

Crustacea Isopoda : Deep-sea Chaetiliidae (Valvifera) from New Caledonia and the Philippines

Gary C. B. POORE

Department of Crustacea, Museum of Victoria
Swanston Street, Melbourne, Victoria 3000
Australia

ABSTRACT

Four species of *Stegidotea* Poore (*S. pinnata* Poore, *S. longipes* sp. nov., *S. carinata* sp. nov. and *S. forcipes* sp. nov.) are reported from deep water in the region of New Caledonia. The last of these is unusual in several respects having a complex seta on the palm of the first three pereopods, subequal uropodal rami, a spike-like molar process and a habitus different from all other species of the genus. *Symmius philippinensis* sp. nov. is described from the Philippines, the third species in this north-western Pacific genus.

The 14 species of Chaetiliidae known from the Western Pacific (Japan, Philippines, New Caledonia, Australia and New Zealand) are tabulated.

RÉSUMÉ

Crustacea Isopoda : Chaetiliidae (Valvifera) des eaux profondes de Nouvelle-Calédonie et des Philippines.

Quatre espèces de *Stegidotea* Poore (*S. pinnata* Poore, *S. longipes* sp. nov., *S. carinata* sp. nov. et *S. forcipes* sp. nov.) ont été récoltées dans les eaux profondes de la Nouvelle-Calédonie. La dernière espèce citée présente des caractères inhabituels, ayant une forte soie denticulée sur le propode des trois premiers périopodes, des rames uropodales subégales, un processus molaire en forme de pointe et un habitus différent de celui de toutes les autres espèces du genre. *Symmius philippinensis* sp. nov. est décrit des Philippines et est la troisième espèce de ce genre du Pacifique nord-ouest.

Une liste des 14 espèces des Chaetiliidae du Pacifique occidental (Japon, Philippines, Nouvelle-Calédonie, Australie et Nouvelle-Zélande) est donnée.

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INTRODUCTION

The valviferan isopod family Chaetiliidae Dana contains twelve modern genera (reappraisal of POORE, 1984, 1985) recognised by the combination of operculiform biramous uropods and subchelate pereopods 1 to 3. In the Western Pacific species of the family were known until recently only from species from sandy beaches and shelf environments in Japan, New Zealand, and south-eastern and north-western Australia (Table 1). Five species, all except one new, have been discovered in much deeper waters by expeditions made by ORSTOM and the Muséum national d'Histoire naturelle in the Philippines and near New Caledonia (FOREST, 1985; RICHER DE FORGES, 1990).

Each species is represented by only one or two specimens which is not surprising given that the sampling and sorting methods used were not designed primarily for such small animals. The descriptions, therefore, are in some cases brief and fuller investigation of some of the unusual features of the specimens awaits larger collections.

The new material belongs in two genera. The first, *Stegidotea* Poore, was known from three Australian species (POORE, 1985, 1990) and its extension to New Caledonia is not surprising. One of the Australian species is now reported from New Caledonia; three new ones are described. The second genus, *Symmius* Richardson, was represented until now by two Japanese species (RICHARDSON, 1904; NUNOMURA, 1984) and now a third from the Philippines is added.

All the material is deposited in the Muséum national d'Histoire naturelle, Paris. All illustrations are of left limbs unless otherwise indicated.

SYSTEMATIC ACCOUNT

Genus *STEGIDOTEA* Poore, 1985

REMARKS. — The original diagnosis of the genus (POORE, 1985) was modified slightly by POORE (1990). The genus is distinguished from other chaetiliids by having pereopods 4-7 simply ambulatory, antenna 1 flagellum of a major plus a minor article, antenna 2 flagellum of 3 or 4 articles, uropods deeply extended ventrally, uropodal exopod shorter than endopod, and generally convex and sculptured pereon. Of the new species described here *S. longipes* and *S. carinata* are typical and similar to the Australian species. The third, *S. forcipes*, is different in several ways but is based only on a manca so full appreciation of its relationships is not possible.

Stegidotea longipes sp. nov.

Figs 1-3

MATERIAL EXAMINED. — New Caledonia. BIOCAL : stn CP 62, 24°19.06'S, 167°48.65'E, 1395-1410 m, beam trawl, 2 September 1985 : ♀ with oostegites, holotype, 5.4 mm (MNHN-Is 2859, with 2 slides).

DESCRIPTION. — Body twice as long as wide, dorsoventrally convex, uropods as deep as pleon viewed laterally. Integument with scattered denticles, especially visible on pleon, uropods, antennae, coxae and posterodistal surfaces of pereopods. Head with straight anterior margin; lateral margins with well defined ocular lobes. Pereonites each with mid-dorsal triangular carina and obscure lateral bosses, more prominent anteriorly; pleonite 2 with small mid-dorsal carinae; pleotelson with 2 larger posteriorly directed carina and minor teeth. Dorsal coxal plates acute posteriorly. Pleon less than half total length; pleonite 1 almost as wide as pleonite 2, free; pleonites 2 and 3 fused mid-dorsally and with acute epimera; pleotelson tapering to rounded apex.

Antenna 1 reaching to near posterior margin of head, about as long as antenna 2, article 3 of peduncle as long as first two together; flagellum nearly as long as last article of peduncle, narrow, its second article minute, each article with a terminal aesthetasc. Antenna 2 peduncle article 3 with 1 strong distomesial spiniform seta, article 5 with 2; flagellum as long as last article of peduncle, of 4 articles of decreasing lengths.

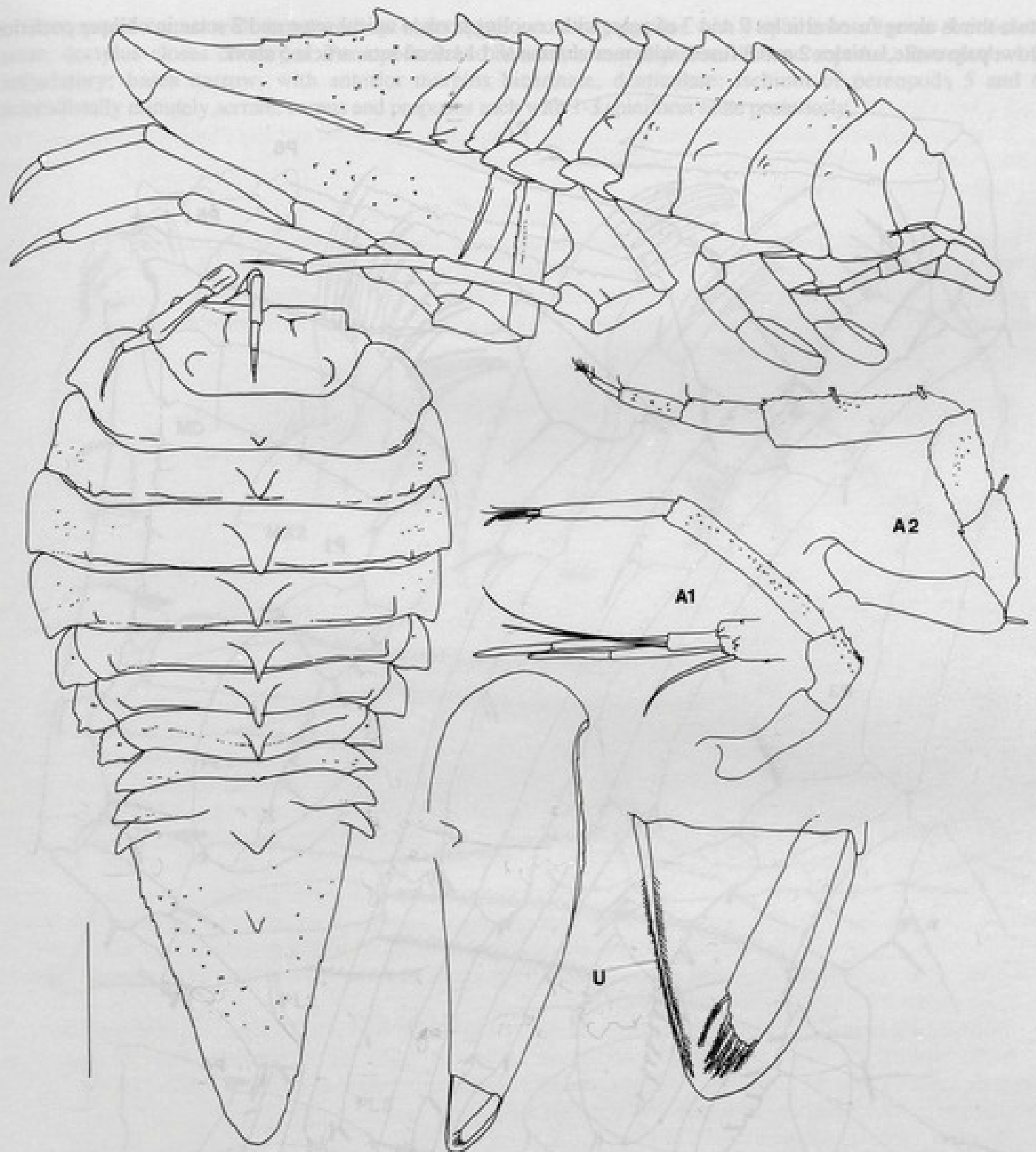


FIG. 1. — *Stegidotea longipes* sp. nov., habitus in dorsal and lateral views (not all legs drawn); antennae 1 and 2 (A1, A2); uropod and rami in detail (U). Scaleline = 1 mm and refers to habitus only.

Mandible with toothed incisor; lacinia mobilis two-thirds as broad as incisor on left, smaller on right; spine row of 5 spines fused to lacinia mobilis; molar process prominent, apically toothed and setose around base. Maxilla 1 with 2 setae on inner lobe, 10 uneven, finely denticulate spiniform setae on outer lobe. Maxilla 2 with 7 setae on inner lobe, middle and outer lobes each with 5 finely denticulate setae. Maxillipedal endite reaching

two-thirds along fused articles 2 and 3 of palp, with coupling hook, 4 apical setae and 2 setae in oblique posterior row; palp ovate, articles 2 and 3 fused, with mesial setae and 1 lateral seta, article 5 short.

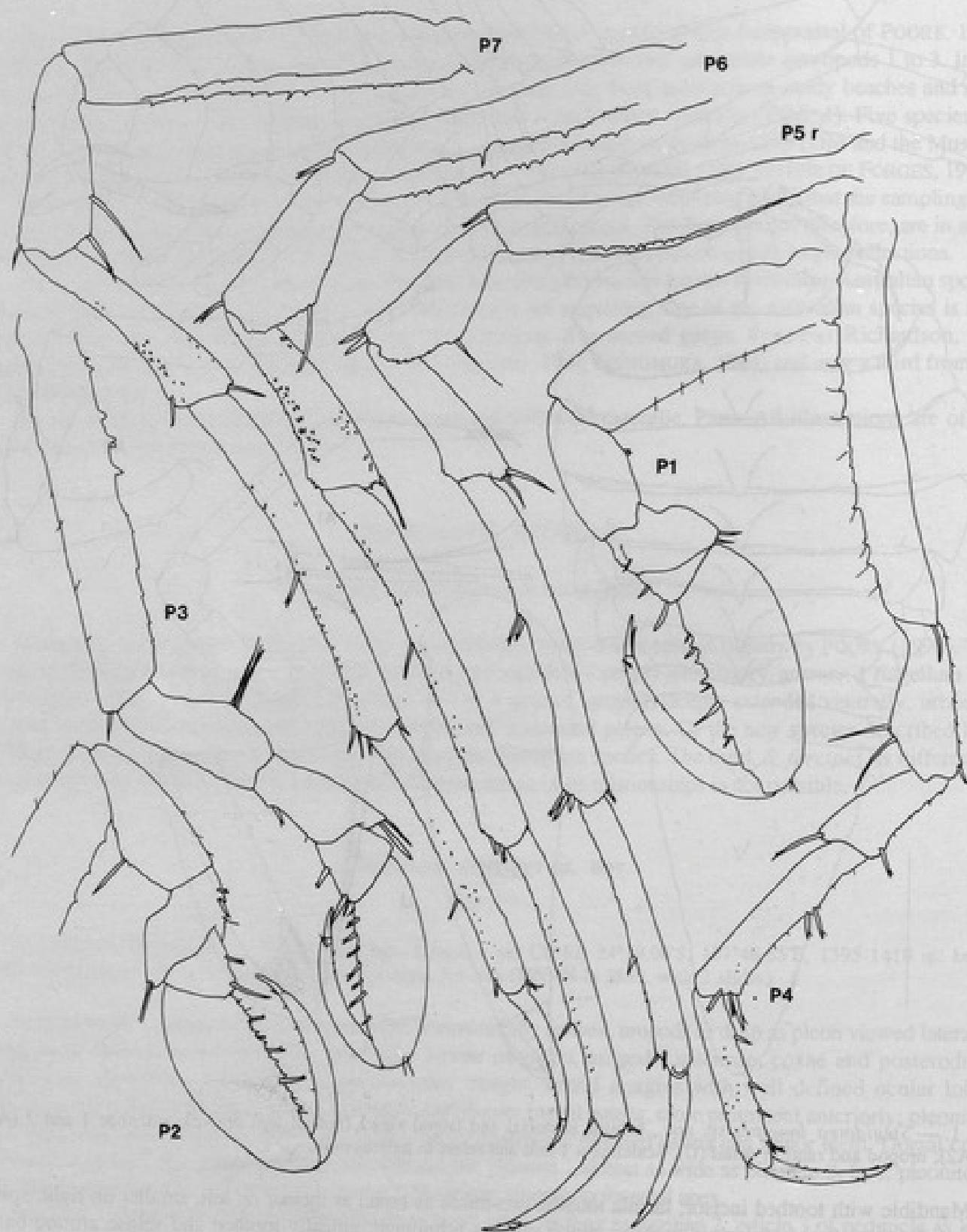


FIG. 2. — *Stegidotea longipes* sp. nov., pereopods 1-7 (P1-P7, all left except pereopod 5).

Pereopod 1 carpus with 1 posterodistal short spiniform seta; propodus with 4 spiniform setae on denticulate palm; dactylus closes on carpus. Pereopods 2 and 3 similar, more spinose than pereopod 1. Pereopods 4-7 ambulatory; bases narrow, with anterior margins bicarinate, denticulate; ischium of pereopods 5 and 6 anterodistally minutely serrate; carpus and propodus each with 1-3 spiniform setae posteriorly.

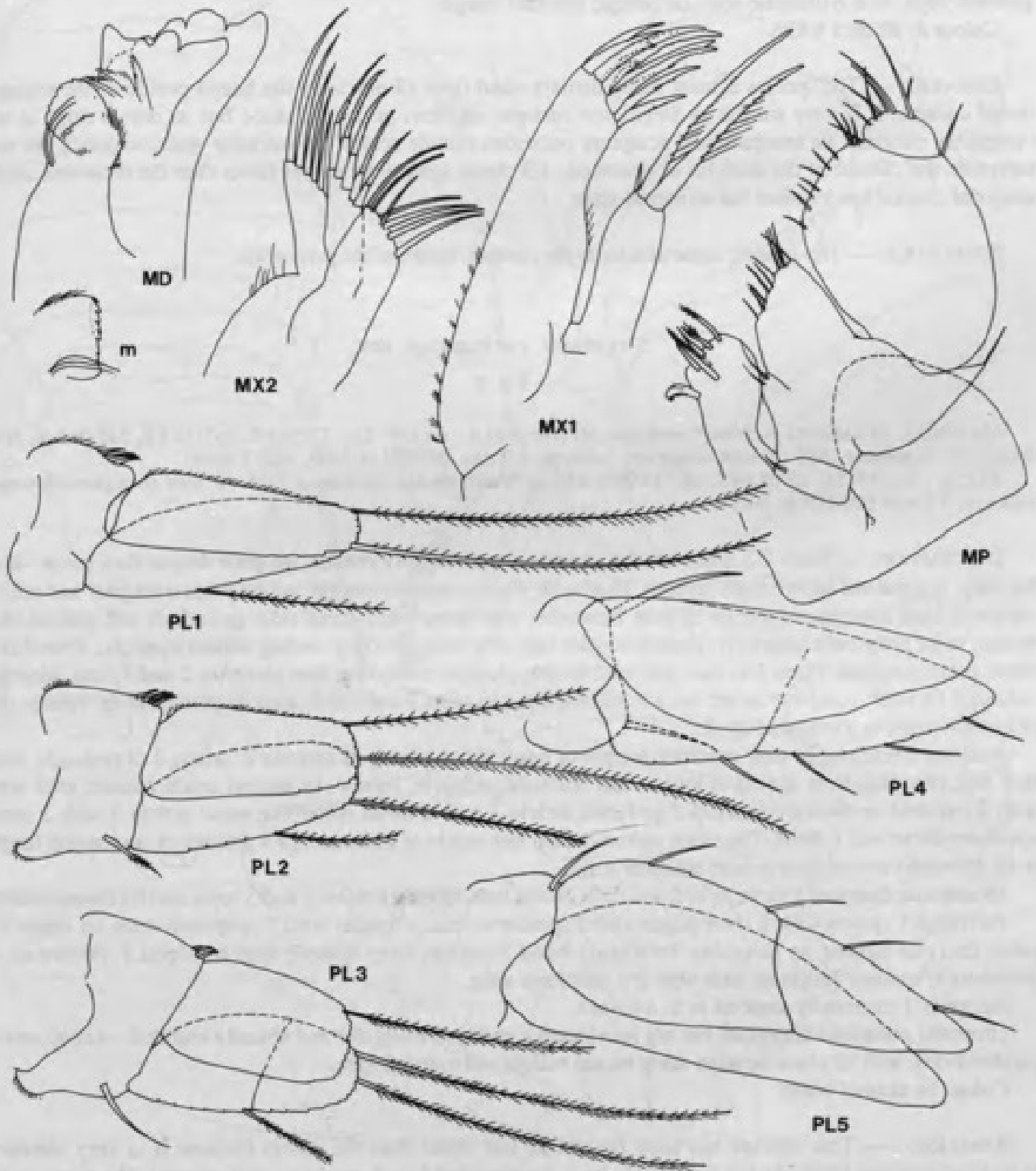


FIG. 3. — *Stegidotea longipes* sp. nov., mandible (MD) and molar process (m); maxillae 1 and 2 (MX1, MX2); maxilliped (MP); pleopods 1-5 (PL1-PL5).

Pleopod 1 with broad peduncle, rami twice as long as peduncle, overlapping; endopod with 11 long apical plumose setae; exopod broader, with 12 apical and lateral plumose setae. Pleopod 2 broader than 1, lateral seta on peduncle. Pleopod 3 similar to 2 except for 2-articulate exopod. Pleopods 4 and 5 longer than first 3, similar to each other, exopods 2-articulate, each article with simple short setae.

Uropodal peduncles adpressed but not interlocking; endopod triangular and apically rounded; exopod narrow, parallel-sided, with 6 plumose setae on oblique terminal margin.

Colour in alcohol white.

REMARKS. — The species is most easily distinguished from all others by the lateral profile of the triangular dorsal carinae. It is very similar to *Stegidotea carinata* sp. nov. in overall shape but its dorsal ridge is more complexly carinate, its integumental sculpture possesses minute scales, its antennae and pereopods are much narrower, the closure of the dactylus of pereopods 1-3 closes against the carpus rather than the propodus, and the uropodal exopod has terminal but no mesial setae.

ETYMOLOGY. — The specific name alludes to the elongate nature of the pereopods.

Stegidotea carinata sp. nov.

Fig. 4

MATERIAL EXAMINED. — New Caledonia. MUSORSTOM 4 : stn DW 221, 22°58.6'S, 167°36.8'E, 535-560 m, Waren dredge, 29 September 1985 : ♀ with oostegites, holotype, 4.2 mm (MNHN-Is 2860, with 1 slide).

BIOCAL : stn DW 36, 23°08.64'S, 167°10.99'E, 650 m, Waren dredge, 29 August 1985 : ♀ with oostegites (damaged), paratype, 4.2 mm (MNHN-Is 2861).

DESCRIPTION. — Body 2.2 times as long as wide, dorsoventrally convex, uropods deeper than pleon viewed laterally. Integument superficially smooth. Head with sinuous anterior margin; ocular lobes triangular and not well separated from anterolateral margin of head. Pereonites with obscure mid-dorsal ridge posteriorly and obscure lateral bosses, more prominent anteriorly; pleotelson with low even crest anteriorly, ending almost squarely. Dorsal coxal plates subrectangular. Pleon less than half total length; pleonite 1 narrower than pleonites 2 and 3, free; pleonite 2 indicated by weak complete suture but not articulating; pleonites 3 and 4 indicated by partial lateral sutures only; pleotelson tapering to rounded apex.

Antenna 1 reaching to near posterior margin of head, about as long as antenna 2, article 3 of peduncle longer than first two; flagellum almost as long as last article of peduncle, narrow, its second article minute, each article with a terminal aesthetasc. Antenna 2 peduncle article 3 with 2 distal spiniform setae; article 5 with 2 medial spiniform setae and 1 distal; flagellum narrower than last article of peduncle, of 4 articles of decreasing lengths. Both antennae covered with minute cuticular scales.

Mouthparts essentially same as in *S. longipes* except maxillipedal articles 2 and 3 separated by distinct suture.

Pereopod 1 carpus with 1 short posterodistal spiniform seta; propodus with 7 spiniform setae on denticulate palm; dactylus closing on propodus. Pereopods 2 and 3 similar, more spinose than pereopod 1. Pereopods 4-7 ambulatory; ischium-propodus each with few spiniform setae.

Pleopods 1 essentially same as in *S. longipes*.

Uropodal peduncles adpressed but not interlocking; endopod triangular and apically rounded; exopod narrow, parallel-sided, with 13 plumose setae along mesial margin and rounded apex.

Colour in alcohol white.

REMARKS. — This species has been figured in less detail than the others because it is very similar to *Stegidotea longipes* from which it has already been distinguished (see Remarks for that species). The paratype is in poor condition but is similar to the holotype in most features. It differs only in that the dorsum of the head and pereonite 1 is rugose. The species was collected in much shallower water (535-650 m) than *S. longipes* (1400 m).

ETYMOLOGY. — The specific name alludes to the simple carina on the anterior part of the pleotelson.

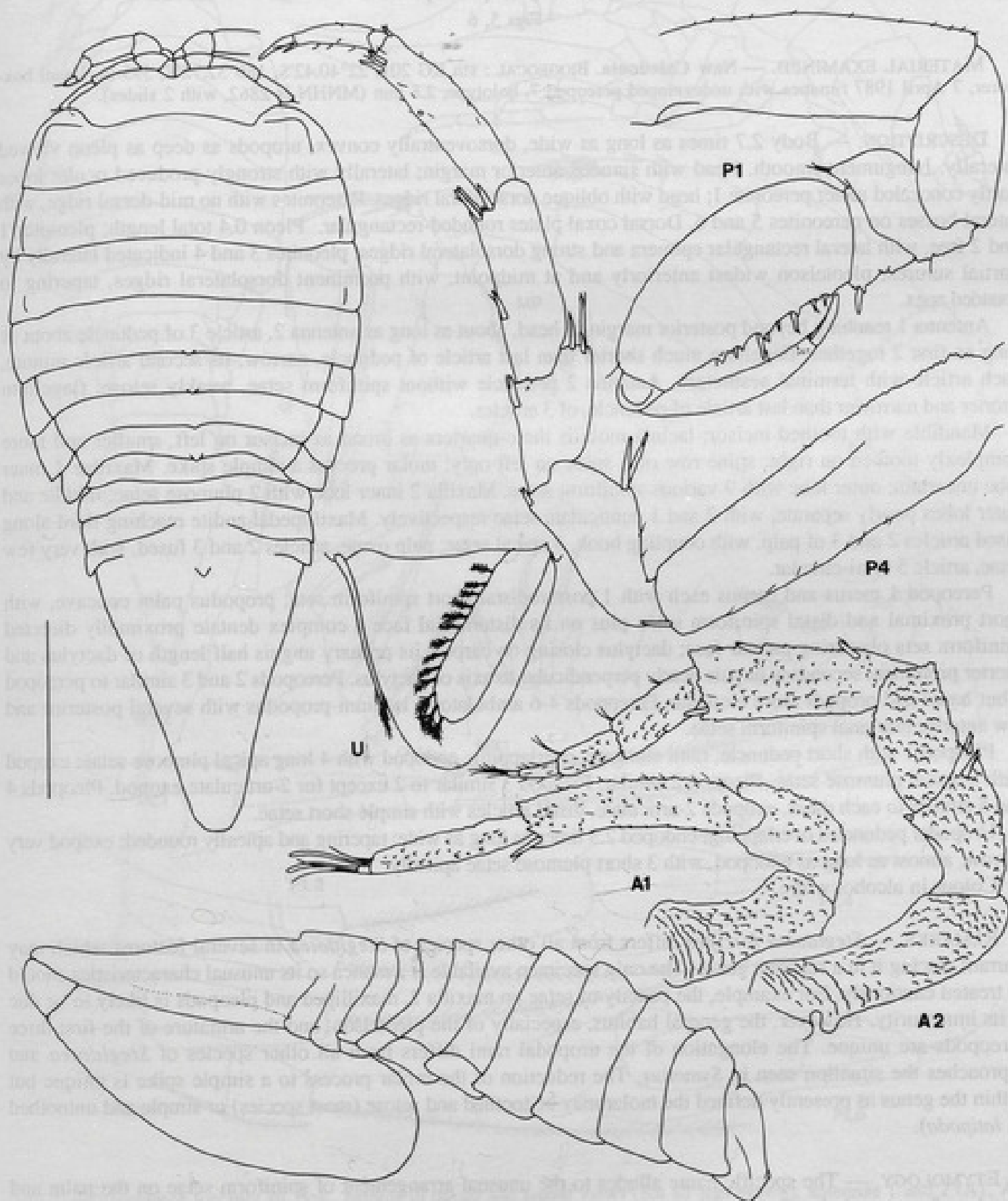


FIG. 4. — *Stegidotea carinata* sp. nov., habitus in dorsal and lateral views (no legs drawn); antennae 1 and 2 (A1, A2); uropodal rami (U); pereopods 1 and 4 (P1, P4). Scaleline = 1 mm and refers to habitus only.

Stegidotea forcipes sp. nov.

Figs 5, 6

MATERIAL EXAMINED. — New Caledonia. BIOGEOCAL : sta KG 201, 22°40.42'S, 166°32.72'E, 595 m, Usnel box-corer, 7 April 1987 : manca with undeveloped pereopod 7, holotype, 2.8 mm (MNHN-Is 2862, with 2 slides).

DESCRIPTION. — Body 2.7 times as long as wide, dorsoventrally convex, uropods as deep as pleon viewed laterally. Integument smooth. Head with sinuous anterior margin; laterally with strongly produced ocular lobes partly concealed under pereonite 1; head with oblique dorsolateral ridges. Pereonites with no mid-dorsal ridge, with lateral bosses on pereonites 5 and 6. Dorsal coxal plates rounded-rectangular. Pleon 0.4 total length; pleonites 1 and 2 free, with lateral rectangular epimera and strong dorsolateral ridges; pleonites 3 and 4 indicated laterally by partial sutures; pleotelson widest anteriorly and at midpoint, with prominent dorsolateral ridges, tapering to rounded apex.

Antenna 1 reaching beyond posterior margin of head, about as long as antenna 2, article 3 of peduncle about as long as first 2 together; flagellum much shorter than last article of peduncle, narrow, its second article minute, each article with terminal aesthetasc. Antenna 2 peduncle without spiniform setae, weakly setose; flagellum shorter and narrower than last article of peduncle, of 3 articles.

Mandible with toothed incisor; lacinia mobilis three-quarters as broad as incisor on left, smaller and more complexly toothed on right; spine row of 1 spine on left only; molar process a simple spike. Maxillae 1 inner lobe uncertain; outer lobe with 9 various spiniform setae. Maxilla 2 inner lobe with 2 plumose setae; middle and outer lobes poorly separate, with 2 and 1 denticulate setae respectively. Maxillipedal endite reaching third along fused articles 2 and 3 of palp, with coupling hook, 3 apical setae; palp ovate, articles 2 and 3 fused, with very few setae, article 5 semi-circular.

Pereopod 1 merus and carpus each with 1 posterodistal short spiniform seta; propodus palm concave, with short proximal and distal spiniform setae plus on its distomesial face a complex dentate proximally directed spiniform seta obscuring palmar face; dactylus closing on carpus, its primary unguis half length of dactylus and shorter prominent secondary unguis nearly perpendicular to axis of dactylus. Pereopods 2 and 3 similar to pereopod 1 but bases and propodi more elongate. Pereopods 4-6 ambulatory; ischium-propodus with several posterior and few anterior marginal spiniform setae.

Pleopod 1 with short peduncle, rami elongate, overlapping; endopod with 4 long apical plumose setae; exopod with 5 apical plumose setae. Pleopod 2 similar. Pleopod 3 similar to 2 except for 2-articulate exopod. Pleopods 4 and 5 similar to each other, exopods 2-articulate, distal articles with simple short setae.

Uropodal peduncles overlapping; endopod 2.5 times as long as wide; tapering and apically rounded; exopod very narrow, almost as long as endopod, with 3 short plumose setae apically.

Colour in alcohol white.

REMARKS. — *Stegidotea forcipes* differs from all other species of *Stegidotea* in several features which may warrant placing it in a separate genus. The only specimen available is a manca so its unusual characteristics should be treated cautiously. For example, the paucity of setae on maxilla 2, maxilliped and pleopods is likely to be due to its immaturity. However, the general habitus, especially of the pleotelson, and the armature of the first three pereopods are unique. The elongation of the uropodal rami differs from all other species of *Stegidotea* and approaches the situation seen in *Symmius*. The reduction of the molar process to a simple spike is unique but within the genus as presently defined the molar may be toothed and setose (most species) or simple and untoothed (*S. latipoda*).

ETYMOLOGY. — The specific name alludes to the unusual arrangement of spiniform setae on the palm and dactylus of pereopods 1 to 3.

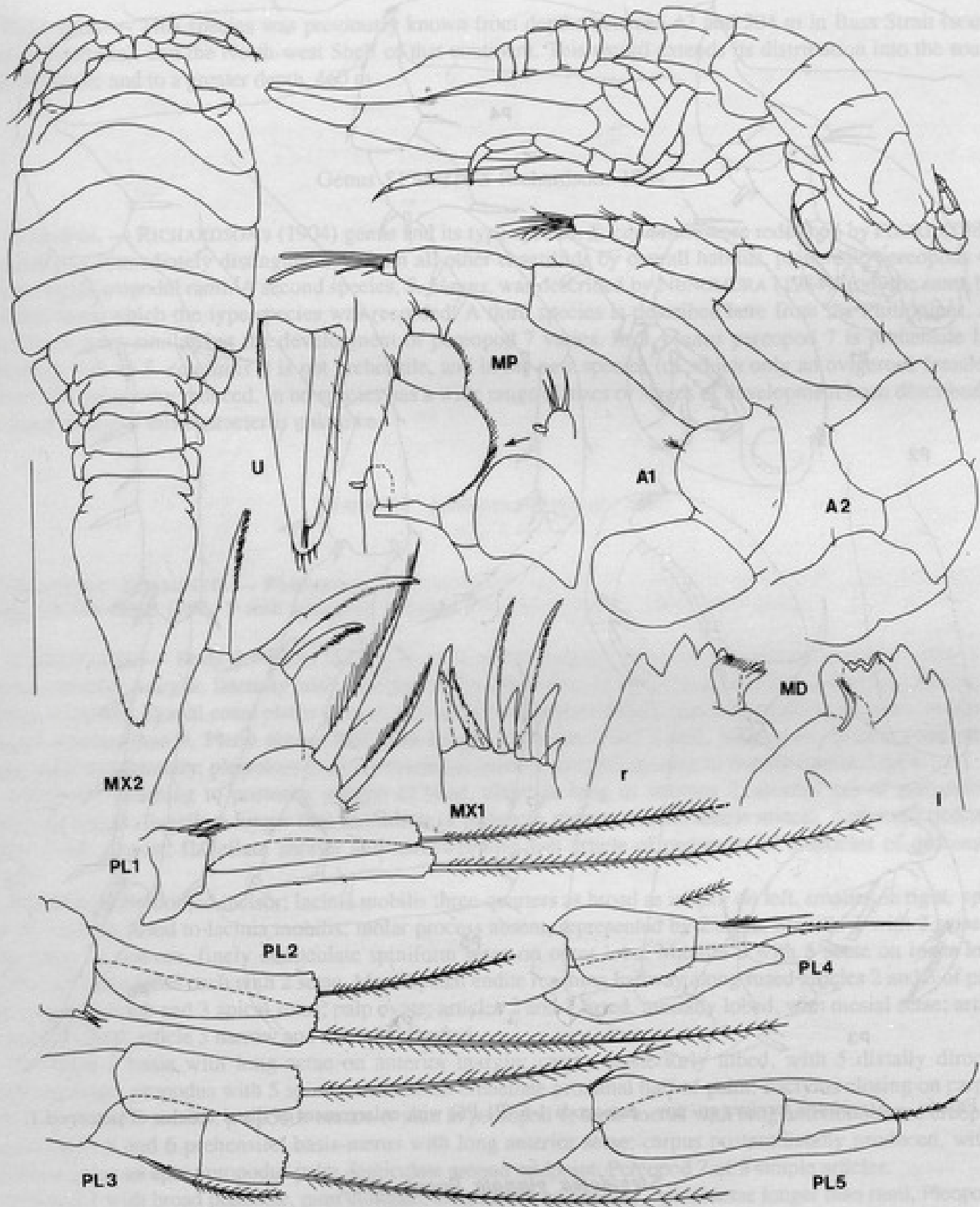


FIG. 5. — *Stegidotea forcipes* sp. nov., habitus in dorsal and lateral views (not all legs drawn); antennae 1 and 2 (A1, A2); mandibles (MD), left (l) and right (r); maxilla 1 outer lobe (MX1); maxilla 2 (MX2); maxilliped (MP) and detail of endite; uropodal rami (U); pleopods 1-5 (PL1-PL5). Scaleline = 1 mm and refers to habitus only.

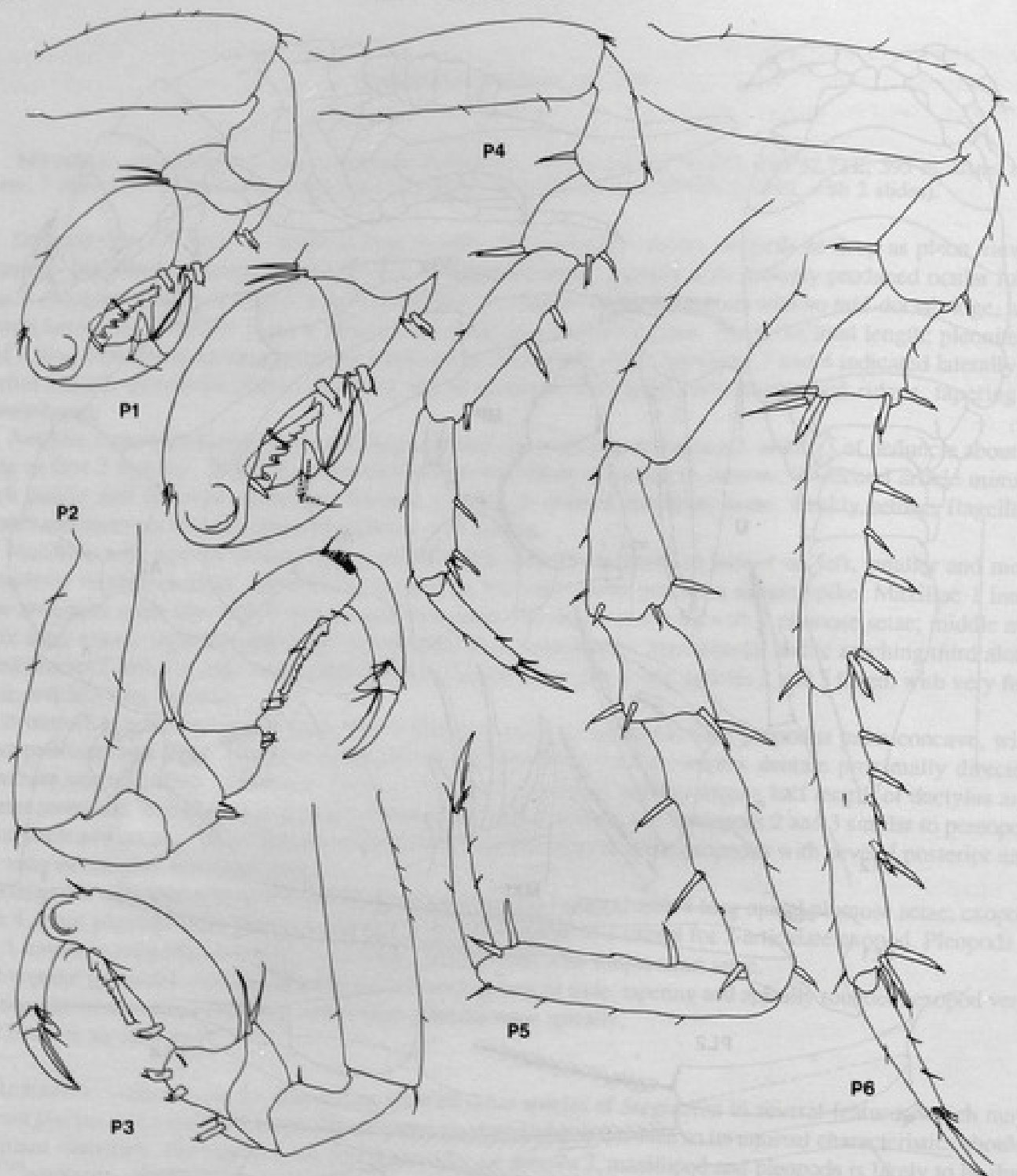


FIG. 6. — *Stegidotea forcipes* sp. nov., pereopods 1-6 (P1-P6) with enlargement of distal articles of pereopod 1.

Stegidotea pinnata Poore, 1985

Stegidotea pinnata Poore, 1985: 161-166, figs 6-9, pl. 34 d; 1990 : 102, 107.

MATERIAL EXAMINED. — Loyalty Islands. BIOCAL : stn DW 83, 20°35.07'S, 166°53.99'E, 460 m, Waren dredge, 6 August 1985 : 1 specimen (MNHN-Is 2863).

REMARKS. — This species was previously known from depths between 42 and 204 m in Bass Strait (southeastern Australia), and the North-west Shelf of that continent. This record extends its distribution into the southeastern Pacific and to a greater depth, 460 m.

Genus *SYMMIUS* Richardson, 1904

REMARKS. — RICHARDSON'S (1904) genus and its type species, *S. caudatus*, were redefined by POORE (1984). The genus is immediately distinguishable from all other chaetiliids by overall habitus, prehensile pereopods 4-6 and the equal uropodal rami. A second species, *S. planus*, was described by NUNOMURA (1984) from the same bay in Japan from which the type species was recorded. A third species is described here from the Philippines. All species are very similar but the development of pereopod 7 varies. In *S. planus* pereopod 7 is prehensile like pereopods 4-6, in *S. caudatus* it is not prehensile, and in the new species (of which only an ovigerous female is known) the leg is very reduced. In no species has a wide range of sizes or stages of development been described so the significance of this character is unknown.

Symmius philippinensis sp. nov.

Figs 7, 8

MATERIAL EXAMINED. — **Philippines.** MUSORSTOM 2 : stn DR 33, 13°32.3'N, 121°07.5'E, 130-137 m, Waren dredge, 24 November 1980 : ♀ with oostegites, holotype, 7.8 mm, (MNHN-Is 2864, with 2 slides).

DESCRIPTION. — Body 2.4 times as long as wide, dorsoventrally flattened. Integument smooth. Head with sinuous anterior margin; laterally with well defined ocular lobes; mouthparts protruding anteriorly. Pereonites without sculpture. Dorsal coxal plates separated, postlateral corners rounded anteriorly, acute posteriorly. Pereonite 7 much smaller than 6. Pleon almost half total length; pleonites 1 and 2 free, with acute epimera; pleonite 3 barely indicated laterally; pleotelson slightly waisted in anterior part and tapering to sharply rounded apex.

Antenna 1 reaching to posterior margin of head, about as long as antenna 2, articles 1-3 of peduncle of increasing length; flagellum longer than last article of peduncle, narrow, second article minute. Antenna 2 peduncle article 3 the longest; flagellum shorter and narrower than last article of peduncle, of 3 articles of decreasing lengths.

Mandible with toothed incisor; lacinia mobilis three-quarters as broad as incisor on left, smaller on right; spine row of 7 spines fused to lacinia mobilis; molar process absent, represented by 2 setae. Maxilla 1 with 2 setae on inner lobe; 11 uneven, finely denticulate spiniform setae on outer lobe. Maxilla 2 with 5 setae on inner lobe; middle and outer lobes each with 2 setae. Maxillipedal endite reaching halfway along fused articles 2 and 3 of palp, with coupling hook and 3 apical setae; palp ovate; articles 2 and 3 fused, mesially lobed, with mesial setae; article 4 mesially lobed; article 5 narrow and mesially directed.

Pereopod 1 basis with long setae on anterior margin; carpus posteriorly lobed, with 5 distally directed spiniform setae; propodus with 5 spiniform setae on crenellate proximal half of palm; dactylus closing on carpus. Pereopods 2 and 3 similar, propodus narrower than in pereopod 1, basis-merus with long anterior setae. Pereopods 4 (assumed), 5 and 6 prehensile; basis-merus with long anterior setae; carpus posterodistally produced, with 3 spiniform setae on apex; propodus palm denticulate around midpoint. Pereopod 7 of 3 simple articles.

Pleopod 1 with broad peduncle, rami elongate, exopod curved laterally, apical setae longer than rami. Pleopod 2 similar except exopod shorter than endopod. Pleopod 3 similar to 2 except for 2-articulate exopod with setae only on second article. Pleopods 4 and 5 similar to each other, exopods 2-articulate, second article with 1 or 3 simple short setae.

Uropodal peduncles overlapping; rami 0.4 total length, subequal; endopod triangular in cross-section; exopod flat with short apical and mesial setae.

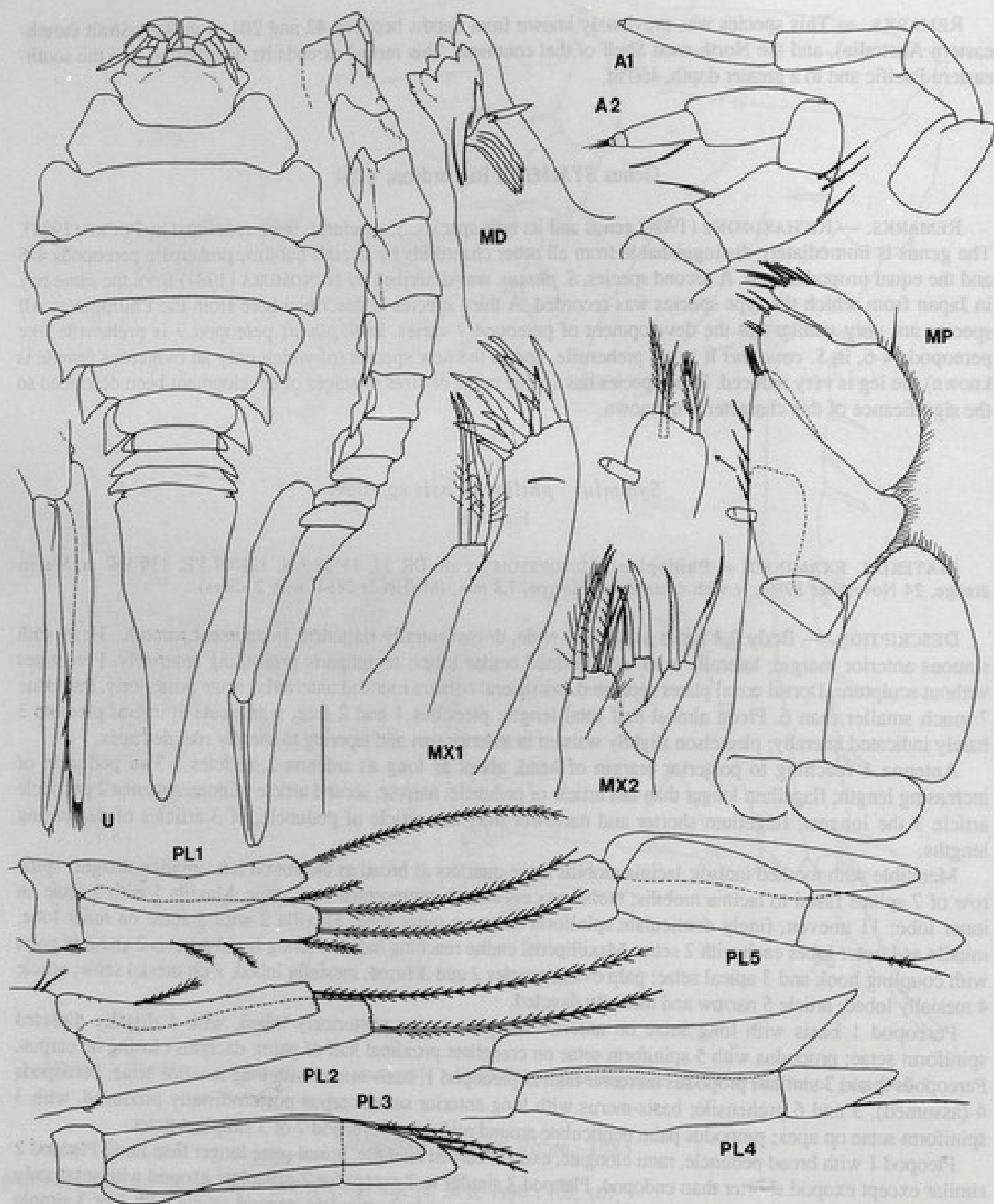


FIG. 7. — *Symmus philippinensis* sp. nov., habitus in dorsal and lateral views (no legs drawn); antennae 1 and 2 (A1, A2); mandible (MD); maxillae 1 and 2 (MX1, MX2); maxilliped (MP) with detail of endite; uropodal rami (U); pleopods 1-5 (PL1-PL5). Scaleline = 1 mm and refers to habitus only.

REMARKS. — *Symmus philippinensis* differs only slightly from *S. caudatus* which is a much narrower species (POORE, 1984). Of the three species known, *S. planus* is the most unusual in displaying a suture between maxillipedal articles 2 and 3, pereopod 7 similar to the preceding ones, very setose pereopods, and a flagellum of antenna 1 with numerous aesthetascs. This last character may be a feature of the male.

The specimen of the new species is not in good condition and an accurate representation of setation (especially of the antennae) could not be made. The combination of oostegites with an undeveloped (postmanca-like)

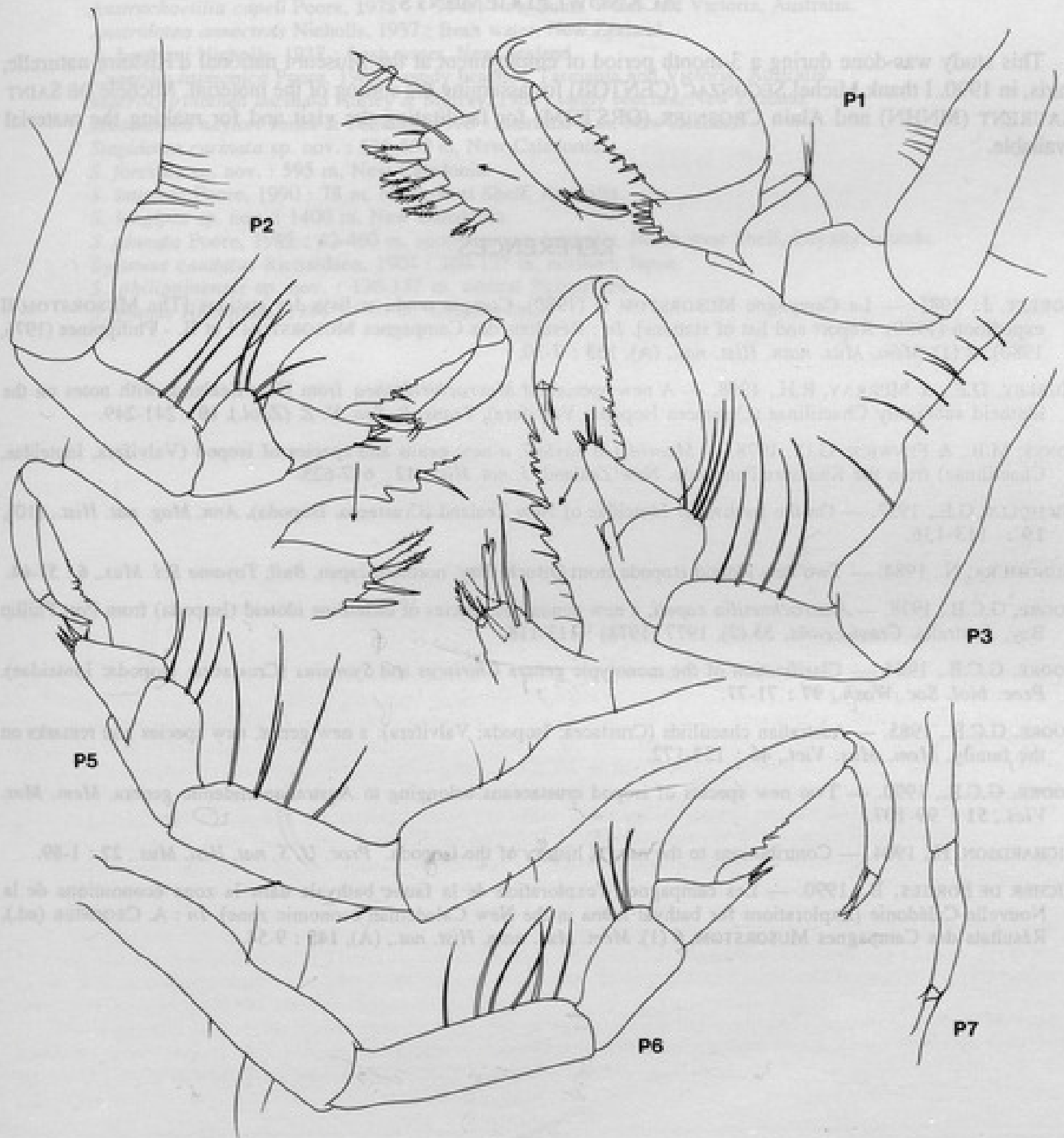


FIG. 8. — *Symmus philippinensis* sp. nov., pereopods 1-3, 5-7 (P1-P3, P5-P7).

pereopod 7 is enigmatic. Only more adult material will explain whether this limb becomes more developed (as in *S. caudatus*) or fully prehensile (as in *S. planus*) in later instars.

ETYMOLOGY. — The specific name derives from the type locality.

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TABLE 1

CHAETILIIDAE FROM THE WESTERN PACIFIC

Species of *Austridotea* have not been examined to ascertain whether they are true chaetiliids; *Notidotea lacustris* Nicholls, 1937 is not a chaetiliid but is a member of the Idoteidae (personal unpublished observations).

Austrochaetilia capeli Poore, 1978 : 4-95 m, New South Wales and Victoria, Australia.

Austridotea annectens Nicholls, 1937 : fresh water, New Zealand.

A. benhami Nicholls, 1937 : fresh water, New Zealand.

Chaetilia tasmanica Poore, 1985 : sandy beaches, Tasmania and Victoria, Australia.

Macrochiridothea uncinata Hurley & Murray, 1968 : sandy beaches, New Zealand.

Maoridotea naylori Jones & Fenwick, 1978 : intertidal-3 m, New Zealand.

Stegidotea carinata sp. nov. : 535-650 m, New Caledonia.

S. forcipes sp. nov. : 595 m, New Caledonia.

S. latipoda Poore, 1990 : 78 m, North-west Shelf, Australia.

S. longipes sp. nov. : 1400 m, New Caledonia.

S. pinnata Poore, 1985 : 42-460 m, south-eastern Australia, North-west Shelf, Loyalty Islands.

Symnius caudatus Richardson, 1904 : 109-127 m, northern Japan.

S. philippinensis sp. nov. : 130-137 m, central Philippines.

S. planus Nunomura, 1984 : 4-10 m, northern Japan.

Aldin CROSNIER

Chercheur CRISTOM

Muséum national d'Histoire naturelle
Laboratoire de Zoologie (Arthropodes)
45 rue Buffon, 75231 Paris Cedex 05
France

RÉSUMÉ

Ce travail est basé à celui qui a été publié en 1985 et dans lequel un ensemble de 30 espèces et une sous-espèce de Heteropneustes indo-pacifique ont été examinées et décrites.

L'étude présentée ici est basée sur un matériel très abondant fourni par les nombreuses récoltes faites par les chercheurs de CRISTOM dans l'Indo-Ouest-Pacifique, à Madagascar, aux Seychelles et en Nouvelle-Calédonie, par collection lors des campagnes organisées conjointement par CRISTOM et le Muséum national d'Histoire naturelle (campagnes MUSORSTOM 1-6 et similaires : Océan Indien, BOMBAUX, etc.) et 23 aux Philippines en Indonésie, en Nouvelle-Calédonie. On a également utilisé par ailleurs des collections de la campagne MD 32 effectuée autour de La Réunion, dans le cadre des recherches financées par les TAAF (Terres Australes et Antipodiques Françaises).

A ce matériel ont été ajoutés enfin, pour la partie indonésienne, National Museum of Natural History, à Washington, ainsi que de nombreuses récoltes se trouvant dans les Muséums allemands et dans ceux d'Amsterdam, Leyde, Copenhague et Francfort sur le Main.

L'insuffisance des descriptions originales et les erreurs mentionnées ont été relevées dans le présent travail, nous ont conduit, dans une première partie, à reconstituer les types de toutes les espèces citées, avant de proposer à droite des espèces nouvelles, de savoir à quel correspondent exactement les noms inscrits dans la littérature, d'autre part à essayer de réexaminer les spécimens pour lesquels une identification a été publiée.

C'est ainsi qu'à l'exception de *M. galensis* Pearson, dont le type semble avoir définitivement disparu, les types de toutes les autres espèces de *Heteropneustes* ont pu être réexaminés et que le matériel supplémentaire réexaminé dans le présent travail est en fait resté et leur identification est devenue évidente.



Poore, Gary C. B. 1991. "Crustacea Isopoda : Chaetiliidae (Valvifera) from New Caledonia and the Philippines." *Mémoires du Muséum national d'histoire naturelle* 152(1), 139–153.

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