

## Two new species of the mesopelagic isopod genus *Syscenus* Harger, 1880 (Crustacea: Isopoda: Aegidae) from the southwestern Pacific

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### Abstract

*Syscenus moana* sp. nov. and *Syscenus karu* sp. nov. are described. *Syscenus moana*, from off southern New Caledonia at depths of 1250–1410 m, differs from all species of *Syscenus* in having robust setae on the uropodal rami; *S. karu*, from off Vanuatu at depths of 450–480 m, is distinguished in particular from all but one species (*S. peruanus* Menzies & George, 1972) by the presence of eyes, and by stout pereopods.

**Key words:** Isopoda, Aegidae, *Syscenus*, New Caledonia, southwest Pacific, mesopelagic

### Introduction

*Syscenus* Harger, 1880 is a small genus of usually eyeless species, known from all oceans except the Southern Ocean. The feeding habits for most species remain unknown, but one species has recently been shown to attack and feed on fishes (Ross *et al.* 2001) and is possibly host dependent. *Syscenus* is primarily tropical and temperate in distribution, and has been recorded from depths as shallow as 70 metres in the North Atlantic (Kensley 2004) to 4609 m off northern Peru (Menzies & George 1972); most records are between approximately 500 and 2000 metres.

Bruce (1997) revised the generic diagnosis for *Syscenus* Harger, 1880 and listed the then known species. This contribution adds a further two species to the genus, bringing the total number of *Syscenus* to nine. Three species are known from the northern Pacific, the East Pacific (off tropical Peru) has one species (see Bruce 1997) and the North Atlantic two species (Kensley 2004).

## Methods

Descriptions were prepared in DELTA (Dallwitz *et al.* 1997) using a general aegid character set. Identical characters states for the two species described here are not included in the description of the latter species. Material is deposited at the Muséum national d'Histoire naturelle, Paris (MNHN).

*Abbreviations:* PMS—plumose marginal setae; RS—robust seta/setae.

## Taxonomy

### Cymothoida Wägele, 1989

#### Aegideae White, 1850

#### *Syscenus* Harger, 1880

*Restricted synonymy:* Bruce, 1997: 113.—Bruce, Lew Ton & Poore, 2002: 163.

*Type species:* *Syscenus infelix* Harger, 1880, by monotypy.

*Remarks.* Recent publications on species of *Syscenus* include Kensley (2004), Kensley & Cartes (2003), and Ross *et al.* (2001) on the parasitic habits of *Syscenus infelix* Harger, 1880. Bruce (1997) provided a revised generic diagnosis. The genus can be recognized by the pleon being abruptly narrower than the pereon, lamellar uropods and maxilliped palp with three articles; all but two species entirely lack eyes. The monotypic genus *Xenuraega* Tattersall, 1909, also with a narrow pleon, is immediately distinguished by the uropodal rami, with a short and stub-like endopod and an exceptionally elongate, filamentous endopod with numerous plumose setae (Bruce 1993, figs 1 and 2).

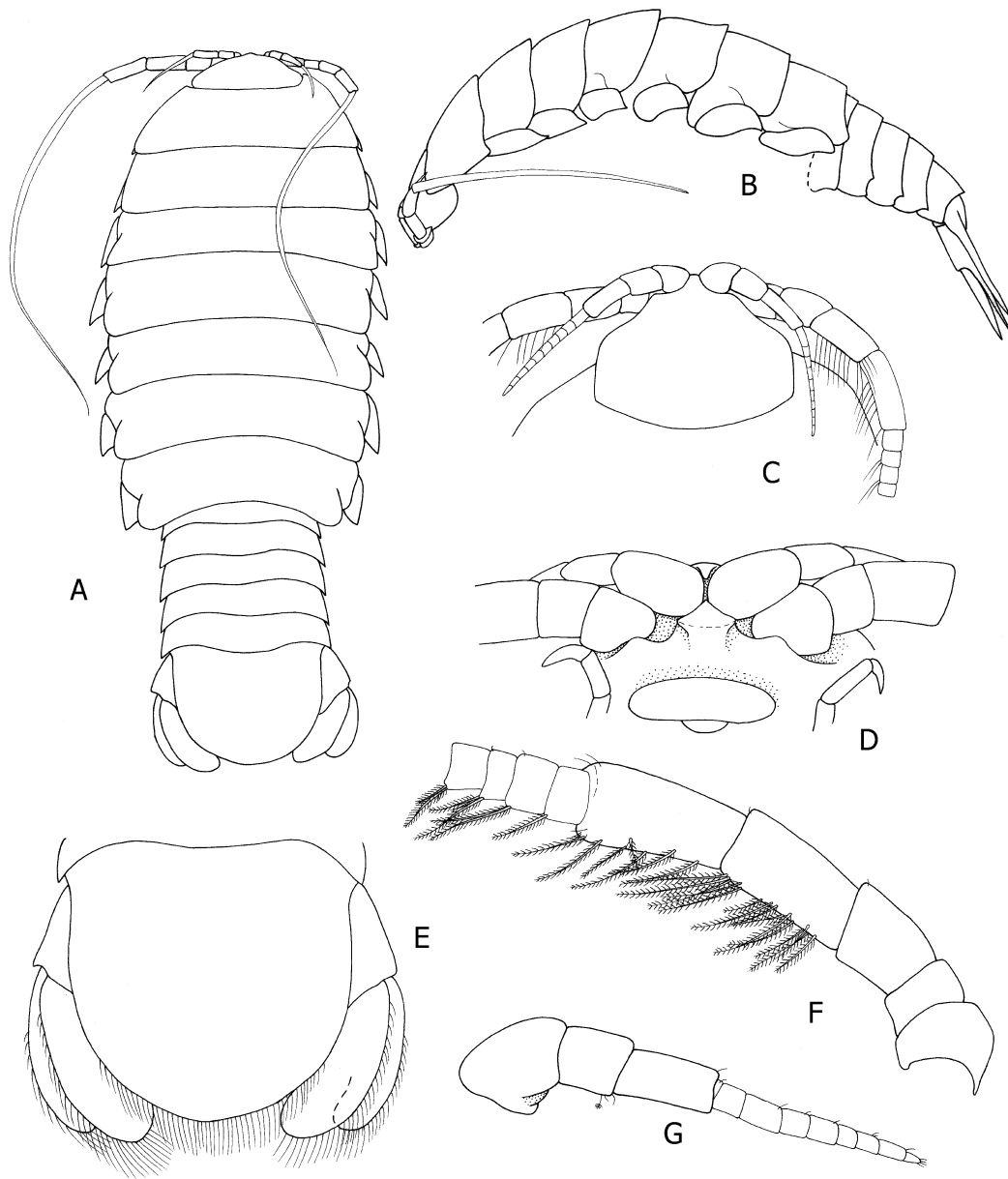
Most species of the genus lack any trace of eyes or ommatidia. *Syscenus peruanus* Menzies & George, 1972, the only previously described species known to have eyes, is known from a single juvenile specimen, atypically deep for the genus at 4526–4609 m, from off Peru. *Syscenus karu* sp. nov. has distinct eyes, and the lack of eyes can no longer be considered a generic character state for the genus.

#### *Syscenus moana* sp. nov. (Figs 1–4)

#### Material examined

Holotype: ♀ (non-ovig. 24 mm), New Caledonia, 23°52'S, 168°58'E, 3 Sep 1985, BIOCAL stn. CP69, 1220–1225 m (MNHN Is.5848).

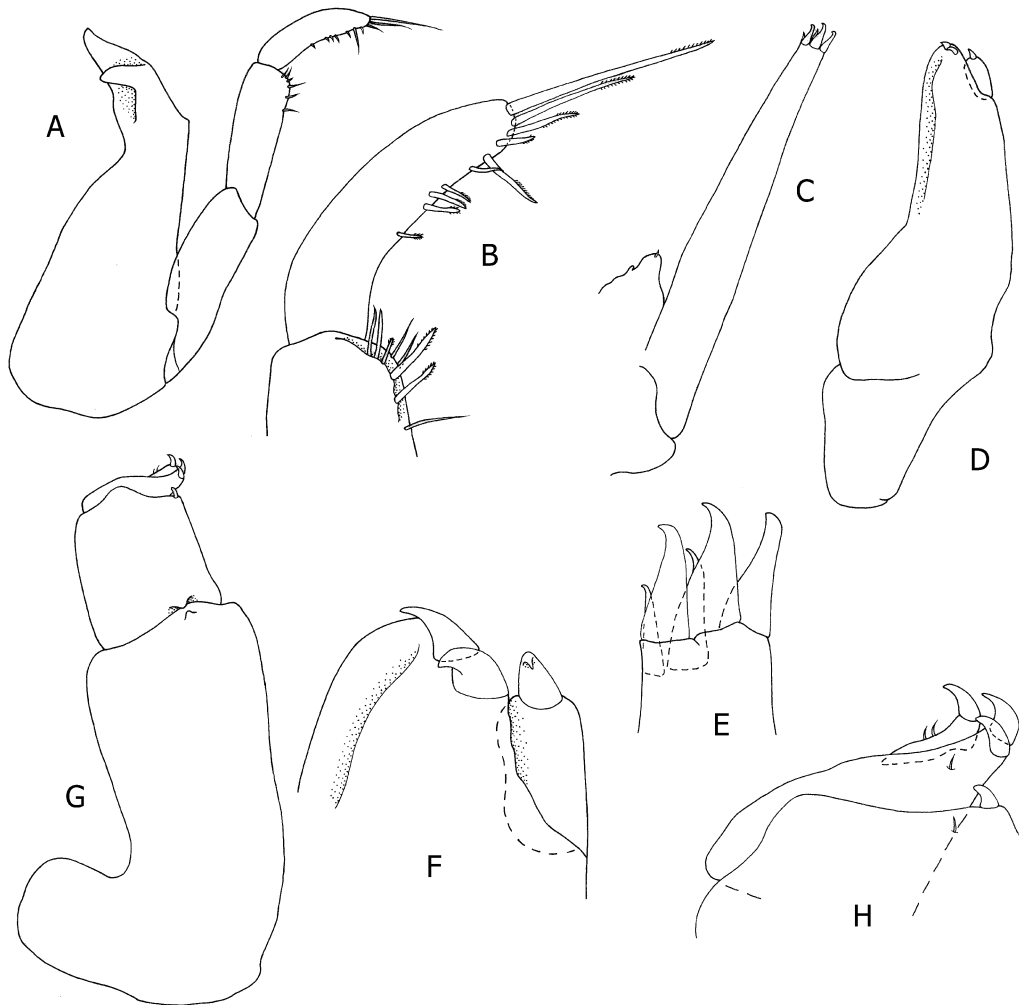
Paratypes: ♂ (18 mm), same data as holotype (MNHN Is.5849). Immature (10 mm), New Caledonia, 24°19'S, 167°49'E, 2 Sep 1985, BIOCAL stn. CP62, 1395–1410 m (MNHN Is. 5850).



**FIGURE 1.** *Syscenus moana* sp. nov. A–E, holotype, F and G paratype MNHN Is.5849. A, dorsal view; B, lateral view; C, head, dorsal view; D, frons; E, pleotelson, dorsal view; F, antenna peduncle; G, antennule.

*Description:* Body 2.7 times as long as greatest width, dorsal surfaces polished in appearance, widest at pereonite 5, lateral margins weakly ovate. *Rostrum* anteriorly narrow, anteriorly truncate in dorsal view (apically bent ventrally). *Eyes* absent. *Coxae* 2

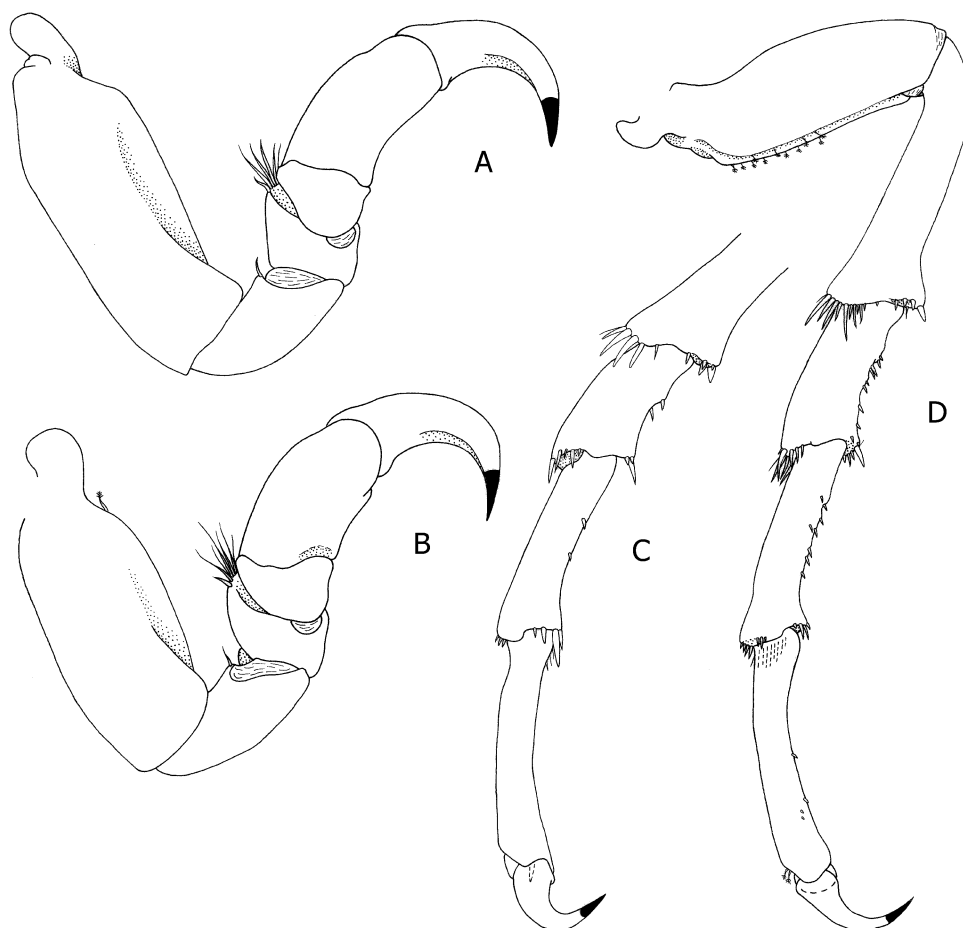
and 3 each with posteroventral angle with small distinct produced point; 5–7 without oblique carina. *Pleon* with pleonite 1 largely concealed by pereonite 7; pleonite 4 with posterolateral margins not extending to posterior margin of pleonite 5; pleonite 5 with posterolateral angles acute. *Pleotelson* 0.9 times as long as anterior width, anterior dorsal surface without 2 sub-median depressions, dorsal surface smooth; lateral margins convex, posterior margin evenly rounded, without RS.



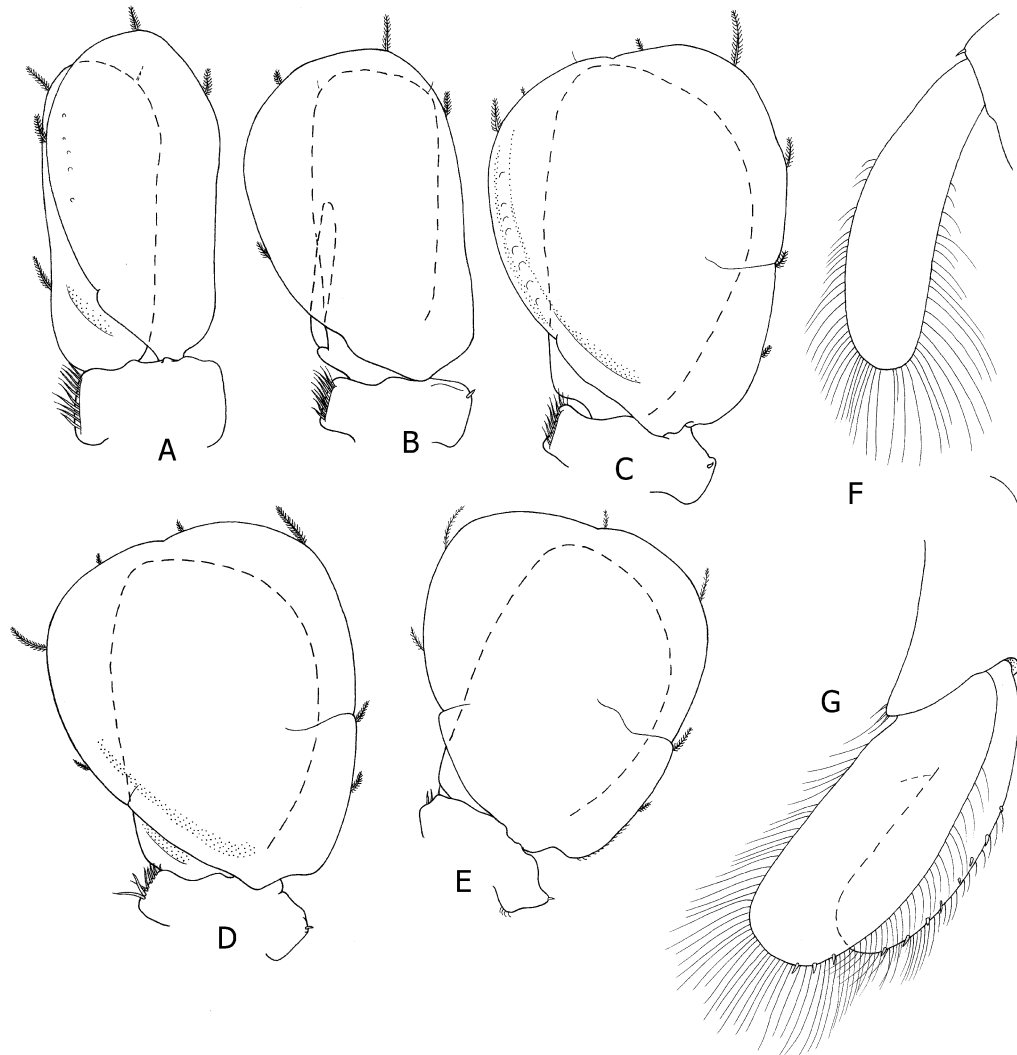
**FIGURE 2.** *Syscenus moana* sp. nov., paratype MNHN Is.5849. A, mandible; B, mandible palp articles 2 and 3; C, maxillule; D, maxilla; E, maxillule apex; F, maxilla apex; G, maxilliped; H, maxilliped palp articles 2 and 3.

*Antennule* peduncle article 3 0.6 times as long as combined lengths of articles 1 and 2, 2 times as long as wide; flagellum with 8 articles, extending to anterior of pereonite 1. *Antenna* peduncle article 3 2.6 times as long as article 2, 1.1 times as long as wide; article 4 1.6 times as long as article 3, 1.8 times as long as wide, inferior margin with 14 plumose setae, and 0 simple setae; article 5 1.1 times as long as article 4, 2 times as long as wide, inferior margin with 7 setae (plumose), anterodistal angle with cluster of 2 short simple setae; flagellum with 32 articles, extending to middle of pereonite 3.

*Frontal lamina* wider than long, anteriorly acute. *Mandible* molar process distinct flat lobe; palp article 2 with 6 marginal distolateral setae; palp article 3 with 10 setae (unevenly sized; distal 2 longest). *Maxillule* with 5 RS. *Maxilla* mesial lobe with 1 hooked RS; lateral lobe with 2 hooked RS. *Maxilliped* palp article 1 distomesial angle with 1 RS; article 2 with 2 hooked RS; article 3 with 1 hooked RS.



**FIGURE 3.** *Syscenus moana* sp. nov., paratype MNHN Is.5849. A–D, pereopods 1, 2, 6 (distal articles only) and 7 respectively.



**FIGURE 4.** *Syscenus moana* sp. nov., paratype MNHN Is.5849. A–E, pleopods 1–5 respectively; F, uropod exopod, ventral view; G, uropod.

*Pereopod 1* basis 2.1 times as long as greatest width; *ischium* 0.5 times as long as basis, inferior margin without RS, superior distal margin with 2 simple setae; *merus* inferior margin without RS, superior distal angle with 11 simple setae; *carpus* 1 times as long as merus, inferior margin without RS; *propodus* 1.3 times as long as proximal width, propodal palm simple, without blade or process, without setae, inferior margin without RS; *dactylus* 1.8 times as long as propodus. *Pereopods 2 and 3* similar to pereopod 1. *Pereopod 6* similar to pereopod 7. *Pereopod 7* basis 2.7 times as long as greatest width, inferior margins with 12 palmate setae; *ischium* 0.9 as long as basis, inferior margin

without RS, superior distal angle with 11 RS, inferior distal angle with 5 RS; *merus* 0.6 times as long as ischium, 2 times as long as wide, inferior margin with 8 RS (set as 2, 2, 2, 1 and 1), superior distal angle with 19 RS, inferior distal angle with 6 RS; *carpus* 0.8 times as long as ischium, 3 times as long as wide, inferior margin with 8 RS (set as 2, 1, 2, 1, 1 and 1), superior distal angle with 20 RS, inferior distal angle with 5 RS; *propodus* 1 as long as ischium, 5.7 times as long as wide, inferior margin with 3 RS (very small, submarginal), superior distal angle with 3 slender setae (plumose), inferior distal angle with 1 RS. Pereopods distal margins of ischium to carpus without abundant simple setae; without strong carina on basis.

*Pleopod 1* exopod 2 times as long as wide, lateral margin straight, mesial margin strongly convex, with PMS on distal one-third; endopod 2.5 times as long as wide, lateral margin weakly convex, with PMS on distal margin only, mesial margin with PMS on distal three-quarters; peduncle mesial margin with 10 coupling hooks. Pleopods 2–5 peduncle distolateral margin each with acute RS.

*Uropod peduncle* ventrolateral margin with 1 robust seta, posterior lobe about absent. Uropod rami with endopod and exopod co-planar, rami extending beyond pleotelson. *Endopod* lateral margin weakly convex, distolateral margin with 3 RS, mesial margin straight, without RS. *Exopod* not extending to end of endopod, 3.9 times as long as greatest width; lateral margin convex, with 8 RS; mesial margin evenly concave, without RS; distal margin rounded.

*Male: Penes* opening flush with surface of sternite 7 (positions of openings not discernable). Pleopod 2 *appendix masculina* with straight margins, 0.5 times as long as endopod, distally bluntly rounded.

*Variation: Robust setae:* Uropod exopod (n=3) mesial margin without; lateral margin 8. Uropod endopod (n=3) distolateral margin with 3 or 4 (once).

*Size:* 18–21 mm.

*Remarks: Syscenus moana* sp. nov. can be readily identified and distinguished from all other species by the posterior margins of all coxae forming an acute angle in conjunction with a relatively short and broadly rounded posterior margin to the pleotelson, uropodal rami with robust setae on the lateral margins, and the uropodal rami extending posteriorly beyond the posterior margins of the pleotelson.

The general appearance of the female is reasonably close to *S. atlanticus* Kononenko, 1988, the pleotelson and uropods in particular are of similar form, as is the rather wide frontal lamina. The coxae of *S. moana* (consistent on all specimens examined) are posteriorly acute (rounded in *S. atlanticus*), the frontal lamina is anteriorly acute and posteriorly subtruncate (but posteriorly merging into head) (posteriorly rounded in *S. atlanticus*) and the posterior pereopods are far more elongate than those of *S. atlanticus*.

The presence of robust setae on uropods has not previously been noted for the genus. I examined specimens of several species and several have ‘thin’, somewhat translucent rami that lack robust setae, these species being *S. intermedius* Richardson, 1910, *S. latus*

Richardson, 1909, *S. springthorpei* Bruce, 1997 and *S. infelix*; robust setae were not recorded for *S. atlanticus*.

*Prey*: Not known.

*Distribution*: Off southern New Caledonia at depths of 1220–1410 m.

*Etymology*: The epithet is the Polynesian word for the ocean; noun in apposition.

***Syscenus karu* sp. nov. (Figs 5, 6)**

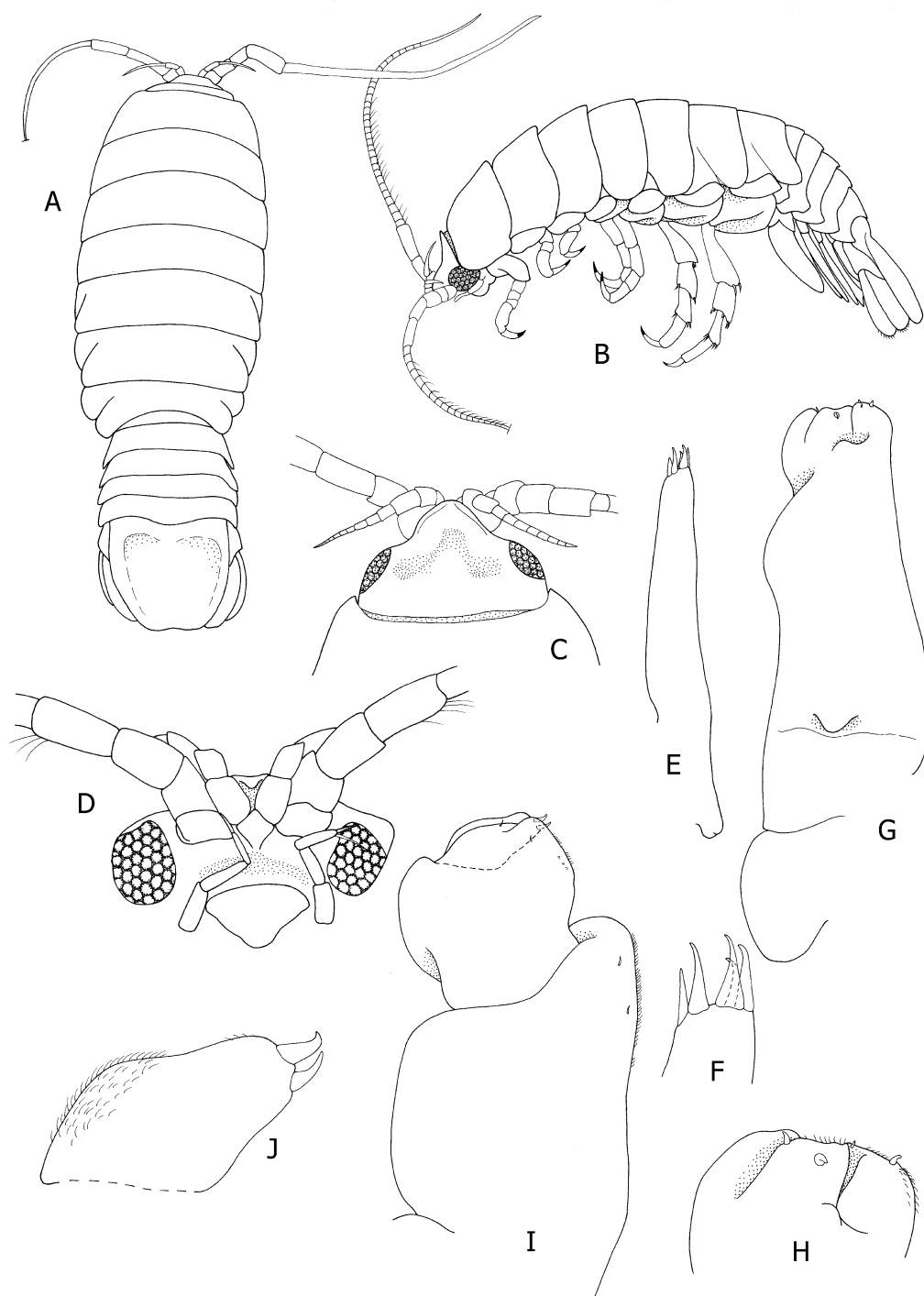
*Material examined*: Holotype: ♀ (22.5 mm), Vanuatu, 19°19.62'S, 169°26.43'E, 23 Sep 1994, MUSORSTOM 8, stn. CP984, 480–455 m, coll. B. Richer de Forges (MNHN Is.5847).

*Description*: *Body* 3.4 times as long as greatest width, lateral margins subparallel. *Rostrum* simple, anteriorly narrow. *Eyes* not medially united (lateral in position), separated by about 70% width of head; each eye made up of ~6 transverse rows of ommatidia, each row with ~6 ommatidia; eye colour pale brown. *Coxae* 2–3 each with posteroventral angle rounded; 5–7 with entire oblique carina. *Pleon* with pleonite 1 visible in dorsal view. *Pleotelson* 1 times as long as anterior width, anterior dorsal surface with 2 sub-median depressions, posterior margin sub-truncate (with shallow median indentation), without RS. *Antennule* peduncle article 3 similar to other of the genus; flagellum with 8 articles, extending to anterior posterior margin of head. *Antenna* peduncle article 3 similar to others of the genus; flagellum with 32 articles, extending to pereonite 6.

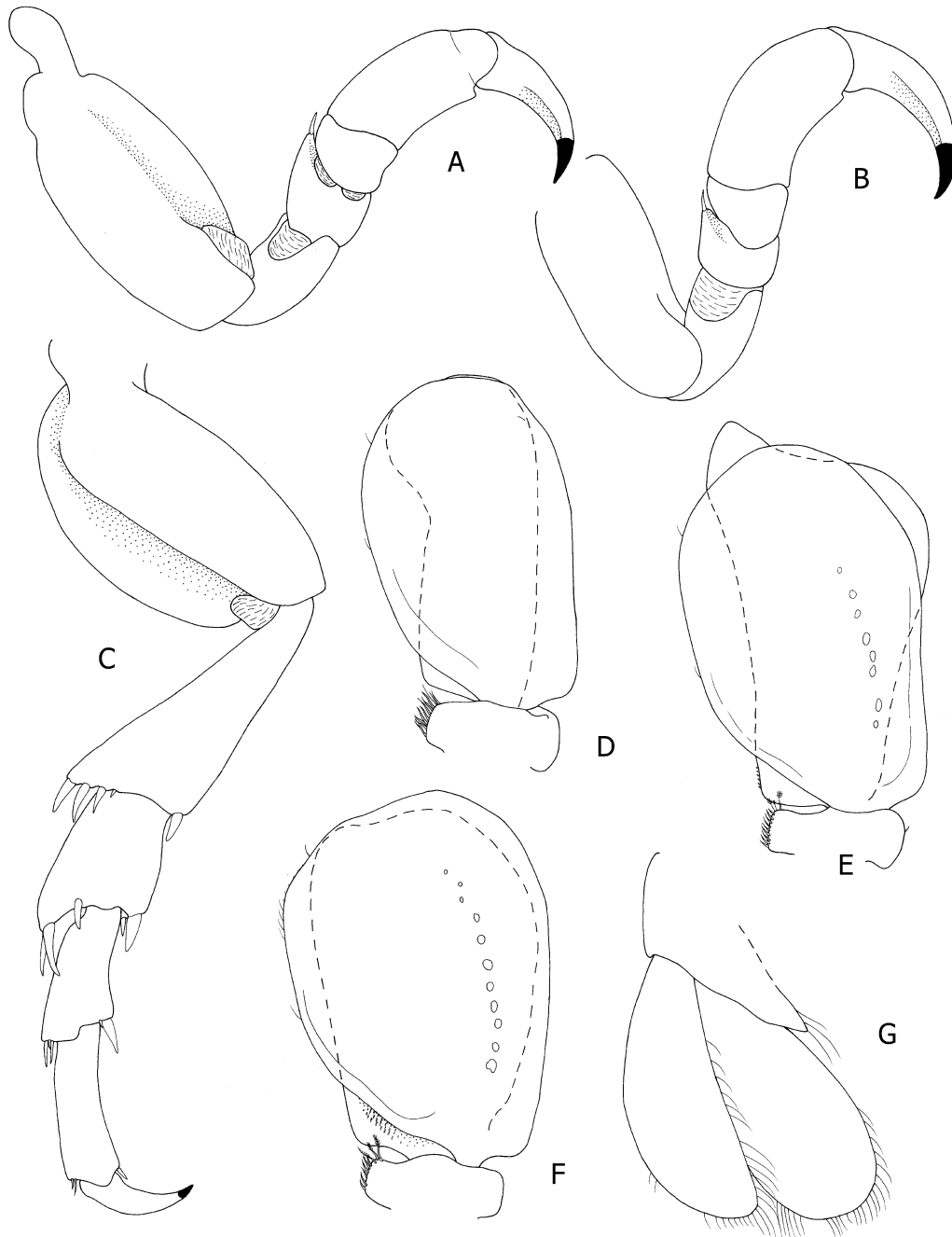
*Frontal lamina* as wide as long, anteriorly acute. *Mandible* palp article 3 with 2 setae. *Maxillule* with 5 RS. *Maxilla* mesial lobe with 2 hooked RS (small); lateral lobe with 1 hooked RS (small). *Maxilliped* palp article 1 distomesial angle without RS; article 2 with 2 hooked RS; article 3 with absent.

*Pereopod 1* basis 2.2 times as long as greatest width; *ischium* 0.4 times as long as basis, inferior margin without RS, superior distal margin without setae; *merus* inferior margin without RS, superior distal angle with 1 seta (acute RS); inferior margin without RS; *propodus* 2 times as long as proximal width, propodal palm simple, without blade or process, without setae, inferior margin without RS; *dactylus* 0.9 times as long as propodus. *Pereopods 2 and 3* similar to pereopod 1. *Pereopod 6* similar to pereopod 7. *Pereopod 7* basis 1.8 times as long as greatest width, inferior margins without palmate setae; *ischium* 0.8 as long as basis, inferior margin without RS, superior distal angle with 4 RS, inferior distal angle with 1 robust seta; *merus* 0.5 times as long as ischium, 1.4 times as long as wide, inferior margin without RS, superior distal angle with 3 RS, inferior distal angle with 2 RS; *carpus* 0.6 times as long as ischium, 2 times as long as wide, inferior margin without RS, superior distal angle with 11 RS, inferior distal angle with 1 robust seta; *propodus* 0.6 as long as ischium, 2.8 times as long as wide, inferior margin without RS, superior distal angle with 2 slender setae, inferior distal angle with 1 RS. *Pereopods* distal margins of ischium to carpus without setae; with strong carina on basis.





**FIGURE 5.** *Sycenus karu* sp. nov. A, dorsal view; B, lateral view; C, head, dorsal view; D, frons; E, maxillule; F, maxillule apex; G, maxilla; H, maxilla apex; I, maxilliped; J, maxilliped palp article 2.



**FIGURE 6.** *Syscenus karu* sp. nov. A–C, pereopods 1, 2, 7 respectively; D–F, pleopods 1–3 respectively; G, uropod.

*Pleopod 1* exopod 1.3 times as long as wide, lateral margin straight, mesial margin strongly convex, with PMS on central one-third; endopod 2 times as long as wide, lateral

margin straight; peduncle mesial margin with 9 coupling hooks. Pleopods 2–5 peduncle distolateral margin each without acute RS.

*Uropod peduncle* ventrolateral margin without RS, posterior lobe about one-third as long as endopod. Uropod rami with endopod and exopod co-planar, rami extending to pleotelson apex. *Endopod* lateral margin convex, lateral margin without RS, mesial margin weakly convex, without RS. *Exopod* not extending to end of endopod, 2.8 times as long as greatest width; lateral margin convex, without RS; mesial margin straight, without RS; distal margin rounded.

*Size*: Holotype 22.5 mm.

*Remarks*: *Syscenus karu* sp. nov. can be distinguished from all but one species of *Syscenus* by the presence of conspicuous, faceted eyes. *Syscenus peruanus* Menzies & George, 1972 is described as having 'eyes degenerate, lacking pigment but bearing ocelli'. The eyes of *S. karu* are conspicuous, pale brown in colour, and the ommatidia are distinct. *S. karu* is further distinguished by the shape of anterior margin of the head which has the median portion strongly produced, the basis of pereopods 4–7 each bearing a strong mesial blade, and the relatively stout pereopods (proportional measurements are provided in the descriptions; in *S. karu* pereopod 7 is 6.1 times as long as the width of the basis, for *S. moana* and *S. springthorpei* that proportion is 13.7 and 12.2 respectively). This species is unusual within the genus in having pleopod 5 peduncle provided with coupling hooks, and also in pleopods 1–3 exopods having marginal setae only on the distomesial margin. and the endopods of pleopods 1–5 all lacking marginal setae.

*Prey*: Not known.

*Distribution*: Known only from the type locality off Vanuatu.

*Etymology*: The epithet is a Polynesian word for eye; noun in apposition.

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