

## Colomastigidae from coral reefs in the Society Islands. Description of two new species (Crustacea, Amphipoda, Gammaridea).

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**Abstract :** The amphipod family Colomastigidae is recorded for the first time from French Polynesia. Extensive fieldwork on coral reefs at Bora Bora and Moorea yielded in total three species, two of them new to science. *Colomastix minuta* n. sp. and *C. tiahurae* n. sp. are described, with a brief discussion on the supposed affinities. *Colomastix lunulilo* Barnard, 1970 is new to French Polynesia.

**Résumé :** La famille des Colomastigidae est décrite pour la première fois en Polynésie française. Une large étude menée sur les récifs coralliens de Bora Bora et Moorea révèle trois espèces au total, deux d'entre elles, nouvelles pour la science, *Colomastix minuta* n. sp. et *C. tiahurae* n. sp. sont décrites et leurs affinités discutées. *C. lunulilo* Barnard, 1970 est une nouvelle espèce pour la Polynésie française.

### INTRODUCTION

Up to now there has been only one contribution dealing with the marine gammaridean amphipods from the Society Islands (Myers, 1989). He reported 32 species of 13 families from Tahiti, Moorea, Huahine and Bora Bora.

While sorting the material of my survey on coral reef inhabiting invertebrates in 1988 at Moorea and Bora Bora it became obvious, that Myers' work is far from complete for the number of shallow-water gammaridean species living on the coral reefs of this area. It was found useful in the light of the new data available and in view of further ecological studies on Polynesian reefs, to extend the existing knowledge of the French Polynesian amphipod fauna in some additional publications.

The family Colomastigidae is not mentioned in Myers' survey in the Society Islands and there is only one other record of a colomastigid amphipod from Polynesia : *Colomastix murivai* Myers, 1990 (♀) from the Cook Islands. Three species of *Colomastix*, two of them new to science were found during the author's fieldwork at Moorea and Bora Bora. They will be described herein, with consideration of the supposed affinities.

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

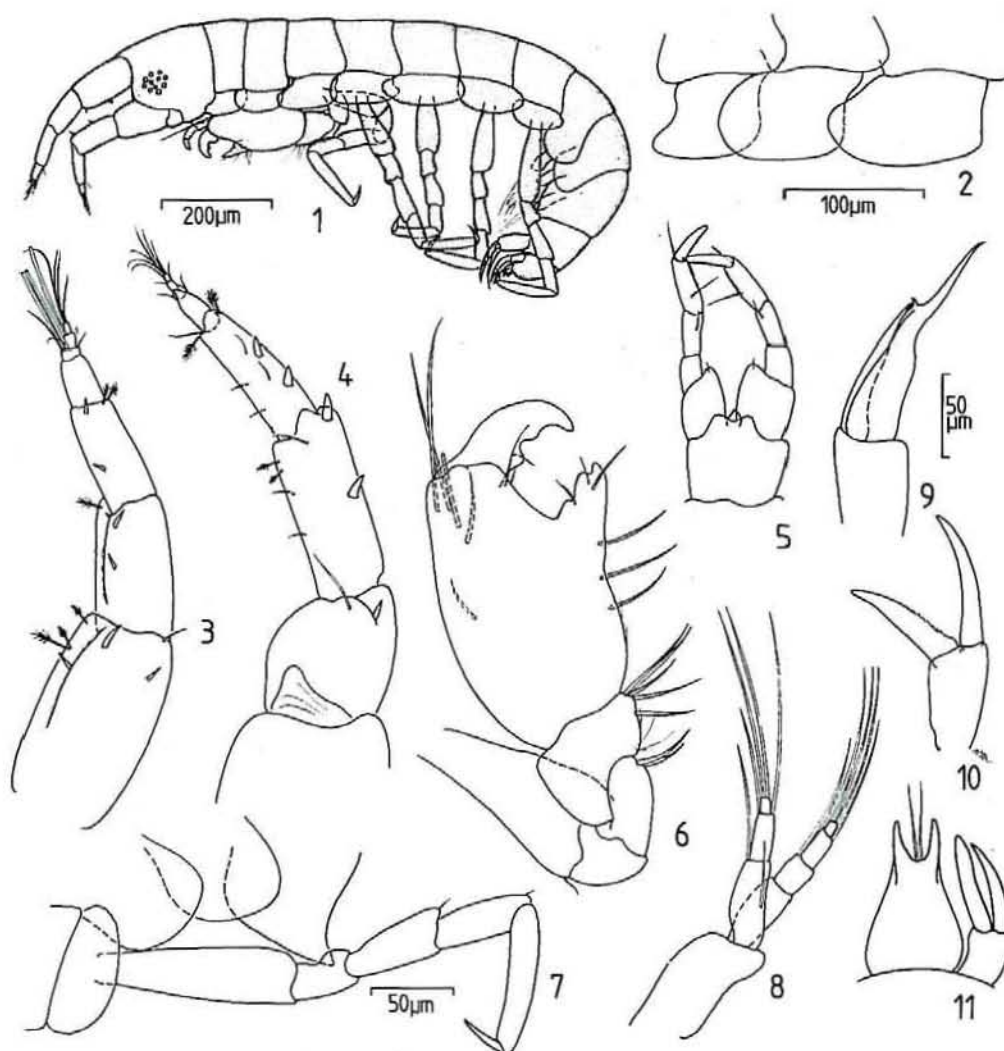
## SYSTEMATIC ACCOUNT

## Colomastigidae

*Colomastix* Grube, 1861*Colomastix lunalilo* Barnard, 19701970 *Colomastix lunalilo* Barnard, Smiths. Contr. Zool., 34 : 96-100, figs. 51-52.1979 *Colomastix lunalilo*, Ledoyer, Mem. civ. St. nat. Verona, sér. 2. Sez. Sci. della Vita, 2 : 26, fig. 9 (II).1990 *Colomastix lunalilo*, Lyons & Myers, J. nat. Hist., 24 : 1222, fig. 20 [literature].

Material : 1 ♂ 1 ♀ (SMF 19471), Bora Bora ; barrier reef near Motu tapu ; from dead coral substratum, 1-1.5 m, 7 March 1988.

Distribution : this species is widely distributed in the tropical Indo-Pacific Ocean. Up to now it has been recorded from Hawaii, Fiji, Madagascar and the Red Sea (Lyons &amp; Myers 1990 : 1222).



Figs. 1-11 : *Colomastix minuta* n. sp., ♂, holotype. 1. lateral view ; 2. coxal plates of pereonites 1-3 ; 3. antenna 1 ; 4. antenna 2 ; 5. maxilliped ; 6. gnathopod 2 ; 7. pereopod 7 and ventral margins of epimera ; 8. pleopod 1 ; 9. uropod 1 ; 10. uropod 2 ; 11. telson and uropod 3.



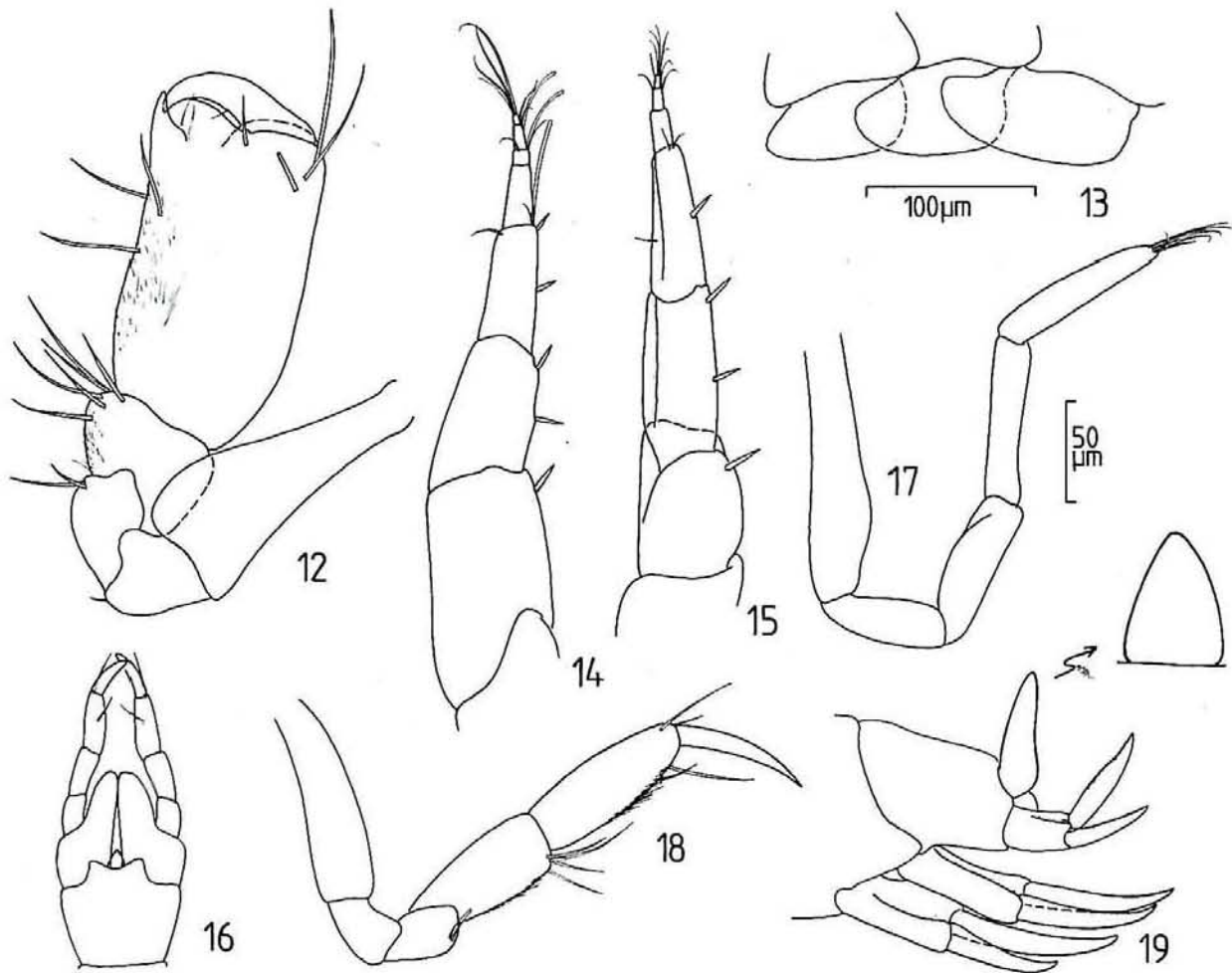
*Colomastix minuta* n. sp. (figs. 1-19)

Holotype : ♂ (SMF 19472), Bora Bora ; Matira beach, southwest coast ; dead coral blocks in lagoon, near hotel "Bora Bora", 0.5-2 m, March 1988.

Paratypes : 1 immature ♂, 2 ♀♀ (MNHN), collected together with holotype. 4 ♂♂, 2 immature ♂♂, 17 ♀♀, deposited as follows. 2 ♂♂, 10 ♀♀ (MNHN), 2 ♂♂, 2 immature ♂♂, 7 ♀♀ (SMF 19473), Bora Bora ; fringing reef near Vaitape, dead corals covered with sponges and algae, 0.5-1 m, 17 February - 6 March 1988.

Derivatio nominis : the specific name refers to the remarkably small size of the new species.

Description, ♂ holotype : tiny specimen of only 1.2 mm total length. Body cylindrical and relatively slender. Lateral lobes of cephalon rounded. Eyes small, composed of 11 weakly pigmented ommatidia. Posteroventral margins of epimera 1-2 rounded, of third epimeron subacute. Distal margin of telson strongly concave, with pair of slender setae at anterior concave margin.



Figs. 12-19 : *Colomastix minuta* n. sp. - preparatory ♂, paratype : 12. gnathopod 2. - ♀, paratype : 13. coxal plates of pereonites 1-3 ; 14. antenna 1 ; 15. antenna 2 ; 16. maxilliped ; 17. gnathopod 1 ; 18. gnathopod 2 ; 19. urosome with uropods and telson, lateral view ; telson also in dorsal view.

Antenna 1  $1\frac{1}{5}$  of body length ; 4 peduncular articles decreasing in size in baso-distal ratio 6 : 4 : 3 : 1.5 ; second and third article with 2-3 short spines along medial margin ; fourth article longer than 3 distal articles together ; flagellum of 3 articles ; first article with 2 aesthetascs, second article with single aesthetasc. Antenna 2 subequal in length to antenna 1, with 5 peduncular and 3 flagellar articles ; second peduncular article with 1, second and third with 2 robust spines along mediodorsal margin ; inner margin of fifth article with triangular lobe ; flagellar articles very small and setose. Inner plate of maxilliped acutely triangular, entire, without distal cleft ; outer lobe of maxilliped poorly pronounced, broadly rounded, bearing a short seta ; palp 4-articulate ; palp-article 2 with a short seta in distal half, third article with 2 longer simple setae, one in the proximal, one in the distal half ; two distal palp-articles with many spinules along medial margin.

Coxae of pereonites 1-3 and 5 anteriorly lobed (less pronounced in second coxa). Gnathopod 1 reduced. Dactylus of second gnathopod short and robust, cutting edge with a larger, rounded tubercle proximally and a much smaller rounded tubercle distally ; propodus robust, palm produced into robust process with two broadly rounded tubercles along anterior margin ; distal part of basis dilated with rounded margins. Pereopods 3-7 similar among one another, typical for genus ; dactylus about  $\frac{1}{3}$  length of propodus.

Endopodite of all pleopods 3-articulate ; exopodite 4-articulate, subequal in length to endopodite.

Exopodite of first uropod  $\frac{2}{3}$  length of endopodite, slender, tapering to acute apex ; upper margin of endopodite sinuous, also tapering to acute apex ; lower margin of endopodite with a minute, curved tooth. Endopodite of second uropod slightly shorter than exopodite, bearing many denticles along lower margin. Third uropod somewhat smaller than uropods 1-2 ; endopodite slightly longer and more robust in distal half than exopodite.

Immature  $\delta$ , paratype : total length 1.2 mm. Palm of gnathopod 2 propodus with strong proximal tooth.

$\varphi$ , paratype : total length 1.2-1.3 mm. Telson triangular, with narrowly rounded apex.

Antenna 1, third, fifth and sixth article with aesthetasc. Spines on articles 2-4 of antenna 2 more slender than in  $\delta$ .

Outer lobe of maxilliped much longer than in  $\delta$ , extending beyond proximal half of second article.

Gnathopod 1 of normal *Colomastix* form, propodus with several slender setae. Propodus and carpus of gnathopod 2 subequal, elongate-oval, posterior margin with fringe of setules and some distal setae ; dactylus of  $\frac{4}{5}$  propodal length.

Endopodite of uropod 1 simple, 1.5 times length of exopodite ; second uropod as in  $\delta$  ; rami of third uropod longer than in  $\delta$  and distally acute ; endopodite 1.2 times longer than exopodite.

Remarks : the affinities of *C. minuta* n. sp. are still obscure. The strongly concave distal margin of the  $\delta$  telson, the shape of the  $\delta$  gnathopod 2 propodus with its large palmar process and the shape of the endopodite of the first  $\delta$  uropods distinguish this small species at first glance from all other members of the genus.

Distribution : Bora Bora, Society Islands.

*Colomastix tiahurae* n. sp. (figs. 20-41)

Holotype : ♂ (SMF 19474), Moorea ; coral slope of Tiahura fringing reef ; dead corals, 1-2 m, 22-23 March 1988.

Paratypes : 2 ♀♀, 1 immature ♂, deposited as follows. 1 ♀ (MNHN), 1 immature ♂ (SMF 19475), collected together with holotype.

Derivatio nominis : the specific name refers to the type locality, the Tiahura area at Moorea.

Description, ♂ holotype : total length 2.0 mm. Body cylindrical and slender. Lateral lobes of cephalon rounded. Eyes relatively small, composed of 17 pigmented ommatidia. Posteroventral margins of epimera rounded. Telson oval, 1.2 times wider than long, with broadly rounded distal margin.

Antenna 1 of 1/4 body length, with 3-articulate peduncle and biarticulate flagellum ; proximal 4 antennular articles decreasing in size in baso-distal ratio 7 : 3.5 : 3 : 1 ; proximal 2 articles with small ventrodistal spine ; third article with 2 short spines on ventral margin ; first flagellar article bearing 2 aesthetascs ; terminal article very small, 1/3 length of penultimate article. Antenna 2 subequal in length to antenna 1, peduncle 5-articulate, flagellum uniarticulate ; proximal peduncular article short and wider than long ; second article largest, with single short spine at mediodistal margin ; third article slightly shorter than second, with row of 4 small spines along mediodorsal margin ; fourth article 2/3 length of third, unarmed ; fifth peduncular article with short, triangular mediodistal lobe ; setose terminal article minute. Inner plate of maxilliped acutely triangular, entire, without distal cleft ; outer lobe oval, extending beyond proximal margin of second article ; palp 4-articulate ; two proximal palp articles bare of any setae ; penultimate article with a simple, medially directed seta in proximal half ; medial margin of two distal articles rugose.

Coxae of pereonites 1-5 lobed anteriorly. Gnathopod 1 vestigial. Dactylus of second gnathopod relatively short and robust, with low rounded tubercle on cutting edge ; propodus oval and robust, palm with 3 strong, rounded tubercles, the medial one being smallest ; distal part of basis strongly dilated with rounded margins. Pereopods 3-7 similar among one another, typical for genus ; dactylus 1/3 length of propodus.

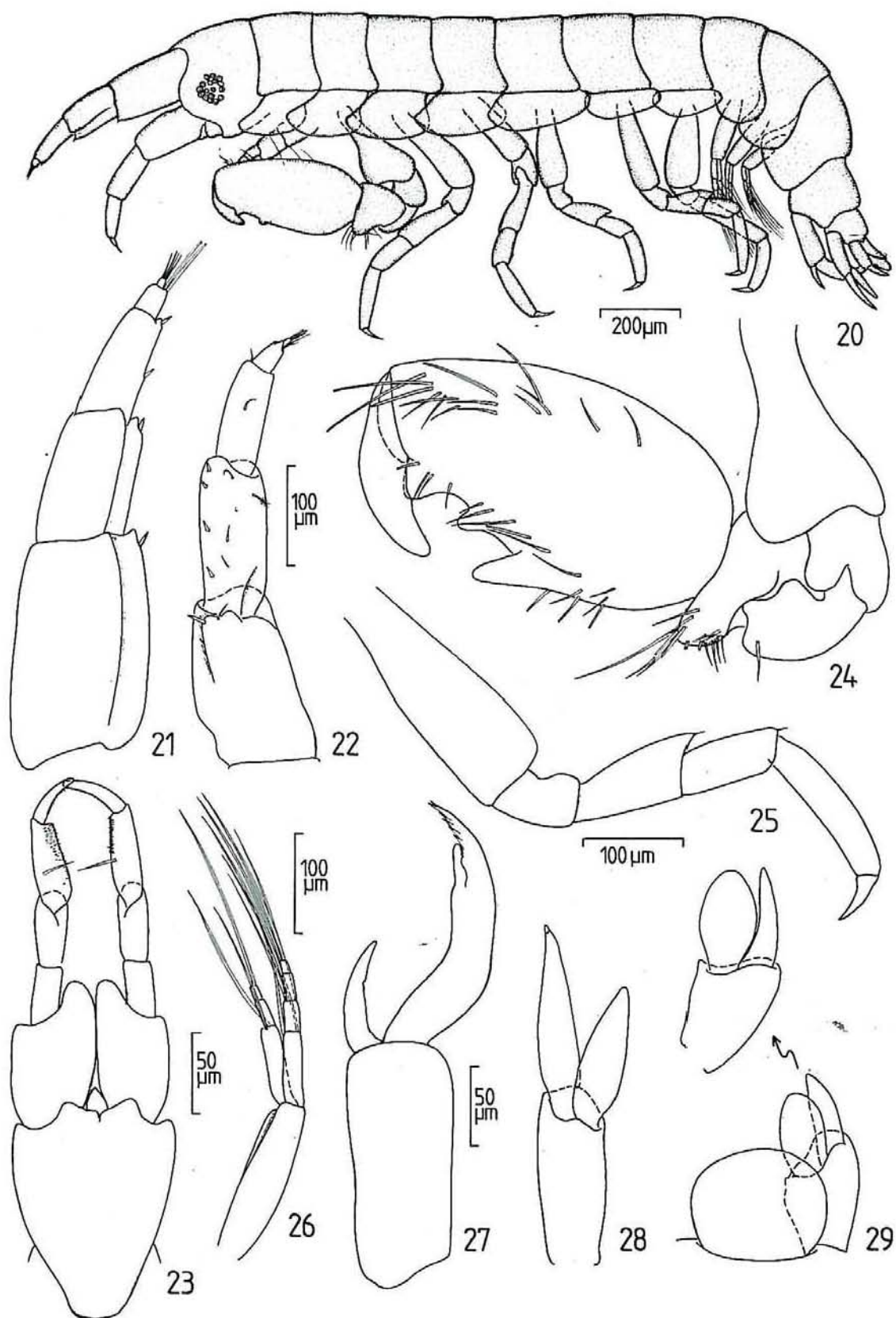
Endopodite of all pleopods 3-articulate, 4/5 length of 4-articulated exopodite.

Exopodite of first uropod small and curved, apex subacute ; exopodite much more robust, also curved, 2.3 times length of exopodite ; distal third of exopodite divided into two lobes : a narrow, inner lobe with rounded apex and a twice longer subacute lobe with several spine-like structures along upper margin. Rami of uropod 2 simple, exopodite 1.3 times longer than endopodite, with a short apical spine. Rami of uropod 3 subequal in length ; endopodite oval, twice wider than exopodite.

Immature ♂, paratype : total length 1.5 mm.

Antenna 1, first article with 4, second with 2 small, robust spines at medial margin ; third article with single distal spine and 2 aesthetascs. Antenna 2 6-articulate ; second article of antenna 2 with 2 short distal spines and a short, acute triangular lobe. Gnathopod 2 resembling mature ♂, dactylus and tubercles on propodal palm more slender, basis less expanded distally.

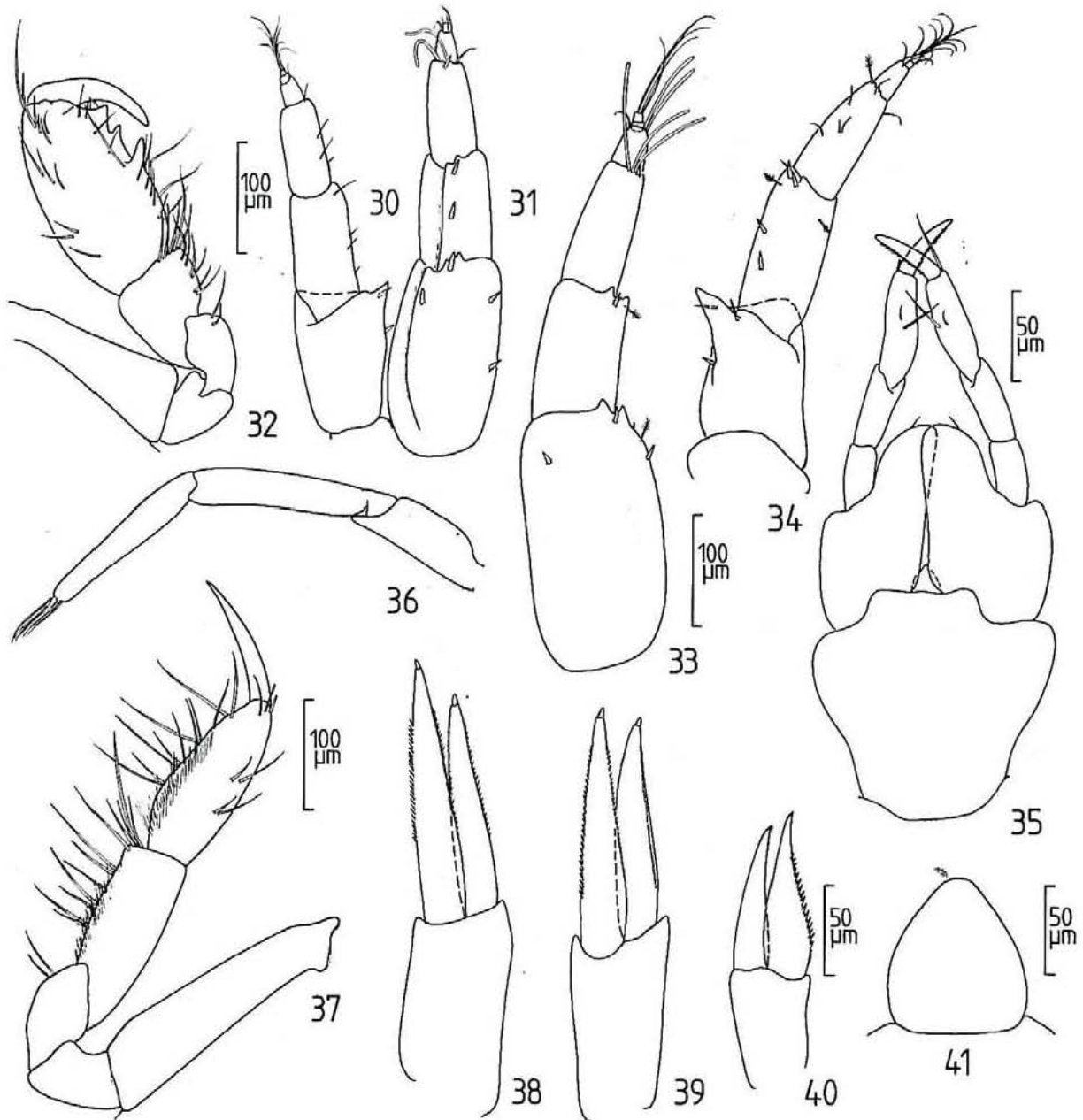




Figs. 20-29 : *Colomastix tiahuræ* n. sp., ♂, holotype : 20. lateral view ; 21. antenna 1 ; 22. antenna 2 ; 23. maxilliped ; 24. gnathopod 2 ; 25. pereopod 3 ; 26. pleopod 1 ; 27. uropod 1 ; 28. uropod 2 ; 29. uropod 3 and telson.

♀, paratype : total length 2.0 mm. Telson roughly triangular, with narrowly rounded distal margin.

Antenna 1 6-articulate ; proximal two peduncular articles with two distal denticles ; first article with 3 small spines, second and third with single distal spine ; third article with 3, and fourth with 2 aesthetascs. Second article of antenna 2 with relatively large, triangular dorsodistal lobe ; second article with 2, third with 4 small spines along mediodorsal margin. Outer lobe of maxilliped much longer than in ♂, extending somewhat beyond first palp



Figs. 30-41 : *Colomastix tiahuræ* n. sp. - preparatory ♂, paratype : 30. antenna 1 ; 31. antenna 2 ; 32. gnathopod 2. ♀, paratype : 33. antenna 1 ; 34. antenna 2 ; 35. maxilliped ; 36. distal three articles of gnathopod 1 ; 37. gnathopod 2 ; 38. uropod 1 ; 39. uropod 2 ; 40. uropod 3 ; 41. telson.

article, distally broadly rounded and tipped with a short seta ; 3rd article with 2 slender setae and a short seta in distal half ; slender terminal article with many spinules along medial margin.

Gnathopod 1 typical for females of *Colomastix*, terminal article with several distal setae. Propodus and carpus of gnathopod 2 subequal, elongate-oval, with several setae and numerous setules along posterior margin ; dactylus of 0.7 times of propodal length.

Uropods decreasing in size from 1 to 3, all tipped with a minute spine ; both rami of uropods 1 and 2 with denticulate margins, except for most proximal and distal parts ; only upper margin of endopodite denticulate in uropod 3.

Remarks : *C. tiahuræ* n. sp. resembles more closely *Colomastix pusilla* Grube, 1861, a species of probably cosmopolitan distribution. In general habitus and shape of the ♂ second gnathopod the new species is very similar to that of *pusilla*. Reliable features to distinguish males of *tiahuræ* from *pusilla* are the distally bilobate endopodite of the first uropod and the ovoid endopodite of the third uropod (cf. Ruffo 1982 : 184, fig. 123).

Distribution : Moorea, Society Islands.

#### ACNOWLEDGMENTS

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#### REFERENCES

- LYONS, J. & A.A. MYERS, 1990. Amphipoda Gammaridea from coral rubble in the Gulf of Aqaba, Red Sea : Families Acanthonotozomatidae, Ampeliscidae, Ampithoidae, Anamixidae, Aoridae and Colomastigidae. *J. nat. Hist.*, 24 : 1197-1225.
- MYERS, A.A. 1989. Amphipoda from the South Pacific : the Society Islands. *Rec. Aust. Mus.*, 41 : 63-82.
- RUFFO, S. 1982. Colomastigidae, in : *The Amphipoda of the Mediterranean* (Ruffo ed.), Part 1, Gammaridea. *Mém. Inst. Océanogr.*, 13 : 1-364 (Colomastigidae 183-184).