

Corallanidae from Bora Bora and Moorea, Society Islands, with description of a new species of *Corallana* (Crustacea : Isopoda : Cymothoidea).

H.G. Müller

Institut für Allgemeine und Spezielle Zoologie der Justus-Liebig-Universität,
Neues Tierhaus, Heinrich-Buff-Ring 29, D-6300 Giessen, Germany (present address)
Centre de l'Environnement, Antenne Museum (École Pratique des Hautes Études, E.P.H.E.)
B.P. 1013, Papetoai, Moorea, Polynésie Française

Abstract : Two species of corallanid isopods belonging to two genera are recorded from coral reefs at Bora Bora and Moorea, Society Islands. *Alcirona insularis* Hansen, 1890 is redescribed in detail and some morphological features are shown from the type material of *Alcirona krebsii* Hansen, 1890 to point out the distinguishing characters of both species. *Corallana societensis* n.sp. is described, with a brief discussion of its supposed affinities.

Résumé : Deux espèces d'Isopodes corallinides, appartenant à deux genres sont recensés dans les récifs coralliens des îles de la Société : Bora-Bora et Mooréa. *Alcirona insularis* Hansen, 1890 est redécrite et certains aspects morphologiques rencontrés chez *Alcirona krebsii* Hansen, 1890 sont notés pour mettre en évidence les caractères distinctifs des deux espèces. *Corallana societensis* n. sp. est décrite et est brièvement comparée à *Corallana tridentata*.

INTRODUCTION

The present report is based on material collected by the author during a 2 months survey of marine invertebrates from coral reefs at Bora Bora and Moorea, French Polynesia, carried out in February-April 1988.

Up to now the isopod family Corallanidae was not known from this geographic area. Extensive collecting of dead coral substrate and pieces of wood distributed over shallow water reef localities at Bora Bora and Moorea revealed 2 species in 2 genera, which are described below.

Alcirona insularis Hansen, 1890, a species with a confusing synonymy, requires a complete redescription and comparison with *Alcirona krebsii* Hansen, 1890 from the tropical Western Atlantic, because it has been erroneously synonymized with *insularis* by some authors. The genus *Corallana* is represented by a species new to science. It is described in detail, with some comments on its supposed relationships.

Both species do not show a clear distributional pattern on the coral reefs studied. They were found in sheltered locations (Moorea : beach channel of the Tiahura fringing reef ; fringing reef at Cook's Bay) and also in locations with a moderately strong wave exposition (Moorea : fringing reef near Afareaitu ; Bora Bora : barrier reef near Motu tapu). It seems, that both avoid the strongly exposed reef sites, because they were not found on the outer reef flat of the barrier reefs near Tiahura and Maharepa (Moorea), where extensive samples have been taken as well.

The specimens are deposited in the Muséum National d'Histoire Naturelle, Paris, France (MNHN) and in the Senckenberg Museum, Frankfurt, Germany (SMF).

SYSTEMATIC ACCOUNT

Corallanidae

Alcirona Hansen, 1890

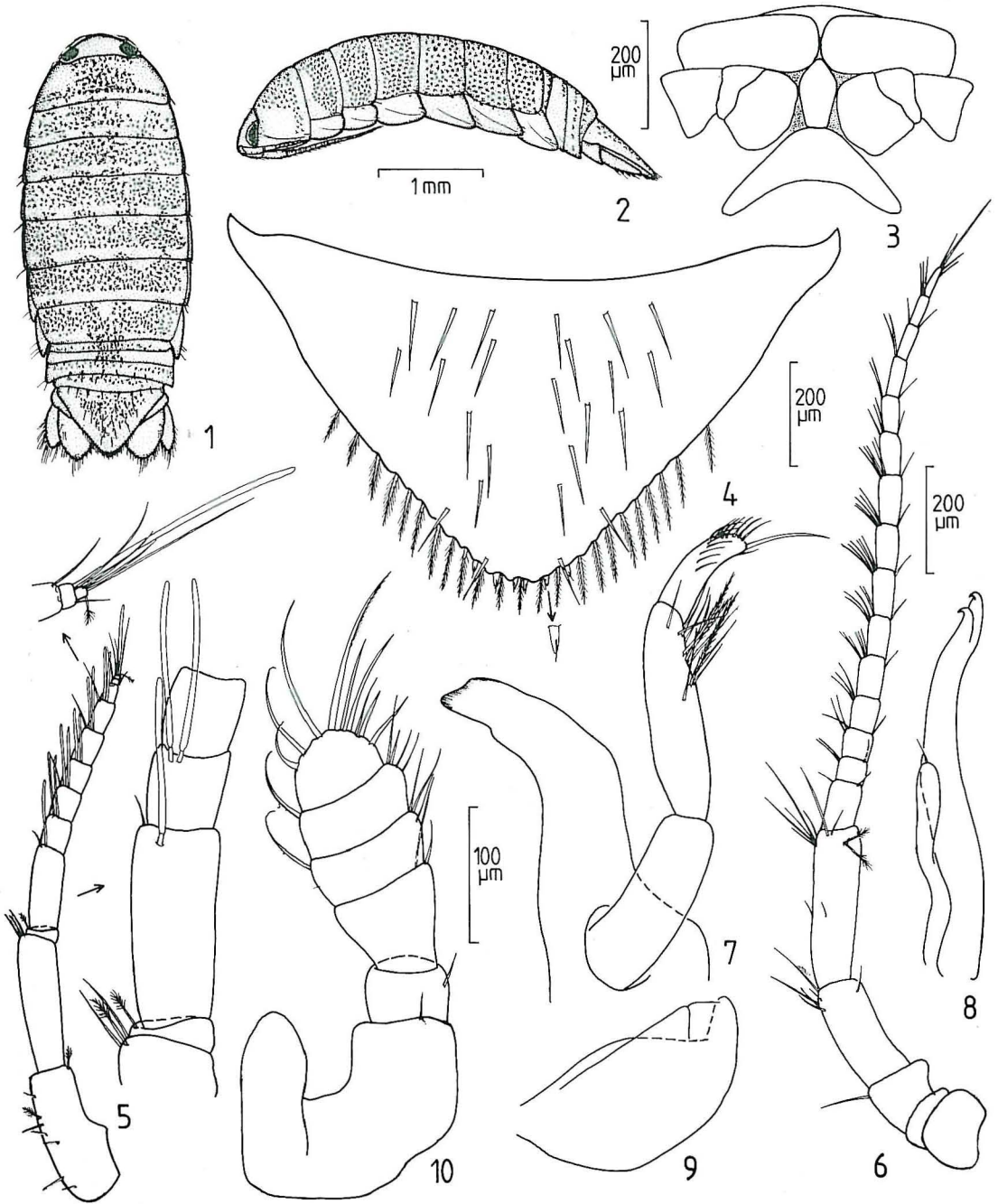
Alcirona insularis Hansen, 1890 (Figs. 1- 28)

1890 *Alcirona insularis* Hansen, Vidensk. Selsk. Skr. 6 (5) : 287 ; Pl. VIII, Fig. 2.

Material : 1 ♂, 9 ♀♀ (1 larvigerous) (MNHN) ; reef flat of fringing reef near Afareaitu, near slope ; dead corals, 0.5 m, 29 March 1988. 1 ♂ (SMF) ; reef flat of fringing reef near Afareaitu, near slope ; coral rubble on sandy bottom, 0.5 m, 29 March 1988. 1 ♂, 2 ♀♀, 2 postmancas (SMF) ; fringing reef at Cook's Bay, about 50 m south of "R. Gump South Pacific Biological Research Station" ; dead corals, 1-2 m, 25 March 1988. 8 ♂♂, 3 ♀♀, 4 postmancas, deposited as follows : 5 ♂♂, 1 ♀, 1 postmanca (SMF) ; 3 ♂♂, 2 ♀♀, 3 postmancas (MNHN) ; coral slope of Tiahura fringing reef ; dead corals, 1-2 m, 22-23 March 1988.

Description, ♂ : total length about 3.9 mm. Body smooth, with numerous tiny pigment spots scattered over entire body with the exception of cephalon. Posterior margin of pereonite 7, pleonites, dorsal surface of pleotelson and posterior margins of most coxae with some slender spines. Cephalon 3 times wider than long, distal margin broadly rounded. Lateral eyes well pigmented, with many small ommatidia. Pereonite 1 longest, other pereonites subequal in length. Pleonites 1-4 subequal in length, with pleonite 4 narrower than other pleonites (Figs. 1-2). Pleotelson triangular, 1.7 times wider than long, with shallowly serrate posterolateral margins ; distal margin of narrowly rounded pleotelson bearing row of 6 small compound spines, separated from one another by plumose seta ; distal and posterolateral margin of pleotelson with 23 plumose setae in total (Fig. 4). Clypeal region as figured (Fig. 3).

Antenna 1, proximal article of 2-articulated peduncle somewhat shorter and wider than second article ; flagellum of 10 articles ; first flagellar article short and wider than long ; second flagellar article longest, almost as long as articles 3-5 combined ; articles 3-8 much shorter than, but subequal in width to second article ; two distal flagellar articles very small ; second and penultimate flagellar articles bearing single aesthetasc ; articles 3-8 each with 2 aesthetascs, (Fig. 5). Antenna 2 slender, its tip reaching to posterior margin of third pereonite ; peduncle 5-articulated, proximal 3 articles short, wider than long ; distal 2 peduncular articles elongate, fifth 1.4 times length of fourth article, both bearing group of some simple setae at outer distal margin ; flagellum of 15 setose articles (Fig. 6). Mandible with narrow, indistinctly bicuspidate incisor process, its distal margin sclerotized ; lacinia mobilis and molar process absent ; mandibular palp 3-articulated, with proximal article widest and distal article shortest ; distal half of second and third article with several, partly



Figs. 1-10: *Alciroa insularis* Hansen, 1890, ♂ : 1. dorsal view ; 2. lateral view ; 3. clypeal region ; 4. pleotelson ; 5. antenna 1 ; 6. antenna 2 ; 7. mandible ; 8. maxilla 1 ; 9. maxilla 2 ; 10. maxilliped.

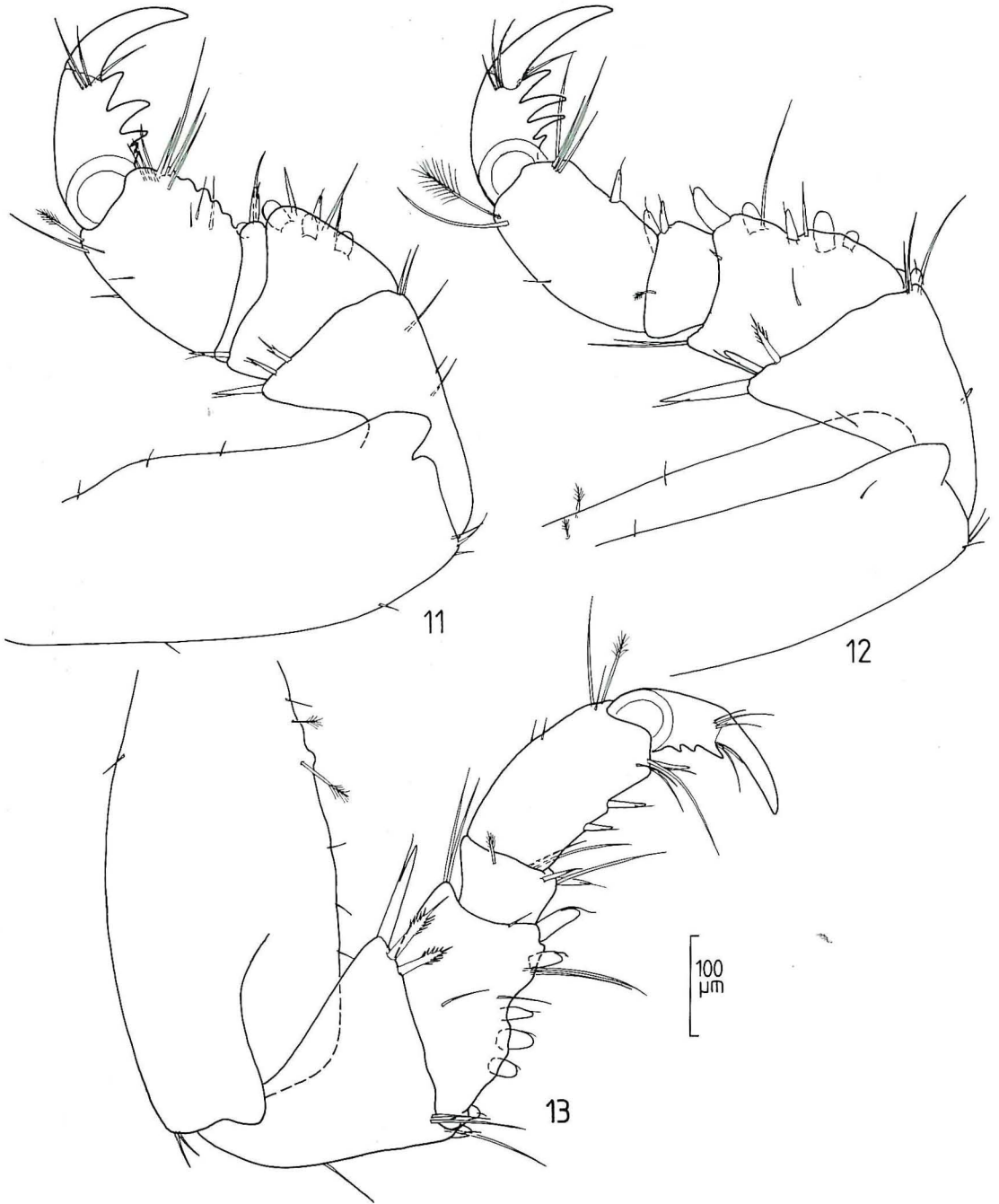
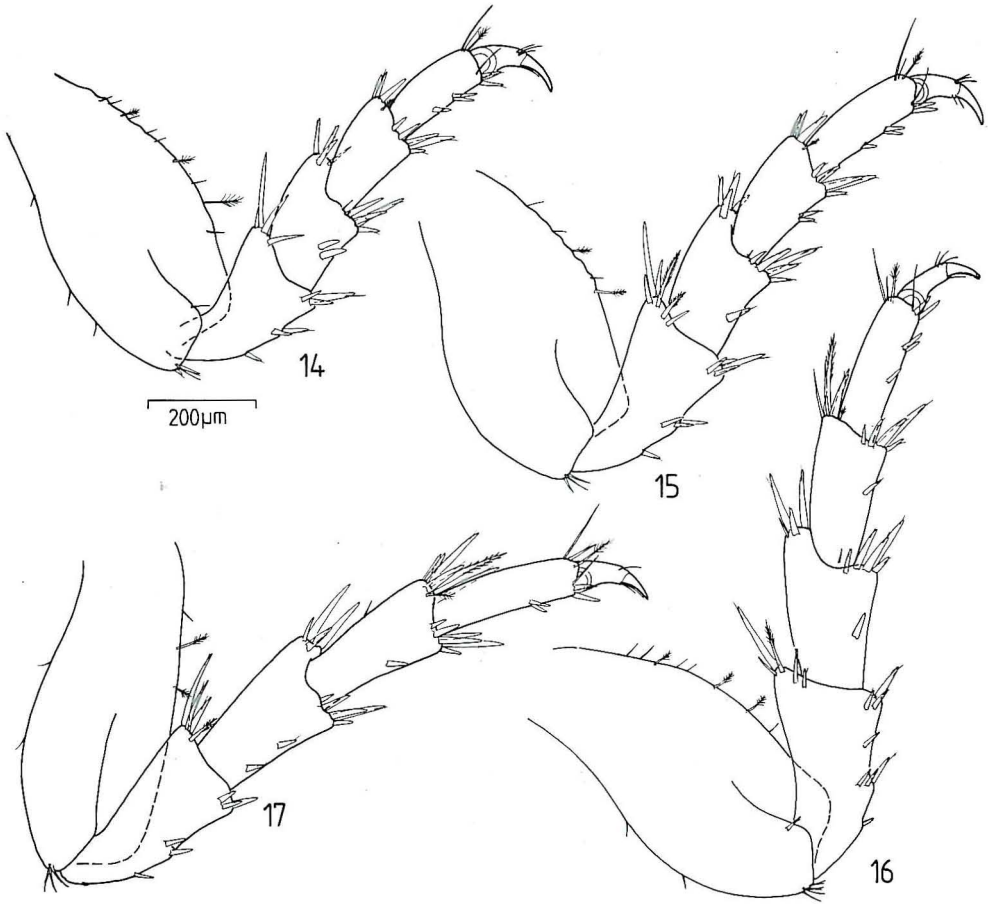
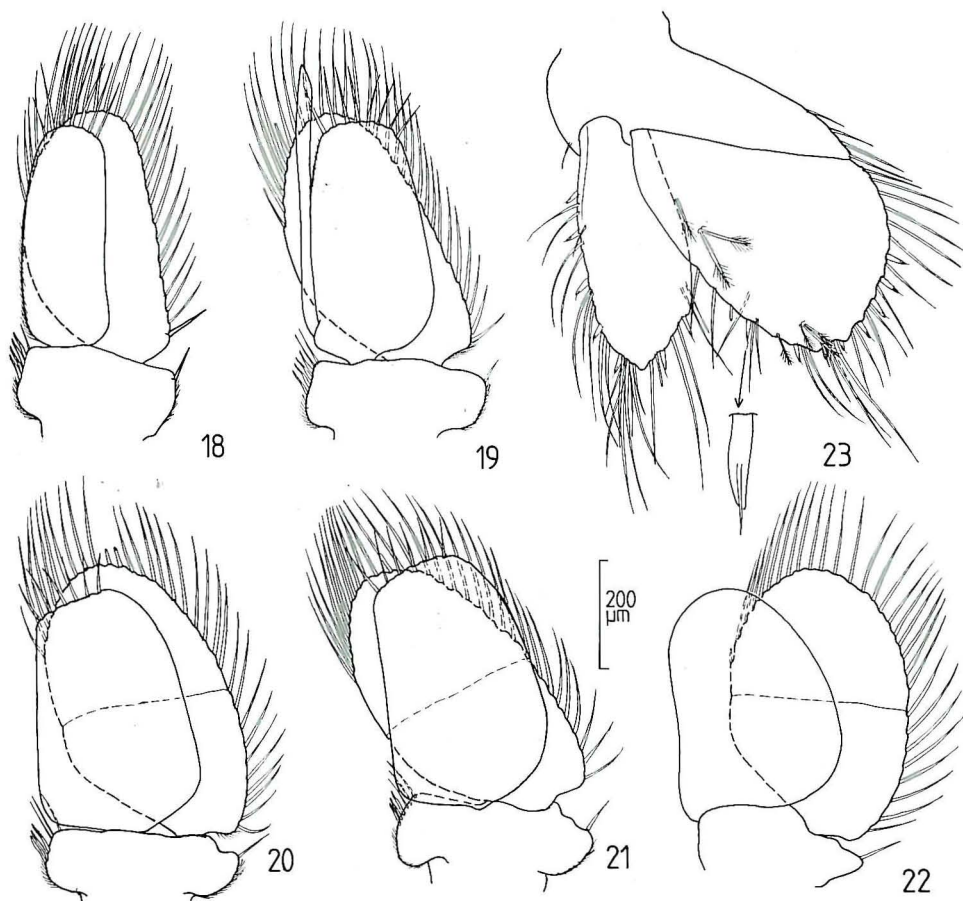


Fig. 11-13 : *Alcirona insularis* Hansen, 1890, ♂ : 11. pereopod 1 ; 12. pereopod 2 ; 13. pereopod 3.



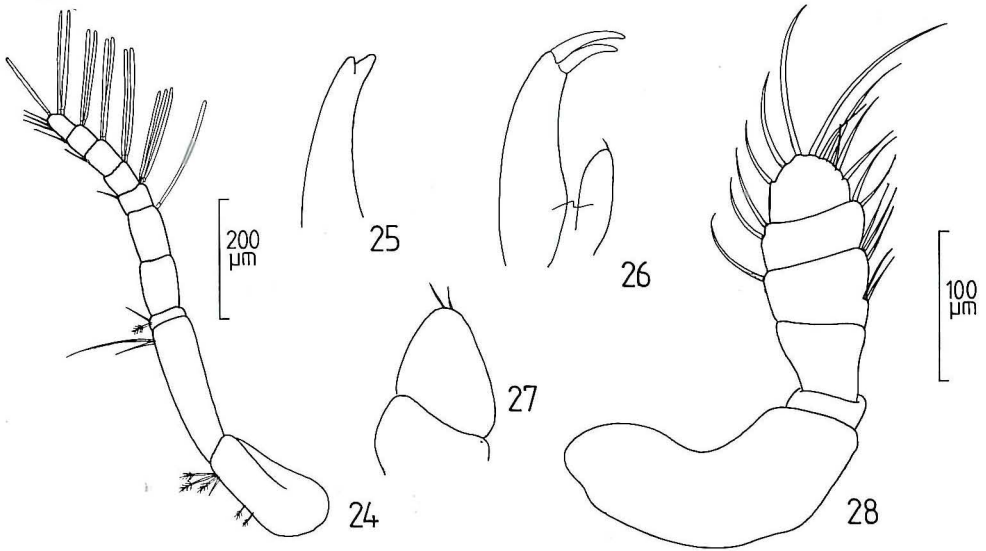
Figs. 14-17: *Alcirona insularis* Hansen, 1890, ♂ : 14 . pereopod 4 ; 15. pereopod 5 ; 16. pereopod 6 ; 17. pereopod 7.

plumose setae (Fig. 7). Maxilla 1 very slender, endopodite about half length of exopodite, distally rounded and tipped with short simple seta ; exopodite with 2 small terminal, hook-shaped acute processes (Fig. 8). Maxilla 2 ovate, poorly developed, with 3 distal non-setose lobes (Fig. 9). Maxilliped narrow, base with outer, ovate, anteriad directed lobe ; palp 5-articulated, with semicircular terminal article ; ectal margin of palp articles 2-5 sparsely setose, mediiodistal margins of articles moderately setose (Fig. 10). Pereopods 1-3 subprehensile (Figs. 11-13) and pereopods 4-7 (Figs. 14-17) ambulatory, becoming more slender from pereonites 1 to 7. Posterior margins of dactylus in pereopods 1-3 with 3-5 acute teeth, which are more strongly developed in pereopods 1-2. Posterior margin of propodus in pereopod 1 somewhat convex, with small, rounded tubercles and some simple setae. Carpus of pereopod 1 very short and much wider than long, bearing a short and relatively slender



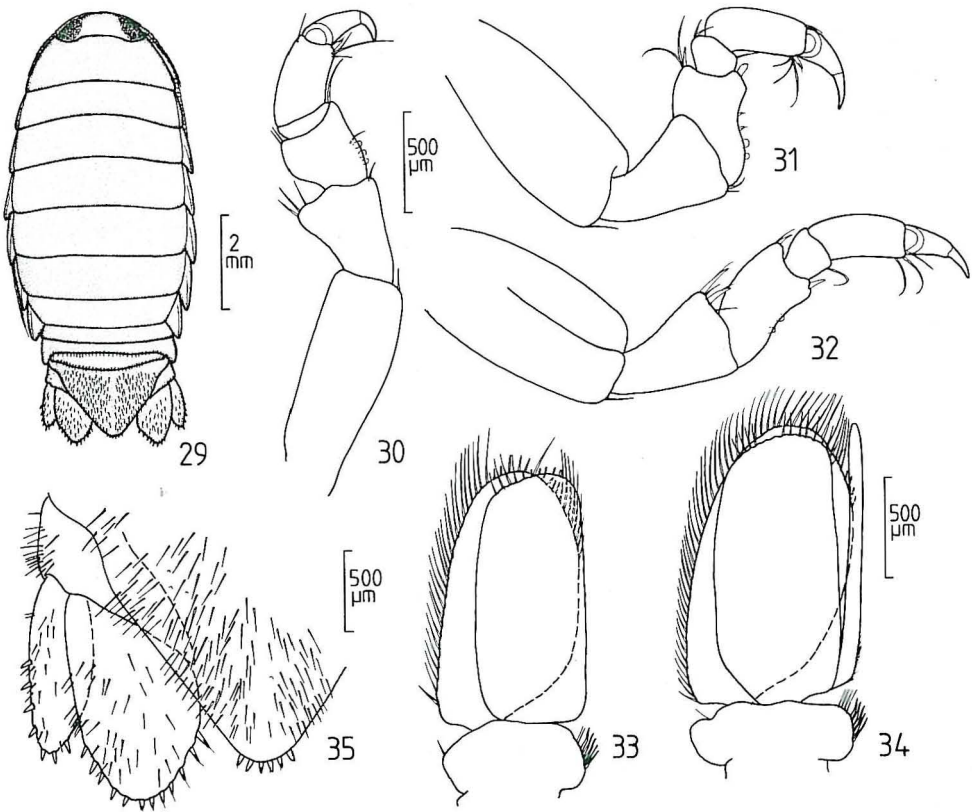
Figs. 18-23 : *Alcirona insularis* Hansen, 1890, ♂ : 18. pleopod 1, 19. pleopod 2 ; 20. pleopod 2 ; 21. pleopod 4 ; 22. pleopod 5 ; 23. uropod.

compound spine at posterior margin ; posterior margin of merus in pereopod 1 with 3 robust and 2 more slender compound spines. Shape of pereopods 2 and 3 more similar among one another than to pereopod 1, except for size of teeth at posterior margin of dactyli. Carpus and merus of pereopods 2-3 more slender than in pereopod 1 and with larger compound spines at posterior margin than in pereopod 1 ; anterodistal margin of ischium in pereopod 2 with 1 pectinate spine ; 2 such spines present on ischium of pereopod 3. Pereopods 4-7 with several compound spines at posterior margin of propodus, carpus, merus and ischium ; moreover, these pereopods with group of some compound spines on anterodistal margin of carpus, merus and ischium. Endopodite of all pleopods always slightly shorter than exopodite. Exopodite of pleopods 3-5 with transverse suture line at about midlength. Sympodite of pleopods 1-2 with 4, of pleopods 3-4 with 3 retinaculae.



Figs. 24-28 : *Alcirona insularis* Hansen, 1890, larvigerous ♀ : 25. incisor of mandible ; 26. maxilla 1 ; 27. maxilla 2 ; 28. maxilliped.

Symphonite of pleopod 1 with slender spine at outer distal margin ; this spine replaced by simple seta in pleopods 2-5. Endopodite of pleopod 1 narrow, lateral margins almost parallel-sided ; distal margin of endopodite broadly rounded, bearing 7 plumose setae ; exopodite roughly ovate, widest at about midlength, bearing 26 plumose marginal setae and 1 slender spine at outer basal margin (Fig. 18). Endopodite of pleopod 2 wider than, but otherwise similar in shape to endopodite of pleopod 1 ; appendix masculina arising at mediobasal margin, extending beyond distal margin of endopodite with about 1/4 of its entire length ; distal margin of endopodite with 8 plumose setae ; exopodite of pleopod 2 quite similar to endopodite of pleopod 1, bearing 30 plumose marginal setae and lacking slender spine at outer basal margin of pleopod 1 endopodite (Fig. 19). Pleopod 3, endopodite widest in proximal third, blunt distal margin with 6 plumose setae ; exopodite quite similar in outline to exopodite of pleopod 2, bearing 32 plumose marginal setae (Fig. 20). Rami of pleopod 4 quite similar to those of pleopod 3 ; endopodite with 6, exopodite with 31 plumose marginal setae (Fig. 21). Pleopod 5, ovate endopodite bare of any setae, with small, anteriorly directed lobe at mediobasal margin ; ovate exopodite with 30 plumose marginal setae (Fig. 22). Uropods robust ; symphonite with 4 plumose setae at mediobasal margin ; exopodite much narrower than but subequal in length to endopodite ; both rami ovate in outline, with several simple and plumose marginal setae ; outer margin of exopodite with 5, inner distal margin with 2 compound spines ; inner distal margin of endopodite with 3, outer distal margin with 5 compound spines ; dorsal surface of endopodite, near outer and distal margin with 7 feathered sensory setae (Fig. 23). All plumose setae of pleopodal and uropodal rami drawn as simple setae.



Figs. 29-35 : *Alcirona krebsii* Hansen, 1890, ♂ lectotype : 29. dorsal view ; 30. pereopod 1 ; 31. pereopod 2 ; 32. pereopod 3 ; 33. pleopod 1 ; 34. pleopod 2 ; 35. pleotelson and left uropod.

♀ : Quite similar in habitus to ♂. Total length 2.9-3.1 mm.

Antenna 1 flagellum of 8 articles, second article shorter than in ♂. Mouthparts of larvigerous ♀ greatly metamorphosed. Incisor of mandible narrower than in ♂, bicuspidate and not sclerotized (Fig. 25). Maxilla 1 much shorter than in ♂ ; inner lobe ovate, tipped with short simple seta ; outer lobe about twice length of inner lobe, with 2 robust distal spines (Fig. 26). Biarticulate maxilla 2 tipped with 2 short distal setae (Fig. 27). Maxilliped without anteriorly directed lobe at outer distal margin of base ; palp similar to ♂ with first article distinctly shorter (Fig. 28).

Postmanca and manca : similar in habitus to mature specimens. Total length 2.5-2.6 and 1.8-3.0 mm, respectively.

Remarks : *Alcirona insularis* from the tropical South Pacific is closely allied with *Alcirona krebsii* Hansen, 1890 from the tropical Western Atlantic, and was considered conspecific with the latter by several authors (e.g. Delaney 1989 : 11 ; Menzies & Kruczynski 1983 : 69). Re-examination of the syntypes of *krebsii* [of which I designate the

herein figured male from St. Thomas in the Caribbean (Figs. 29-35) as lectotype] revealed, that this species and *A. insularis* are not the same. Though the type material of *krebsii* is not in good condition, some distinguishing features from *insularis* are obvious at first sight. *A. krebsii* is much larger, the lectotype measuring 9 mm in total length. The tip of the second antenna of *A. krebsii* reaches back to the posterior margin of the 7 th pereonite, whereas it reaches back only to the posterior margin of the 3 rd pereonite in *insularis*. Correspondingly, there are much more antennal flagellar articles in *krebsii*. The uropodal rami (Fig. 35) bear several slender spines on its dorsal surface (lacking in *insularis*) and the dorsal surface of the pleotelson bears much more slender spines than in specimens of *insularis* (Fig. 29). It appears that all setae at the uropodal rami and pleotelson of the type material of *A. krebsii* are broken off. Another distinguishing feature is the lack of strong tooth-shaped processes at the posterior margin of the dactyli in pereopods 1-3 of *krebsii* (Figs. 30-32). The first and second pleopods were removed from the lectotype. The sympodite of both bears 5 retinaculae at its medial margin (4 in *insularis*). Moreover the marginal setae of the pleopodal rami are more numerous than in *insularis* (Figs. 33-34). Their exact number could not be ascertained, because some are broken off. The appendix masculina of *krebsii* is shorter than in *insularis*, extending beyond the distal margin of the endopodite with only 1/10 of its entire length (Fig. 34).

The holotype of *A. insularis* (Samoa) was available for re-examination from the Zoologisk Museum in Copenhagen. It is in poor condition, and there is only one minor feature differing from the specimens from the Society Islands. The posterior margin of the propodus of pereopod 1 is smooth in the holotype, whereas it has some small rounded tubercles in the material from Moorea.

Due to the confusing synonymy (cf. Menzies & Kruczynski 1983 : 69) and poor descriptions available in the literature for *A. insularis* and *krebsii* it is impossible to estimate their geographic distribution from the many published records.

Corallana Dana, 1852

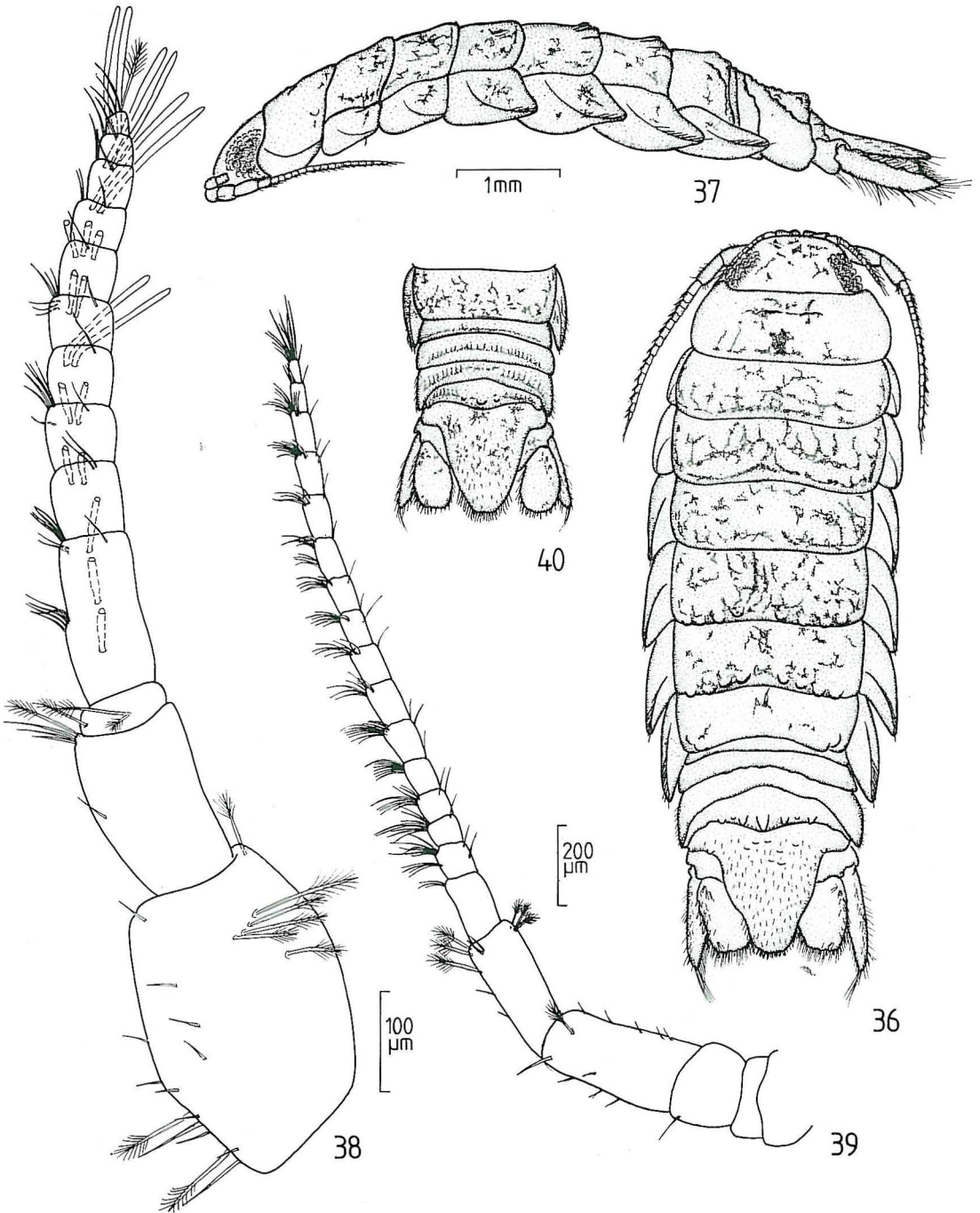
Corallana societensis n.sp. (Figs. 36-62)

Holotype : ♂ (SMF), Moorea ; beach channel of Tiahura fringing reef ; in pieces of wood, about 1 m, March 1988.

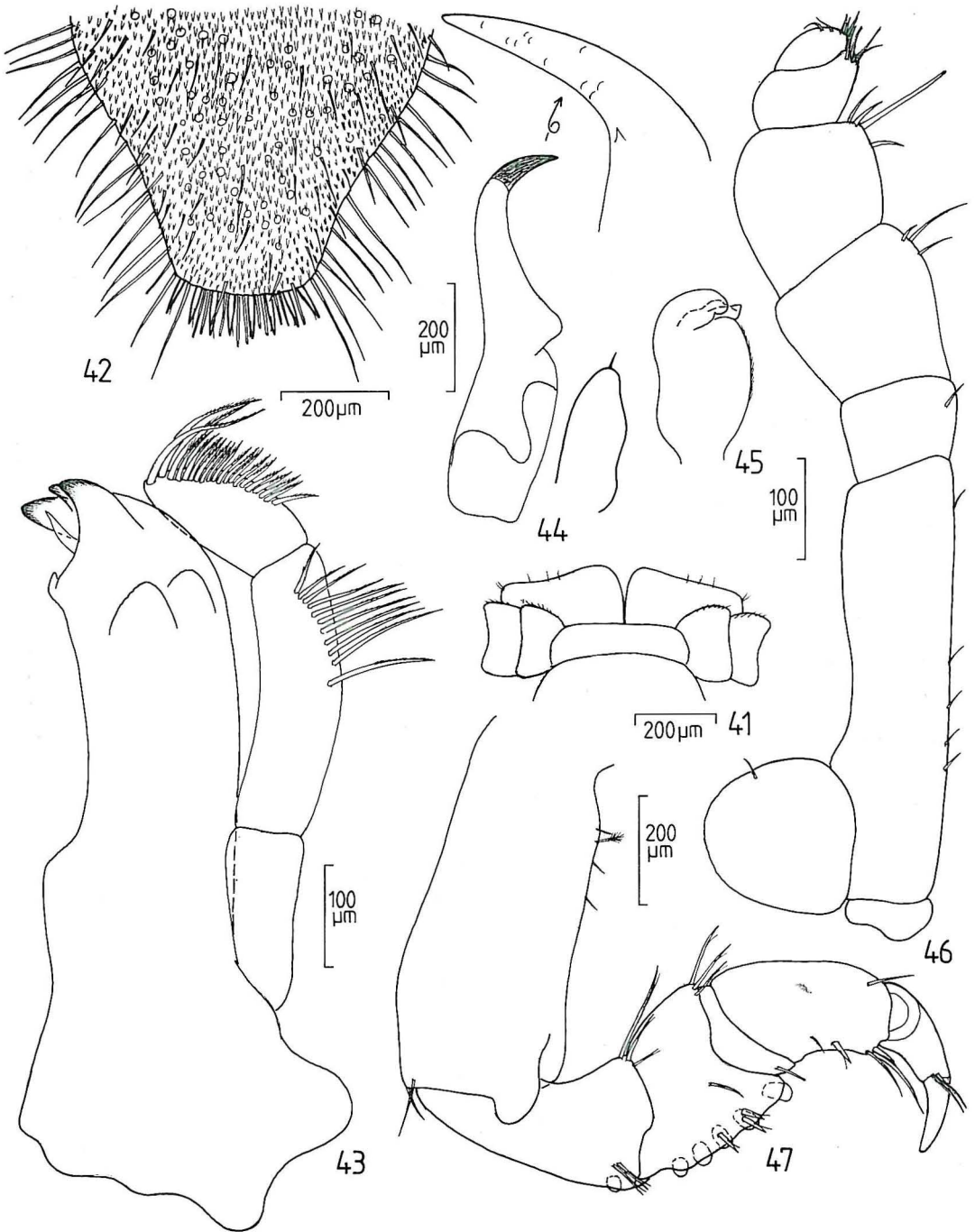
Paratypes : 2 ♂♂, 1 ♀, 2 immature adults, 1 manca (SMF), Moorea ; collected together with holotype. 2 ♂♂, 2 immature adults, 1 postmanca, 1 manca (MNHN), Bora Bora ; barrier reef near Motu tapu ; in dead corals, 1-1.5 m, 7 March 1988.

Derivatio nominis : The specific name refers to the geographic area of the type locality, the Society Islands.

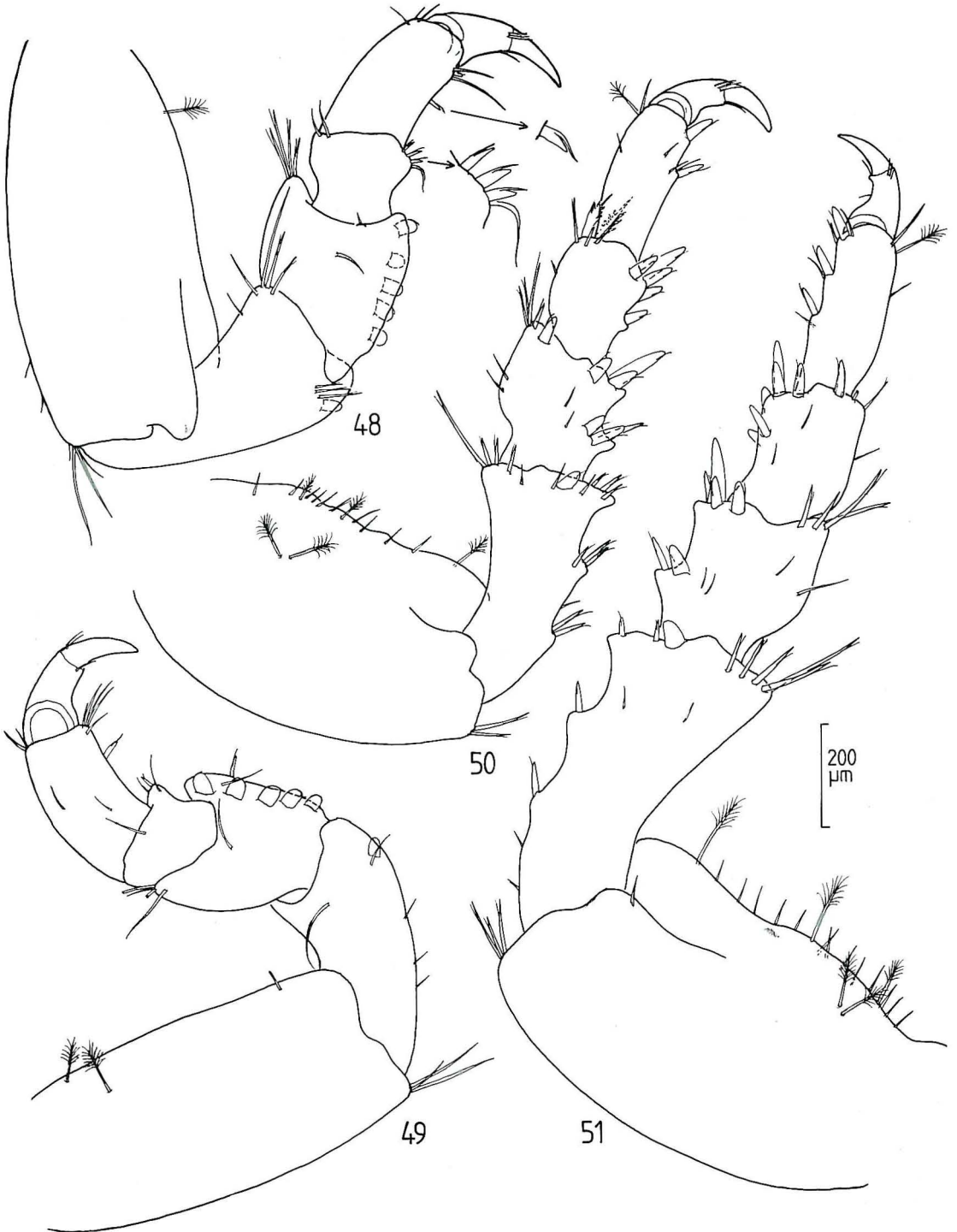
Description, ♂ holotype : total length 5.2-6.9 mm. Pigmentation variable ; irregular pigment reticulations may be present on dorsum of cephalon, pereonites, pleonites and pleotelson. Cephalon 2.4 times wider than long, with broadly rounded anterior margin and large,



Figs. 36-40 : *Corallana societensis* n.sp., ♂ holotype : 36. dorsal view ; 37. lateral view ; 38. antenna I ; 39. antenna 2. - ♀, paratype : 40. pereonite 7 and pleon, dorsal view.



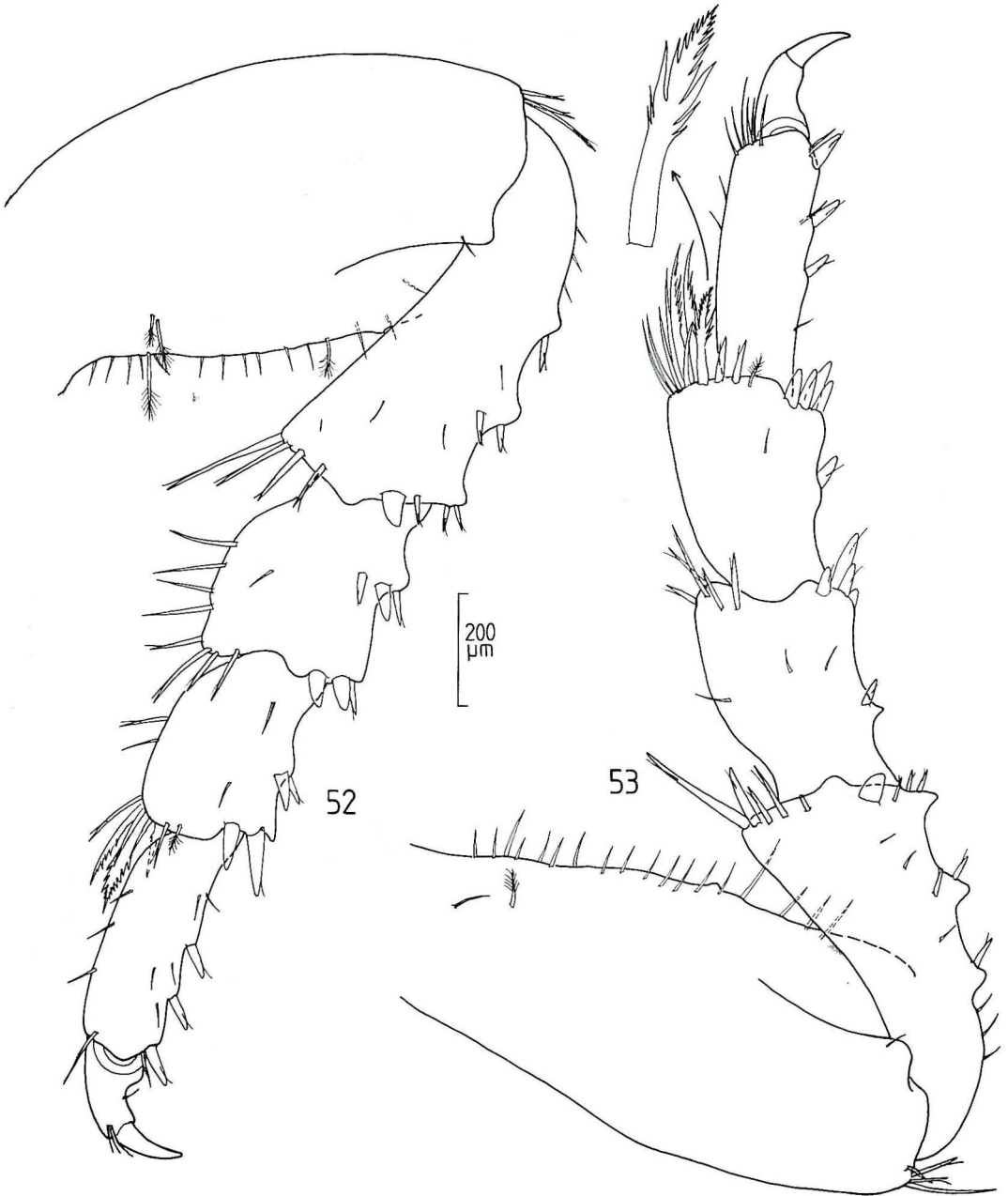
Figs. 41-47: *Corallana societensis* n.sp., ♂ holotype : 41. clypeal region ; 42. distal part of pleotelson ; 43. mandible ; 44. maxilla 1 ; 45. maxilla 2 ; 46. maxilliped ; 47. pereopod 1.



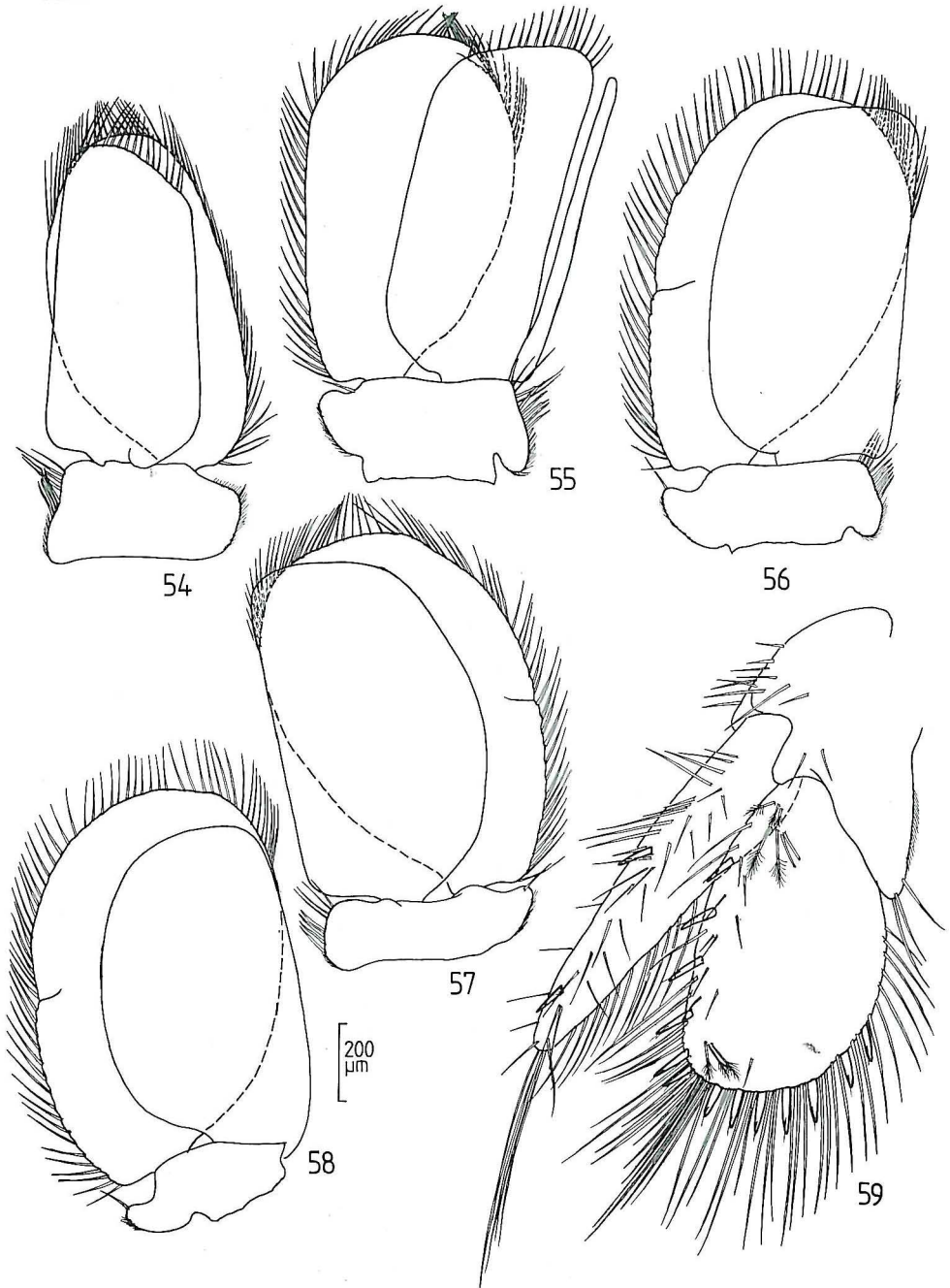
Figs. 48-51 : *Corallana societensis* n.sp., ♂ holotype : 48. pereopod 2 ; 49. pereopod 3 ; 50. pereopod 4 ; 51. pereopod 5 ; 52. pereopod 6 ; 53. pereopod 7.

well pigmented lateral eyes composed of relatively large ommatidia (Figs. 36-37). Clypeal region as figured (Fig. 41). Pereonites in length similar among one another. All coxae with carinae and prominently visible in dorsal view ; posterior margin of coxae 4-7 with progressively produced posteroventral margins. Pereonite 1 dorsomedially with some indistinct granules in transverse row. Pereonites 5 and 6 each with 8 rounded tubercles in transverse row along posterior margin. Pereonite 7 with 4 tubercles in 2 pairs at posterolateral margin. First and second pleonite concealed by coxae of pereonite 7. Expanded lateral margins of third pleonite concealing lateral margins of fourth pleonite. Fourth pleonite with transverse row of 7 short tubercles along posterior margin, medial tubercle being largest. Pleotelson roughly triangular and slightly wider than long, with sinuous lateral margins and some tiny tubercles on anterodorsal surface (Fig. 36) ; dorsum of pleotelson covered with numerous short setae and denticulate structures ; broadly rounded distal margin of pleotelson with row of 8 slender compound spines ; moreover, posterolateral and distal margin of pleotelson with many simple setae (Fig. 42).

Antenna 1, peduncle biarticulate ; proximal article longest and widest, bearing 8 feathered sensory setae ; flagellum of 11 articles ; proximal flagellar article very short, much wider than long ; second article longest, bearing 3 aesthetascs in longitudinal row ; articles 3-10 each with 2 aesthetascs, (Fig. 38). Antenna 2 slender, peduncle of 5 articles ; proximal 3 peduncular articles short ; distal 2 peduncular articles elongate and subequal in length ; flagellum composed of 26 relatively densely setose articles (Fig. 39). Mandible elongate, with sclerotized, 3-cuspidate incisor, a robust distal spine (probably representing vestigial spine row) and a vestigial, hook-shaped molar process ; 3-articulated mandibular palp strongly developed, with second article longest and third article shortest ; second article with row of 11 fringed, slender spines in distal half ; third article with row of 20, more robust fringed spines (Fig. 43). Endopodite of maxilla 1 : small and ovate lobe, tipped with short simple seta ; exopodite large, with strongly developed and sclerotized, hook-shaped and acute distal part (Fig. 44). Maxilla 2 vestigial, ovate, with 3 distal non-setose lobes (Fig. 45). Maxilliped very slender ; epipodite almost circular, with short simple seta near distal margin ; 5-articulated palp bearing few setae at medial and distal margin of articles ; palp articles 1-3 longer than articles 4-5 (Fig. 46). Pereopods ambulatory, similar among one another, though becoming more slender from pereopod 1 to 7. Carpus of pereopod 1 very short and much wider than long. Posterior margin of merus and ischium in pereopods 4-7 with some tubercles of triangular shape. Pereopods 1-3 bearing rounded compound spines only at posterior margin of merus and at posterodistal margin of ischium (Figs. 47-49). Pereopods 4-7 more densely spinose than pereopods 1-3 ; many compound of different size and shape along posterior and distal margins of articles, as figured (Figs. 50-53). Sympodite of pleopods 1-4 with 4-5 retinaculae. Endopodite of pleopod 1 relatively slender, with subparallel lateral margins and broadly rounded distal margin bearing 16 plumose setae ; ovate exopodite widest at about midlength, bearing 45 plumose marginal setae (Fig. 54). Endopodite of pleopod 2 with parallel lateral margins and blunt distal margin bearing 17 plumose setae ; appendix masculina slender, with narrowly rounded distal margin, not extending beyond distal margin of ramus ; ovate exopodite widest in distal half, bearing 53

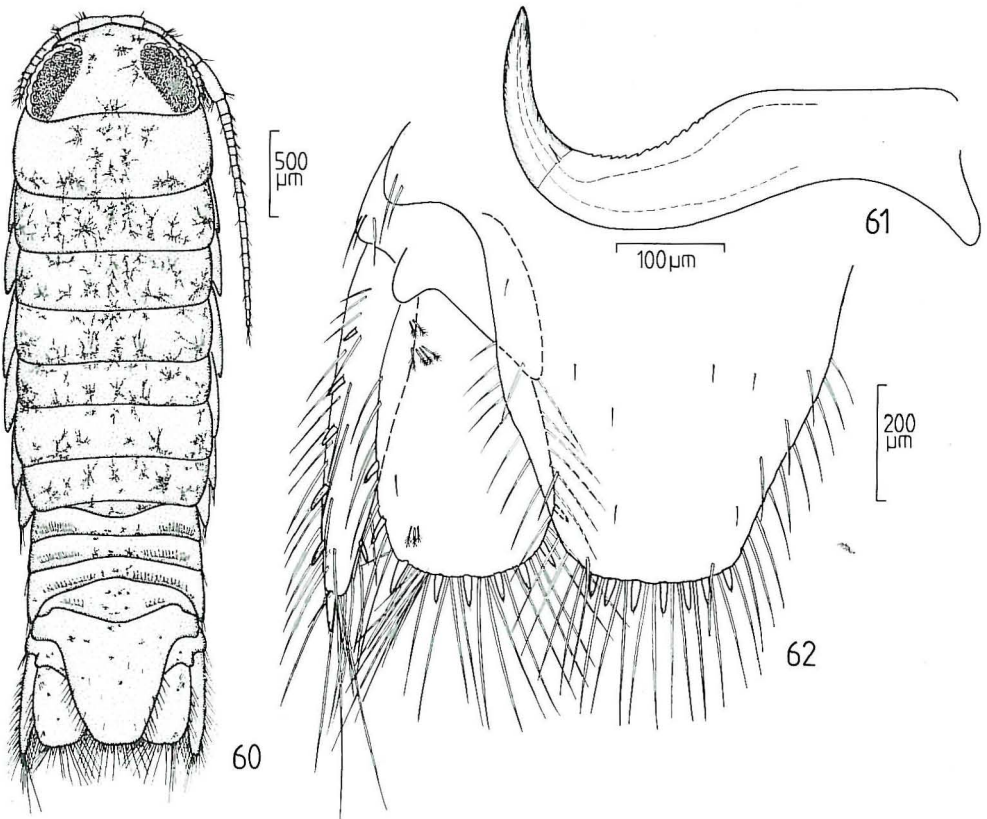


Figs. 52-53 : *Corallana societensis* n.sp., ♂ holotype : 52. pereopod 6 ; 53. pereopod 7.



Figs. 54-59 : *Corallana societensis* n.sp., ♂ holotype : 54. pleopod 1 ; 55. pleopod 2 ; 56. pleopod 3 ; 57. pleopod 4 ; 58. pleopod 5 ; 59. uropod.

plumose marginal setae (Fig. 55). Endopodite of pleopod 3 with medial margin straight and outer margin slightly convex ; blunt distal margin without setae ; ovate exopodite widest in distal half, bearing 61 plumose marginal setae (Fig. 56). Pleopod 4 similar to pleopod 3, exopodite with 63 plumose marginal setae (Fig. 57). Endopodite of pleopod 5 without setae, roughly ovate in outline and with short, anteriad directed lobe at inner base ; exopodite quite similar to that of pleopods 3-4, bearing 61 plumose marginal setae (Fig. 58). Uropodal exopodite very slender and longer than ovate endopodite, well extending beyond distal margin of pleotelson ; both uropodal rami with many simple setae in arrangement as figured ; inner margin of exopodite lacking compound spines, outer margin with 2 slender compound spines ; endopodite with 6 slender compound spines at outer distal margin and 7 slender compound spines along distal and mediobasal margin ; dorsal surface of endopodite, near outer margin with 8 feathered sensory setae (Fig. 59). All plumose setae of pleopodal and uropodal rami drawn as simple setae.



Figs. 60-62 : *Corallana societensis* n.sp., small immature adult, paratype : 60. dorsal view ; 61. maxilla 1 ; 62. pleotelson and left uropod.

♀ : total length 7.1 mm, similar to ♂. Tubercles on posterior margin of pereonites 5-7 absent, only pleonite 4 with 3 small, rounded tubercles near posteromedial margin. Lateral margins of pleotelson slightly convex (Fig. 40).

Immature adult : total length 4.3-5.9 mm. Small immature adult (4.3 mm) with the following features. - Dorsum of body smooth, pereonites covered with scattered denticritic chromatophores. Eyes very large and darkly pigmented (Fig. 60).

Medial margin of hook-shaped exopodite of maxilla 1 with row of acute denticles (Fig. 61). Slender uropodal exopodite with row of 6 compound spines at outer and distal margins, and a single compound spine at inner distal margin ; ovate endopodite with 9 marginal compound spines ; distal margin of pleotelson with 7 compound spines separated from one another by 1-2 plumose setae (Fig. 62).

Postmanca and manca : in general features quite similar to immature adults. Total length 3.4 and 2.6-2.9 mm, respectively.

Remarks : *Corallana societensis* n.sp. seems to be most closely allied with *C. tridentata* Jones, Icelly & Cragg, 1983 from Papua New Guinea. The male of *tridentata* differs from the same sex of the new species through the larger and more numerous pereonal and pleonal tubercles, which are present on pereonites 4-7 of *tridentata* and on all pleonites except for the first one. The posterior margin of pereonites 5 and 6 has a dense setose fringe in the male of *tridentata*, which is lacking in *societensis*. A female paratype of *C. tridentata* was available from the British Museum (Natural History) for comparison with the female of *societensis*. As mentioned for the male of *tridentata*, there is a setose fringe at pereonites 5-7, which is not present in the female of *societensis*. Moreover, the female of *tridentata* has also a transverse row of setae at the pleonites and some tubercles at pereonites 6 and 7, features which were not found in the female of the new species (cf. Jones, Icelly & Cragg 1983 : 842 ; Fig. 3).

Distribution : Bora Bora and Moorea, Society Islands.

ACKNOWLEDGMENTS

The present study has been mainly carried out at the Antenne Muséum in Moorea (director : Dr René Galzin) and the Centre de Biologie et d'Écologie Tropicale et Méditerranéenne in Perpignan, France (director : Dr Bernard Salvat). My thanks are due to Dr Salvat and Dr Galzin for their help to organize the fieldwork and for making available the laboratory facilities of their institutes. I am also grateful to Dr. Torben Wolff, Zoologisk Museum, Copenhagen, who kindly made available the type material of *Alcirona insularis* and *A. krebsii*. A female paratype of *Corallana tridentata* was given in loan to me by Mrs. Joan Ellis, British Museum (Natural History), London.

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