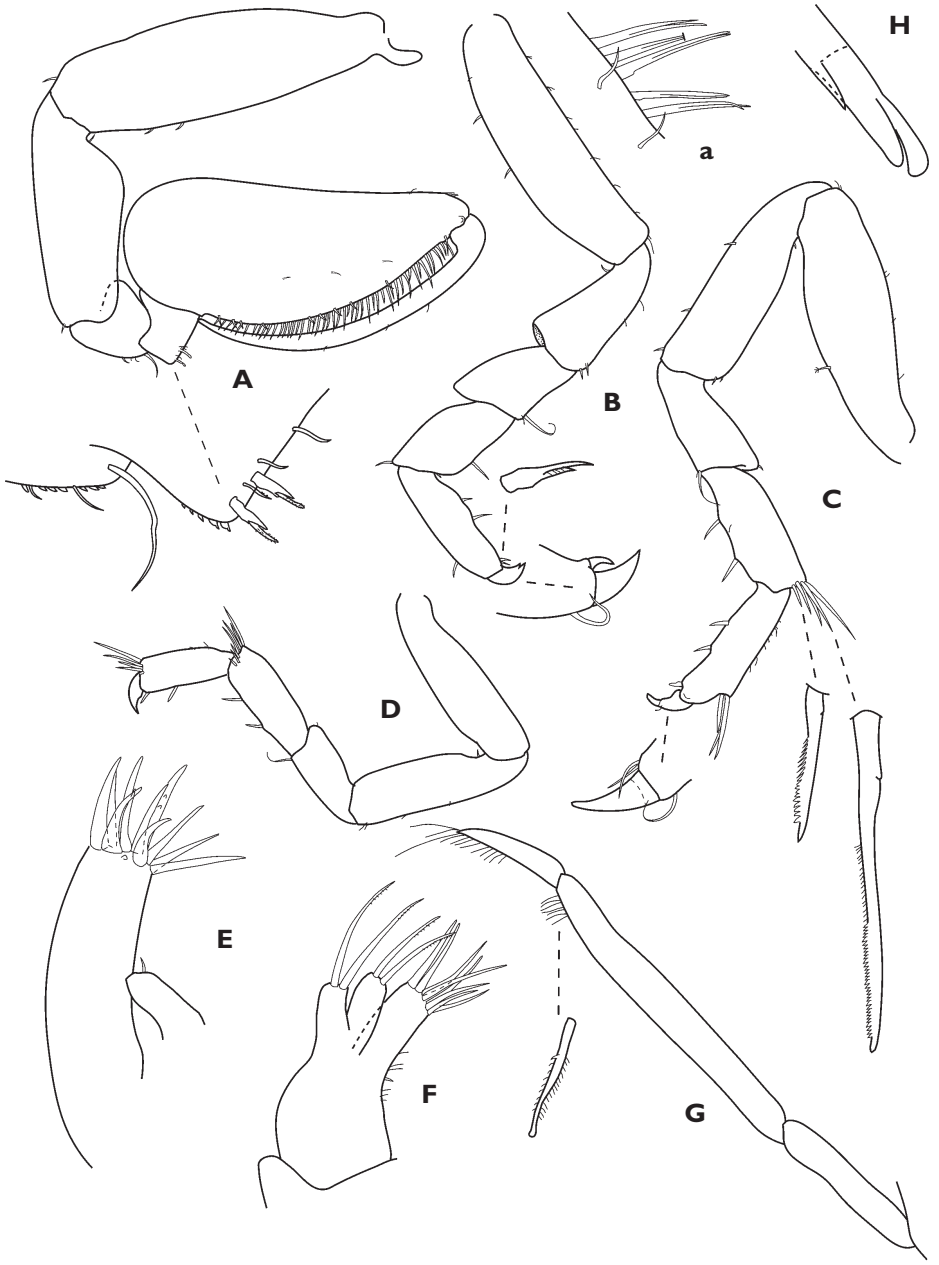

Figure 26. *Thysanoserolis orbicula* sp. n. Holotype. **A–D** pereopods 1, 2, 6 and 7 respectively **a** detail of pereopod 1 propodal palm setae **E** maxillule **F** maxilla **G** mandible palp **H** pereopod 1, dactylus unguis.

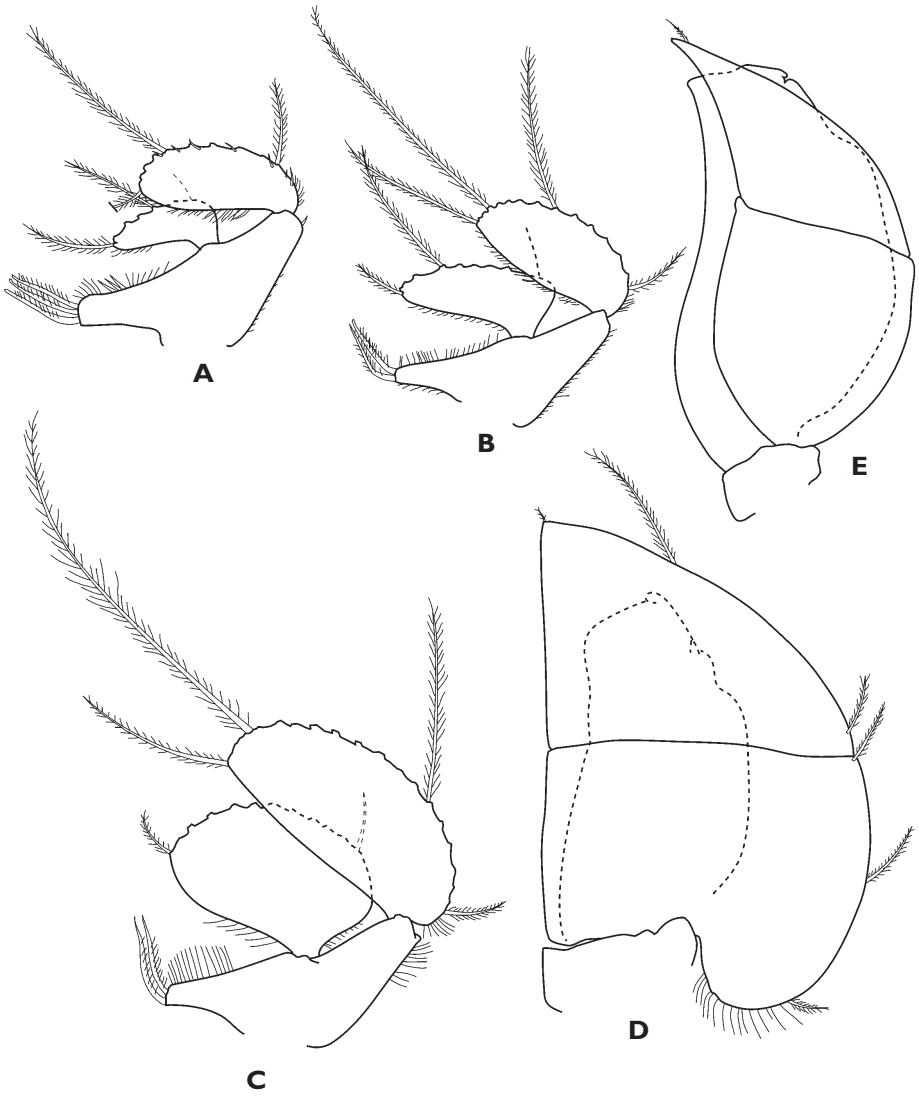

Figure 27. *Thysanoserolis orbicula* sp. n. Holotype. **A–E** pleopods 1–5 respectively.

without median tubercle. *Eyes* minute (less than 5% greatest width of head), reniform, ommatidia not distinct (possibly absent). *Pereonites* all entire, articulating; *Pereonite 1* anterolateral margin continuously convex; dorsal surfaces without tubercles. *Coxae* of pereonites 2–4 articulated, with dorsal sutures, distal margins weakly convex; coxae 4 extending to anterior margin of pleotelson; coxae 5 extending posteriorly along 0.5 of pleotelson length; coxae 6 extending to posterior margin of pleotelson, and along 0.8 of pleotelson length. *Pleonites* extending posteriorly along 1.1 pleotelson lateral margin; pleonite 1 sternal plates with single median lobe, sternal plate 1 without median ridge. *Pleotelson* 0.8 times as long as anterior width; dorsal surface with median

longitudinal carina (not reaching posterior margin), without paired sublateral carinae; lateral margins straight; posterior margin sub-truncate (with median point), without distinct median excision.

Antennule peduncle article 2 1.1 times as long as wide; articles 3 and 4 1.1 times as long as article 2; article 3 3.8 times as long as wide; flagellum 0.6 as long as peduncle articles 3 and 4, with 2 or 3 articles, extending to posterior margin of eye. *Antenna* peduncle article 4 2.7 times as long as wide, 3.8 times as long as article 3; article 5 0.9 times as long as article 4, 3.9 times as long as wide; antennal flagellum 0.3 as long as peduncle article 5, with 1 or 2 articles, extending to posterior of pereonite 1.

Epistome with obtuse median point. *Mandible incisor* even or minutely irregular, left mandible lacinia mobilis 0.8 as wide as incisor, right mandible lacinia mobilis distally multicuspid, mandibular spine simple or with 1 or 2 teeth; palp article 2 with 7 distolateral setae, article 3 with 13 biserrate setae. *Maxilla* mesial lobe with 8 long, finely serrate setae; middle lobe with 2 long simple setae; lateral lobe with 2 distal simple setae. *Maxilliped palp* article 2 proximomesial margin with 2 setae, distomesial margin with 6 setae, lateral margin distally with 3 setae; article 3 lateral margin with 0 setae, distal margin with 8 setae; endite distal margin RS serrate.

Pereopod 1 carpus RS simple; propodus 2.5 times as long as wide, inferior margin with ~48 RS; narrow RS simple, deeply bifid; dactylus with unguis distally bifid. *Pereopod 2 basis* 3.8 times as long as greatest width; 0.5 times as long as basis, ischium 2.1 times as long as wide; *merus* 0.6 as long as ischium, 1.4 times as long as greatest width, inferior margin with 1 cluster of setae (of 1), superior distal angle with 0 setae; *carpus* 0.7 as long as ischium, 1.7 times as long as wide, inferior margin with 1 cluster of setae (of 1); *propodus* 0.9 as long as ischium, 3.0 times as long as wide, inferomesial margin with 2 RS; *dactylus* 0.2 as long as propodus, unguis acute, with prominent secondary unguis. *Pereopod 6 basis* 3.3 times as long as greatest width; *ischium* 0.9 as long as basis, 3.5 times as long as wide, inferior margin with 3 clusters of setae (of 1, short), superior distal angle with 0 RS; *merus* 0.5 as long as ischium, 2.5 times as long as wide, inferior margin with 1 cluster of setae (of 1), superior distal angle with 1 seta (minute); *carpus* 0.6 as long as ischium, 3 times as long as wide, inferior margin with 2 clusters of setae (1 and 1 RS), superior distal angle with 5 setae; *propodus* 0.6 as long as ischium, 3.1 times as long as wide, inferior margin with 2 clusters of setae (RS), distal margin with 3 setae (RS), inferior distal angle with 1 RS; *dactylus* 1.6 as long as proximal width. *Pereopod 7* similar to, but 0.7 as long as pereopod 6. Setae on inferior margins of pereopods 4–7 simple. Inferior margins of pereopods 2–7 setulose fringe absent.

Pleopod 1 peduncle 3 times as long as wide, mesial margin with 3 coupling setae; exopod 2.3 as long as wide, with 11 PMS; endopod 2.7 times as long as wide, 0.7 as long as exopod, with 6 PMS. *Pleopod 2* peduncle 1.5 as long as wide, mesial margin with 2 coupling setae; exopod 2.2 as long as wide, with 15 PMS; endopod 2.8 as long as greatest width. *Pleopod 3* exopod with 24 PMS, endopod with 13 PMS. *Pleopod 4*

exopod with complete transverse suture, endopod without transverse suture. *Pleopod 5* exopod with complete transverse suture, endopod without transverse suture.

Uropods (rami + peduncle) 0.7 as long as pleotelson, peduncle 0.7 as long as endopod. *Endopod* 1.8 as long as wide; distally narrowly rounded. *Exopod* 0.6 as long as endopod, 2.3 times as long as wide, distally acute.

Remarks. The two other species in the genus, both from the western Atlantic, are abundantly different. *Thysanoserolis orbicula* can be immediately identified and separated from its congeners (and all other serolids) by the almost circular body outline (body shorter [0.9] than wide, compared to 1.4 as long as wide in *T. elliptica* and 1.2 as long as wide in *T. completa*), very flat body, conspicuously flattened and wide antennal peduncle articles that form part of the continuous body outline, the very short antennule flagellum, and geniculate antennal flagellum.

Distribution. New Caledonia; at depths of 400–430 metres.

Etymology. The epithet is derived from the Latin *orbis* meaning round.

Caecoserolis Wägele, 1994

Caecoserolis Wägele, 1994: 10 (not *Caecoserolis* of Poore and Brandt 1997: 161; = *Myopiarolis* gen. n.)

Type species. *Serolis brinki* Kensley, 1978; original designation (Wägele 1994).

Description. *Head* lateral lobe mesial margin with single concavity; anterolateral lobes forming of continuous margin with pereonite 1; anterior submarginal 'ridge' absent; posterior margin without ornamentation. *Eyes* absent. *Pereonites* all entire, articulating; pereonite 1 anterior margin not strongly bent dorsally, dorsally without tubercles. *Coxae* of pereonites 2–4 articulated, with dorsal sutures; 2–4 and pereonite 6 entirely lacking coxal keys; distal margin truncate; coxae 6 wide, laterally or distally broad, extending proximal to insertion of uropod peduncle. *Ventral coxal plates* 2–4 meeting midline; simple, smooth; plates 6 and 7 entirely separate. *Pleonites* distally narrow or acute, laterally overlapped by coxae 6, extending posteriorly along pleotelson. *Sternites* 5–7 visible, fused. *Sternal* plates of pleonites 1–3 3-cornered, with acute median point, without median ridge. *Pleotelson* dorsal surface not vaulted, with weak median longitudinal carina, without paired sublateral carinae; pleotelson posterior margin evenly rounded, without distinct exit channel.

Antennule flagellum 1.2–2.0 as long as peduncle articles 3 and 4, extending to pereonite 2. *Antenna* peduncle articles 4 and 5 broad, article 5 less than 5 times as long as greatest width; flagellum three-quarters as long as peduncle article 5.

Epistome evenly rounded. *Mandible* incisor with two posterior cusps; left mandible lacinia mobilis three-quarters as wide as incisor or larger, right lacinia mobilis distally multicuspid; mandibular spine distally serrate. *Maxilliped* palp with 3 articles; article 3 cordiform, longer than wide.

Pereopod 1 carpus RS–state not known (pilose *vs* serrate); propodal palm setae all RS, alternating straight and flattened, wide RS finely pilose, narrow RS distally bifid, with simple flagellum. *Pereopod* 2 propodus inferior margin without heel; palm straight; unguis simple, blunt.

Penial openings narrowly separated.

Pleopods 1–3 peduncles subquadrate. slightly narrower distally, pleopods 1–3 peduncles with coupling setae. *Pleopod* 2 endopod lamellar part slightly shorter than ramus.

Uropods Biramous, inserted on pleotelson mid-laterally, positioned laterally, not forming part of continuous body outline; less than one-third as long as pleotelson, endopod distally rounded.

Remarks. *Caecoserolis* belongs with the group of genera characterised by having a distal stem on pleopod 2 endopod, approximating to the 'Group B' of Wägele (1994). The genus can be identified by the flat (or weakly domed) pleotelson that lacks lateral carinae, antenna with broad peduncular articles 4 and 5, pleopod peduncles that are sub-quadrate (slightly narrower distally than proximally) and by the short uropods inserted mid-laterally on the pleotelson; another less precise character is that *Caecoserolis* has a flatter body than related genera.

All but the type species of *Caecoserolis* have been transferred to the *Myopiarolis* gen. n. The characters that most readily separate these two genera (in parentheses for *Myopiarolis*) include antenna peduncle articles 4 and 5 broad with article 5 less than 5 times as long as greatest width (slender, elongate, 4.6–6.3 and 8.6–10.3 as long as wide respectively), pleopods 1–3 peduncles quadrate or subquadrate (triangular), pereonite 1 anterior margin anterior margin weakly indented (distinctly indented), pereonites all with visible entire sutures (pereonites 5–7 sutures medially fused), simple and flat pleotelson that lacks sub-lateral carina (pleotelson vaulted, with sub-lateral carinae), coxae 6 not extending posteriorly to pleonites (extending posteriorly to pleonites) and penial openings narrowly separated (fused in all species of *Myopiarolis*).

Distribution. The genus is monotypic, with one western Indian Ocean species, off the Natal coast of South Africa.

Caecoserolis brinki (Kensley, 1978)

Fig. 28

Serolis brinki Kensley, 1978: 144, figs 14, 15.
Caecoserolis brinki.– Wägele 1994: 10, 11 (type species by designation).

Material. *Holotype*: ♂ (8.4 mm), Indian Ocean; off the Natal Coast between Richards Bay and Lake St Lucia, South Africa, 28°31′S, 32°34′E, 24 May 1976, stn. SM103, 680 m, coll. RV *Meiring Naude* (SAM 15460).

Notes on the holotype: The label data differs slightly from that published in Kensley (1978). The specimen has one accompanying vial with dissected mandibles and pere-

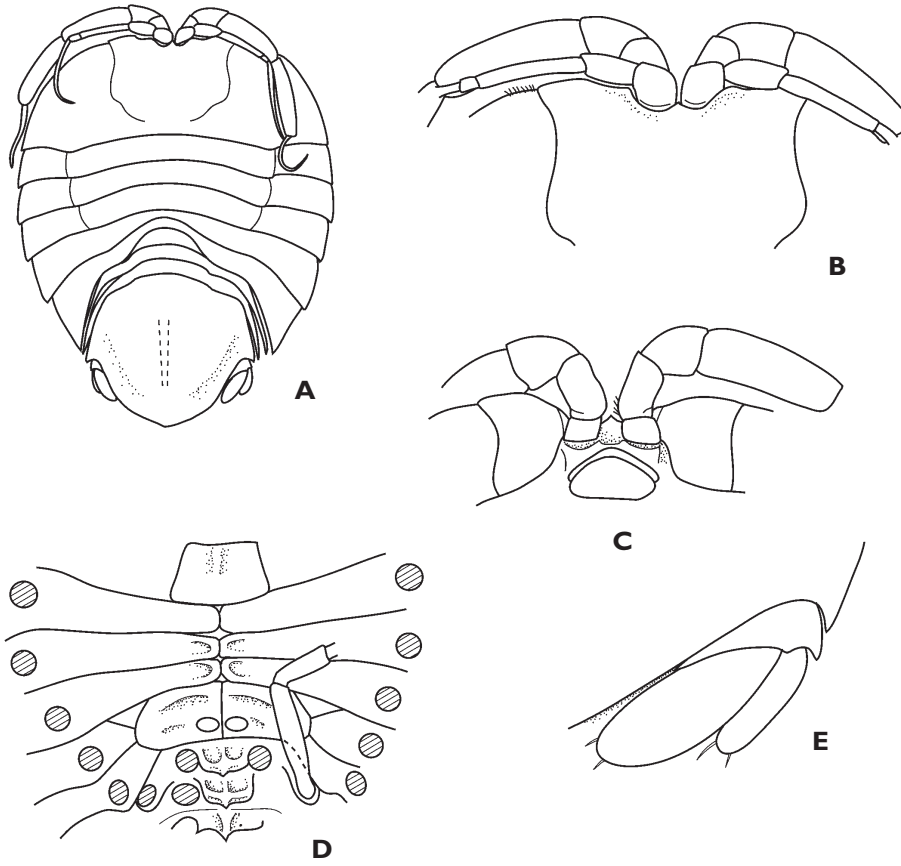

Figure 28. *Caecoserolis brinki* (Kensley, 1978). Holotype. **A** dorsal view **B** head, anterolateral margin **C** frons **D** ventral view sternites and pleonites **E** uropods (in situ).

opod 1; other dissected appendages (right hand maxilla, maxilliped, pereopods 2 and 7; pleopods 1and 2) were not with the specimen.

Remarks. The species is identifiable on the basis of generic characters. Further material is needed to redescribe the species in detail (e.g. morphology of the pereopodal setae).

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