

**A new species of *Chevalia* (Crustacea: Amphipoda: Corophiidae)
from the Indian Ocean with remarks on *Chevalia carpenteri* and the
C. aviculae superspecies complex**

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Abstract.—A new amphipod, *Chevalia hirsuta*, is described and figured from material collected in the Indian Ocean by the Yale Seychelles Expedition. The relationship of this species to all known *Chevalia* is discussed, along with a review of several morphological characters of potential diagnostic value.

The genus *Chevalia* was reviewed by Barnard & Thomas (1987), who described a new species, *Chevalia carpenteri* from Belize, adding to a genus previously regarded as monotypic. Their review also re-established the validity of *C. mexicana* Pearse, 1913, and *C. inequalis* (Stout, 1913), which were previously synonymized with *Chevalia aviculae* Walker, 1904 (Shoemaker 1942; Barnard 1962, 1970). Furthermore, Barnard & Thomas (1987) showed that a *Chevalia* superspecies complex exists, with variants known from the Galapagos (Barnard 1979), Fiji (Myers 1985) and Hawaii (Barnard 1970), in addition to *C. inaequalis* and *C. mexicana*. Clearly, *Chevalia aviculae* has been a convenient taxonomic assignment for what is actually a complex of sibling species.

Another new species is herein described from the Seychelles Archipelago in the Indian Ocean, collected during the Yale Seychelles Expedition (YSE), 1957–1958. The relationship of this new species to other *Chevalia* (in particular to *C. aviculae* and *C. carpenteri*), a discussion of diagnostic characters and an emendment of the key provided by Barnard & Thomas (1987) are presented.

Chevalia hirsuta new species
Figs. 1–6

Diagnosis.—Article 2 of pereopods 5–7 ovate, broadly expanded, posterodistal corner not produced. Pereopods densely setose; dense bundles of long setae on posterior margin of article 2 pereopods 5–7, anterodistal and posterodistal margin of article 4, pereopods 3–7, uropod 1 peduncle and uropod 3 rami. Pleonal epimera rounded.

Description of holotype female.—Head nearly twice as long as first pereon segment; coxae small, separated from each other. Mandible, palp article 1 short, article 2 slightly longer than article 3, articles 2 and 3 setose. Lower lip, inner lobes and outer lobes separated, distal margins broadly convex, setose. Maxilla 1, inner plate small, lightly setose, outer plate with 11 distal spines, palp 2-articulate, first article short. Maxilla 2, inner plate with oblique row of facial setae and setose inner margin, outer plate distally setose. Maxilliped, inner plate setose along inner margin, outer plate with 7 spines along inner margin, palp 4-articulate, second article long, article 3 with oblique row of long facial setae, article 4 tapered, distally setose. Antenna 1 longer than antenna 2, densely setose, accessory

flagellum 3-articulate, third article minute, length of article 1 of flagellum nearly 300% that of article 2, and 2 densely setose. Antenna 2, length of article 1 of flagellum nearly 300% that of article 2. Gnathopod 1 much smaller than gnathopod 2, coxa produced, anterior margin weakly concave, posterior margin broadly rounded, article 2 with dense posterodistal bundle of very long setae, article 5 linear, longer than article 6, densely setose, article 6 subchelate, ovate, palm oblique, convex. Gnathopod 2, ventral margin of coxa excavate, anterodistal corner rounded, article 2 shorter than article 6, article 5 short with small posterior lobe, article 6 broad, palm oblique, sinuoidal, proximoposterior tooth strong, pointed, posterior margin lined with fascicles of setae and smaller curly facial setae. Pereopod 3, length of gill and oostegite subequal to that of article 2, article 2, anterior margin setose, article 4 expanded, distal margin armed with many long setae, article 5 short, dactyl simple. Pereopod 4, gill 80% length of article 2, oostegite 125% length of article 2, article 2, anterior margin setose, article 4 expanded, article 5 short, dactyl simple. Pereopod 5, gill 30% longer than article 2, oostegite longer than entire appendage, article 2 posterior margin expanded, with dense medial bundle of long setae, article 5, posterodistal corner with 4 stout submarginal spines. Pereopods 6 and 7 similar, basis expanded, posterior margin setose, article 4, anterodistal and posterodistal corners each with bundles of very long setae, article 5, posterodistal corner with 4 stout submarginal spines; pereopod 6, gill nearly as long as basis. Uropod 1, peduncle with dense distal bundle of long setae, outer ramus shorter than inner, opposing inner margins (viewed dorsally) with complexly serrate teeth. Uropod 2, outer ramus shorter than inner ramus, posterior margin setose, apically spinose, inner ramus lanceolate, margins naked. Uropod 3, distal margin of inner and outer ramus with dense bundles of extremely long setae. Telson subquadrate, distal corners weakly produced, with

scale-like plates, posterior margin with two sparse bundles of long and short setae, lateral margins lightly setose.

Male.—The males are smaller, but very similar to the females in the major diagnostic features. However, in the largest male (YPM 9741) the setal bundles are generally denser and the setae slightly longer than in the largest females.

Variation.—In the smallest individuals of both sexes, article 2 of pereopods 5–7 is only slightly expanded, and the posterior margin is nearly straight and parallel to the anterior margin. In these smaller individuals the diagnostic long setae are present but relatively shorter and fewer in number than in larger specimens; smaller specimens, however, typically bear longer setae on the posterior margin of the antennae than those exhibited by the holotype female.

Etymology.—The specific epithet is derived from the Latin *hirsutus*, meaning hairy, and alludes to the extremely long and dense setae of the pereopods, urosome, and telson.

Material examined.—Female holotype, YPM 9206, 10.1 mm. Seychelles: Maliki Pate, off Cerf Island, 4°33'N, 55°30'E, under algae on dead coral. Yale Seychelles Expedition Station 29. Collector, A. J. Kohn, 2 November 1957. Male allotype, YPM 9741, 9.1 mm. 7 female paratypes, YPM 9742. 6 male paratypes, YPM 9743. Female paratype, 7.0 mm, YPM 9744. 20 male and female paratypes, YPM 9828. Female paratype, 6.1 mm, YPM 9829. Allotype and paratypes with same data as holotype. All specimens deposited in the Yale Peabody Museum.

Remarks.—Barnard & Thomas (1987) subdivided the genus *Chevalia* into two groups, based primarily on diagnostic features of the oostegites and pereopods 5–7. One group, represented by the *C. aviculae* superspecies complex, was defined by having three pairs of oostegites (pereopods 3–5) and a produced posterodistal corner on the basis of pereopods 5–7. *Chevalia carpenteri* was placed as the sole member of a

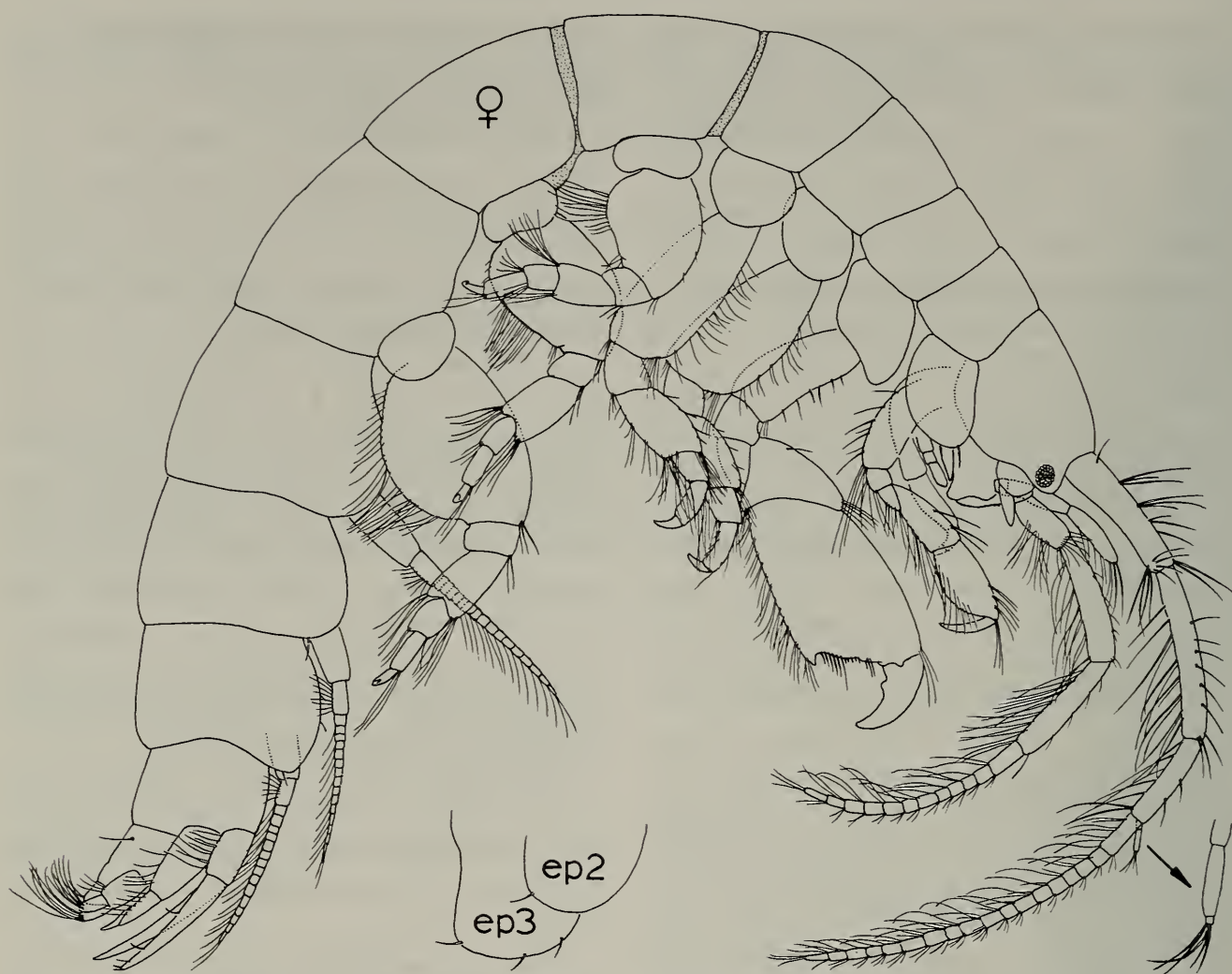


Fig. 1. A: YPM 9206, *Chevalia hirsuta* new species, female holotype, 10.1 mm. Abbreviations are: A, antenna; Md, mandible; Ll, lower lip; Mx, maxilla; Mxpd, maxilliped; Gn, gnathopod; P, pereopod; Pl, pleopod; U, uropod; T, telson; ep, epimeron; in, incisor; mlr, molar; plp, palp. Gnathopods are numbered Gn1 and Gn2; pereopods are numbered P3–P7.

second group because it possesses only 2 pairs of oostegites (on pereopods 4 and 5), and the basis of pereopods 5–7 is ovate, the posterodistal corner not produced. The new species described herein, *C. hirsuta*, has broadly rounded posterodistal corners of the basis of pereopods 5–7 and three pairs of oostegites; as such, it represents an intermediate form with characters overlapping both groups.

Based upon the ovoid condition of article 2 pereopods 5–7, *C. hirsuta* is morphologically allied to *C. carpenteri* of the Caribbean. However, based upon its possession of three pairs of oostegites, and rounded (i.e., not produced) epimeral plates, *C. hirsuta* is similar to all forms of the *C. avi-*

culae complex as defined by Barnard & Thomas (1987). Aside from the apparently unique combination of oostegite and basis characteristics of pereopods 5–7, *C. hirsuta* clearly differs from all known species of *Chevalia* in its possession of dense bundles of exceptionally long setae on various parts of the pereopods and uropods.

The type species of *Chevalia*, *C. aviculae*, was described from Sri Lanka [formerly Ceylon] by Walker (1904) and has also been reported from Madagascar by Ledoyer (1982), although the latter record is now provisionally attributed to *C. mexicana* Pearse 1913 (Barnard & Thomas 1987). Walker's figures are not very detailed, and the form he described is not easily distin-

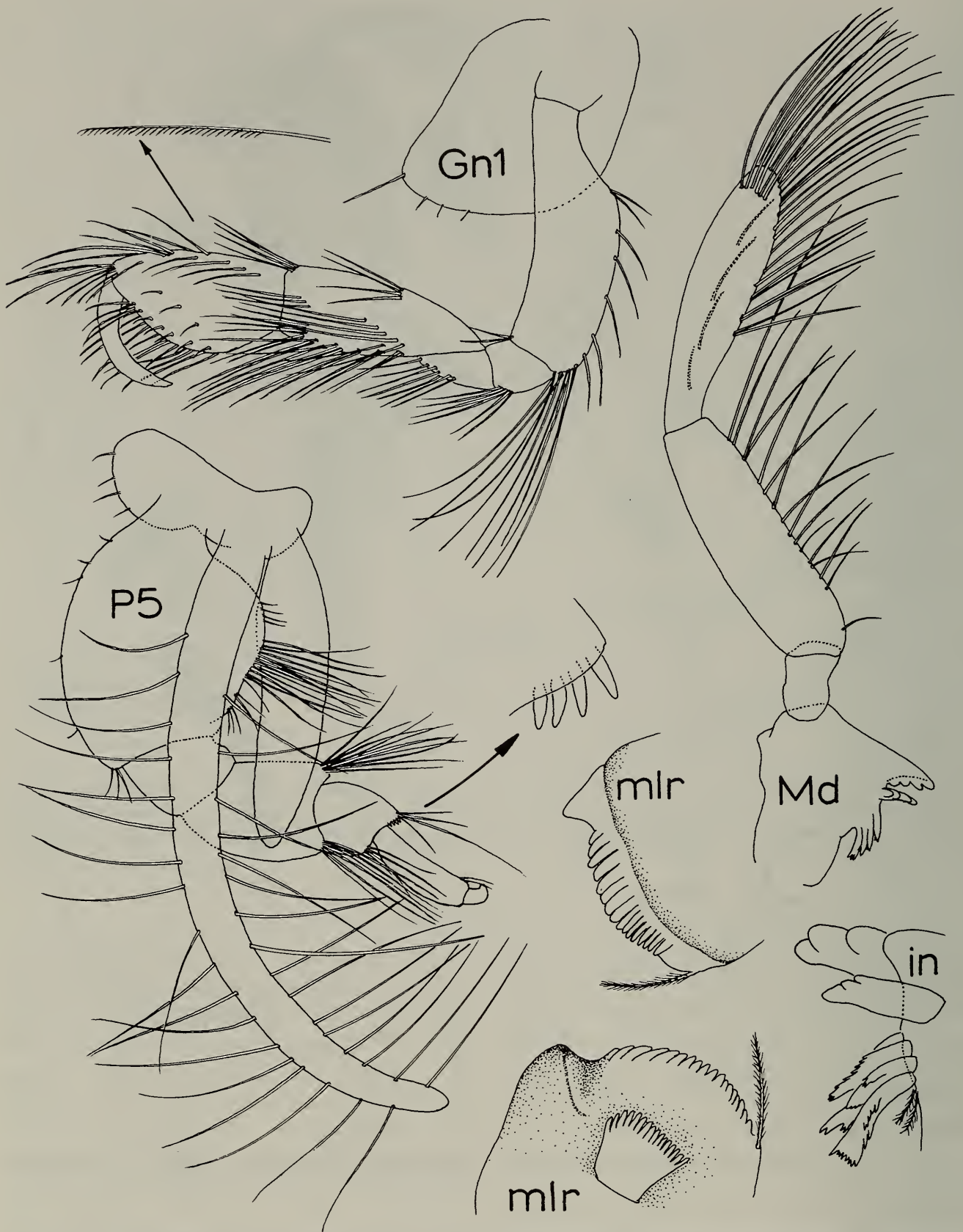


Fig. 3. YPM 9206, *Chevalia hirsuta*, new species, female holotype, 10.1 mm. For abbreviations, see Fig. 1.

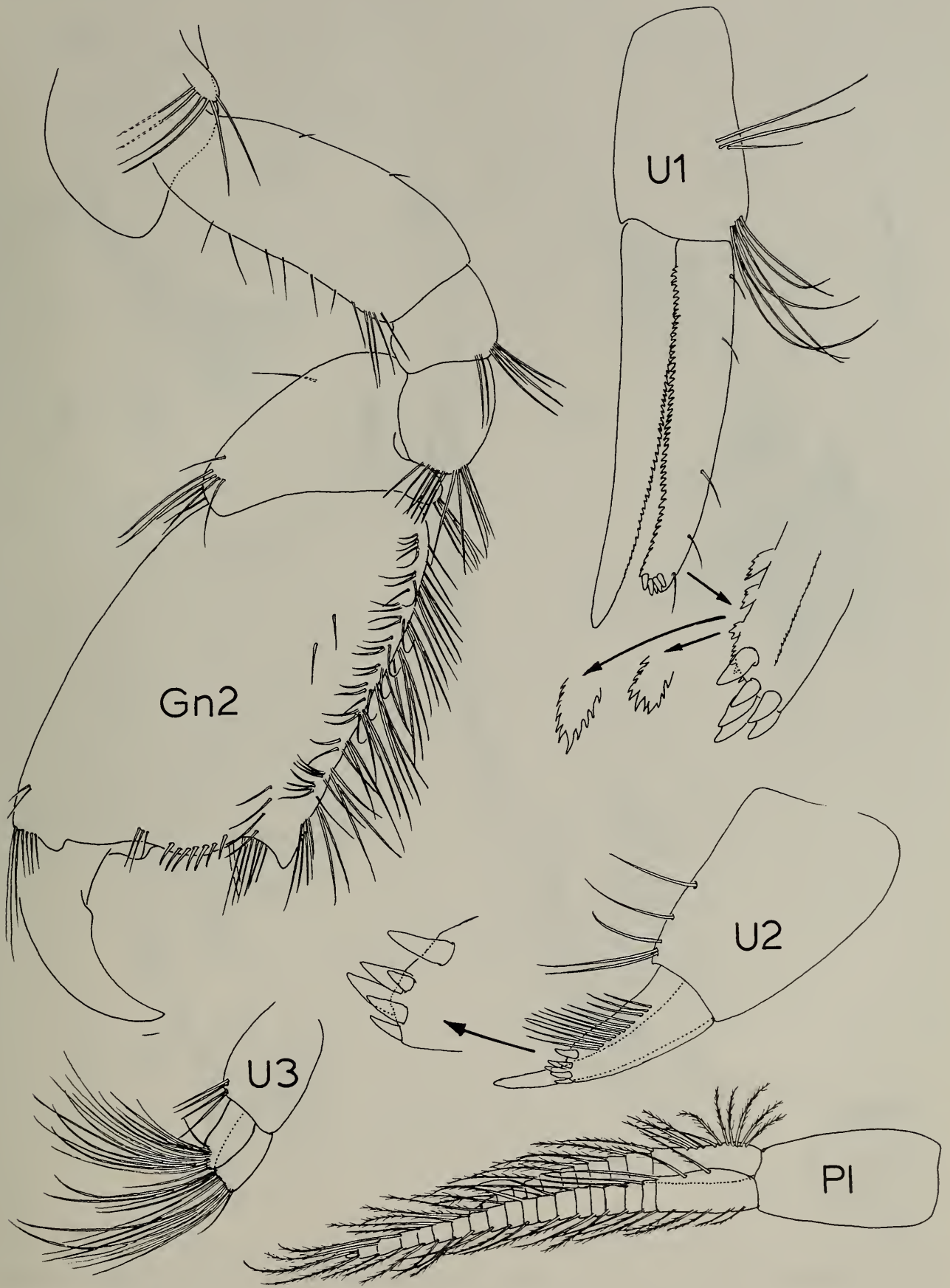


Fig. 4. YPM 9206, *Chevalia hirsuta*, new species, female holotype, 10.1 mm. For abbreviations, see Fig. 1.

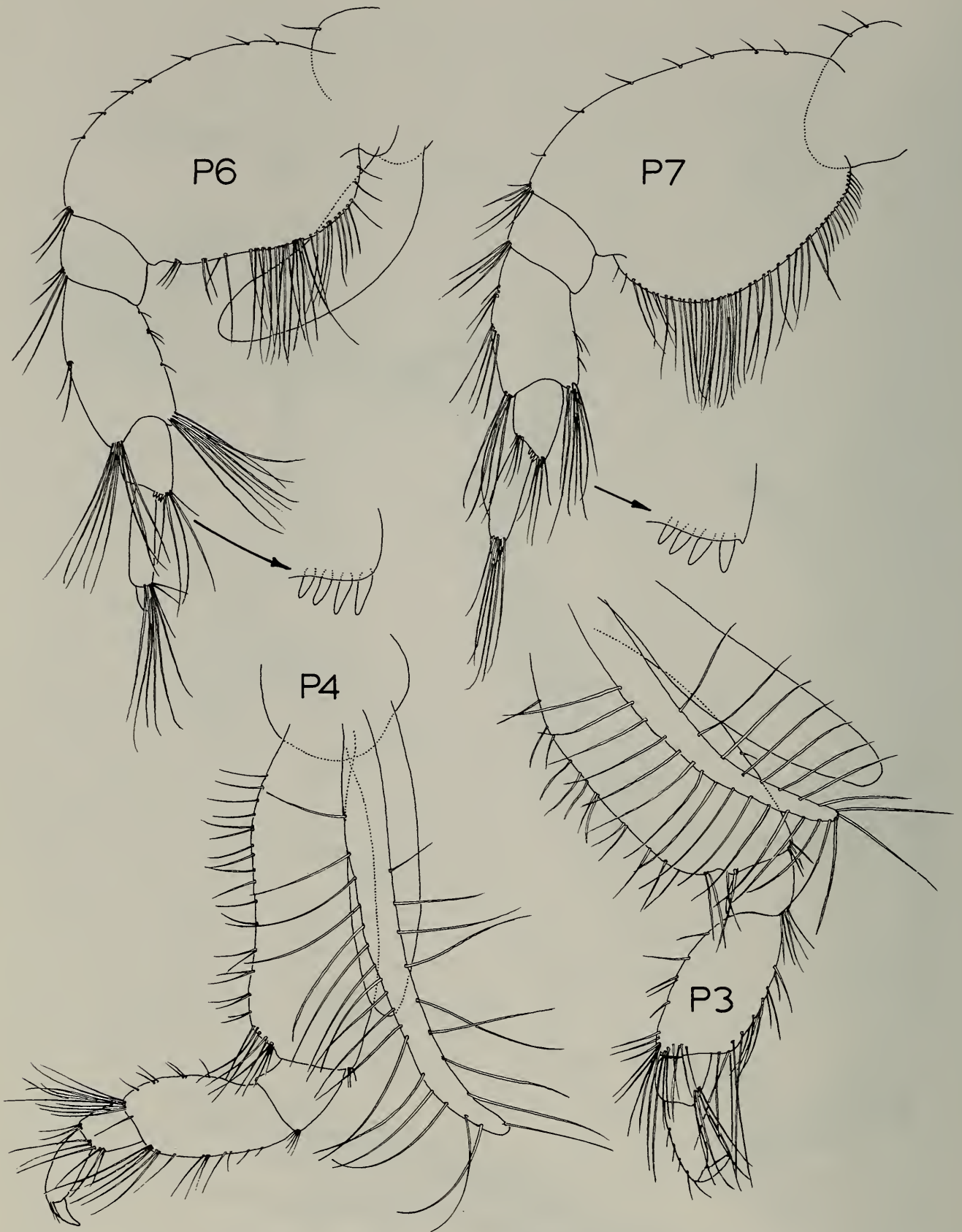


Fig. 5. YPM 9206, *Chevalia hirsuta*, new species, female holotype, 10.1 mm. For abbreviations, see Fig. 1.

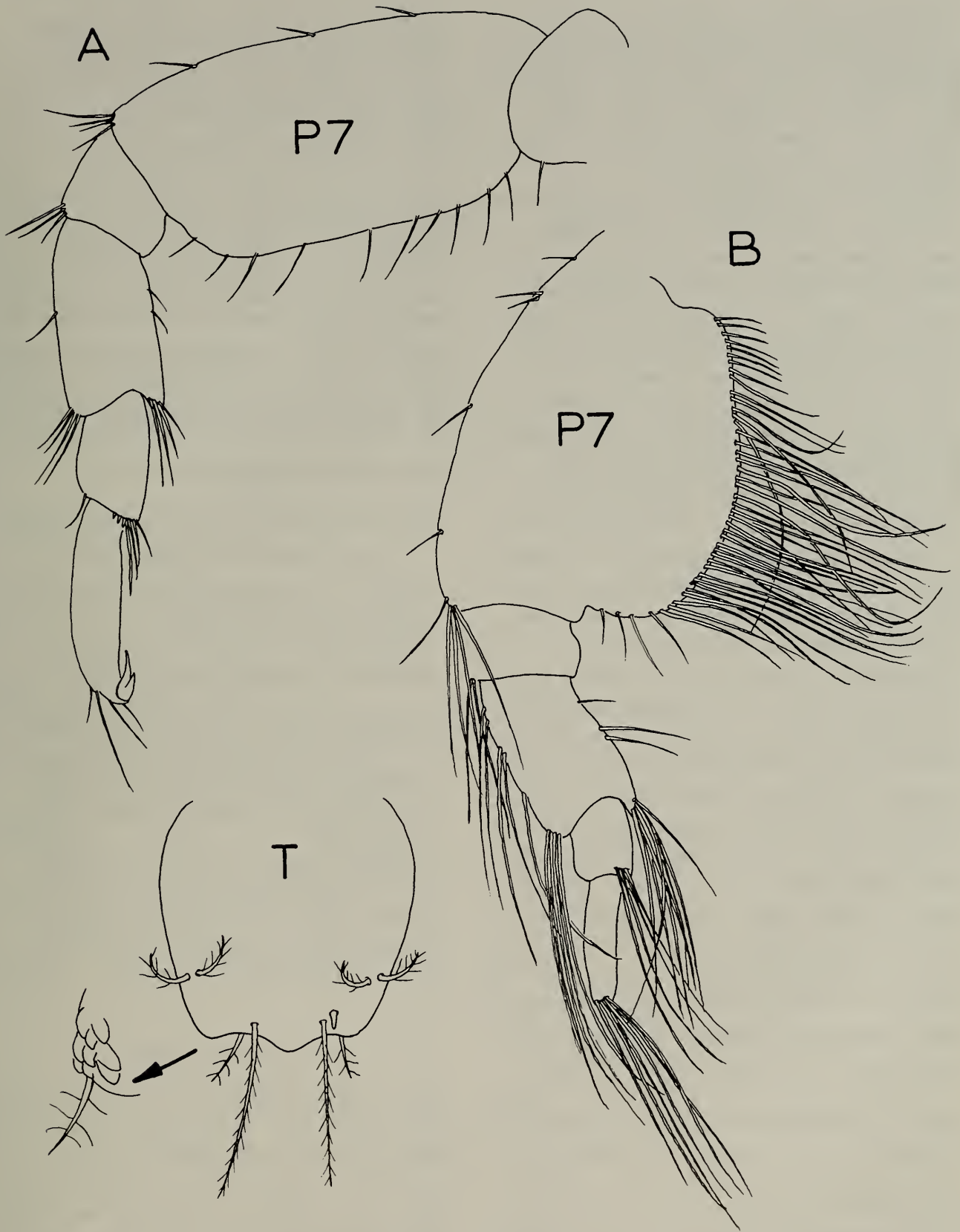


Fig. 6. *Chevalia hirsuta*, new species. Telson, YPM 9744, female paratype, 7.0 mm. A: YPM 9829, female paratype, 6.1 mm; B: YPM 9741 male allotype, 9.0 mm.

specimens may prove otherwise, *C. hirsuta* is very large compared to all other species of *Chevalia* (adults); the largest specimen of *C. hirsuta* examined (YPM 9206) is nearly 2.5 times larger than any other known species of the genus.

There is some similarity between small specimens of *C. hirsuta* and *C. pacifica*, recently described from Madang Lagoon, Papua, New Guinea (Myers 1995); in both species, article 2 of pereopod 7 is ovate, and not produced posteroventrally. *Chevalia hirsuta* differs from *C. pacifica* in having a prominent palmar tooth on gnathopod 2, which is distinct even in the smallest specimens (4–5 mm); a palmar tooth is lacking in *C. pacifica* as figured by Myers (1995). Furthermore, in small specimens of *C. hirsuta* the rami of uropod 1 are subequal in length, whereas in the figured specimen of *C. pacifica* the inner ramus is nearly 30% longer than the outer ramus.

Barnard & Thomas (1987) defined a variant of the *C. aviculae* complex, based upon a description of *C. aviculae* from Fiji by Myers (1985). Subsequently, Myers (1995) erected *C. pacifica* to attribute full species status to the Fijian variant; however, he based this new taxon upon specimens collected from New Guinea, rather than Fiji. Myers' (1995) figure of pereopod 7 of *C. pacifica* from New Guinea differs from what he had figured previously for the Fiji specimens (Myers 1985). The Fiji specimens, therefore, probably represent a different, and as yet undescribed, species.

Two characters are of potential future value in evaluating the species assignments of *Chevalia*: the number of submarginal spines at the anterodistal corner, article 5, pereopods 5–7; and the basic morphology of the subserrations of the teeth on the inner margin of the outer ramus, uropod 1. In *C. hirsuta* there are 4 anterodistal submarginal spines on article 5, pereopods 5–7. On the holotype of *C. carpenteri* (USNM 195157) there are only two spines. Furthermore, these spines are bifid on the type specimen, compared to simple on *C. hirsuta*. An ex-

amination of several of the specimens of *Chevalia* spp. described by Barnard & Thomas (1987) has confirmed different patterns of this character, depending on specimen provenance. Strong differences were also noted between the micromorphology of the subserrations of the teeth on the inner margin of the outer ramus of uropod 1. In *C. hirsuta*, the marginal subserrations are large and very irregular, whereas in *C. carpenteri* the subserrations are small and very regular. These two characters should prove useful in helping to distinguish, perhaps as new species, several of the morphs referred to by Barnard & Thomas (1987) from various localities around the world.

Key to the taxa of *Chevalia* (modified from Barnard & Thomas 1987)

1. Article 2 of pereopods 5–7 ovate, not produced posteroventrally 2
 Article 2 of pereopod 7 subquadrate, produced or squared posteroventrally . . .
 *aviculae* complex and *pacifica*
2. Oostegites 2 pairs, article 2 of pereopods 5–7 in fully developed adults moderately expanded, length more than twice width, pereopods 3–7, urosome and telson with normal setae *carpenteri*
 Oostegites 3 pairs, article 2 of pereopods 5–7 in fully developed adults greatly expanded, width 90% length; pereopods 3–7, urosome and telson with dense bundles of exceptionally long setae . . . *hirsuta*

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