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**Cirolanidae of the genera *Calyptolana*, *Cirolana*, *Neocirolana*,  
*Colopisthus* and *Excircolana* from the Santa Marta area,  
Caribbean Sea of Colombia (Crustacea: Isopoda: Cymothoidea)**

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With 121 Figures

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Key words: Isopoda, Cirolanidae; new species, records; Caribbean Sea of Colombia.

**Abstract**

Six species of the cirolanid genera *Calyptolana*, *Cirolana*, *Neocirolana*, *Colopisthus* and *Excircolana* are recorded from the Santa Marta area, Caribbean Sea of Colombia. *Cirolana kiliani* n. sp., *Neocirolana tayronae* n. sp. and the male of *Calyptolana hancocki* BRUCE, 1985 are described. Detailed redescrptions are given for *Colopisthus parvus* RICHARDSON, 1902 and *Excircolana mayana* (IVES, 1891).

**Introduction**

The present contribution is part of a series dealing with the marine isopod fauna of the Santa Marta area, Caribbean Sea of Colombia. The fieldwork has been carried out at the Instituto de Investigaciones marinas de Punta de Betin in Santa Marta (INVEMAR/COLCIENCIAS) during 1985—1986, over a period of about 15 months. Samples were taken in different habitats from the intertidal to about 30 m depth. The area studied ranges from the airport of Santa Marta in the west to Punta el Diamante at the eastern border of the Tayrona National Park, extending over a coastline of about 70 km.

Eight species of the family Cirolanidae have been collected. The genus *Metacirolana* NIERSTRASZ, 1931 with two species has been treated earlier (MÜLLER 1991, with redescription of *Metacirolana agaricicola* KENSLEY, 1984 and description of *Metacirolana agujae*), while this paper reports on the remaining genera *Calyptolana* BRUCE, 1985, *Cirolana* LEACH, 1818, *Neocirolana* HALE, 1925, *Colopisthus* RICHARDSON, 1902 and *Excircolana* RICHARDSON, 1912, with altogether six species. Two new species belonging to the genera *Cirolana* and *Neocirolana* were found and will be described herein. The male of *Calyptolana hancocki* is described for the first time. Moreover, detailed redescrptions are provided for *Colopisthus parvus* RICHARDSON, 1902 and *Excircolana mayana* (IVES, 1891).

The material has been obtained while skin and SCUBA diving. The substrate was collected and transported to the institute in fine mesh cloth bags and plastic bags. It was stored in 5% for-

malin/sea water for some hours, then washed with fresh water over a 0.5 mm sieve and preserved in 70% ethanol. The specimens are deposited in the Zoologisches Museum Berlin (ZMB), INVEMAR, Santa Marta and in the author's private collection.

### Systematic account

#### *Calyptolana* BRUCE, 1985

##### *Calyptolana hancocki* BRUCE, 1985 (Figs. 1–24)

1985 *Calyptolana hancocki* BRUCE, J. Crust. Biol. 5 (4): 710–714, Figs. 1 a, 2, 3.

1989 *Calyptolana hancocki*, – KENSLEY & SCHOTTE. Guide to the marine isopod crustaceans of the Caribbean, Smiths. Inst. Press: 132, Fig. 57.

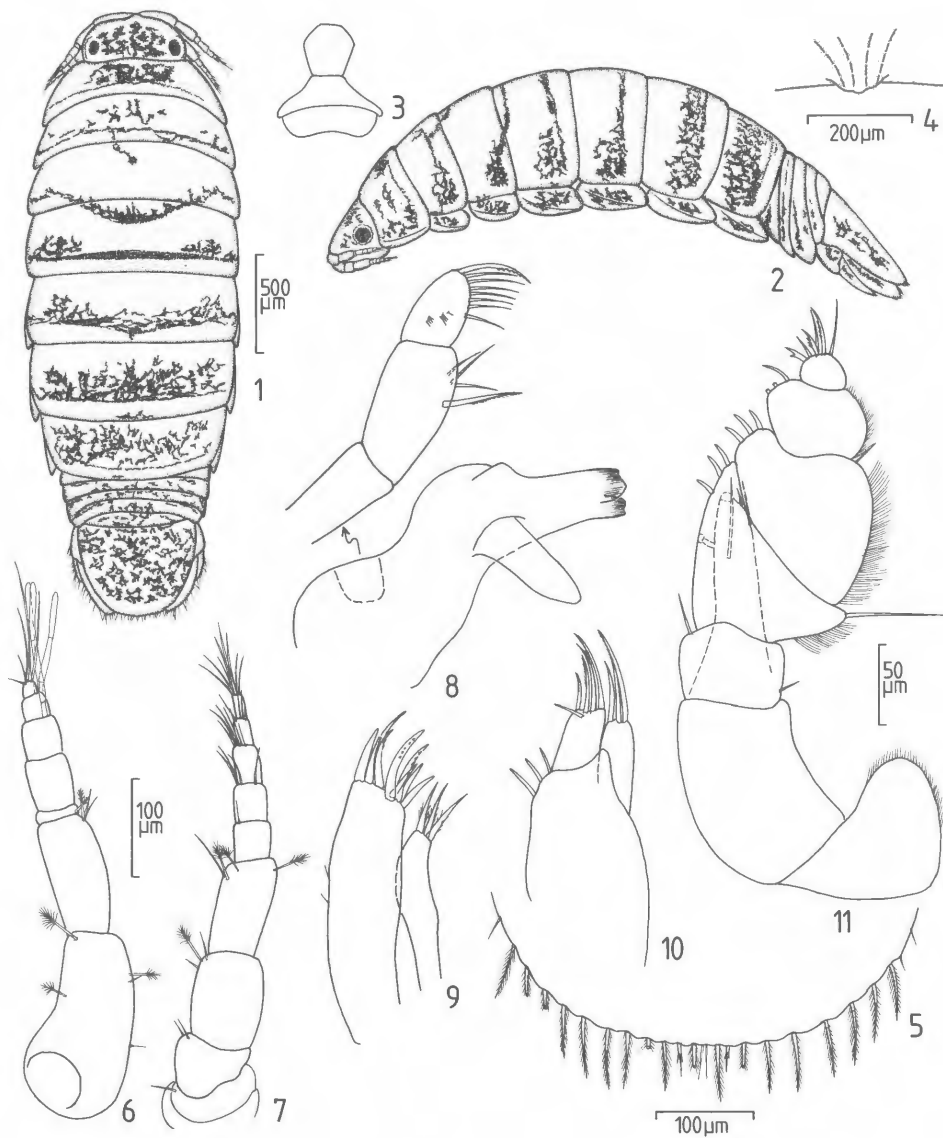
1991 *Calyptolana hancocki*, – SCHOTTE, HEARD & KENSLEY, Gulf Res. Rep. 8 (3): 255.

Material: Punta Aguja, about 4 km east of Santa Marta: 1 ♀ (HGM); coral rubble, 20–25 m, 24 September 1985. Bahia de Nenguangue, about 25 km northeast of Santa Marta: 3 ♂♂, 1 ♀, 1 manca (ZMB 26969); under stones on sandy bottom, 0.5 m, 10 April 1986.

Description, ♂: Total length 3.1 mm (frontal margin of cephalon to tip of pleotelson), maximum width at pereonite 5. Body usually almost completely covered by brown chromatophores; few specimens show only some irregular dendritic pigmentations on cephalon and pleotelson, and transverse bands on pereonites and pleonites. Cephalon 2.3 times wider than long, with well developed rostral point. Dorsolateral eyes fairly small and well pigmented. Clypeal region as figured. Pereonites increasing in length from 1–4; pereonites 4–6 subequal in length; 7th pereonite 3/4 length of pereonite 6. Coxae increasing in length posteriorly, all with distinct furrow; coxae of pereonite 7 just reaching to distal margin of first pleonite. Genital openings located on single, shallow tubercle near posterior margin of sternite 7. Pleonites subequal in length; medial part of first pleonite completely hidden below posterior margin of pereonite 7; lateral margins of pleonite 5 covered by pleonite 4. Pleotelson 1.2 times wider than long, slightly narrowing distally; broadly rounded distal margin bearing 18 short plumose setae, two short and slender apical compound spines and a pair of small simple setae.

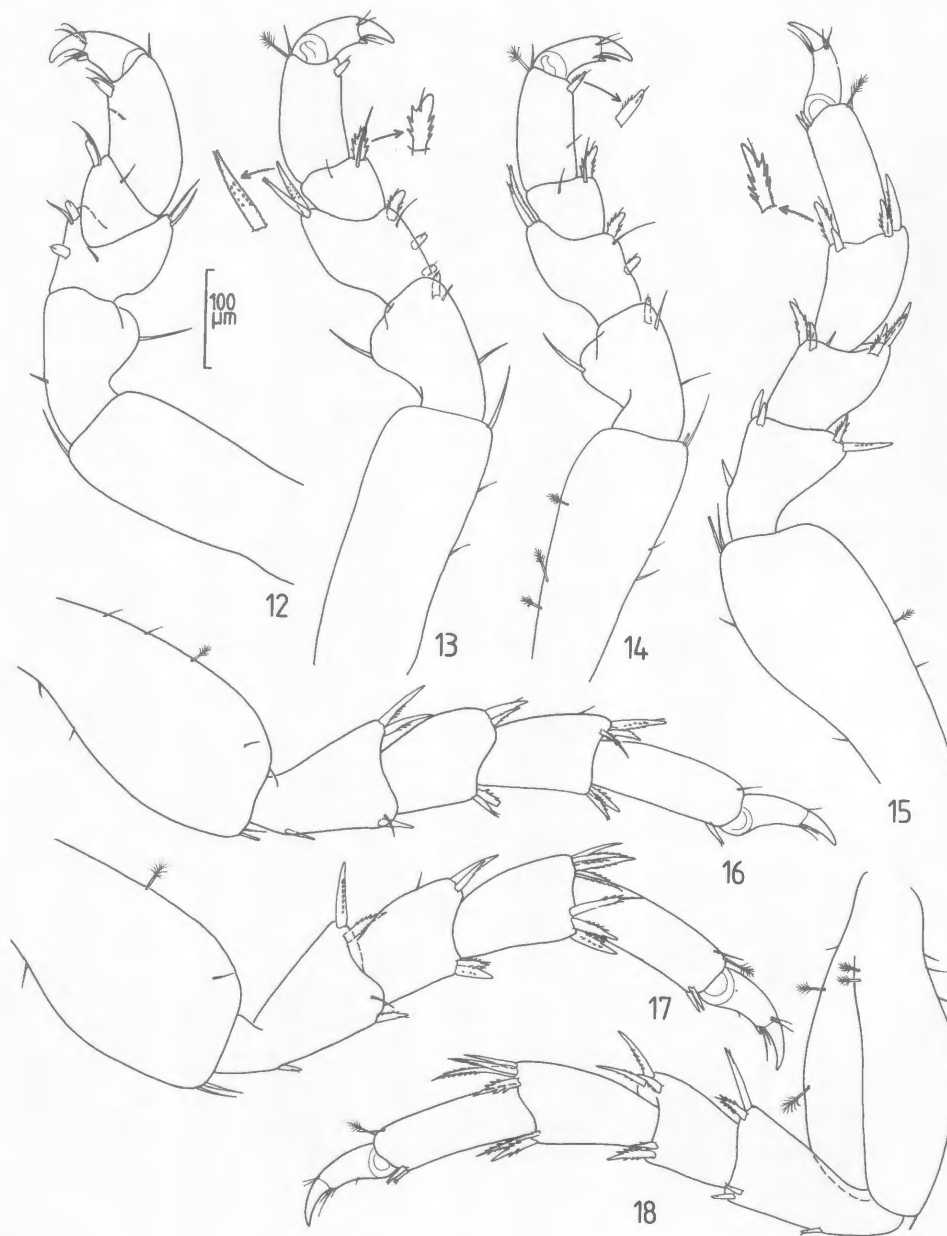
Both antennae robust and subequal in length, not reaching to posterior margin of first pereonite. Peduncle of antenna 1 biarticulated; first article widest, 1.6 times length of second; flagellum 5-articulated; proximal article shortest, much wider than long; article 3 with single aesthetasc, 4th article with 2 aesthetascs; small terminal article bearing few simple setae. Peduncle of second antenna 5-articulated; three proximal articles short and wider than long: 4th article wider than, but subequal in length to 5th article; flagellum of 5 setose articles.

Incisor of mandible narrow, of 2 sclerotized cusps, no lacinia present; molar an elongate, tongue-shaped lobe, without setae and denticles; mandibular palp robust and 3-articulated; second article largest, with 4 setae in distal half; terminal article smallest, ovate, bearing 8 setae in two distal thirds. Narrow inner ramus of first maxilla with three distal, acute and fringed spines; outer lobe bearing 9 distal, partly denticulate spines. Inner ramus of second maxilla greatly reduced, with three short and slender, non-denticulate spines; inner lobe of outer ramus with 5, outer lobe of outer

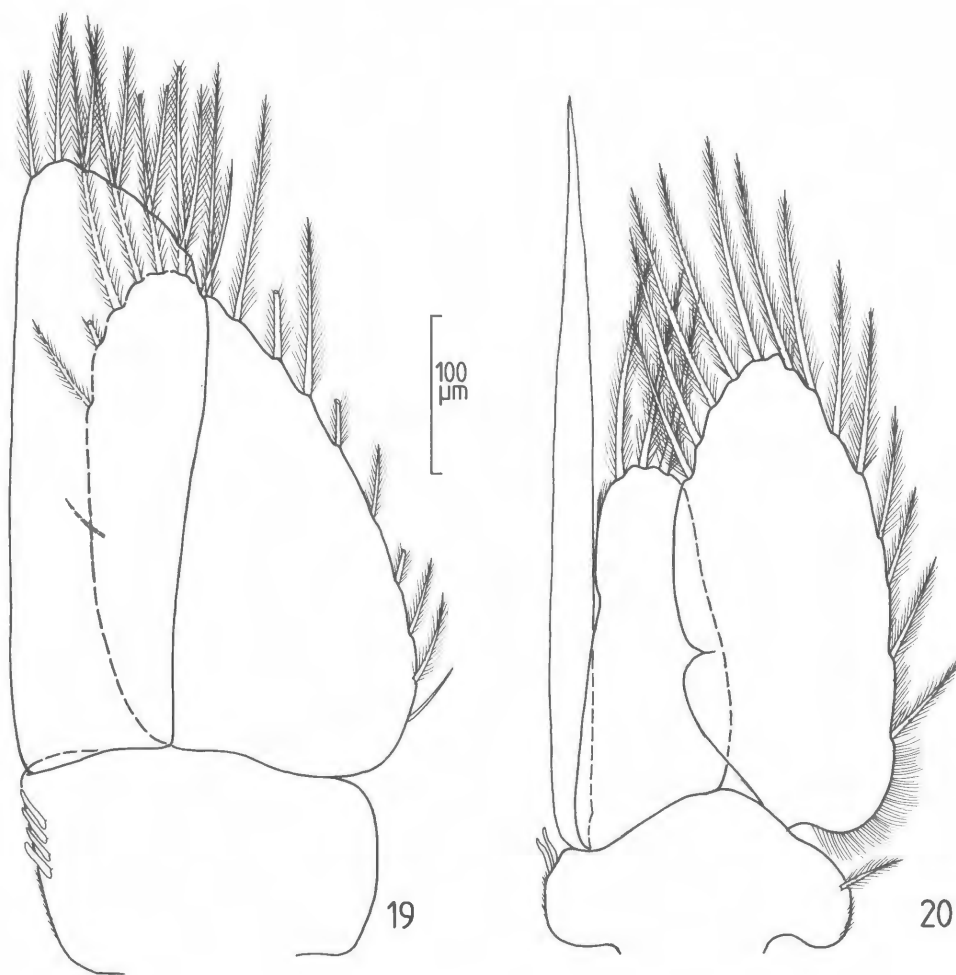


Figs. 1–11. *Calyptolana hancocki* BRUCE, 1985, ♂; 1 dorsal view; 2 lateral view; 3 clypeal region; 4 genital tubercle; 5 distal margin of telson; 6 antenna 1; 7 antenna 2; 8 mandible; 9 maxilla 1; 10 maxilla 2; 11 maxilliped.

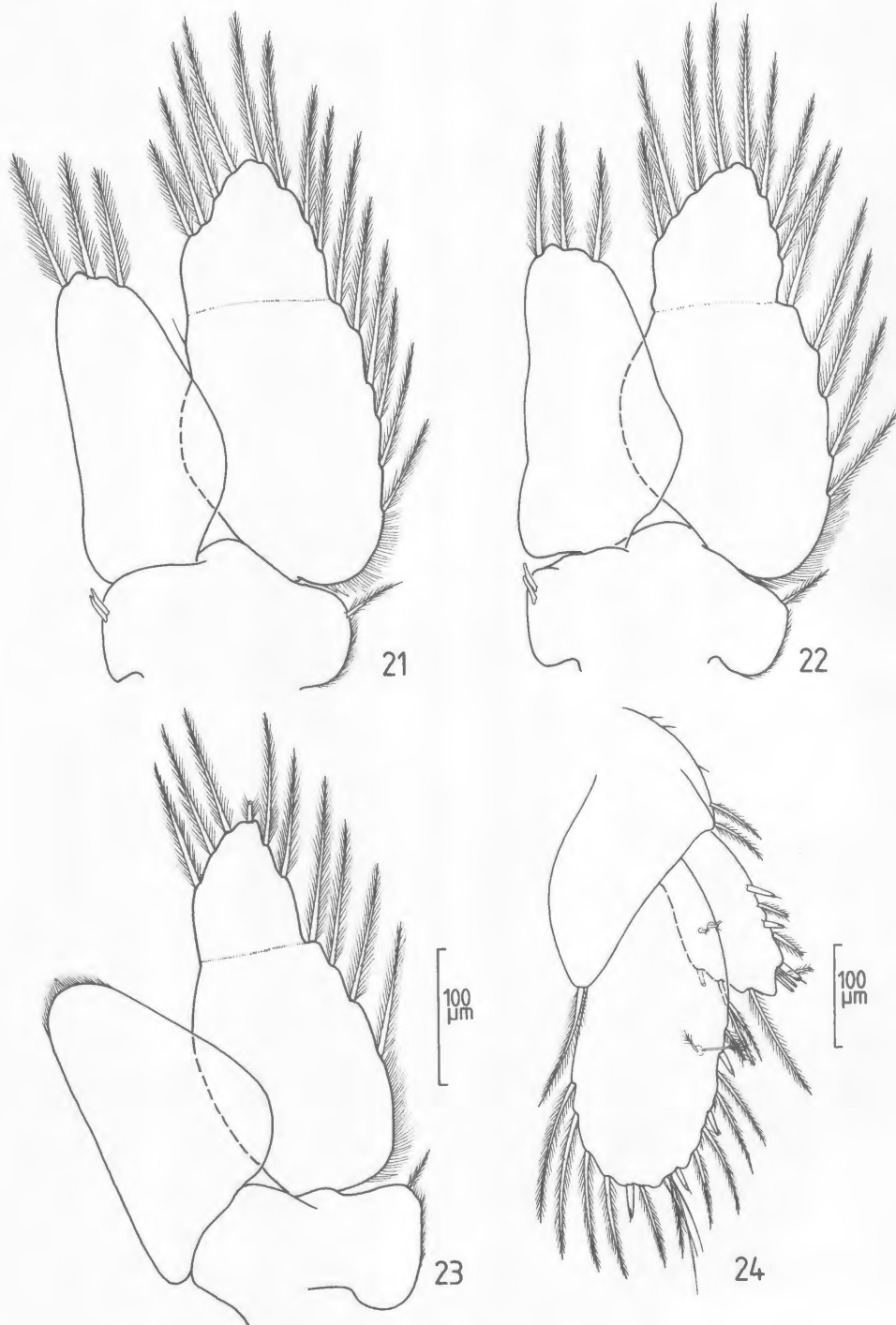
ramus with 3, partly fringed setae. Endite of maxilliped slender, extending to distal margin of second palp article and bearing single coupling hook; palp of 5 broad articles; second and third article much larger than others, with simple seta at outer distal margin; articles 2–4 bearing some short, simple spines; rounded distal article with 3 short denticulate spines and 3 simple setae.



Figs. 12–18. *Calyptolana hancocki* BRUCE, 1985 ♂: 12 pereopod 1; 13 pereopod 2; 14 pereopod 3; 15 pereopod 4; 16 pereopod 5; 17 pereopod 6; 18 pereopod 7.



Figs. 19–20. *Calyptolana hancocki* BRUCE, 1985, ♂: 19 pleopod 1; 20 pleopod 2.



Figs. 21—24. *Calyptolana hancocki* BRUCE, 1985, ♂: 21 pleopod 3; 22 pleopod 4; 23 pleopod 5; 24 right uropod, dorsal view.

Ambulatory pereopods similar among one another, relatively robust and scarcely setose. Dactylus of first pereopod 1.3 times length of curved unguis, bearing small posterodistal spine and 4 short distal setae; carpus triangular, lacking free anterior margin; posterodistal margin of propodus and carpus with robust, rounded compound spine; posterior margin of merus with 2 of these spines. Pereopods 2 and 3 quite similar among one another, trapezoid carpus with free anterior margin; posterodistal margins of carpus and merus with robust, denticulate compound spine; anterodistal margin of merus bearing pair of slender, denticulate compound spines; number of spines increasing on articles from pereopods 4 to 7; in these pereopods denticulate spines present at distal margins of carpus, merus and ischium.

First pleopod operculiform; sympodite with 4 retinacula; narrow endopodite with almost parallel lateral margins, 1.2 times length of exopodite; oblique distal margin of endopodite bearing 7 plumose setae; ovate exopodite with rounded distal margin, bearing 15 plumose setae at inner distal, distal and outer margin. Pleopods 2–5 remarkably smaller than first pleopods. Sympodite of second pleopod with 2 retinacula at medial margin and a plumose seta at outer margin; endopodite of second pleopod roughly ovate, 4/5 length of ovate, distally narrowly rounded exopodite; endopodite with 3 distal plumose setae; appendix masculina styletto-like with acute apex, twice length of endopodite and also well extending beyond plumose setae of exopodite; exopodite with notch in proximal half of medial margin and 13 plumose setae at inner distal, distal and outer margin. Exopodite of pleopods 3–5 with indistinct suture in distal half. Pleopods 3 and 4 quite similar among one another: sympodite with 2 retinacula at medial margin and a plumose seta at outer margin; endopodite 3/4 length of exopodite; inner margin of endopodite almost straight, distal margin rounded and outer margin convex; distal margin of endopodite bearing 3 plumose setae; exopodite roughly ovate, distinctly narrower in distal third; inner distal, distal and outer margin of exopodite bearing 14 plumose setae in pleopod 3, 13 plumose setae in pleopod 4. Sympodite of pleopod 5 without retinacula, outer distal margin with short plumose seta; endopodite of pleopod 5 triangular with rounded margins, devoid of any setae; distal margin setulose; inner distal, distal and outer margin of exopodite bearing 10 plumose setae. Sympodite of uropod with long plumose seta at produced inner distal margin and two shorter plumose setae at outer distal margin; both rami ovate, exopodite only half length of endopodite; exopodite with 6 plumose marginal setae, two distal simple setae and 3 robust compound spines along outer margin; endopodite bearing 12 plumose marginal setae, 3 distal simple setae and 4 compound spines along outer margin; dorsal surface of endopodite near outer margin bearing 4 feathered sensory setae.

♀: Apart from sexual characters, quite similar to ♂; body generally less slender.

Remarks: The original description of this species is based on two females from the Netherlands Antilles (BRUCE 1985: 707–716, Figs. 1–3). Though it has been found since then at some other places in the Caribbean, nothing was commented on the male of this species. From the material collected at the Caribbean Sea of Colombia it becomes apparent, that the sexual dimorphism is poorly pronounced and confined to differences of certain sexual characters (genital tubercle, second pleopods). Usually both sexes are densely covered by brown chromatophores (KENSLEY & SCHOTTE 1989: 133, Fig. 57 A). This feature is unique within all caribbean species of

Cirolanidae, making this species easily recognizable in samples. However, exceptions occur, as shown for the male in Fig. 1.

Little is known on the habitat of this species. SCHOTTE, HEARD & KENSLEY (1991) mention, that the species was found in sand-rubble of coral-reef locations. The Colombian material was collected in similar situations, coral rubble and under stones on sandy bottoms. Specimens in the French Antilles (MÜLLER, in press) were exclusively found in crevices of dead corals. The vertical distribution ranges from the intertidal to about 43 m.

Distribution: Santa Marta area, Caribbean Sea of Colombia; Aruba, Netherlands Antilles; Martinique, French Antilles; Turks and Caicos Islands, British West Indies; Dominican Republic.

### *Cirolana* LEACH, 1818

#### *Cirolana kiliani* n. sp. (Figs. 25–47)

Holotype: Isla Morro Grande de Santa Marta: ♂ (ZMB 26970a); coral rubble, 30 m, 19 March 1986.

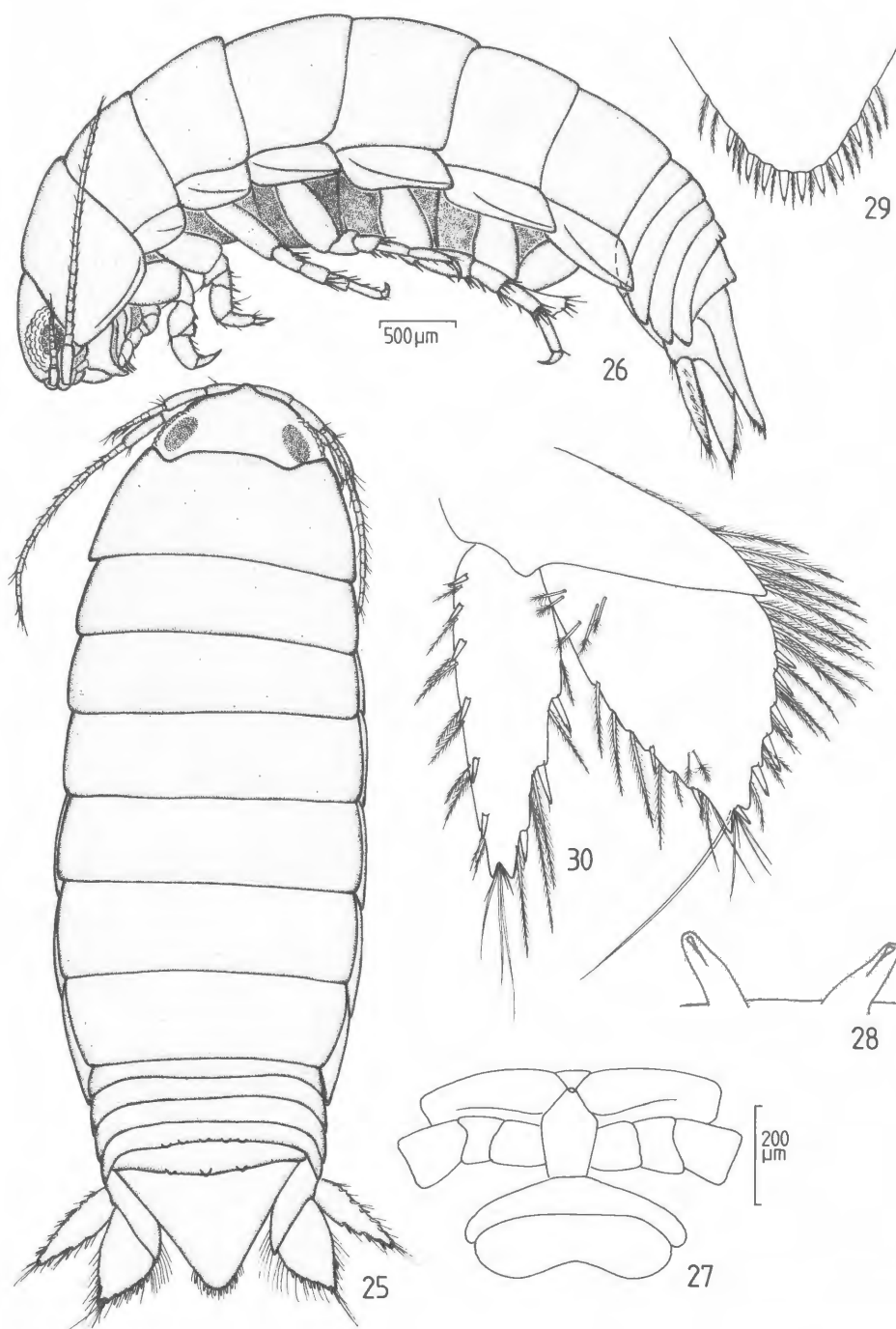
Paratypes: 3 ♂♂, 2 ♀♀ (ZMB 26970b); collected together with holotype. 2 ♀♀ (HGM); from holotype location, coral rubble, 25 m, 18 September 1985. Isla Morrito de Santa Marta: 3 ♀♀ (lov.) (HGM); coral rubble, 30 m, 18 February 1986. Bahia de Nenguangue, about 25 km northeast of Santa Marta: 3 ♂♂, 1 immature adult (HGM); roca ahogada; coral rubble, 18 m, 2 September 1985. 1 ♀ (INVEMAR); roca ahogada, coral rubble, 11–16 m, 23 September 1985. 1 immature adult (ZMB 26970c); roca ahogada, 16 m, 10 October 1985. Bahia de Guachaquita, about 35 km northeast of Santa Marta: 1 manca (ZMB 26970d); roca ahogada, coral rubble, 13 m, 28 February 1986.

Derivatio nominis: The species is dedicated to the late Prof. Dr. h. c. E. F. KILLIAN for stimulating and supporting my scientific work for several years.

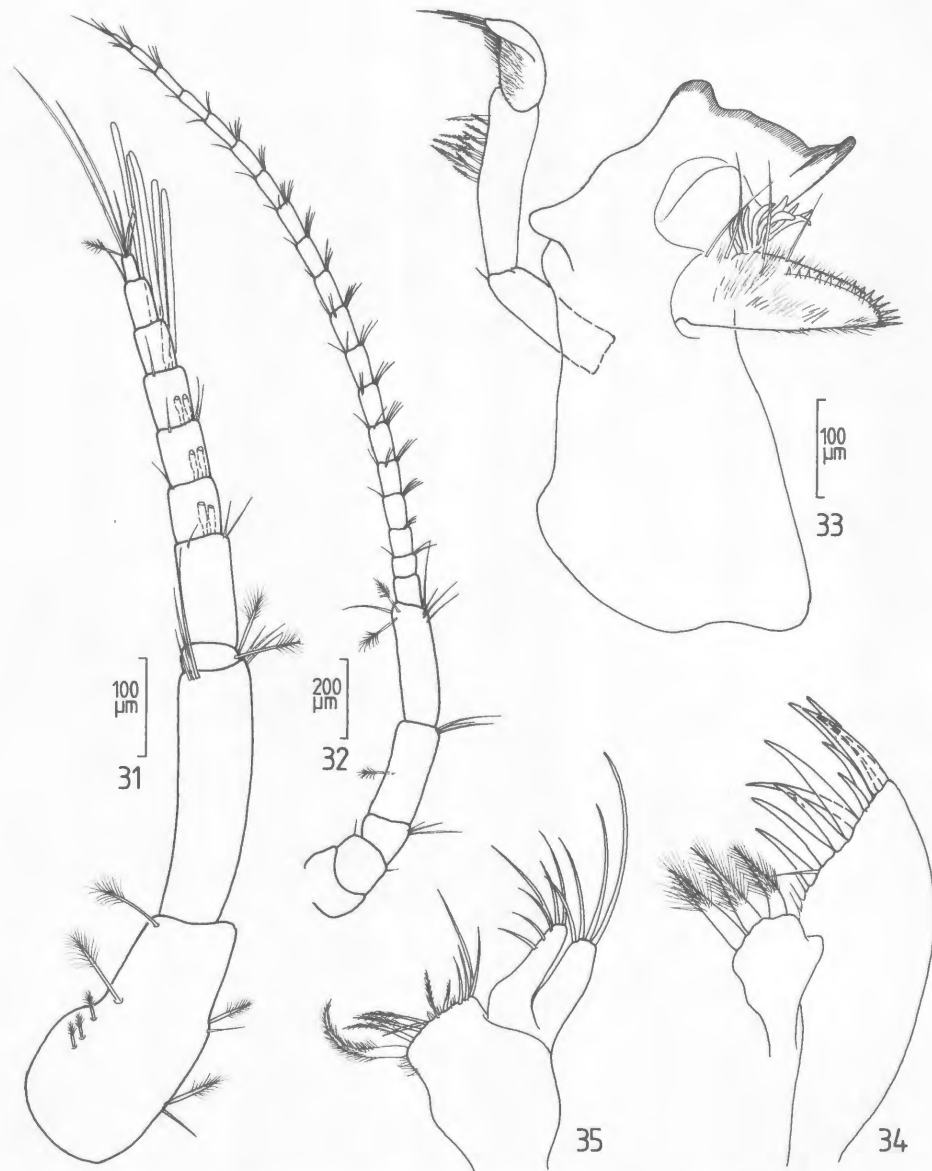
Description, ♂: Total length 4.5–6.0 mm (frontal margin of cephalon to tip of pleotelson), maximum width at pereonites 5–6, Body colourless, or with few pigment spots. Cephalon twice longer than wide, with narrowly rounded rostral point and large, well pigmented lateral eyes. Clypeal region as figured. All coxae with carina, greatly increasing in size from coxa 1 to 4; coxae of pereopods 4–7 similar in size and outline; coxae of pereonite 7 reaching slightly beyond posterior margin of first pleonite. Pereonite 1 longest, 1.4 times length of subequal pereonites 2 and 3. Pereonites 4–7 subequal in length, 1.2 times longer than first pereonite. Penes at posterior margin of pereonite 7 sternite, separated by about twice their diameter. Free pleonites subequal in length; lateral margins of pleonite 5 covered by pleonite 4; fourth pleonite generally with row of 5, fifth pleonite with row of 3 small tubercles at posterior margin; one of the males available only with a single tubercle at pleonite 5. Pleotelson triangular; narrowly rounded distal margin bearing row of 14 short plumose setae and 8 robust compound spines.

Antenna 1 with biarticulated peduncle; more robust proximal article subequal in length to second; flagellum 10-articulated; proximal article short and wider than long, second article longest; articles 2–6 bearing pair of distal aesthetascs; 7th



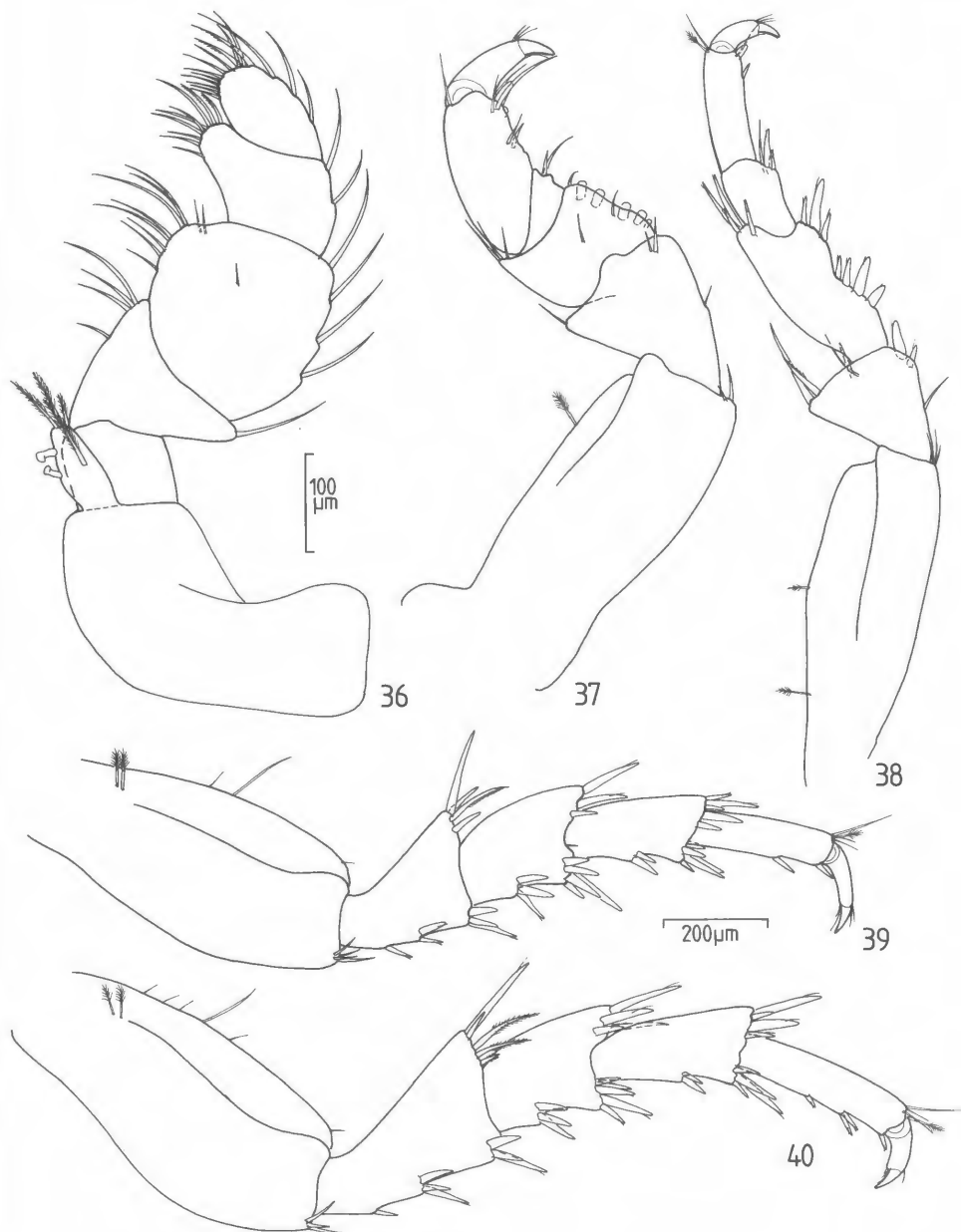


Figs. 25–30. *Cirolana kiliani* n. sp., ♂ holotype: 25 dorsal view; 26 lateral view; 27 clypeal region; 28 penes; 29 distal margin of pleotelson; 30 left uropod, dorsal view.

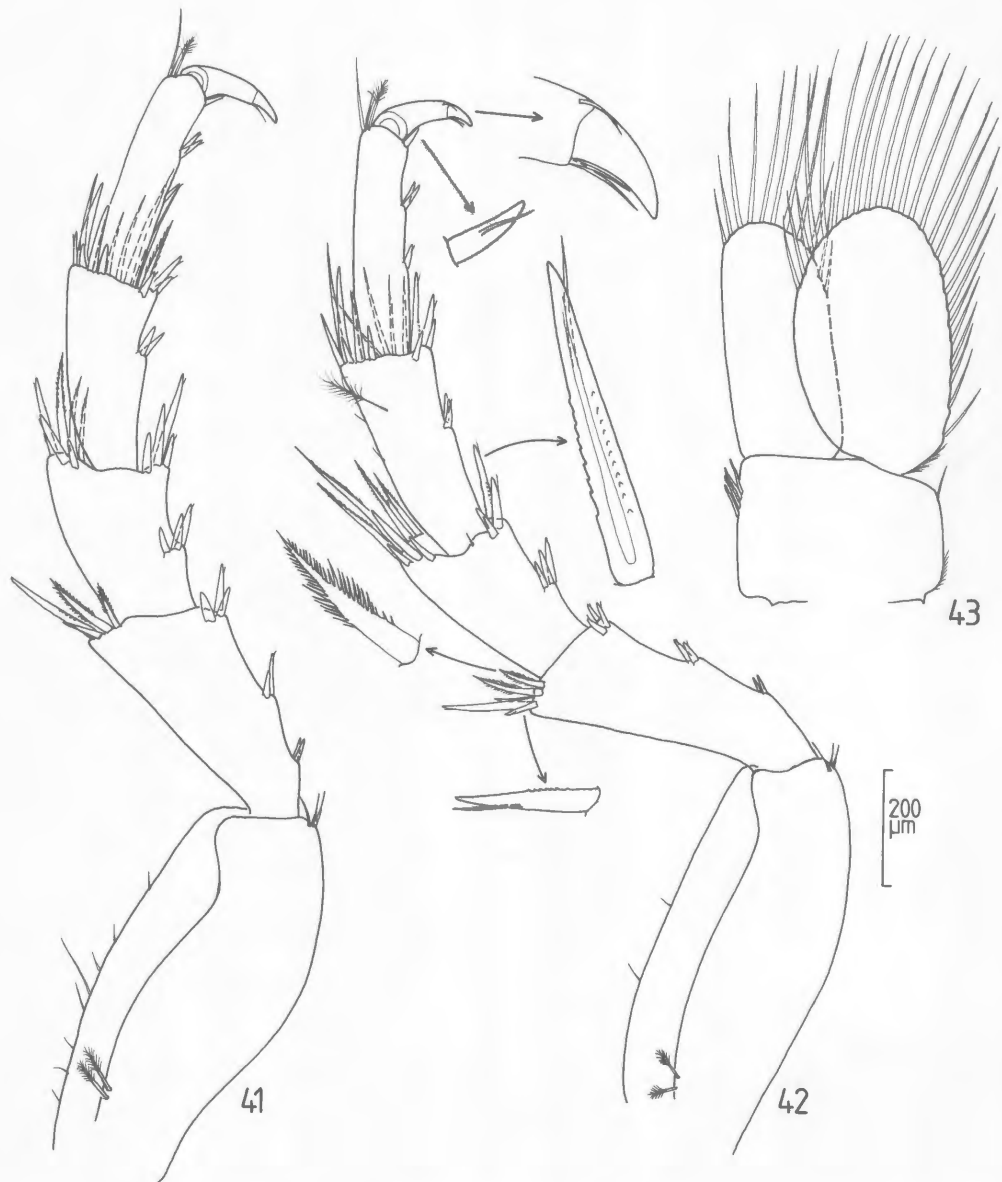


Figs. 31 – 35. *Cirolana kiliani* n. sp., ♂ holotype: 31 antenna 1; 32 antenna 2; 33 mandible; 34 maxilla 1; 35 maxilla 2.

article with single aesthetasc. Second antenna slender, reaching back to posterior margin of second pereonite; peduncle 5-articulated; three proximal articles short; distal two articles elongate, 5th article 1.2 times length of 4th; flagellum twice longer than peduncle, of 19 setose articles.

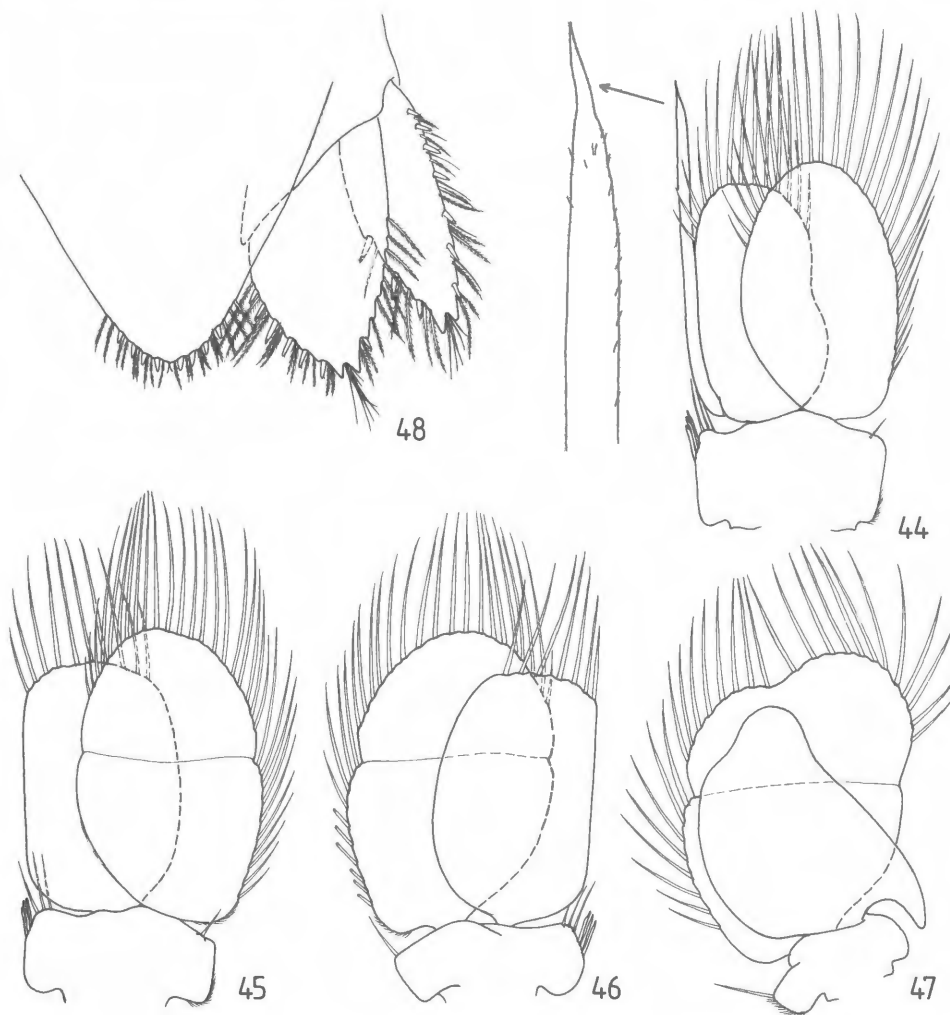


Figs. 36–40. *Cirolana kiliani* n. sp., ♂ holotype: 36 maxilliped; 37 pereopod 1; 38 pereopod 2; 39 pereopod 4; 40 pereopod 5.



Figs. 41–43. *Cirolana kiliani* n. sp., ♂ holotype; 41 pereopod 6; 42 pereopod 7; 43 pleopod 1.

Incisor of mandible broad, sclerotized, indistinctly 3-cuspidate; lacinia mobilis lacking, spine row with 9 spines; molar slender, with 14 teeth in two distal thirds, 3 slender setae in proximal half and many setules; three-articulated palp slightly extending beyond distal margin of incisor; elongate second article 1.4 times length of first and 1.8 times length of distal one; second and third article with several



Figs. 44–47. *Cirolana kiliani* n.sp., ♂: holotype: 44 pleopod 2; 45 pleopod 3; 46 pleopod 4; 47 pleopod 5. – Fig. 48 *Cirolana diminuta* Menzies, 1962, ♂ paratype (United States National Museum, cat. number 245146): distal part of pleotelson and right uropod.

fringed setae in distal half. Small inner ramus of first maxilla bearing three robust and plumose distal spines; mediodistal margin of outer ramus bearing 11 robust spines of different length and a short simple seta. Inner ramus of second maxilla well developed, truncate, bearing curved, plumose spine, 5 small plumose and 5 simple setae; inner lobe of outer ramus with 6, outer lobe of outer ramus with 4 curved setae. Endite of maxilliped short, just reaching to distal margin of first palp article; endite bearing 2 medial coupling hooks and 4 short plumose setae in distal half; third article of 5-articulated palp considerably larger than remaining articles; setae at medial margins of these articles more numerous and shorter than at outer margin.

Pereopods moderately slender and scarcely setose. Dactylus of pereopod 1 twice length of unguis; propodus with robust, rounded, posterodistal compound spine; triangular carpus lacking free anterior margin, posterior margin with small, rounded tubercle; merus with 5 stout, rounded compound spines along posterior margin. Pereopods 2–3 quite similar among one another; merus elongate, twice length of carpus, bearing 7 stout compound spines along posterior margin and 4 anterodistal, more slender compound spines. Pereopods 4–7 more densely spinose and longer than anterior pereopods; carpus, merus and ischium bearing many compound spines (partly denticulate in pereopods 6–7) at posterior and anterior margin.

Endopodite of pleopods 1–5 somewhat shorter and narrower than exopodite; sympodite of pleopod 1 with 5, of pleopods 2–4 with 3 retinaculae; sympodite of pleopod 5 without retinacula. Exopodites of pleopods 3–5 with transverse suture. Pleopod 1, endopodite with parallel lateral margins; rounded distal margin bearing 11 plumose setae; exopodite with 25 plumose setae along inner distal, distal and outer margin. Endopodite of second pleopod more robust than in first pleopod; styletto-like appendix masculina acute, extending beyond ramus with 3/10 of entire length. Pleopods 3 and 4 quite similar in shape. Pleopod 3, inner margin of endopodite straight, outer margin slightly convex; broadly rounded distal margin bearing 10 plumose setae; inner distal, distal and outer margin of ovate exopodite with 31 plumose setae. Endopodite of 4th pleopod with 7, of exopodite with 28 plumose marginal setae. Endopodite of fifth pleopod devoid of any setae, with slender, antierad directed triangular lobe at inner proximal margin; broadly ovate exopodite bearing 28 plumose marginal setae. All plumose setae of pleopods drawn as simple setae. Uropodal exopodite narrower than but subequal in length to endopodite; exopodite somewhat extending beyond distal margin of pleotelson; lateral margins of uropodal rami convex, apices strongly bifid with group of several simple setae; medial margin of endopodite with 12 plumose setae and 6 compound spines, outer margin bearing 10 plumose setae and a subapical compound spine; medial margin of exopodite with 5 plumose setae and 3 compound spines in distal half, outer margin bearing 9 plumose setae, 5 simple setae and 7 compound spines.

♀: Sexual dimorphism poorly pronounced, in general habitus and size quite similar to ♂. Tubercles on 4th pleonite reduced, those on pleonite 5 poorly defined.

Remarks: The new species from the Caribbean Sea of Colombia appears to be closely allied with *Cirolana diminuta* MENZIES, 1962 from California. The following features serve best to distinguish *C. diminuta* from *C. kiliani* n. sp., using for comparison a ♂ paratype available from the United States National Museum (USNM 245146), the original description (MENZIES 1962: 343–344, Fig. 6), and a supplementary description provided by BRUCE & BOWMAN (1982: 329, Fig. 3 A-I). The body of the californian species is more densely covered with scattered pigment reticulations, while specimens of *kiliani* n. sp. are colourless or show only some tiny pigment spots. Some small tubercles are present at the posterior margin of pleonites 3–5 in mature specimens of *diminuta*. These tubercles were found only at the posterior margins of pleonites 4–5 on the new species. The shape of the pleotelson and uropods is very similar in both species (Fig. 48), but the compound spines at the distal margin of the pleotelson are distinctly shorter in *diminuta*, less than half the length of the adjacent plumose setae. Moreover, a pair of very small simple setae is found at the pleotelsonic apex of this species, a feature not observed in the colom-

bian species. Another good feature to distinguish both species is the presence of penes in *C. kiliani*. In *C. diminuta* the vasa deferentia open "flush with the surface of sternite 7" (BRUCE 1982: 330).

*Cirolana kiliani* is a sublittoral species recorded from depths between 11 and 30 m. It was always found associated with coral rubble.

Distribution: Caribbean Sea of Colombia, Santa Marta to eastern boarder of the Tayrona National Park. It seems to be widely distributed along this coastline, found in most of the locations where sublittoral coral rubble has been sampled during the fieldwork.

#### *Cirolana parva* HANSEN, 1890

- 1890 *Cirolana parva* HANSEN, Vidensk. Selsk. Skr., 6 (5): 340–341, pl. 2, Figs. 6–6b, pl. 3, Figs. 1–1d.  
 1982 *Cirolana parva*, – BRUCE & BOWMAN, Proc. biol. Soc. Wash., 95 (2): 325–333, Figs. 1–2 [literature].  
 1989 *Cirolana parva*, – KENSLEY & SCHOTTE, Guide to the marine isopod crustaceans of the Caribbean, Smiths. Inst. Press.: 135, Figs. 59C–E, 60.  
 1990 *Cirolana parva*, – MARKHAM, DONATH-HERNANDEZ, VILLALOBOS-HIRIART & DIAZBARRIGA, An. Inst. Biol. Univ. Nac. Autón. México, Ser. Zool., 61 (3): 414.  
 1991 *Cirolana parva*, – SCHOTTE, E. HEARD & KENSLEY, Gulf Res. Rep., 8 (3): 255.

Material: Punta de Betin, Santa Marta: 1 immature adult (HGM); coral rubble, 22 m, 17 December 1985. Bahia de Chengue, about 15 km northeast of Santa Marta: 1 ♀ (HGM); coral rubble in *Thalassia*, 0.5 m, 13 September 1985. 4 ♂♂ (INVEMAR); coral rubble in *Thalassia*, 1 m, 1 November 1985. 6 ♀♀, 3 immature adults, 4 manca (ZMB 26971a); *Thalassia* with coralline algae, 1 m, 21 January 1986. 14 ♂♂, 1 ♀, 1 immature adult, 1 manca (ZMB 26971b); in *Halimeda* on reef-flat, lower intertidal, 14 April 1986. Bahia de Cinto, about 30 km northeast of Santa Marta: 3 ♀♀, 1 postmanca (HGM); *Thalassia* with coral rubble, 0.5 m, 17 March 1986. 10 ♂♂, 2 manca (HGM); under stones, intertidal, 0.5 m, 14 April 1986.

Remarks: *Cirolana parva* is a common shallow-water marine isopod in the tropical Western Atlantic (Caribbean Sea and Gulf of Mexico): A detailed redescription with information on the distribution is provided by BRUCE & BOWMAN (1982) and MÜLLER (in press). The present records are the first from the northern coast of South America.

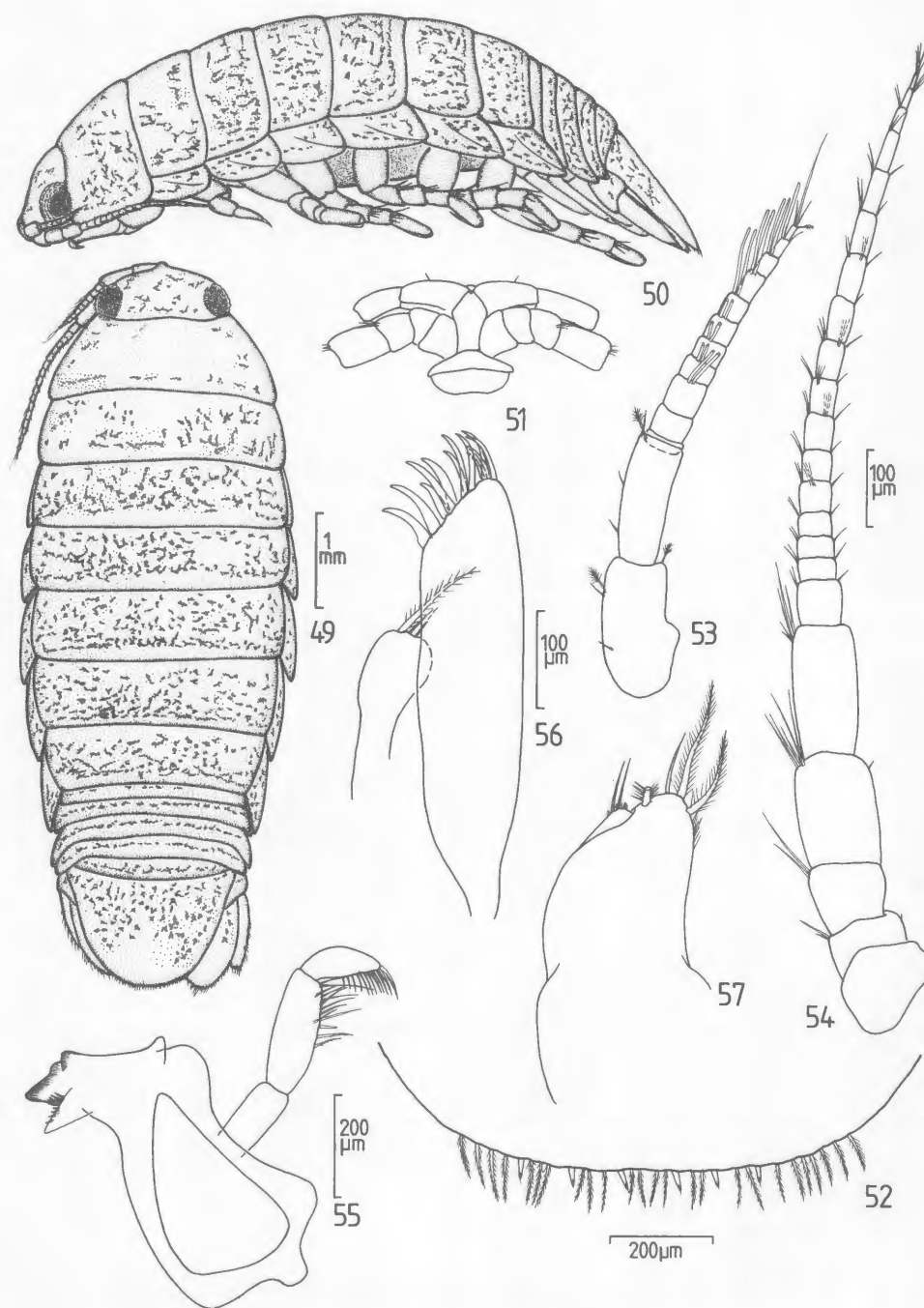
#### *Neocirolana* HALE, 1925

##### *Neocirolana tayronae* n. sp. (Figs. 49–71)

Holotype: ♀ (ZMB 26972); Bahia de Nenguangue, about 25 km northeast of Santa Marta; roca ahogada, coral rubble, 11–16 m, 23 September 1985.

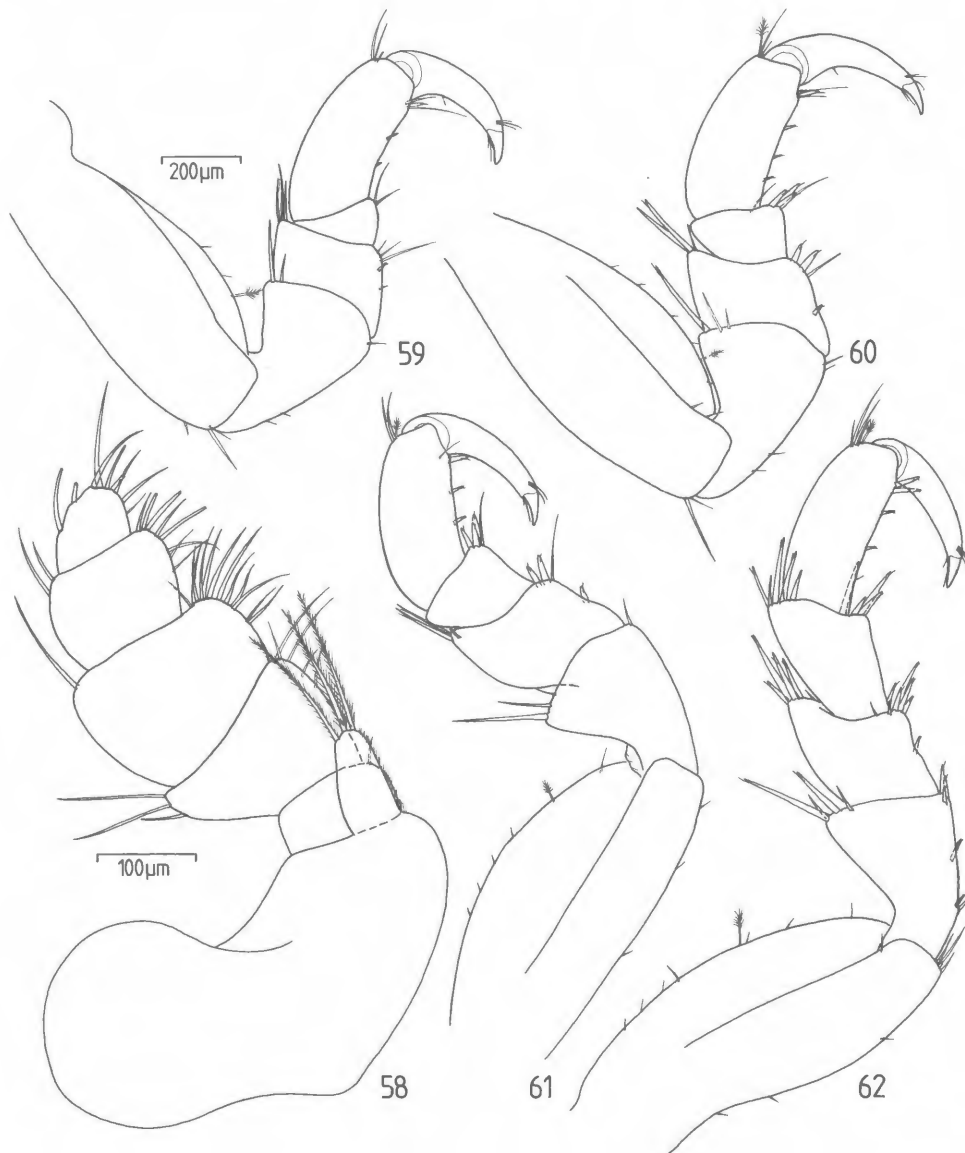
Paratype: ♀ (HGM); collected together with holotype.

Derivatio nominis: The specific name refers to the geographic area of the type locality, the Tayrona National Park east of Santa Marta.



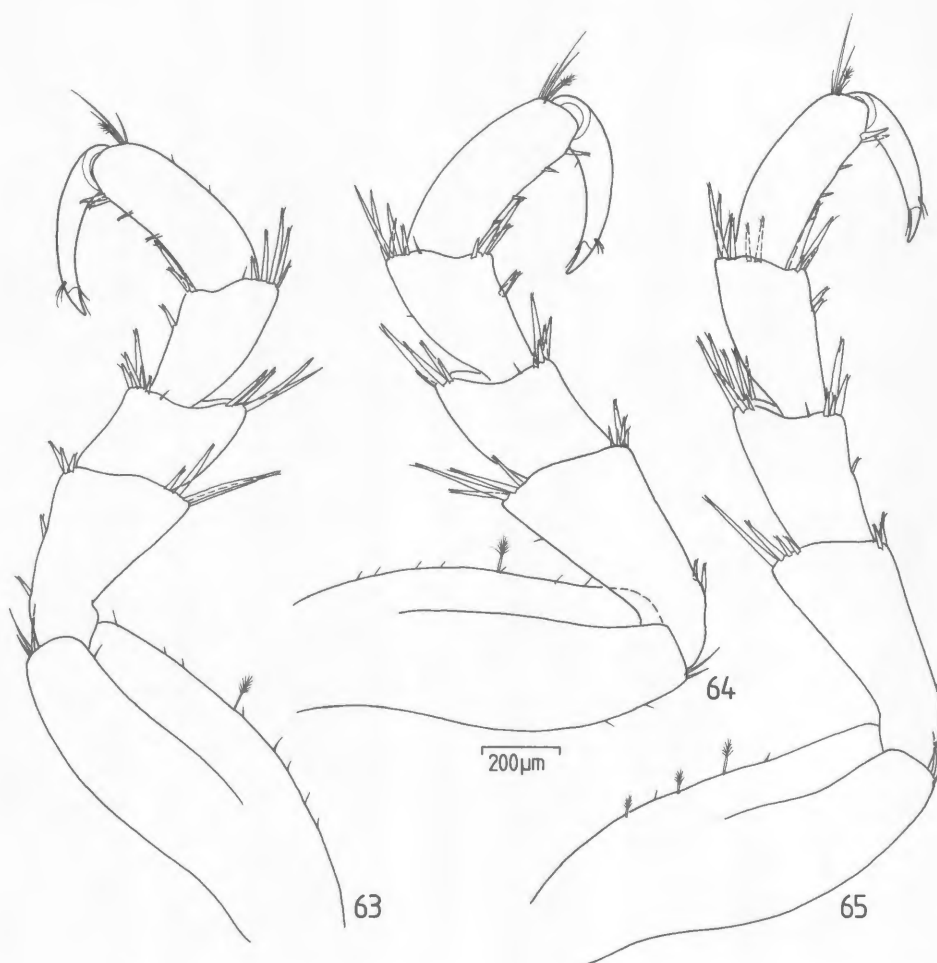
Figs. 49–57. *Neocirolana tayronae* n. sp., ♀ holotype: 49 dorsal view; 50 lateral view; 51 clypeal region; 52 distal margin of pleotelson; 53 antenna 1; 54 antenna 2; 55 mandible; 56 maxilla 1; 57 maxilla 2.





Figs. 58–62. *Neocirolana tayronae* n. sp., ♀ holotype: 58 maxilliped; 59 pereopod 1; 60 pereopod 2; 61 pereopod 3; 62 pereopod 4.

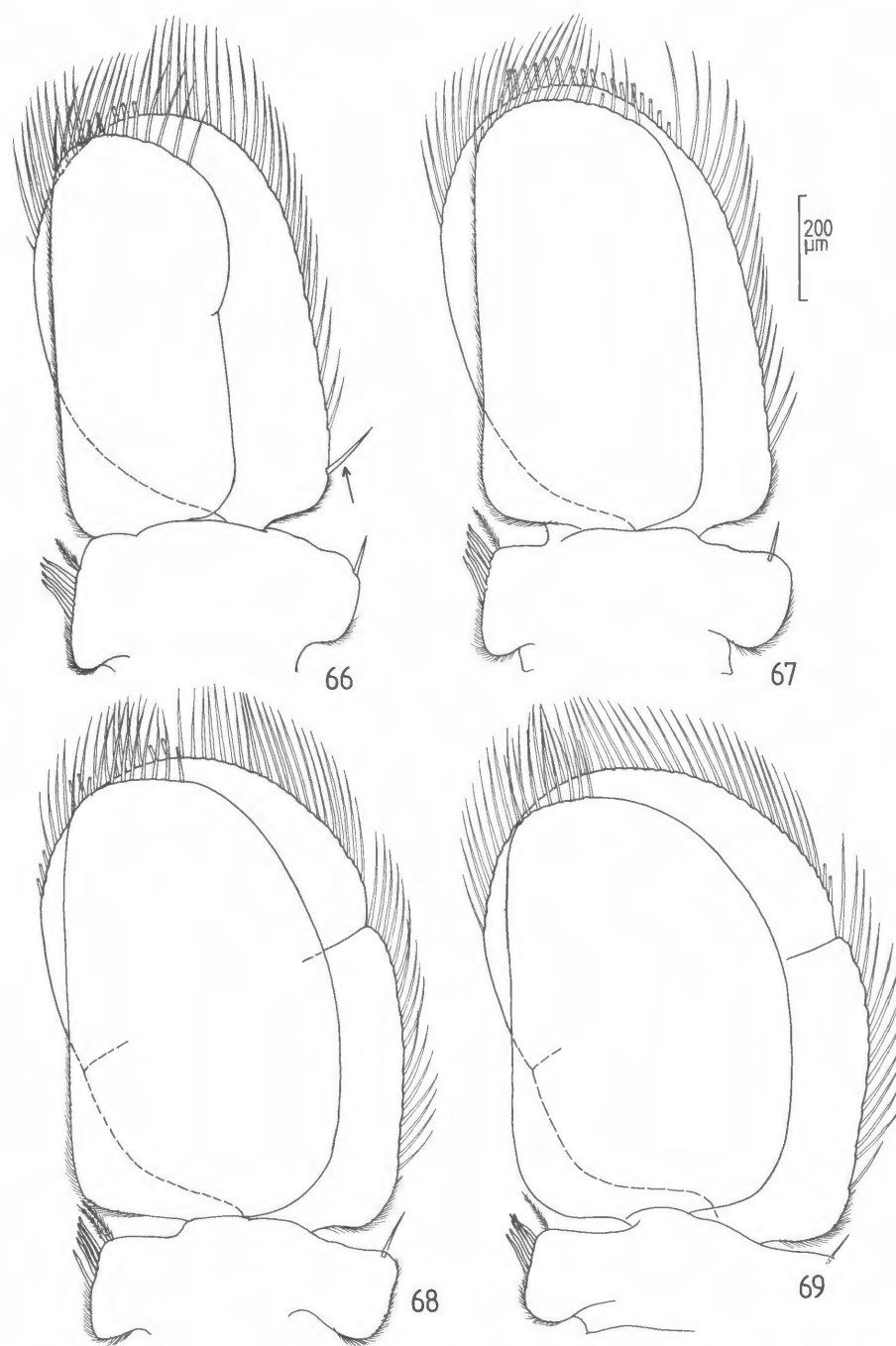
Description, ♀: Total length 7.6 mm (frontal margin of cephalon to tip of pleotelson), maximum width at pereonite 5. Body covered with numerous pigment spots and some reticulations. Cephalon 2.5 times wider than long, with narrowly rounded rostral point. Lateral eyes large and well pigmented, diameter more than half length of cephalon. Clypeal region as figured. All coxae with carinae, those of



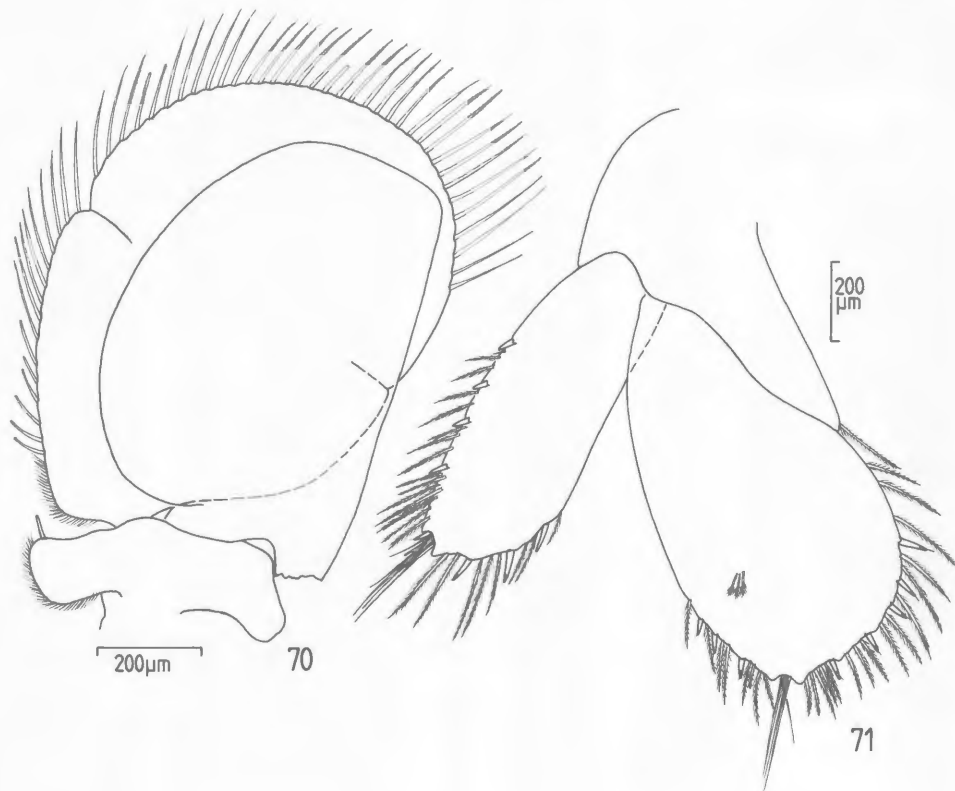
Figs. 63–65. *Neocirolana tayronae* n. sp., ♀ holotype: 63 pereopod 5; 64 pereopod 6; 65 pereopod 7.

pereonites 3–7 progressively more produced; coxae of pereonite 7 almost reaching to posterior margin of second pleonite. Pleonites subequal in length; lateral margins of pleonite 5 covered by pleonite 4. Pleotelson 1.5 times longer than wide, with broad, truncate distal margin and broadly rounded posterolateral margins; distal pleotelsonic margin bearing row of 6 small compound spines separated among one another by 2–4 short plumose setae; in total 25 plumose setae present along distal margin of pleotelson.

Peduncle of first antenna biarticulated, articles subequal in length; flagellum 11-articulated, with proximal article wider than long; articles 3–9 bearing pair of small aesthetascs, penultimate article with single aesthetasc. Second antenna slender, reaching back almost to posterior margin of second pereonite; 5-articulated peduncle



Figs. 66–69. *Neocirolana tayronae* n. sp., ♀ holotype: 66 pleopod 1; 67 pleopod 2; 68 pleopod 3; 69 pleopod 4.



Figs. 70–71. *Neocirolana tayronae* n. sp., ♀ holotype: 70 pleopod 5; 71 left uropod, dorsal view.

with 3 short proximal and 2 distal more elongate articles; flagellum of 17 setose articles.

Sclerotized 3-cuspidate mandibular incisor moderately robust; lacinia mobilis lacking, spine row of 5 spines; molar process short, elongate-triangular, with 4 teeth; 3-articulated palp reaching to apex of incisor, second article somewhat longer than first and distal one; second and third article with several, partly fringed setae in two distal thirds. Small inner ramus of first maxilla bearing pair of distal plumose setae; mediobasal margin of outer ramus with 12 curved spines. Inner ramus of second maxilla well developed, rounded, with 3 plumose setae and a short simple seta; outer ramus reduced, present as a very short, broad uniarticulate lobe bearing pair of distal simple setae. Ovate endite of maxilliped extending well beyond distal margin of first palp article, bearing three long distal plumose setae (extending beyond distal margin of second palp article) and no coupling hook; third article of 5-articulated palp largest, as wide as second article; setae at medial margins of articles more numerous and shorter than at outer margin.

Pereopods moderately robust and scarcely setose; dactyls of pereopods slender, few spines present on articles of pereopods 1–3. Posterior margin of propodus in

all pereopods with row of 3–5 small compound spines. Carpus of pereopod 1 triangular, lacking free anterior margin, devoid of any spines. Number of slender, always non-denticulate compound spines present on carpus, merus and ischium increasing from pereopod 2 to 7.

Symphodite of pleopod 1 with 4, of pleopods 2–4 with 5 and pleopod 5 without retinacula; a short, slender spine present at outer distal margin of sympodites 1–5. Endopodite of all pleopods always more slender and slightly shorter than exopodite. Exopodites of pleopods 3–5 with incomplete oblique suture line. Endopodite of first pleopod with parallel lateral margins; rounded distal margin bearing 14 plumose setae; exopodite ovate, bearing 38 plumose marginal setae at inner distal, distal and outer margin; moreover, a slender spine present at outer proximal margin of exopodite (Fig. 66, arrow). Rami of second pleopod similar in outline to pleopod 1, slightly more robust; distal margin of endopodite bearing 17 plumose setae; inner distal, distal and outer margin of exopodite with 46 plumose setae. Endopodite of third pleopod with straight medial and somewhat convex outer margin; distal margin bearing 11 plumose setae; exopodite with 56 plumose marginal setae. Pleopod 4 quite similar to pleopod 5, endopodite with 8, exopodite with 54 plumose marginal setae. Endopodite of 5th pleopod with straight medial, convex outer and truncate distal margin, devoid of any setae; inner proximal margin of endopodite with anteriorly directed triangular lobe, distal part broken off. All plumose setae of pleopods drawn as simple setae. Uropodal rami ovate, both with group of slender simple setae in shallow distal concavity; exopodite narrower than but subequal in length to endopodite; endopodite slightly extending beyond distal margin of pleotelson; outer margin of exopodite with row of 5 small compound spines and 14 plumose setae; inner distal margin of exopodite with row of 3 longer compound spines and 8 plumose setae; outer distal margin of endopodite bearing row of 3 small compound spines and 9 plumose setae; strongly convex inner margin of endopodite with row of 5 compound spines and 16 plumose setae; dorsal surface of endopodite with 3 small feathered sensory setae in distal half.

♂: unknown.

Remarks: *Neocirolana tayronae* n. sp. is allied with *Neocirolana obtruncata* (RICHARDSON, 1901) from the Caribbean and Gulf of Mexico. In the literature this species has been assigned to the genus *Cirolana*, then transferred to *Neocirolana* by JAVED & YASMEEN (1990: 71). Only the ♂ of *N. obtruncata* has been described in some detail (MARTIN & FELDER 1984: 30–34, Figs. 1–2), so the present comparison is based mainly on a mature ♀ I had in loan from the Smithsonian Institution (USNM 25154, unknown locality). This appears to be the non-type specimen considered by RICHARDSON (1905: 108) as follows: “a third specimen is in the collection of the U. S. National Museum from unknown locality”. The eyes of *obtruncata* are smaller than in *tayronae* n. sp. The distal margin of the pleotelson is somewhat broader, truncate and finely crenulate. The setae of the pleotelson and uropods are broken off in the specimen from the Smithsonian Institution. MARTIN & FELDER (1984: 33) mention, that the uropods and the distal pleotelsonic margin are fringed with short setae, spines are lacking. According to KENSLEY & SCHOTTE (1989: 135) the posterior margin of the pleotelson bears “about eight spines”. Considering these confusions which are due to insufficient descriptions of this species I confine myself to distinguish *N. tayronae* and *obtruncata* females through a reliable feature I found

while examining the ♀ of *obtruncata*: In this species both the inner and outer lobe of the outer ramus of the second maxilla is well developed, bearing several curved distal setae. In RICHARDSON (1905: 108, Fig. 89b) the outer lobe of the outer ramus is shown biarticulated. This probably comes from the fact, that the thick proximal half of the lobe is separated from the thin distal half by an oblique ridge. But, this is not a suture line! When there are really no spines at the margins of the uropodal rami in *obtruncata* (according to MARTIN & FELDER 1984, KENSLEY & SCHOTTE 1989), this would be also a good feature to distinguish *obtruncata* from the new species.

Conclusion: *N. tayronae* appears to be most closely allied with *N. obtruncata*, best distinguished from this species through the vestigial outer ramus of the second maxilla. Other features separating these species have to be discussed when a detailed description of both sexes of *obtruncata* is available and the unknown ♂ of *tayronae* n. sp. is discovered.

Distribution: Tayrona National Park, Santa Marta area at the Caribbean Sea of Colombia.

#### *Colopisthus* RICHARDSON, 1902

Diagnosis: The genus is characterized through the following features in combination. Sexual dimorphism poorly pronounced. Pleon with 3 free pleonites; lateral margins of third pleonite covered by pleonite 2. Antenna 1 with 3-articulated peduncle. Pereopods 1–3 very similar among one another, bearing few spines; triangular carpus lacking free anterior margin. Pereopods 4–7 increasing in length posteriorly; carpus, merus and ischium bearing several non-denticulate compound spines at anterodistal and posterior margin; propodus of third pereopod remarkably small. Exopodite of pleopods 3–5 with complete oblique suture line in distal half.

#### *Colopisthus parvus* RICHARDSON, 1902 (Figs. 72–96)

1902 *Colopisthus parvus* RICHARDSON, Trans. Conn. Acad. Sci., 11: 289–290, pl. 38, Figs. 33–36.

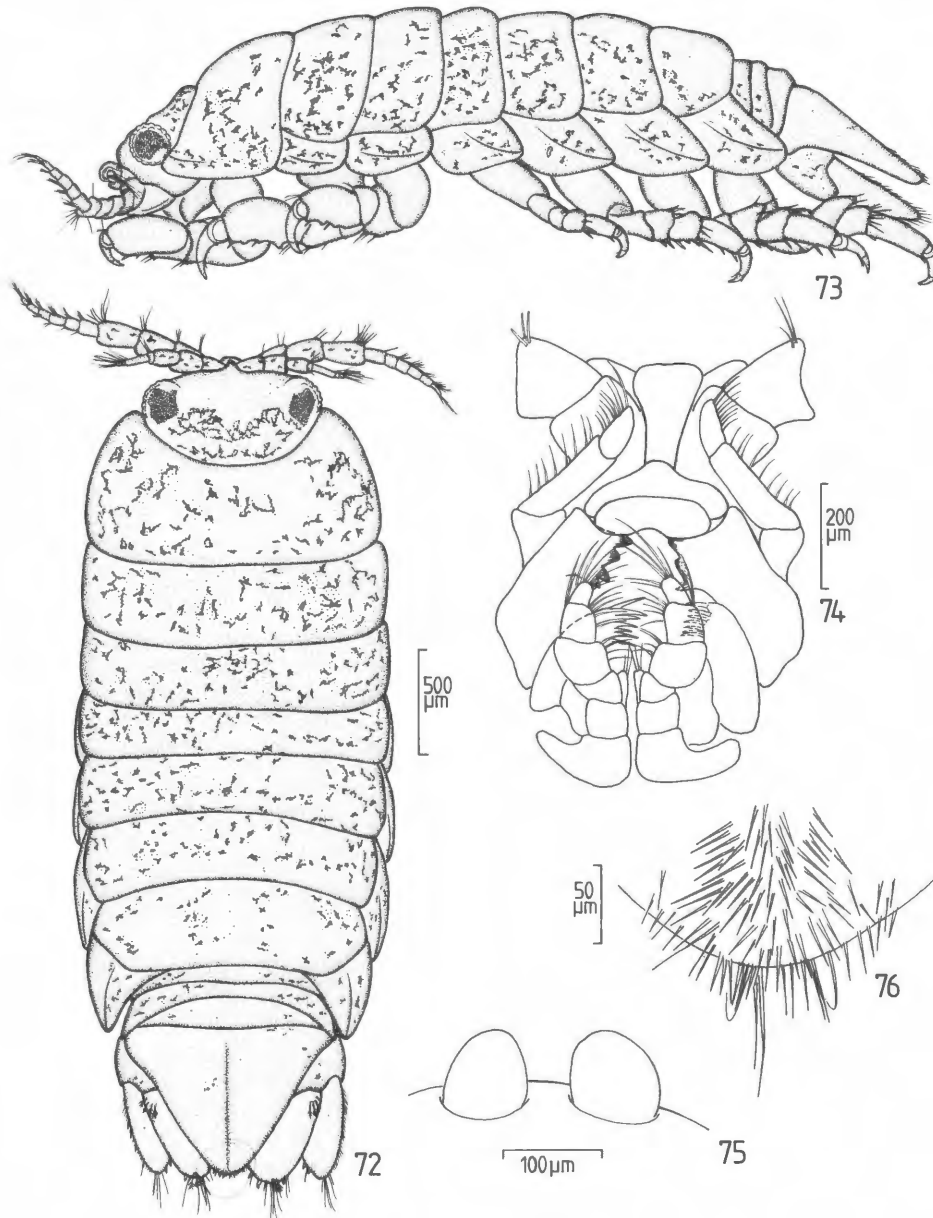
1905 *Colophisthus parvus*, – RICHARDSON, Bull. U.S. natn. Mus., 54: 137, Fig. 119.

1968 *Colopisthus parvus*, – MENZIES & GLYNN, Stud. Fauna Curaçao and other Caribb. Isl., 27 (104): 41, Figs. 16–17.

1989 *Colopisthus parvus*, – KENSLEY & SCHOTTE, Guide to the marine isopod crustaceans of the Caribbean. Smiths. Inst. Press (N. Dutro ed.): 147, Fig. 66A.

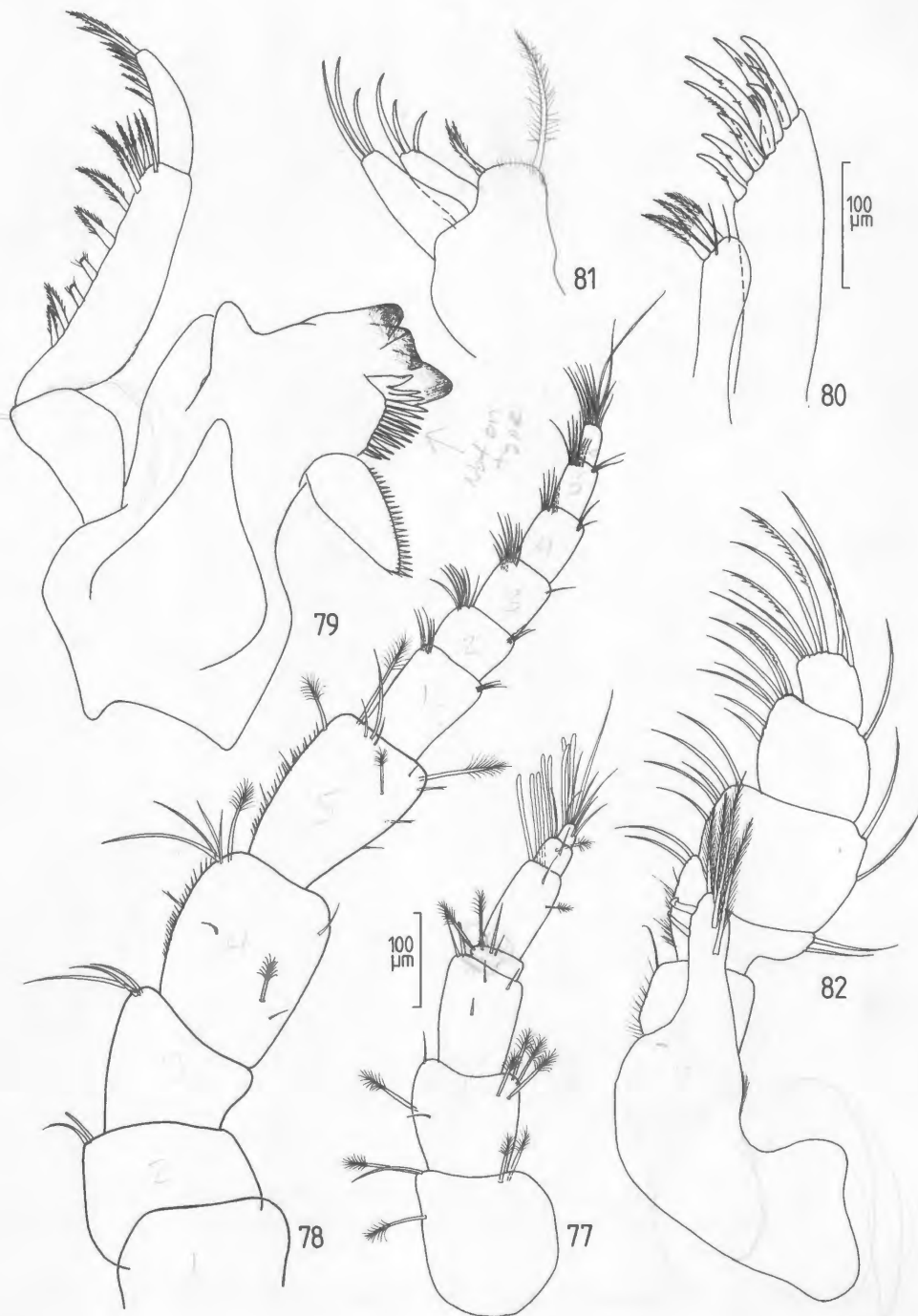
Material: Punta de Betin, Santa Marta: 1 ♀, 1 immature adult, 1 postmanca (INVEMAR); brown algae on rocky shore, intertidal, 31 August 1985. 5 ♀ ♀, 2 immature adults, 2 mancas (ZMB 26937); *Sargassum* on rocky shore, lower intertidal, 15 September 1985. 1 ♂, 1 ♀ (HGM); under rocks, intertidal, 0.5 m, 31 December 1985.

Description, ♂: Total length 3.9 mm (frontal margin of cephalon to tip of pleotelson), maximum width at pereonites 4–5. Body covered with several scattered brownish pigment spots. Cephalon 1.7 times wider than long; frontal margin very slightly convex, with well developed subacute rostral point; dorsolateral eyes large and well pigmented. Clypeal and mouthpart region as figured. Pereonites decreasing



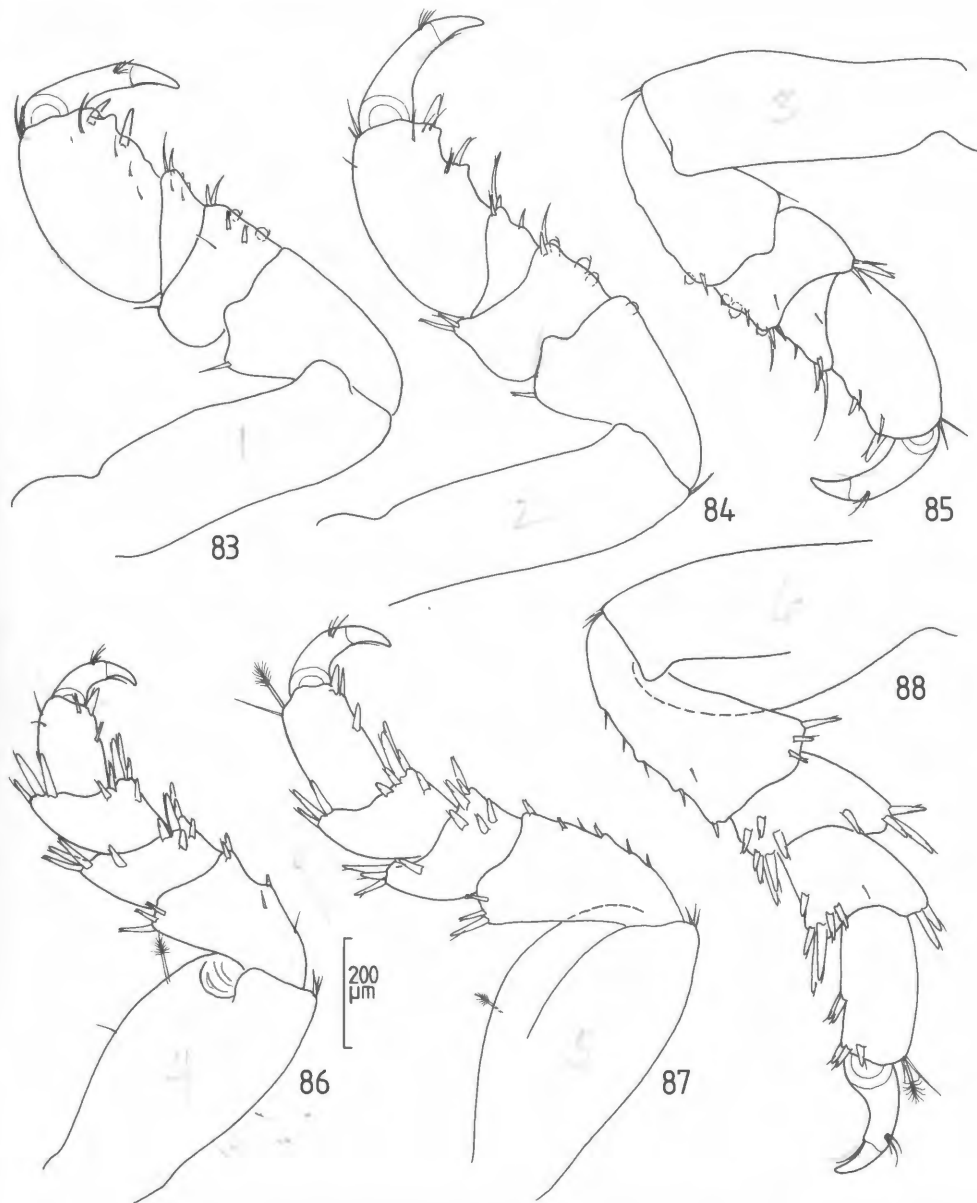
Figs. 72–76. *Colopisthus parvus* RICHARDSON, 1902, ♂: 72 dorsal view; 73 lateral view; 74 mouthparts and clypeal region; 75 penes; 76 distal margin of pleotelson, dorsal view.

in length from 1 to 4, then increasing in length from 5 to 7. All coxae with carinae, those of pereonites 3–7 progressively more produced; coxae of pereonite 7 reaching slightly beyond posterior margin of third pleonite. Penes at pereonite 7 sternite, robust and ovate in outline, separated among one another by about half their



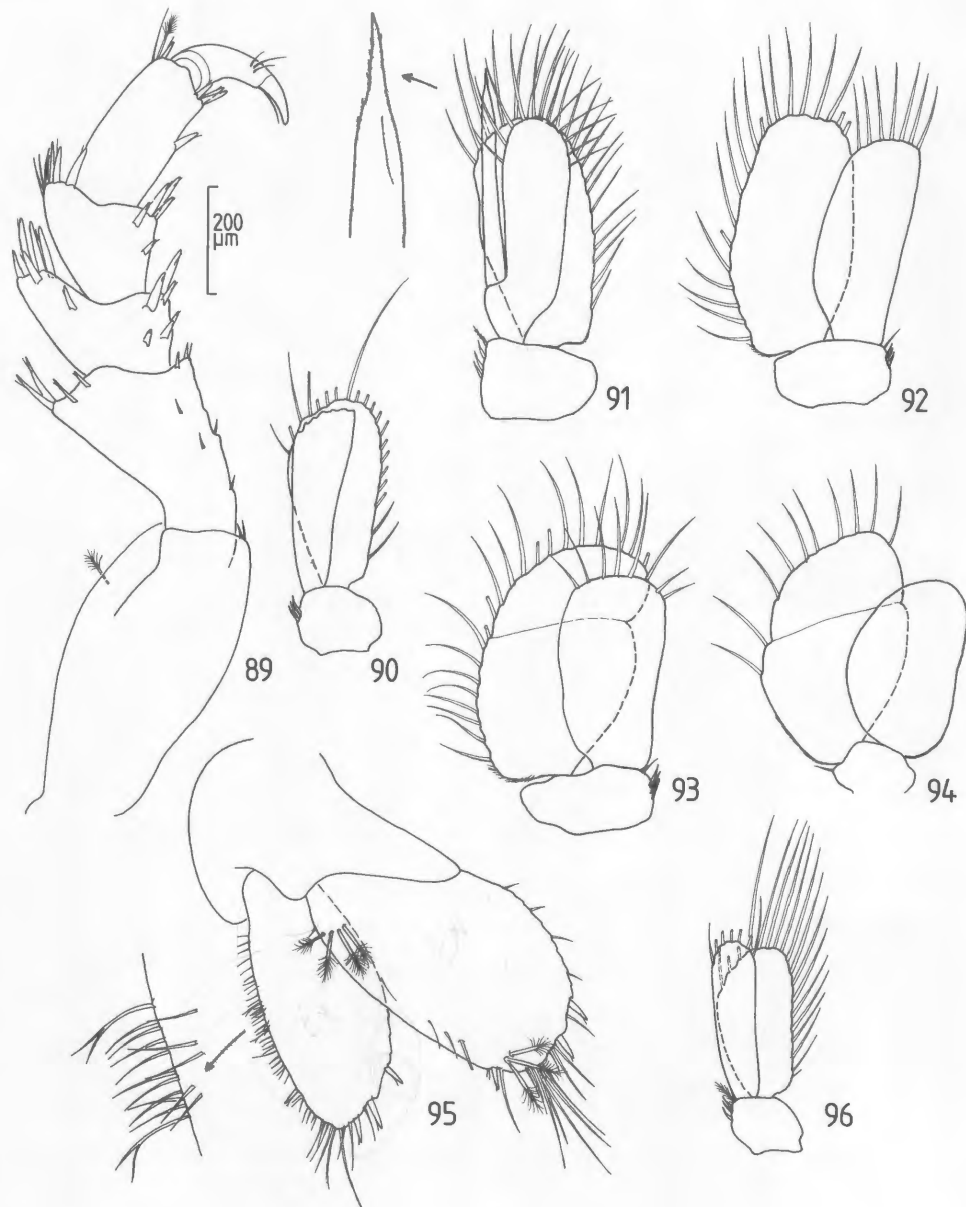
Figs. 77–82. *Colopisthus parvus* RICHARDSON, 1902, ♂: 77 antenna 1; 78 antenna 2; 79 mandible; 80 maxilla 1; 81 maxilla 2; 82 maxilliped.





Figs. 83–88. *Colopisthus parvus* RICHARDSON, 1902, ♂: 83 pereopod 1; 84) pereopod 2; 85 pereopod 3; 86 pereopod 4; 87 pereopod 5; 88 pereopod 6.

diameter. Three free pleonites present; lateral margins of third pleonite covered by pleonite 2. Pleotelson triangular, with strong middorsal ridge and narrowly rounded distal margin; dorsal ridge and distal margin of pleotelson bearing many slender spines.



Figs. 89–96. *Colopisthus parvus* RICHARDSON, 1902. — ♂: 89 pereopod 7; 90 pleopod 1, distal part of endopodite damaged; 91 pleopod 2; 92 pleopod 3; 93 pleopod 4; 94 pleopod 5; 95 left uropod, dorsal view. — ♀: 96 pleopod 1.

Antennae robust, not extending beyond distal margin of first pereonite. Peduncle of first antenna longer than flagellum, of 3 robust articles similar in length; flagellum 4-articulated; proximal flagellar article very short and much wider than long, second article elongated; articles 2-4 bearing 2-3 slender aesthetascs. Peduncle of second antenna 5-articulated, slightly longer than flagellum; three proximal articles short, longer than wide; two distal peduncular articles somewhat longer, subequal in length, bearing several spinules along outer margin; flagellum of 6 robust, setose articles.

Incisor of mandible robust and sclerotized, 3-cuspidate; spine-row of 14 spines; elongate-ovate molar process with 21 teeth; 3-articulated mandibular palp robust and very long, distal article completely extending beyond incisor; elongate second article as long as palp articles 1 and 3 together, bearing row of 11 fringed spines; terminal article with 8 fringed spines in distal half. First maxilla, small inner ramus with 3 distal plumose spines and 2 short simple setae; inner distal margin of outer ramus bearing 11 curved, mostly denticulate spines. Inner ramus of second maxilla broad, subtruncate, bearing a long and two much shorter plumose setae; inner and outer lobe of outer ramus slender, both bearing 3 curved slender spines. Maxillipedal endite slender, extending to distal margin of second palp article, bearing 4 distal plumose setae and 2 mediolateral coupling hooks; 5-articulated palp almost straight, moderately setose, few combed setae present on two distal articles.

Pereopods robust, articles bearing very few setae and non-denticulate compound spines. Pereopods 1-3 quite similar among one another: posterior margin of ovate propodus with 1-2 shallow tubercles and 2 slender compound spines; carpus triangular, lacking free anterior margin, bearing 2-4 posterior compound spines; posterior margin of merus with some robust, rounded compound spines; ischium with single posterodistal, rounded compound spine. Pereopods increasing in length from 4 to 7, propodus of 4th article remarkably small; carpus, merus and ischium of these pereopods bearing several compound spines at anterodistal and posterior margins.

Symphodites of pleopods 1-4 bearing 3 medial coupling hooks. Exopodites of pleopods 4-5 with oblique suture line in distal half. Endopodite of first pleopod slender, distal part broken off; elongate-ovate exopodite bearing 20 plumose setae at distal and outer margin. Both rami of pleopod 2 subequal in length, with rounded distal margin; appendix masculina of slender endopodite styletto-like and acute, extending beyond distal margin of ramus with 1/4 of entire length; distal margin of endopodite bearing 11 plumose setae; exopodite with 20 plumose setae at outer and distal margin. Rami of third pleopod subequal in length; inner margin of endopodite straight, outer margin slightly convex; distal margin bearing 7 plumose setae; outer and distal margin of ovate exopodite bearing 19 plumose setae. Endopodite of 4th pleopod 4/5 length of exopodite, lateral margins almost parallel; distal margin slightly convex, bearing 8 plumose setae; ovate exopodite with 21 plumose setae at outer and distal margin. Endopodite of 5th pleopod 4/5 length of exopodite, ovate, without setae; ovate exopodite with only 10 plumose setae along outer and distal margin. All plumose setae of pleopodal rami drawn as simple setae. Both uropodal rami ovate, slightly reaching beyond distal margin of pleotelson. Uropodal exopodite narrower than but subequal in length to endopodite; outer and distal margin of exopodite with many, partly bifid setae and a slender compound spine in distal third;

inner distal margin bearing 3 compound spines; dorsal surface of exopodite bearing numerous spinules near outer margin (not drawn); uropodal endopodite with few marginal setae; outer distal margin with 2 compound spines, inner distal margin with 3 compound spines; dorsal surface of endopodite near outer proximal and distal margin bearing 7 feathered sensory setae in groups of 4 (proximal) and 3 (distal).

♀: Apart from sexual characters, quite similar to ♂. Endopodite of first pleopod slightly extending beyond distal margin of exopodite, bearing 7 distal plumose setae; exopodite with 17 plumose setae at inner distal, distal and outer margin.

Remarks: A detailed redescription of *C. parvus* is presented herein, to point out the differences to the genus *Metacirolana*.

As already mentioned by BRUCE (1986: 10), the genus *Colopisthus* with the single species *C. parvus* RICHARDSON, 1902 is closely allied with *Metacirolana* NIERSTRASZ, 1931. Considering mouthpart morphology, pereopods and pleopods, many similarities are apparent. Both genera show a 3-articulate peduncle of the first antenna. The 3-articulated mandibular palp is large and extends well beyond the distal margin of the incisor. The pereopods 1–3 are more robust and more similar among one another than to the pereopods 4–7. *Colopisthus* is best distinguished from *Metacirolana* through the presence of only 3 free pleonites, instead of 5 in this genus.

Little is known on the habitat of *Colopisthus parvus*. KENSLEY & SCHOTTE (1989: 147) mention as substrate "intertidal rocks and algae", which is well in agreement with the information from Colombia.

Distribution: Apparently widely distributed in the tropical Western Atlantic. The species is known with certainty from Bermuda (RICHARDSON 1902: 289–290, pl. 38, Figs. 33–36), Puerto Rico (MENZIES & GLYNN 1968: 40–41, Figs. 16–17) and the Caribbean Sea of Colombia. I doubt that the specimens recorted under the name *Colopisthus parvus* from West Africa (Senegal) by MONOD (1952) belong to this species. Some features differ considerably from the description given herein: 1. Pleon with only two free pleonites. 2. Flagellum of first antenna with only two articles. 3. Inner ramus of second maxilla much shorter, rounded, bearing 7 setae. This record of *C. parvus* from Africa requires confirmation.

#### *Excirolana* RICHARDSON, 1912

#### *Excirolana mayana* (IVES, 1891) (Figs. 97–121)

1891 *Cirolana mayana* IVES, Proc. Acad. nat. Sci. Phil., 186–187, pl. 6, Figs. 3–10.

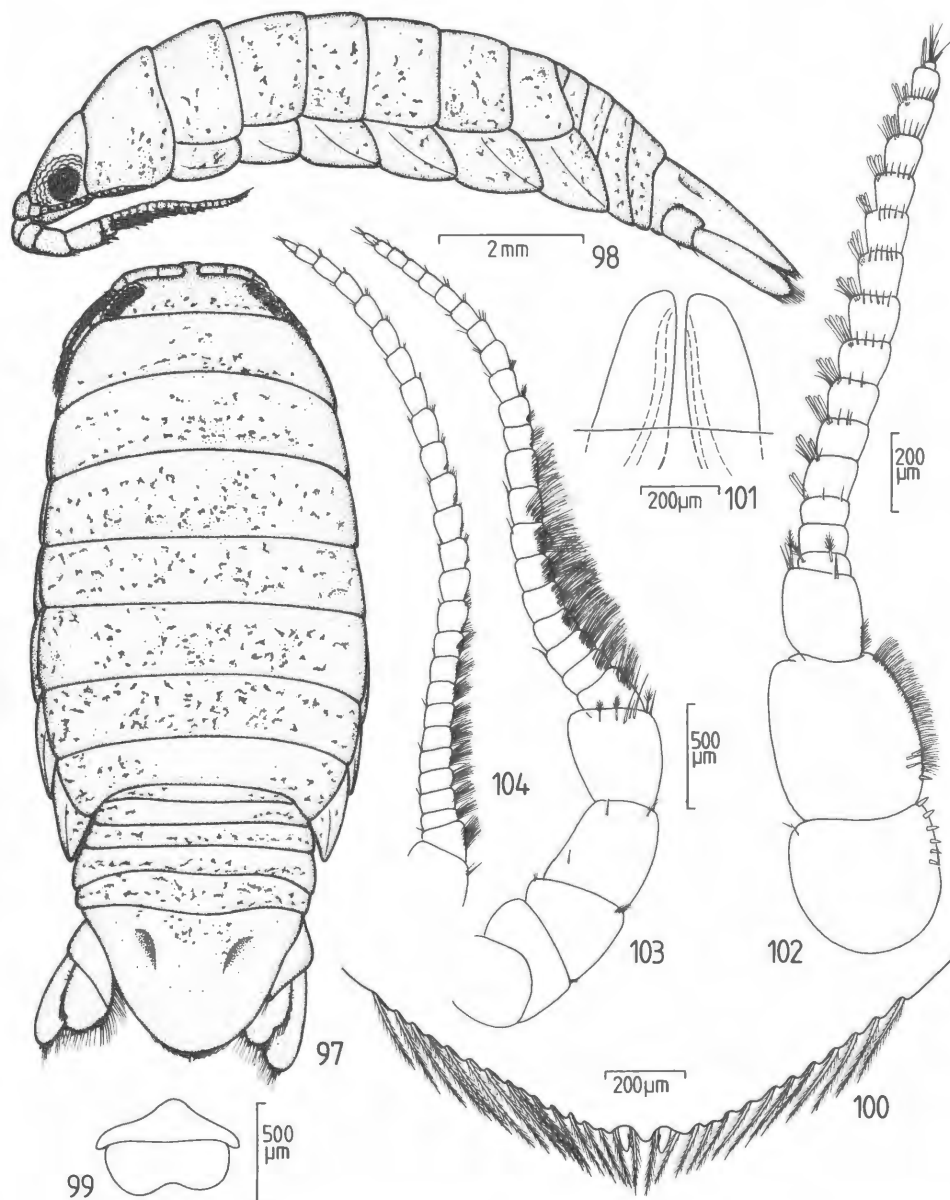
1905 *Cirolana mayana*, – RICHARDSON, Bull. U.S. natn. Mus., 54: 87–90, Figs. 66–70 [literature].

1969 *Excirolana mayana*, – LEMOS de CASTRO & da SILVA BRUM, – Bolm. Mus. nac. Rio de Janeiro, Zool., 271: 3–6, Figs. 1–16 [literature].

1989 *Excirolana mayana*, – KENSLEY & SCHOTTE, Guide to the marine isopod crustaceans of the Caribbean. Smiths. Inst. Press (N. Dutro ed.): 153, Figs. 68D–F, 69D–E.

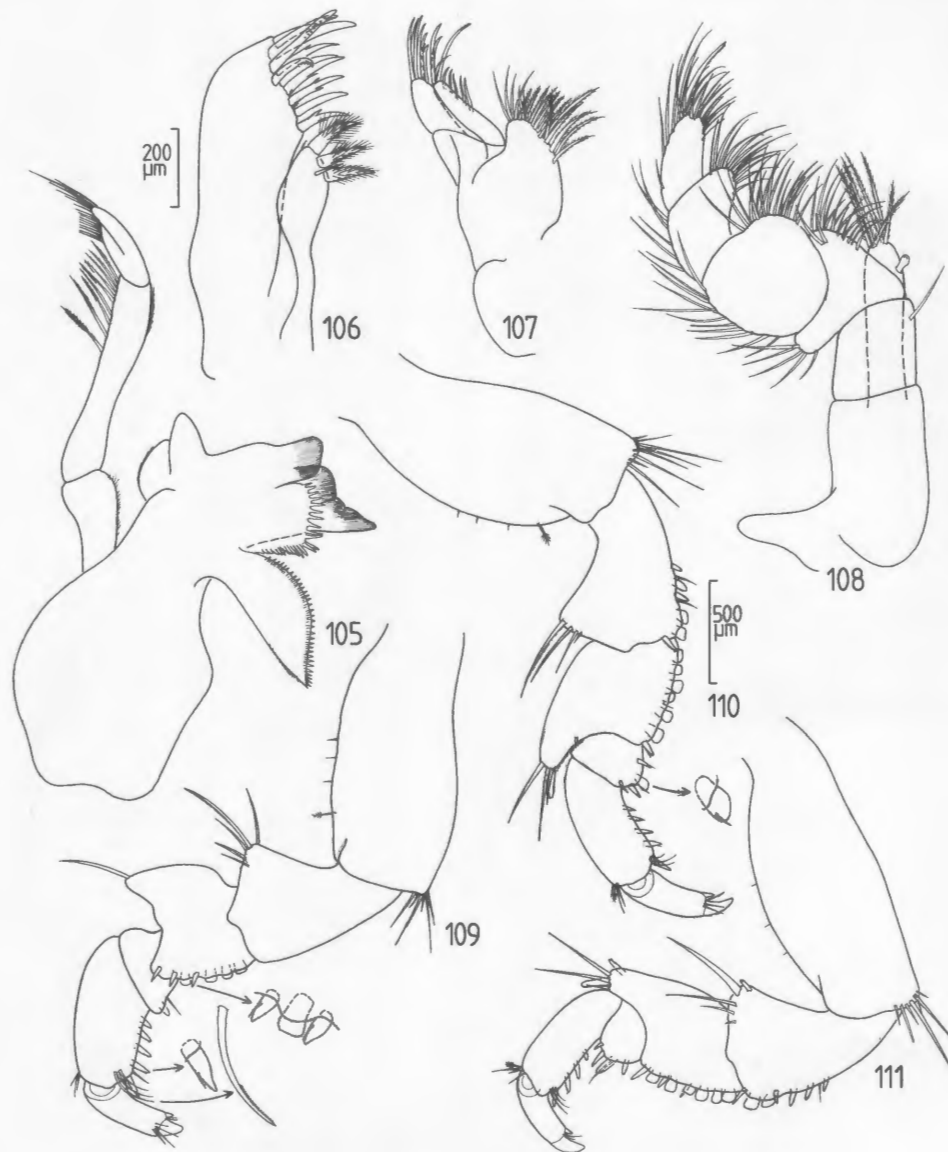
1990 *Excirolana mayana*, – MARKHAM, DONATH-HERNANDEZ, VILLALOBOS-HIRIART & DIAZ-BARRIGA, An. Inst. Biol. Univ. Nac. Autón. México, Ser. Zool., 61 (3): 414.

Material: Punta de Betin, Santa Marta: 1 ♀, 2 manca (HGM); coarse sand and gravel, intertidal, 15 December 1985. Punta Aguja, about 4 km east of Santa Marta: 1 ♂ (HGM); coral rubble,



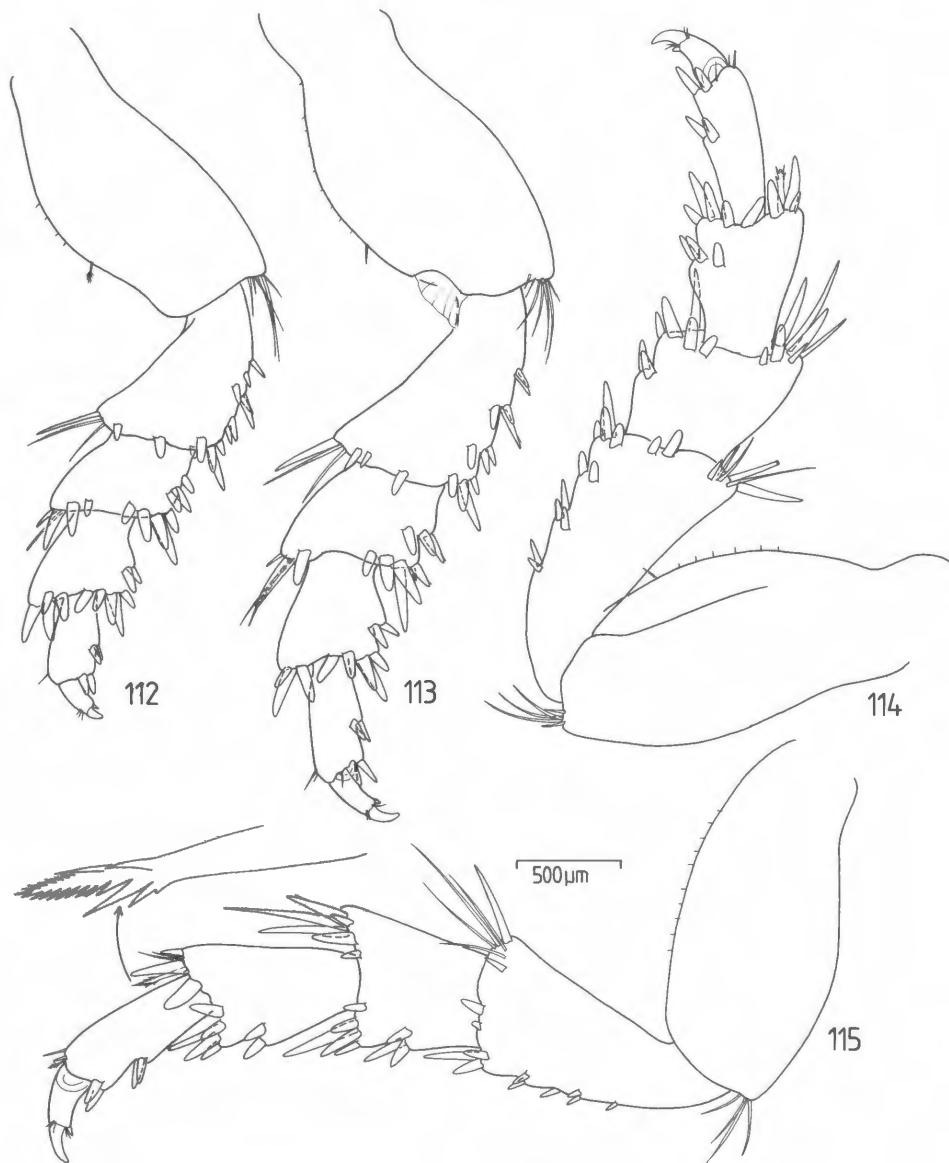
Figs. 97–104. *Excirolana mayana* (IVES, 1891). — ♂: 97 dorsal view; 98 lateral view; 99 clypeal region; 100 distal margin of pleotelson; 101 penes; 102 antenna 1; 103 antenna 2. — ♀: 104 flagellum of antenna 2.

16–18 m, 16 September 1985. Isla de la Aguja, about 4 km east of Santa Marta: 2 ♀♀, 11 immature adults, 3 postmancas, 7 mancas (HGM); gravel, intertidal, 18 Februar 1986. Bahía Concha, about 10 km northeast of Santa Marta: 6 ♂♂, 1 ♀, 15 immature adults, 2 postmancas (ZMB 26974a); gravel, intertidal, 12 February 1986. Bahía de Gairaca; about 20 km northeast of Santa



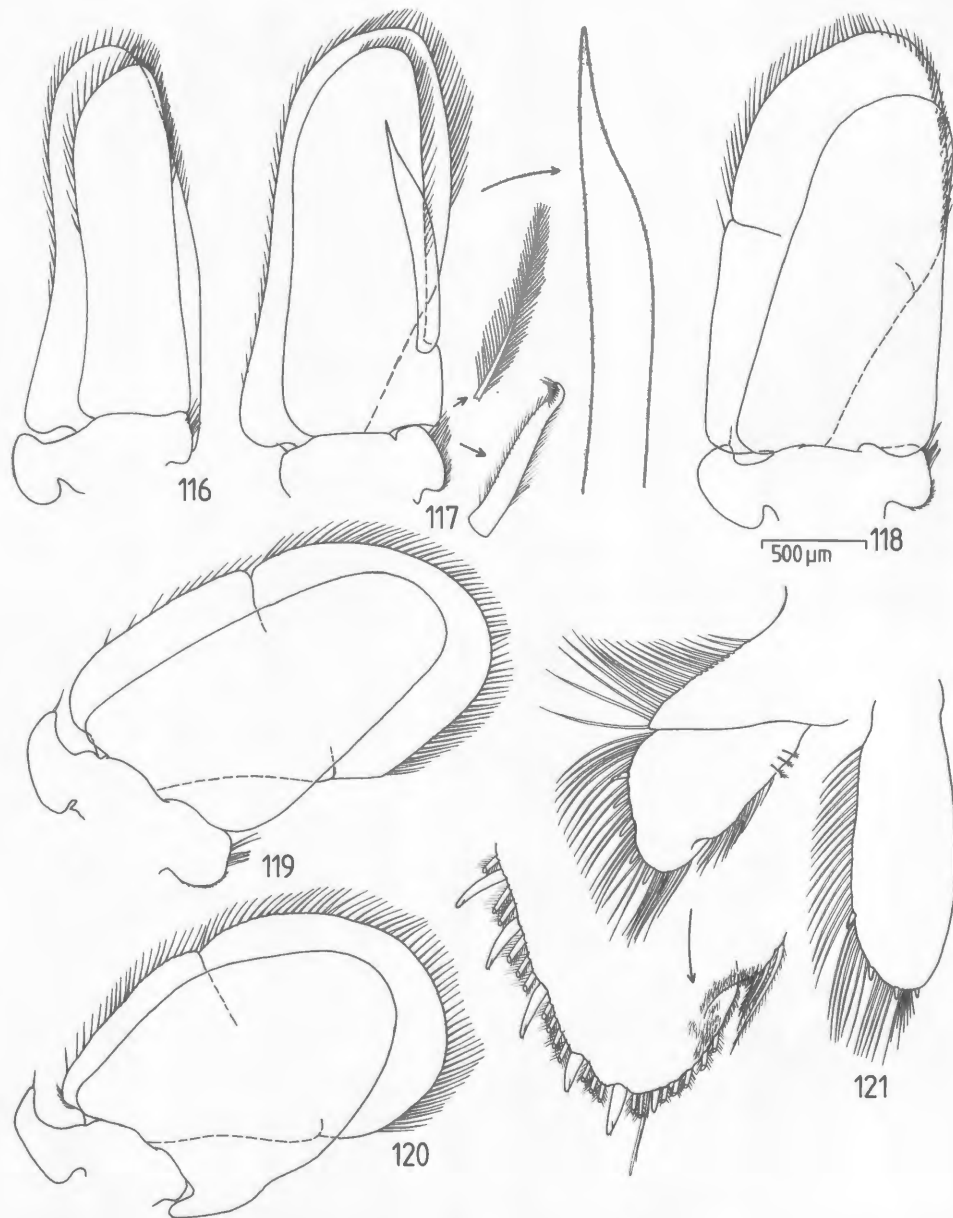
Figs. 105 – 111. *Excirolana mayana* (IVES, 1891), ♂: 105 mandible; 106 maxilla 1; 107 maxilla 2; 108 maxilliped; 109 pereopod 1; 110 pereopod 2; 111 pereopod 3.

Marta: 5 ♀♀, 8 manca (INVEMAR); under stones on sandy beach, intertidal, 9 April 1986. 2 ♂♂, 2 ♀♀, 7 immature adults, 1 postmanca, 4 manca (ZMB 26974 b), coarse sand and gravel, intertidal, 9 April 1986. Bahía de Cinto, about 30 km northeast of Santa Marta: 1 ♀ (HGM); from *Sargassum* washed ashore, intertidal, 14 November 1985.



Figs. 112–115. *Excirolana mayana* (Ives, 1891), ♂: 112 pereopod 4; 113 pereopod 5; 114 pereopod 6; 115 pereopod 7.

Description, ♂: Total length 7–11 mm (frontal margin of cephalon to tip of pleotelson), maximum width at pereonite 5. Body covered with several tiny pigment spots. Cephalon 1.5 times wider than long, with distally widening rostral process separating bases of first antennae. Lateral eyes very large and well pigmented. Clypeal region as figured. Pereonites 1–6 subequal in length, 7th pereonite slightly



Figs. 116–121. *Excirolana mayana* (IVES, 1891), ♂: 116 pleopod 1; 117 pleopod 2; 118 pleopod 3; 119 pleopod 4; 120 pleopod 5; 121 right uropod, dorsal view.

shorter, All coxae with carinae, those of pereonites 3–7 progressively more produced; coxae of pereonite 7 reaching beyond distal margin of third pleonite. Penes at pereonite 7 sternite, robust and elongate-ovate, separated among one another at base by about half their diameter. Five free pleonites subequal in length; first pleonite



partly hidden under posterior margin of 7th pereonite; pleonite 5 not covered laterally by pleonite 4, Triangular pleotelson with narrowly rounded distal margin and pair of shallow dorsolateral excavations; distal pleotelsonic margin bearing 29 plumose setae and a pair of apical compound spines; these spines separated among one another by 2 plumose setae.

First antenna moderately slender, reaching back to distal half of first pereonite; peduncle 3-articulated; third article remarkably shorter than proximal articles, with fringe of setules at inner proximal half and small distal spine; two proximal articles broad, first one with row of 6 small spines at inner distal margin; second article with 4 small spines at inner proximal margin and dense fringe of setules along entire length; flagellum 15-articulated, 3 proximal articles wider than long; articles 3 and 14 bearing pair of short aesthetascs, articles 4–13 with 4 short aesthetascs; moreover, articles 3–13 with some short simple setae distally. Second antenna slender, reaching back to posterior margin of second pereonite; peduncle 5-articulated, two distal peduncular articles robust as proximal articles, only somewhat longer; flagellum about 1.6 times longer than peduncle, of 21 setose articles; moreover, articles 1–10 bearing dense fringe of long setules along outer margins.

Incisor of mandible robust and sclerotized, 3-cuspidate; spine row of 24 spines; elongate-ovate molar process with 32 teeth; 3-articulated mandibular palp very long, distal article completely extending beyond incisor; elongate second article bearing 9 plumose setae in distal half; terminal article with 16 setae in distal half. Small inner ramus bearing 3 robust plumose spines distally and 2 short simple setae; inner distal margin of outer ramus bearing 11 curved, mostly denticulate spines. Inner ramus of second maxilla ovate, bearing 19 mediobasal, mostly plumose setae; inner and outer lobe of outer ramus slender, inner lobe bearing 10, outer lobe with 7 curved setae. Endite of maxilliped slender, well extending beyond proximal palp article; rounded distal margin bearing 6 slender plumose setae, mediobasal margin with single coupling hook; 5-articulated palp moderately setose.

Pereopods robust, articles bearing very few setae. Pereopods 1–3 more similar among one another than to pereopods 4–7: dactylus with short, robust unguis and small adjacent spine posterodistally; propodus with group of 3 posterodistal fringed setae and 4 moderately slender compound spines along posterior margin; carpus, merus and ischium with several slender compound spines and robust square compound spines along posterior margins; anterodistal margin of merus and ischium, as well as posterodistal margin of basis bearing some slender setae; moreover, produced anterodistal margin of merus with single compound spine in second pereopod, 2 compound spines in third pereopod. Pereopods increasing in length from 4 to 7, unguis, dactylus and propodus of 4th article remarkably small; carpus, merus and ischium of these pereopods bearing several robust, mostly non-denticulate compound spines at anterodistal and posterior margins; propodus of these pereopods with 2 pairs of non-denticulate compound spines at posterior margin.

Symphonite of pleopods 1–4 with 3 medial retinacula and few adjacent plumose setae. Endopodite of pleopods 1–5 always somewhat shorter than exopodite, without setae in pleopods 3–5; endopodites of pleopods 1–2 and exopodites of all pleopods bearing many short plumose marginal setae (drawn as simple setae); exopodites of pleopods 3–5 with incomplete transverse suture line at about midlength.

Both rami of first pleopods relatively slender. Rami of second pleopod slightly longer and more robust than in first pleopods; styletto-like appendix masculina tapering to acute apex in distal half, not reaching to distal margin of endopodite. Endopodite of 3rd pleopod with straight medial margin; exopodite ovate, more robust in distal half. Pleopod 4 quite similar to pleopod 3. Ovate endopodite of pleopod 5 with rounded, anteriad directed lobe at inner proximal margin; exopodite quite similar to pleopod 4. Triangular mediiodistal projection of uropodal sympodite bearing row of many plumose setae along medial margin; uropodal exopodite elongate-ovate, narrower and somewhat longer than endopodite; only exopodite extending beyond distal margin of pleotelson; mediiodistal and distal margin of endopodite bearing 4 small compound spines, medial margin with many plumose setae; distal margin between compound spines with group of 8 simple setae; outer margin of endopodite strongly convex, inner margin almost straight, distal margin rounded; exopodite bearing many plumose marginal setae and 5 compound spines along mediiodistal and distal margin; inner proximal surface of exopodite bearing 3 feathered sensory setae; outer distal margin of exopodite with conspicuous shallow notch.

♀: Apart from sexual characters, similar to ♂. Flagellum of second antenna longer, of 25 articles; setules on articles 1–10 much shorter than in ♂, not longer than diameter of articles.

Remarks: Two species of *Exciorolana* are known from the Caribbean Sea: *E. braziliensis* RICHARDSON, 1912 and *E. mayana* (IVES, 1891). The latter is best distinguished from *braziliensis* through the longer, more slender uropodal endopodite and the well separated excavations on the dorsal surface of the pleotelson (cf. KENSLEY & SCHOTTE 1989: 151, Fig. 68). Though *E. mayana* is a common isopod in the Caribbean Sea and Gulf of Mexico, a detailed description has never been given. For further systematic studies on species in this genus the sexual dimorphism of the second antenna should be examined. Another feature characteristic for members in this genus might be the presence of small spines at the inner margin of the two proximal articles of the first antenna.

The preferred habitat of *Exciorolana mayana* is the intertidal zone of sandy beaches, where specimens are often found between gravel or under stones. The species burrows in sand. The robust pereopods and strong spines on propodus, carpus, merus and ischium are adaptations for this behaviour.

Remarks: Common throughout the Caribbean Sea and Gulf of Mexico, from Florida to Venezuela (KENSLEY & SCHOTTE 1989: 153).

### Acknowledgements

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