

The sphaeromatid genus *Paracilicaea* Stebbing 1910 (Crustacea Isopoda) from the Western Indian Ocean with the description of five new species

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Received 6 October 1998, accepted 15 March 2000

Seven species of *Paracilicaea* are recorded from intertidal habitats on the coasts of Somalia and the Yemen, Western Indian Ocean. *Paracilicaea falcata* n. sp., *P. mirabilis* n. sp., *P. nodosa* n. sp., *P. peniculata* n. sp. and *P. uncinata* n. sp. are described. The genus *Paracilicaea* Stebbing 1910 from the Indo-Pacific region is revised and redefined. Four species are excluded from *Paracilicaea* and are here regarded as "incertae sedis": *P. dakini* (Tattersall 1922), *P. fimbriata* Kus-sakin et al. 1990, *P. hamata* (Baker 1908) and *P. septemdentata* (Baker 1910). A key to the species of the genus is given, together with a synoptic list of all species, with their synonymy and distribution.

KEY WORDS: Isopoda, Sphaeromatidae, *Paracilicaea*, taxonomy, Somalia, Yemen, Western Indian Ocean.

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INTRODUCTION

The genus *Paracilicæa* Stebbing 1910 includes 20 Indo-Pacific species of infratidal or subtidal habitat, the majority known from Indonesia (KUSSAKIN et al. 1990), Australia (HARRISON & HOLDICH 1984) and from the coasts of East Africa (KENSLEY 1978, 1984; MÜLLER 1995). These are often recorded in association with corals, sponges or sea plants.

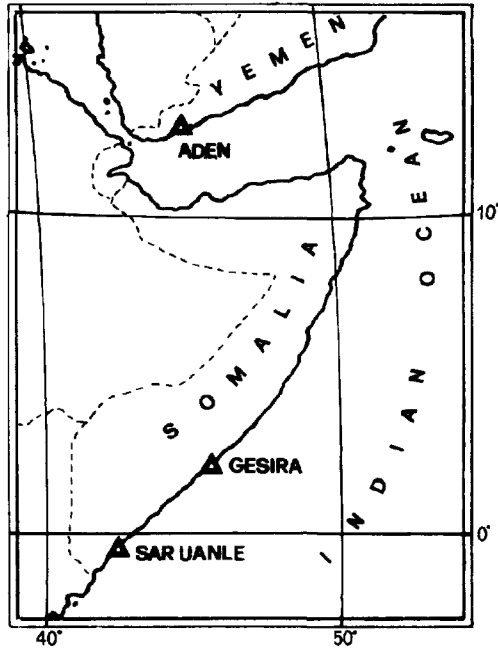


Fig. 1. — Collecting sites.

The genus is difficult to define precisely as the only diagnostic and unifying characters are the reduction of the uropod endopod and the lack of dorsal pleonal processes in adult males. These character states are both losses and reductions, and therefore difficult to homologise. The pleonal process may be present or absent within a genus (BRUCE 1997) and therefore such a character state is not necessarily of generic merit. Furthermore, the character state of a reduced uropodal endopod is not unique. Consequently the genus lacks any unique defining characters, leaving its status as a monophyletic taxon open to question. The problem is not easy to resolve without at least a detailed taxonomic investigation of all Sphaeromatidae species with a uropodal endopod reduced and an exopod elongated (species housed in *Paracilicæa*, *Cilicæa* Leach 1818, *Cilicæopsis* Hansen 1905, and *Cymodoce* Leach 1814 or others "incertae sedis"). The present morphological study is intended as a starting-point for a necessary major revision.

HARRISON & HOLDICH in 1984 described the Australian species of *Paracilicæa* and discussed the taxonomy of the genus on a worldwide basis, "excluding" three Australian species from the genus: *P. dakini* (Tattersall 1922), *P. hamata* (Baker 1908) and *P. septemdentata* (Baker 1910). These three species are here regarded as "incertae sedis". Since that time further species have been added to the genus (KENSLEY 1984, JAVED 1990a, KUSSAKIN et al. 1990, MÜLLER 1995). The present material was collected during several research trips along the Somali coasts (PARDI 1976a, 1976b, 1982) by the researchers of the Centro di Studio per la Faunistica ed Ecologia Tropicali. Some of these specimens are new to science. Information about the Somali collecting sites is reported in VANNINI et al. (1977) and GALIL & VANNINI (1990). Additional material from Yemen (Fig. 1) was sent to us by Dr W. Wranik.

MATERIAL AND METHODS

The specimens examined were collected on the western shore of the Indian Ocean, or are deposited in the collections indicated in the text with the following abbreviations: ZMUF = Museo di Storia Naturale, Sezione di Zoologia, Università di Firenze; BMNH = The Natural History Museum, London; MNHN = Muséum National d'Histoire Naturelle, Paris.

The specimens were dissected, mounted on slides with Hoyer medium and drawn with the aid of a camera lucida.

SYSTEMATIC ACCOUNT

Family Sphaeromatidae Latreille 1825

Genus *Paracilicæa* Stebbing 1910

Paracilicæa STEBBING 1910: 84, 106, 107; HALE 1929: 272, 288; HARRISON 1984: 386; HARRISON & HOLDICH 1984: 324-327, 384; HARRISON & ELLIS 1991: 943.

Type species. Paracilicæa hanseni Stebbing 1910 (by monotypy).

Distribution. Red Sea, Indian Ocean, Western Pacific Ocean.

Generic diagnosis. Sphaeromatinae with cephalon, pereon and pleon lacking dorsal extensions or prominent processes. Sexual dimorphism obvious, especially in the form of the uropods and in the dorsal ornamentation of the pleotelson. Uropod of male with endopod reduced; exopod elongate, extending posteriorly well beyond pleotelsonic apex. Uropod of female with rami lamellar, about equal in length, extending approximately to the pleotelsonic apex. Both sexes with pleotelson bearing two large submedial dorsal bosses and with pleotelsonic posterior margin medially excavated with median tooth.

Description of adult male. Body 2-3 times as long as wide. Epistome anteriorly acute. Pereonite I about 2 times as long as pereonite II. Pleon bearing two distinct suture lines running to its posterolateral margin. Posterior margin of pleon generally with two submedial tubercles, occasionally curved or arcing posteriorly in the midline. Antenna I with 3-segmented peduncle, flagellum with three proximal articles lacking setae, subsequent articles with 1-2 aesthetascs and simple setae on distal external corner, terminal article with apical simple setae; antenna II with 5-segmented peduncle, flagellum articles setose on mediolateral margin. Left mandible

with incisor process robust, lacinia mobilis and dentate molar process; right mandible with molar process and incisor process weaker than left mandible; both mandibles with spine row and a 3-articulate palp. Maxilla I; endite with 4 distal plumose spines and a distolateral small spine, exite with distal serrate spines. Maxilliped; medial margin of distal articles with coupling hook; articles 2-4 of the 5-articulate palp bear pronounced setigerous lobes. Pereopods bearing at most several superior setae or spines on sternal margin of the segments; pereopod I shorter than pereopods II-VII. Penes slender, generally elongate, separate to the base. Pleopod II with appendix masculina sublinear, extending from proximomedial angle beyond ramal apex. Exopods of pleopods III-V with entire transverse suture. Endopods of pleopods IV-V with transverse folds. Exopod of pleopod V with apex and medial margin of the two distal articles bearing finely scaled bosses.

Description of ovigerous female. Body smaller than male without or weakly developed dorsal ornamentation. Posterior margin of pleon and pleotelson similar to that of male. Mouthparts metamorphosed. Pereopodal and pleopodal morphology generally similar to that of male. Brood pouch formed from four pairs of oostegites arising from sternites I-IV and overlapping in the midline; brood held in five pairs of medial pouches within the body.

Remarks. HARRISON & HOLDICH (1984) considered as "incertae sedis" the three species *P. septemdentata*, *P. dakini* and *P. hamata*. We agree that *P. hamata* with uropodal exopods hooked, very elongate tooth in the pleotelsonic notch, and lacking sexual dimorphism is a very unusual *Paracilicæa*, as also are *P. dakini* and *P. septemdentata* having a broadly truncate epistome and the posterior margin of the pleon strongly produced backwards and medially overhanging the proximal part of the pleotelson. Another species should be added to the group, as already stated by the authors, *P. fimbriata* Kussakin et al. 1990, which shows the same unusual characters as *P. dakini* and *P. septemdentata*.

However, the 20 species housed in *Paracilicæa* exhibit a considerable variation from each other, likely related to the history of the genus. STEBBING (1910: 106-107) defined *Paracilicæa* as a genus constituted by "Hansen's Sphaerominae hemibranchiatae ... section Cymodicini ... The uropods in agreement with *Cilicæa* exclude it from *Cymodoce*. The want of any medio-dorsal process on the anterior part of the pleon excludes it from *Cilicæa*. The presence of a median lobe in the terminal notch of the pleon excludes it from *Cilicæopsis*. The median prolongation in front and rear which distinguish *Ceratocephalus* are wanting here, and in *Cassidinella* the outer ramus of the uropods is very short, whereas here it is very long". Since its original description *Paracilicæa* has been a group lacking positive attributes, deprived of phylogenetic significance and containing the refuse of other genera. Therefore, an accurate revision of this genus is necessary for the further study of the relations among the genera *Paracilicæa*, *Cymodoce*, *Cilicæa*, *Cilicæopsis*.

The posterior pleonal margin of the majority of species has a pair of submedial tubercles. *P. aspera* Harrison & Holdich 1984, *P. watanuæ* Müller 1995, *P. gigas* Baker 1928 and *P. pubescens* (Milne Edwards 1840) have the posterior margin of pleon curved or little produced medially, showing a certain analogy with the pleonal process of *Cilicæa*. The development of the posterior pleotelsonic tooth shows intermediate conditions. *P. setosa* Müller 1995 is characterised by the median tooth projecting beyond the posterior margin of pleotelson, while in *P. cordilyna* Kensley 1984 it is almost absent (a condition similar to that of the genus *Cilicæopsis*). The reduction of the uropodal endopod and the lengthening of the exopod in adult males are also variable states in several species within the genus (MONOD 1971a).

KEY TO WORLD SPECIES OF THE GENUS *PARACILICÆA*

The key identifies only males, owing to the strong sexual dimorphism; only association with males can reliably identify a female. Some of the distinctive marks used in this key are illustrated in Fig. 2.

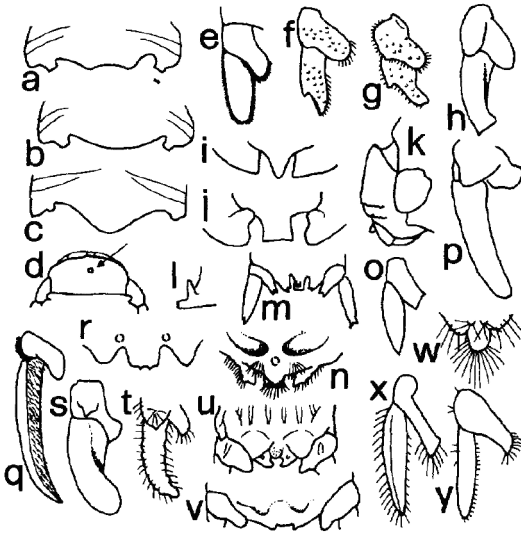


Fig. 2. — Some characters referred to in the key.

- | | | |
|---|--|---|
| 1 | Posterior margin of pleon little produced medially or broadly rounded | 2 |
| — | Posterior margin of pleon with two submedial tubercles (Fig. 2a) | 5 |
| 2 | Posterior margin of pleon broadly rounded or curved (Fig. 2b) | 3 |
| — | Posterior margin of pleon slightly produced medially (Fig. 2c), relatively big body (length 25-30 mm) and epistome with a small median knob <i>P. gigas</i> Baker 1928 | |
| 3 | Body dorsally bearing numerous, small, prominent, hemispherical tubercles; cephalon with one small median tubercle (Fig. 2d, arrow) | 4 |
| — | Body smooth; margins of both uropodal rami densely setulose (Fig. 2e) | |
| | <i>P. watamuae</i> Müller 1995 | |
| 4 | Uropodal exopod with almost parallel margins (Fig. 2f), strong tooth on lateral margin of uropodal exopod; appendix masculina twice as long as endopod of pleopod II | |
| — | <i>P. pubescens</i> (Milne Edwards 1840) | |
| — | Uropodal exopod with non-parallel margins (Fig. 2g), twice as long as endopod; appendix masculina extending beyond endopod of pleopod II about 1/3 of its length; basis of pereopods II-VI bearing two longitudinal superior rows of tubercles | |
| | <i>P. aspera</i> Harrison & Holdich 1984 | |
| 5 | Exopod of the uropod medially and apically weakly truncate (Fig. 2h) | 6 |
| — | Endopod of the uropod apically non-truncate, if medially curved apically rounded | 7 |
| 6 | Posterior margin of pleotelson with median tooth subtriangular and with acute apex (Fig. 2i), coxal plates of pereonite VII as long as preceding one | |

—	..... <i>P. asiatica</i> Kussakin et al. 1990	
—	Posterior margin of pleotelson with median tooth subquadrate and with truncate apex (Fig. 2j), pereonite VII coxal plate shorter than those of pereonites I-VI.....	
	..... <i>P. uncinata</i> n. sp.	
7	Anterior margin non-carinate or with a single carina	8
—	Anterior margin with a double carina and epistome with a subquadrate medial tubercle (Fig. 2k); pleotelson with two submedial cup-shaped structures.....	
	..... <i>P. mirabilis</i> n. sp.	
8	Median tooth of the posterior margin of pleotelson with dorsal tubercle	9
—	Median tooth of posterior margin of pleotelson smooth or granulate, but without dorsal tubercle.....	12
9	Dorsal tubercle of posteromedian tooth of pleotelson subconical and dorsally protruding (Fig. 2l); exopod of uropod with entire and rounded apex.....	10
—	Posterodorsal pleotelsonic tubercle and posterolateral teeth apically bifid; apex of the uropodal exopod notched (Fig. 2m)	
	..... <i>P. mossambica</i> Barnard 1914	
10	Pleotelson with submedial ellipsoid bosses and small, eye-shaped hollows on both sides of posterior median tooth (Fig. 2n); anterior margin strongly carinate.....	
	..... <i>P. falcata</i> n. sp.	
—	Pleotelson with two submedial mammilliform bosses; anterior margin not carinate	11
11	Pereonal segments with two lines of tubercles; uropodal exopod about twice as long as endopod (Fig. 2o)	
	..... <i>P. eupyga</i> (Nobili 1906)	
—	Pereonal segments with a single line of tubercles; uropodal exopod more than 3 times as long as endopod (Fig. 2p)	
	..... <i>P. nodosa</i> n. sp.	
12	Exopod of uropod with acute apex, curved inwards and excavate on the inner side (Fig. 2q); median tooth of pleotelsonic posterior margin as long as the lateral teeth and with small submedial tubercles on both sides of its base (Fig. 2r)	13
—	Exopod of uropod not excavated on the inner side or if excavated with rounded apex; base of median tooth of pleotelson smooth.....	14
13	Submedial bosses of pleotelson with superimposed latitudinal ridge; body length about 10 mm.....	
	..... <i>P. peniculata</i> n. sp.	
—	Submedial bosses of pleotelson with superimposed longitudinal row of tubercles; length about 20 mm	
	..... <i>P. flexilis</i> Baker 1928	
14	Uropodal exopod medially curved, laterally flat and twisted (Fig. 2s) or slightly curved with an apical internal protrusion (Fig. 2t)	15
—	Uropodal exopod not twisted or slightly curved	16
15	Margins of uropodal exopod indented	
	..... <i>P. hanseni</i> Stebbing 1910	
—	Margins of uropodal exopod smooth	
	..... <i>P. keijji</i> Javed 1990	
16	Dorsal anterior part of pleotelson bearing six low longitudinal ridges; posterior median tooth of pleotelson short (Fig. 2u)	
	..... <i>P. stebbingi</i> Baker 1926	
—	Dorsal anterior part of pleotelson without six low longitudinal ridges	17
17	Pleotelson with dorsal anterior part bearing two submedial granular tubercles and posterior margin with a shallow terminal notch flanked by low round tubercles (Fig. 2v).....	
	..... <i>P. cordylina</i> Kensley 1984	
—	Pleotelson with posterior margin obviously 3-lobed	18
18	Distal part of pleotelson with a median cone-shaped tooth posteriorly protruding and with a pair of lateral small setose tubercles (Fig. 2w); body densely setose	
	..... <i>P. setosa</i> Müller 1995	
—	Distal part of pleotelson with each lateral tooth subequal in length to median tooth; body not densely setose	19
19	Endopod of uropod with apex obliquely truncate (Fig. 2x)	
	..... <i>P. teretron</i> Barnard 1955	
—	Endopod of uropod with acute apex (Fig. 2y)	
	..... <i>P. clavus</i> Barnard 1955	

SPECIES ACCOUNT

Paracilicæa hanseni Stebbing 1910 (Fig. 3)

Paracilicæa hanseni STEBBING 1910: 107, pl. 9C. BARNARD 1914: 398; 1955: 71-72. NIERSTRASZ 1931: 206. MONOD 1971a: 945, 947, 949, 951-955, figs 20-32. HARRISON & HOLDICH 1984: 384. KENSLEY 1984: 271. KUSSAKIN et al. 1990: 86. MÜLLER 1995: 368.

Material examined. Tanzania: 1♂, Zanzibar, 1928, leg. T.R.R. Stebbing, BMNH 1928.12.1.977 [topotype; the type material could not be found in the BMNH as already stated by MONOD (1971a)].

Distribution. Western Indian Ocean from scattered localities between Tanzania and India.

Habitat. Infratidal, subtidal.

Remarks. The species is readily identified by a pair of submedial pleonal protuberances and two medial pleotelsonic "obliquely truncated processes, which while the specimen is somewhat bent hide from view the short inner rami of the uropod" (STEBBING 1910: 107). The description of *P. hanseni* from Gulf of Kutch, India (MONOD 1971a), with its median cone-shaped lobe of the posterior pleotelsonic margin seems to indicate that MONOD, who had a single male specimen without cephalon, was in effect describing not a geographic variant of *P. hanseni* but a different species.

Paracilicæa falcata n. sp. (Figs 4-6)

Material examined. Holotype: ♂ (9.2 mm), MZUF 2324; allotype: ♀ ovigerous (6.6 mm), MZUF 2325; 13 May 1985, - 70 m. Paratypes: 1♀ (5.1 mm), 13 May 1985, - 70 m, MZUF 2326; 1♂ (non-measurable), Hadibo, March 1986, MZUF 2327. South Yemen; leg. W. Wranik.

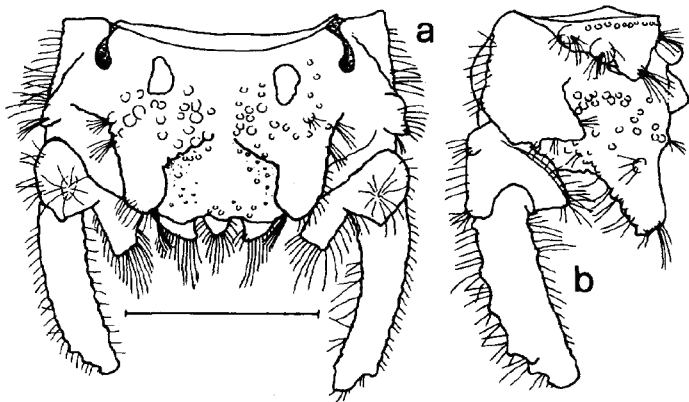


Fig. 3. — *Paracilicæa hanseni*. Adult male (BMNH 1928.12.1.977); a, pleotelson, dorsal view; b, pleotelson and pleon, dorsal and lateral view; scale line = 2 mm.

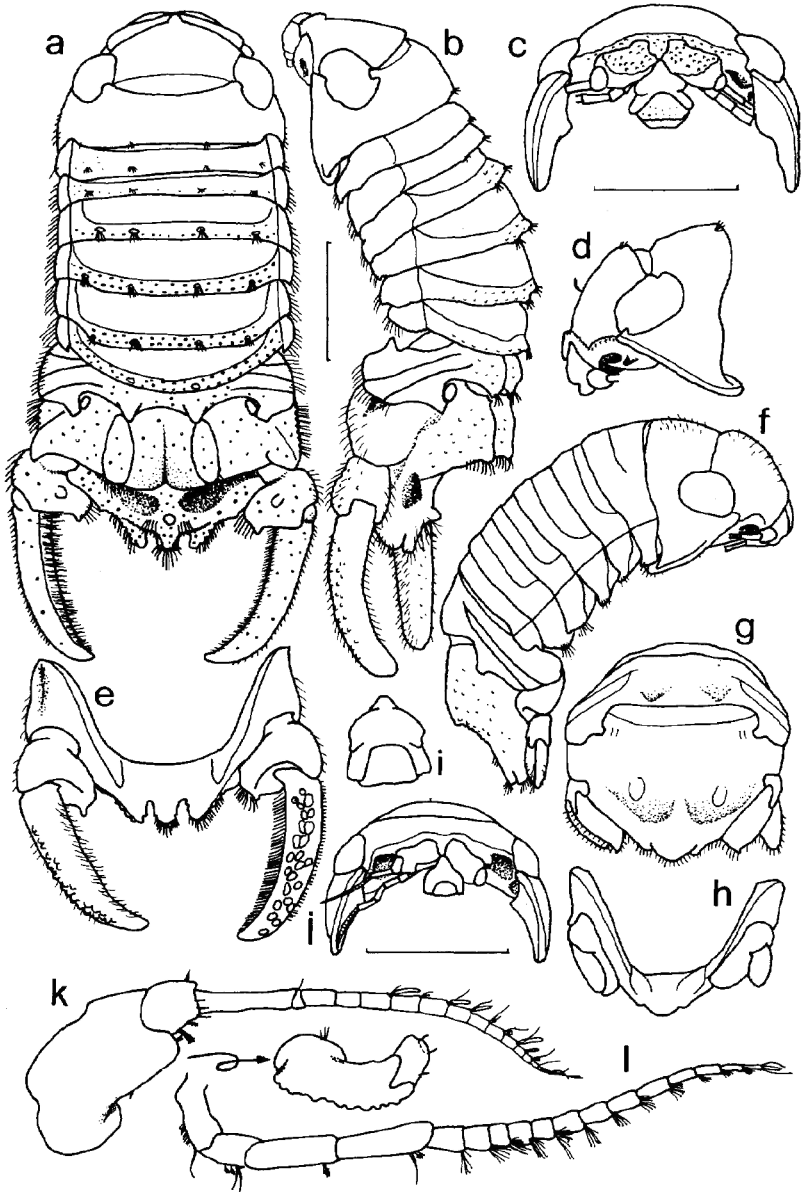


Fig. 4. — *Paracilicæa falcata* n. sp. Adult male (MZUF 2324); *a*, body, dorsal view; *b*, body, lateral view; *c-d*, cephalon, ventral and lateral view; *e*, pleotelson, ventral view. Ovigerous female (MZUF 2325); *f*, body, lateral view; *g-h*, pleon and pleotelson, dorsal and ventral view; *i*, epistome and labrum; *j*, cephalon, ventral view; scale lines = 2 mm. Appendages (MZUF 2327); *k*, antenna I; *l*, antenna II.

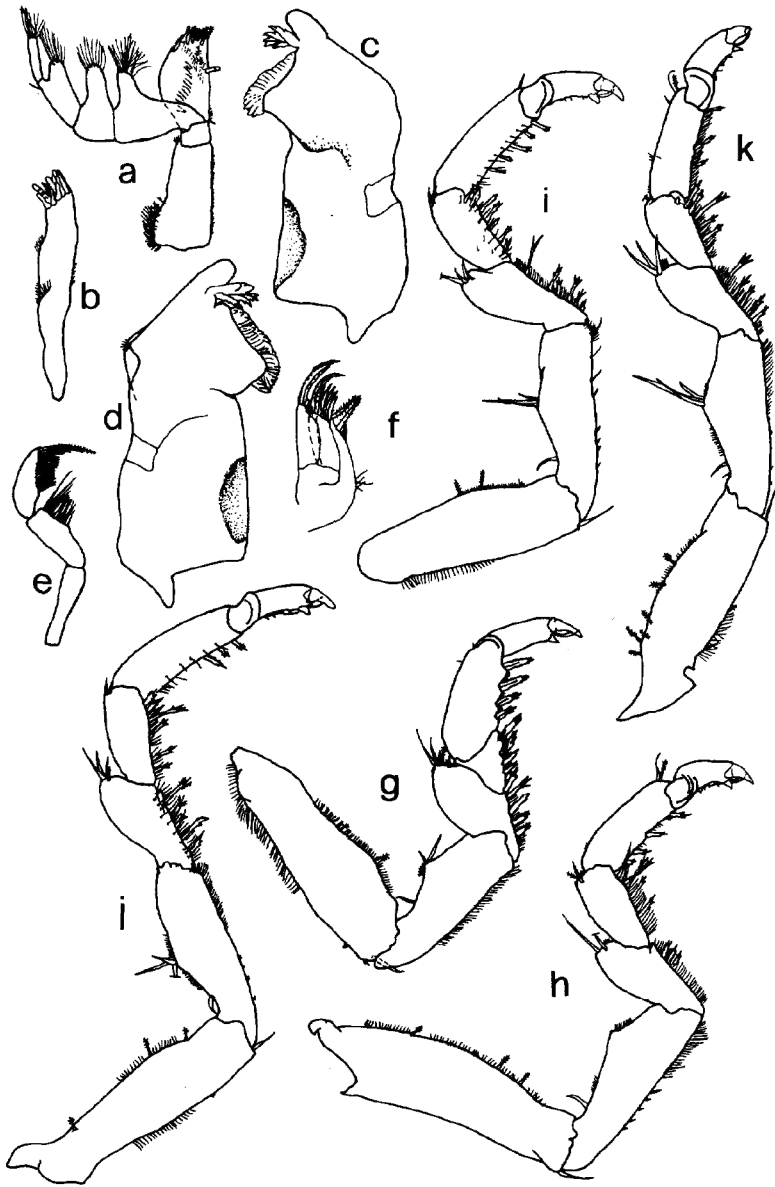


Fig. 5. — *Paracilicæa falcata* n. sp. Appendages (MZUF 2327); a, maxilliped; b, exopod of maxilla I; c, right mandible; d, left mandible; e, mandibular palp; f, maxilla II; g-k, pereopods I-V respectively.

Male. Pereonites and abdomen bearing small granules scattered on dorsal surface of posterior part. Cephalon anterior margin strongly carinate, anterior part with two submedial small depressions. Pereonite I with lateral margin thickened. Pereonites II-VII with the thick posterior part bearing a transverse row of 4 rounded setose tubercles progressively bigger from pereonites II to VII; coxal plates with lateral margin pubescent and posterior apex acute in pereonites II-V. Pleon with two submedial projecting bosses apically bearing a tuft of setae, lateral margin pubescent. Pleotelson dorsally with ellipsoid submedial bosses with a fringe of setae on posterior margin; lateral margin of anterior half serrate in dorsal view; posterior half depressed, pubescent, with two paramedial eye-shaped depressions, between these is a conical median tubercle; posterior margin lateral teeth subtriangular, highly granulated and pubescent; median tooth subrectangular, pubescent, with central part protruding.

Antenna I: peduncle basal article anteriorly strongly granulated; flagellum with 15 articles. Antenna II, flagellum with 12 articles. Left mandible: spine row with 4 dentate spines, a robust tricuspidate lacinia mobilis and a robust monocuspidate incisor process. Right mandible spine row with 5 dentate spines. Palp: article

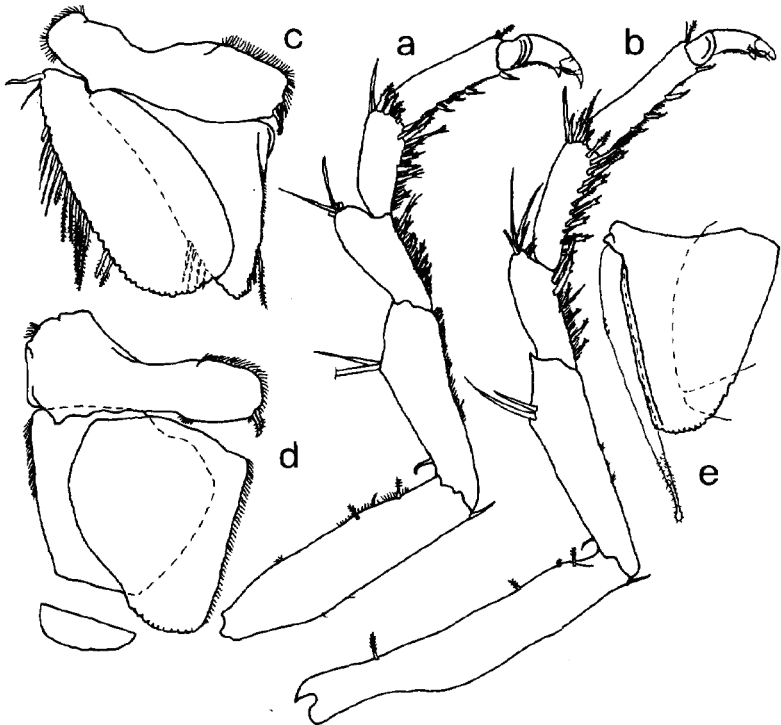


Fig. 6. — *Paracilicæa falcata* n. sp. Appendages (MZUF 2327); a-b, pereopods VI-VII; c-d, pleopods I-II; e, endopod of pleopod II.

II with 11 setae and article III with 20 plumose setae on sternal margin, the apical seta typically longer and stronger than others. Maxilla I: exite with 11 distal robust dentate spines. Maxilla II: endite with about 9 distal robust plumose spines and some setae on medial margin; exite with both lobes bearing distally 9 robust spines, dentate on their medial part. Maxilliped: endite distal margin with 9 plumose spines and strong medial spine, 2 plumose spines and a transverse row of slim setae on surface.

Pereopod I: basis with a long spine on distosternal corner, setae and plumose spines on tergal margin; ischium about $\frac{3}{4}$ the length of the basis with a proximal spine and a median group of 2 long robust spines on tergal margin, sternal margin pubescent; merus about $\frac{1}{3}$ the length of the ischium, sternal margin with 5 long distally serrate and proximally expanded spines, tergal margin with a group of 5 distal spines; carpus just shorter than merus with 4 distally serrate and proximally expanded spines on sternal margin; propodus more than double the length of carpus, sternal margin with 4 distally serrate and proximally expanded spines; dactylus about half as long as propodus. Pereopods II-III about equal in size, thinner than pereopod I, carpus as long as merus. Pereopods IV-VII longer than I-III and more spinose; pereopod VII medial spines of the carpus and the merus are arranged in two parallel rows.

Pleopod I: peduncle with 3 coupling spines; endopod subtriangular with 20 long plumose setae on distal margin, medial margin slightly thickened and pubescent; exopod ellipsoid with lateral and distomedial margins with 40 long plumose setae and proximolateral strong spine. Pleopod II: endopod subtriangular with 13 long plumose setae on distal margins, medial margin thickened; exopod ellipsoid with 25 long plumose setae on distal and lateral margins; appendix masculina extending beyond distal margin of endopod for $\frac{1}{3}$ of its length, tapering to a rounded apex. Pleopod III: peduncle with 2 coupling spines; endopod trapezoid with 10 plumose setae on distal margin; exopod trapezoid with a transverse suture on distal fifth.

Uropod: peduncle with proximal tubercle hemispheric; endopod greatly reduced with a small posterior protuberance; exopod pointed, medially curved, pubescent and with ventral surface conspicuously granulated.

Female. Body less granulated and pubescent than that of the male. Cephalon slightly pubescent and anterior margin weakly carinate; in frontal view two small lateral depressions are visible near the antennal joining. Pleon with submedial bosses finely granulated. Pleotelson posterior margin pubescent, and posterior median tooth with rounded apex. Uropod; endopod with truncate apex; exopod subovate.

Derivatio nominis. The epithet refers to the falcate uropods.

Habitat. Subtidal (- 70 m).

Remarks. The poor state of the single male specimen (the holotype) has not permitted the description of all appendages. Nevertheless the observed characters are sufficient to define the new species of *Paracilicæa*.

The species most similar to *P. falcata* is *P. nodosa*. The general ornamentation of the body of the two species is very similar. However they are easily distinguished by *P. nodosa* lacking the two elliptical protuberances on the anterior side of pleotelson while they are present in *P. falcata*, which moreover has an anterior margin of the cephalon strongly carinate and a frontally granulated basal segment of the antenna I. In addition, the uropodal endopod of *P. nodosa* does not bear the posterior tubercle as does *P. falcata*.

***Paracilicæa keijii* Javed 1990 (Figs 7-8)**

Paracilicæa keijii JAVED 1990a: 21-28, figs 1-3; 1990b: 21-24.

Material examined. Pakistan: 1♂ holotype, 17 January 1988, BMNH 1989:106:1; 1♂ paratype, 27 August 1984, BMNH 1989:107:1; Bulleji, Karachi, 24°51'N-66°48'E, leg. W. Javed. Somalia: 2♂♂ (9.8 and 8.7 mm), Gesira, 1980, leg. G. Chelazzi, ZMUF 2176; 1♂ (8.4 mm) 1♀ ovigerous (non-measurable), Sar Uanle, in *Pocillopora* coral, November-December 1976, leg. M. Vannini, ZMUF 2177; 1♂ (8.4 mm), Gesira, October 1981, in corals, leg. M. Vannini, ZMUF 2178.

Distribution. Northwestern Indian Ocean (Pakistan and Somalia).

Habitat. Intertidal.

Remarks. The specimens from Somalia can be easily ascribed to the species *P. keijii*, from Pakistan, although the two populations present a few differences. The specimens from Somalia are characterised by a strong rectangular median tooth flanked by wide deep notches, while the Pakistani population has a subterminal knob on the posteromedian lobe of the male and the median tooth of the pleotelsonic posterior margin is apically rounded both in the male and female. Moreover the Somali specimens have a stockier appearance than the Pakistani ones.

***Paracilicæa mirabilis* n. sp. (Figs 9-10)**

Material examined. Holotype, 1♂ (3.2 mm) MZUF 2328. Paratype, 1♂ (in very poor condition) MZUF 2329. Yemen, Aden, 13 April 1985; leg. W. Wranik.

Male. Body slightly granulated and pubescent especially on posterior surface. Cephalon anterior margin with two characteristic carinae with margins rippled. Epistome triangular with the central part greatly protruding, lateral rami depressed; labrum flat, anterior part with two paramedial points finely granulated. Pereonites II-VII with posterior part thickened and granulated; pereonite VII with two paramedial rounded tubercles on posterior margin and coxal plate shorter than those of preceding segments. Pleon with median part protruding posteriorly and bearing two submedial bosses overhanging the pleotelson, on each side on a longitudinal line, three setose spikes. Pleotelson bearing two distinctive cup-shaped structures with undulate margins. These cups are anteriorly connected by a semi-circular stripe, bearing on a weak bifid protuberance on each side, thus delimiting a median depression. The anterior part of this depression bears two posteriorly projected cylindrical tubercles, with truncate apex. The pleotelson is laterally depressed, with two elliptical, adjacent setose tubercles on each side. Posterior margin with a subrectangular median tooth, apically bearing a fringe of long setae.

Antenna I: peduncle basal article granulated; flagellum with 11 articles. Antenna II flagellum with 19 articles. Left mandible: robust incisor process tricuspidate, lacinia mobilis bicuspidate, spine row of 2 denticulate spines. Right mandible: incisor process tricuspidate, spine row of 5 dentate spines. Palp: article II with 7 plumose setae on distal half and article III with 13 sternal plumose setae. Maxilla I: endite with 4 distal plumose spines and a small lateral spine; exite with 9 distal robust dentate spines. Maxilla II: endite with 8 distal robust plumose spines; exite with both lobes bearing 7 stout distal spines. Maxilliped: endite with 8 distal plumose spines, two transverse rows of setae on surface and medial margin of the distal article, with a long plumose spine near the single coupling hook.

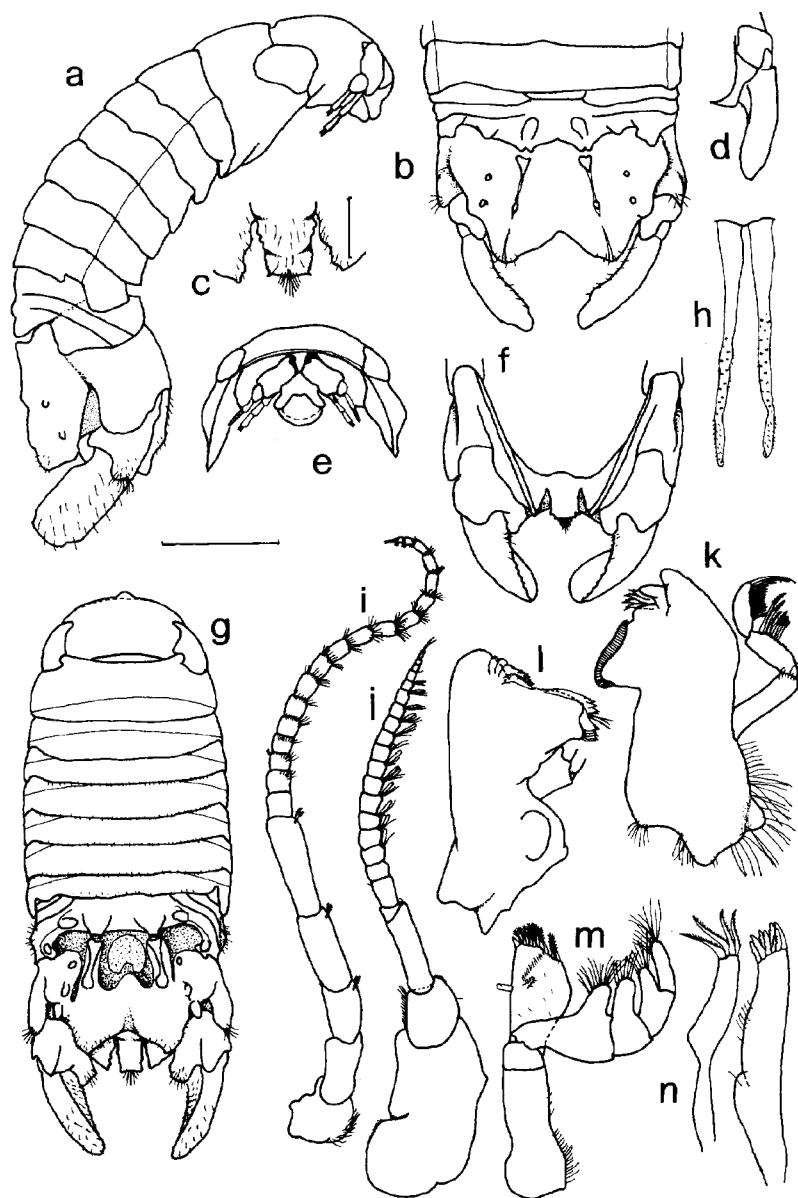


Fig. 7. — *Paracilicæa keijii*. Adult male (ZMUF 2178); a, body, lateral view; b, pleon and pleotelson, dorsal view; c, posterior margin of pleotelson; d, uropod; e, cephalon, ventral view; f, pleotelson, ventral view; g, body of a specimen (ZMUF 2177) placed under a slide, dorsal view; scale line = 2 mm. Appendages (ZMUF 2177); h, penes; i, antenna II; j, antenna I; k, right mandible; l, left mandible; m, maxilliped; n, maxilla I.

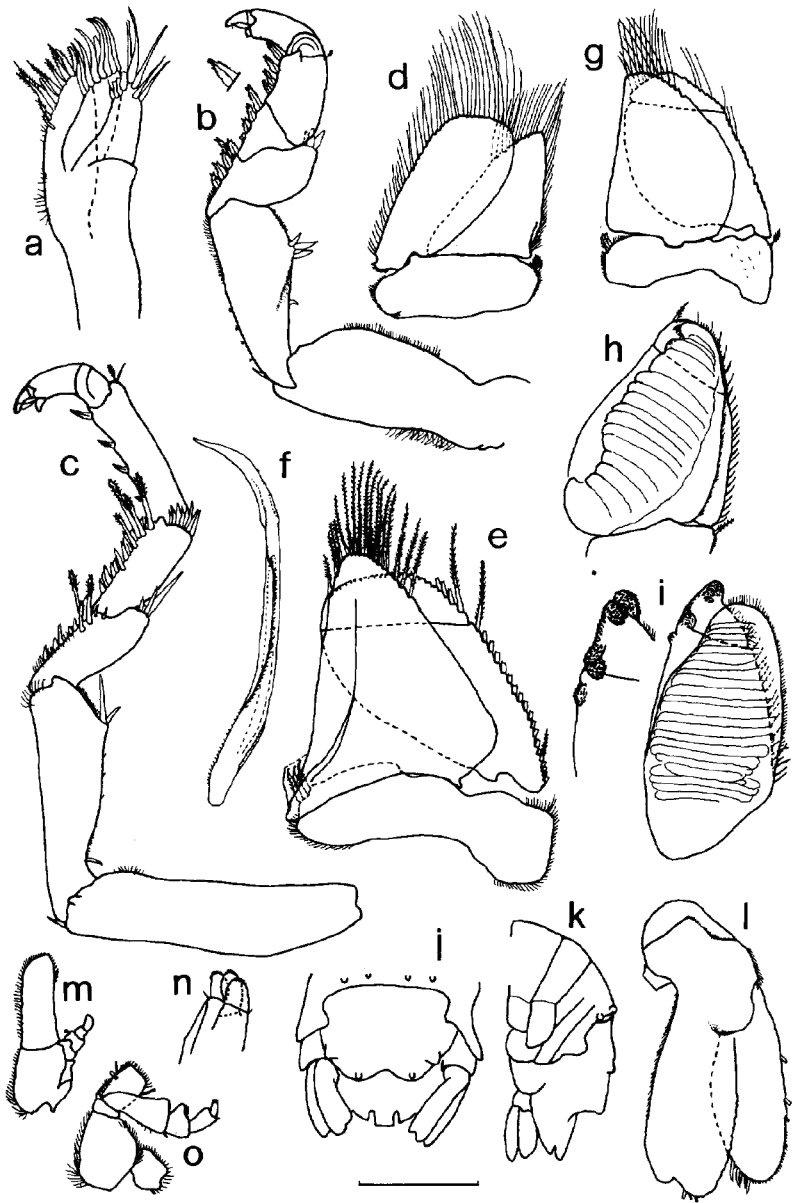


Fig. 8. — *Paracilicaca keijii*. Appendages (ZMUF 2177); a, maxilla II; b-c, pereopods I, VII; d, pleopod I; e, pleopod II without appendix masculina; f, appendix masculina; g-i, pleopods III-V respectively. Ovigerous female (ZMUF 2177); j-k, pleon and pleotelson, dorsal and lateral view; scale line = 2 mm; l, uropod; m-o, metamorphosed mouthparts.

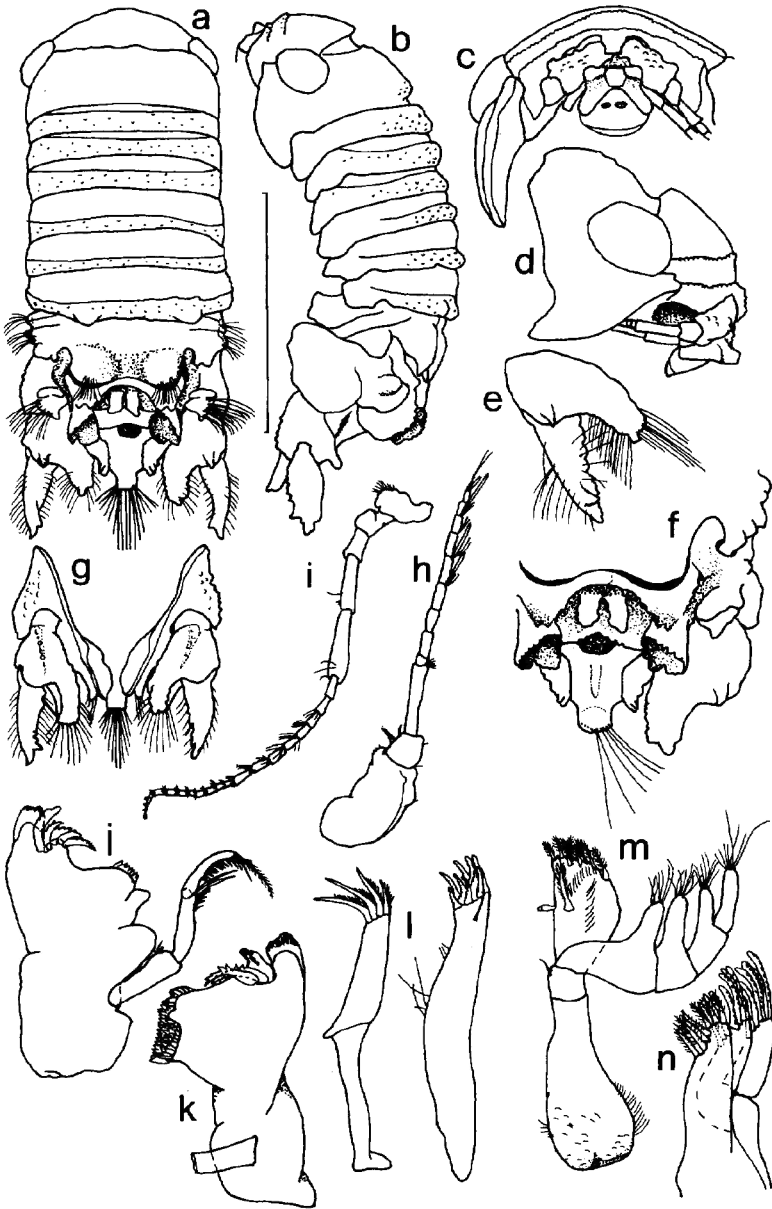


Fig. 9. — *Paracilicæa mirabilis* n. sp. Adult male (MZUF 2328); a, body, dorsal view; b, body without setae, lateral view; c-d, cephalon, ventral and lateral view; e, uropod; f-g, pleotelson, dorsal and ventral view; scale line = 2 mm. Appendages (MZUF 2329); h-i, antenna I-II; j, right mandible; k, left mandible; l, maxilla I; m, maxilliped; n, maxilla II.

Pereopod I: basis with a long spine on distosternal corner, and a paramedial, plumose seta on tergal margin; ischium about as long as basis, tergal margin with

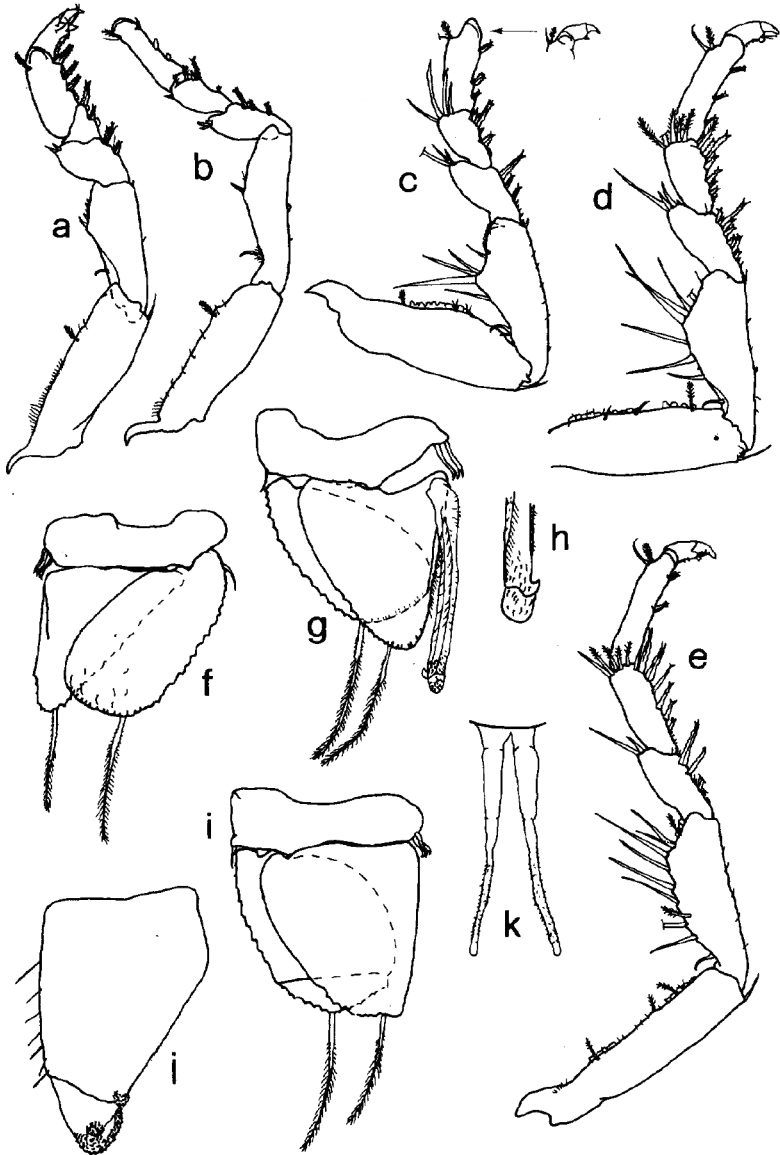


Fig. 10. — *Paracilicaca mirabilis* n. sp. Appendages (MZUF 2329); *a-e*, pereopods I, II, V-VII respectively; *f-g*, pleopods I-II; *h*, apex of appendix masculina; *i*, pleopod III; *j*, exopod of pleopod V; *k*, penes.

a proximal squat spine and some distal short spines; merus length about half that of the ischium, sternal margin with 3 distally serrate and proximally expanded spines, tergal margin with 2 distal short spines; carpus about half the length of the merus with 2 distally serrate and proximally expanded spines on sternal margin; propodus 3 times as long as carpus, sternal margin crested with 3 distally serrate and proximally expanded spines, tergal margin with a distal plumose seta; dactylus about half the length of the propodus with a crested sternal margin, apically a long acute unguis and a short accessory unguis with seta. Pereopods II-IV similar in size, thinner than pereopod I; carpus as long as merus. Pereopod V with the spines on the tergal margins longer than those of the preceding appendages, tergal margin of basis crested. Pereopods VI and VII longer than preceding ones, VII longer than VI, and more spinose. Penes, proximal third broad, distally slightly setose and with round apex.

Pleopods I-III peduncle with 4-3-3 coupling spines respectively. Pleopod I: endopod subtriangular with about 20 long plumose setae on distolateral margin, medial margin with a feeble proximal fold; exopod ellipsoid with lateral and distal margins with about 29 long plumose setae and a robust proximolateral spine. Pleopod II: endopod subtriangular with about 20 long plumose setae on distolateral margin, medial margin pubescent with a proximal fold; exopod ellipsoid with lateral and distal margins with about 29 long plumose setae; appendix masculina extending beyond endopod for the distal sixth of its length, with two lines of setae on the surface and a hook-shaped protuberance on distolateral margin, rounded apex. Pleopod III: endopod subtrapezoid with 20 long plumose setae on distal margin; exopod ovate with transverse suture on distal fifth, lateral and distal margins with about 20 long plumose setae. Pleopod IV: exopod with transverse suture on distal fifth and with spines on lateral and distolateral margins; endopod lateral margin with slim dense setae. Pleopod V: exopod with transverse suture on distal fifth, lateral margin with spines, distal part of medial margin with 4 finely toothed bosses.

Uropod: endopod about half as long as the length of exopod, extending beyond pleotelsonic apex, pubescent, apex truncate and with a median subcylindrical tubercle; simpod with a dorsal pointed tubercle; exopod slightly twisted, pubescent, medial margin strongly granulated and bearing a conical distal tubercle extended almost as far as acute apex.

Derivatio nominis. The epithet alludes to the extraordinarily ornate pleotelson.

Habitat. Intertidal.

Remarks. *P. mirabilis* is easily distinguished from all other species of the genus by the presence of a double carina on the anterior margin of the cephalon, the epistome with a median anteriorly projecting tubercle, the ornate pleotelson and the hooked apex of appendix masculina. The presence of these very striking characters is sufficient, in our opinion, to characterise this species.

Paracilicæa mossambica Barnard 1914 (Figs 11-12)

Paracilicæa mossambicus BARNARD 1914: 397-398, tav. XXXIV; 1955: 70-72. ROMAN 1970: 168, 170-173, 182, 186, 192, 195, 197. KUSSAKIN et al. 1990: 86.

Paracilicæa mossambica; NIERSTRASZ 1931: 206. MONOD 1971a: 947, 949, 951; 1971b: 176, figs 51-65; 1975: 1010, figs 59-62. KENSLEY 1978: 109-110, fig. 46-B. HARRISON & HOLDICH 1984: 384. JAVED 1990a: 26-27.

Material examined. Somalia: 1♂ (8.7 mm), Gesira, in coral, 10 October 1979, ZMUF 2179; 1♂ (8.8 mm), Gesira, in *Acropora*, November-December 1976, ZMUF 2180; 2♂♂ (7.7 and 8.1), Gesira, on roots of *Thalassodendrum* on reef, 11 December 1976, ZMUF 2181; 1♂ (7.5 mm), Sar Uanle, November-December 1976, ZMUF 2182; 1♂ (6.4 mm), Sar Uanle, in coral, 9 May 1980, ZMUF 2183, leg. M. Vannini.

Distribution. Madagascar and eastern coasts of Africa.

Habitat. Intertidal.

Remarks. The Somali material corresponds perfectly to the description of *P. mossambica* given by BARNARD (1914, 1955). Differences can be noticed in a somewhat greater granulation of the abdomen, where two transverse ridges can be seen on the posterior side of the pleon, and on the two lateral tubercles on the pleotelson. Finally, as described by MONOD (1971a) for the specimens in Tuléar, the median tooth of the posterior margin of pleotelson bears a bifid dorsal tubercle. The species is easily distinguished by the three posterior teeth apically bifid and the apex of the uropodal exopod narrow and notched.

***Paracilicæa nodosa* n. sp.** (Figs 13-15)

Material examined. Holotype: 1♂ (8.4 mm), intertidal plateau, ZMUF 2174; allotype: 1♀ with oostegites (7.0 mm), under stones at the base of the cliff, ZMUF 2476. Paratypes: 3♂♂ (8.7; 9.0 and 8.7 mm), under stones at the base of the cliff, ZMUF 2172; 2♂♂ (9.0 and 7.2 mm) 1♀ (7.2 mm) 2♀♀ with oostegites (6.8 and 6.5 mm), intertidal plateau, ZMUF 2173; 1♂ (8.7 mm), phanerogame on plateau, ZMUF 2175. Somalia, Sar Uanle; November-December 1976; leg. M. Vannini.

Male. Body posteriorly slightly pubescent. Cephalon with anterior margin not carinate. Labrum medial part granulated and slightly raised in comparison to posterior part. Pereonites II-VII posteriorly tuberculate, with a transverse row of tubercles progressively bigger from pereonites II to VII. Pleon glabrous, finely granulated, with 3 lateral tubercles, one on each segment, and 4 tubercles along posterior margin. Pleotelson dorsally finely granulated, anteriorly with 8 tubercles in two transverse rows, submedial bosses with 3 small lateral tubercles; posterior margin lower than proximal part, median tooth with a subconical dorsally protruding tubercle.

Antenna I, flagellum with 19 articles. Antenna II, flagellum with 17 articles. Left mandible: lacinia mobilis pointed; spine row of 4 denticulate spines. Right mandible with spine row of 2 denticulate spines. Palp: sternal margin of article II with 12 plumose setae on distal half, article III with 16 plumose setae and 2 apical setae long, robust and bent. Maxilla I: exite with 6 distal robust spines and a setose boss on proximal part of the medial margin. Maxilla II: endite with 14 distal robust plumose spines and some setae on medial margin; exite with medial and lateral lobes with 7 robust distal spines. Maxilliped: endite distal margin with 11 plumose spines; medial margin of distal article with plumose spine near the single coupling hook and a transverse row of setae on the surface. Palp with article II bearing 2 spines on lateral margin.

Pereopod I robust; basis with a long spine on distosternal margin; ischium shorter than basis, with tergal margin bearing a short proximal spine and 7 median spines; merus about half as long as ischium, with a group of 4 spines on distotergal margin, 4 spines distally serrate and proximally expanded on the slightly pubescent

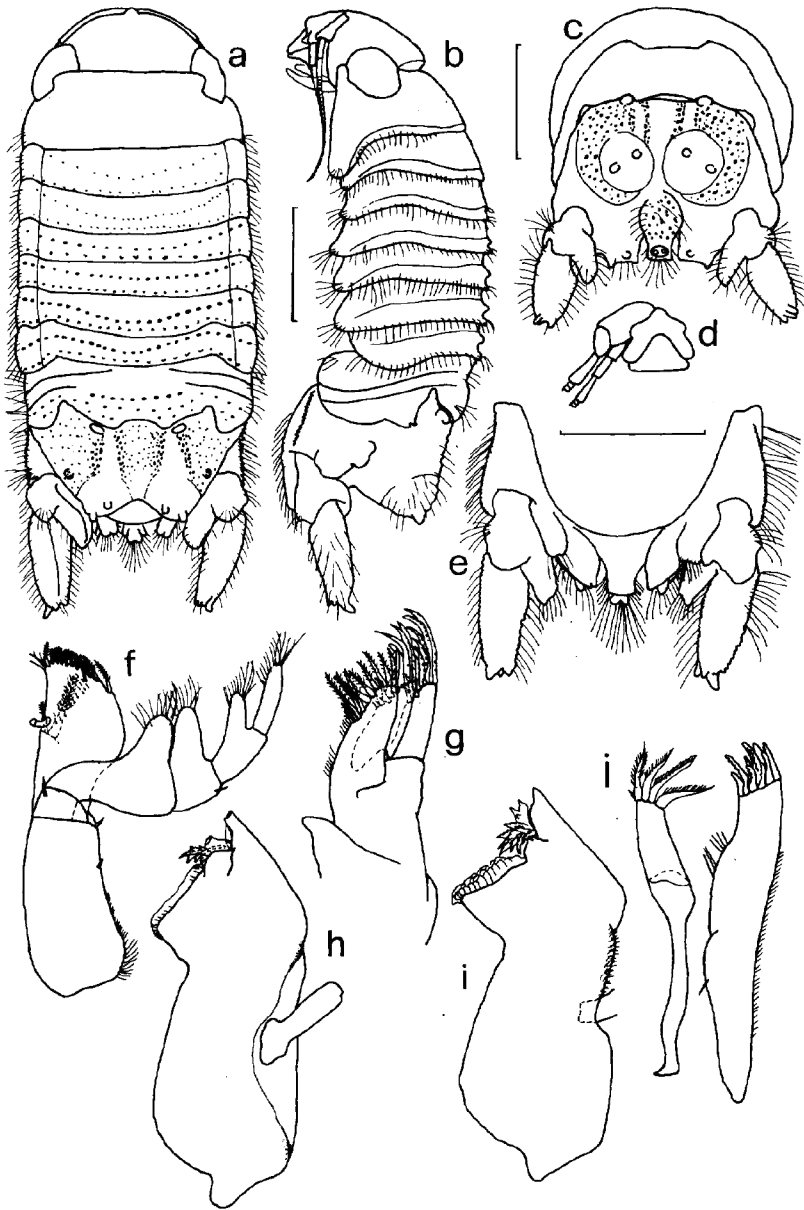


Fig. 11. — *Paracilicæa mossambica*. Adult male (ZMUF 2180); a, body, dorsal view; b, body, lateral view; c, body, posterior view; d, epistome and labrum; e, pleotelson, ventral view; scale lines = 2 mm. Appendages (ZMUF 2179); f, maxilliped; g, maxilla II; h, left mandible; i, right mandible; j, maxilla I.

sternal margin; carpus about half as long as merus with tergal pubescent margin bearing 3 distally serrate and proximally expanded spines; propodus about 3 times as long as carpus, sternal margin with 4 distally serrate spines proximally expanded and distal spine on tergal margin; dactylus slightly shorter than propodus, with robust unguis, a simple seta and a small accessory unguis. Pereopods II-V similar in size, thinner than pereopod I; carpus as long as merus and with a group of spines on distotergal margin. Pereopods VI and VII longer than II-V, more spinose. Penes apex tapering, with 4 longitudinal rows of small spines on distal part.

Pleopods I-III peduncle with 4-3-4 coupling spines respectively. Pleopod I: endopod subtriangular with about 20 long plumose setae on the distolateral margin, medial margin pubescent with proximal fold; exopod lateral and distomedial margins with about 40 long plumose setae and a proximolateral spine. Pleopod II: endopod subtriangular with about 20 long plumose setae on distolateral margin, medial margin pubescent with proximal fold; exopod with lateral and distomedial

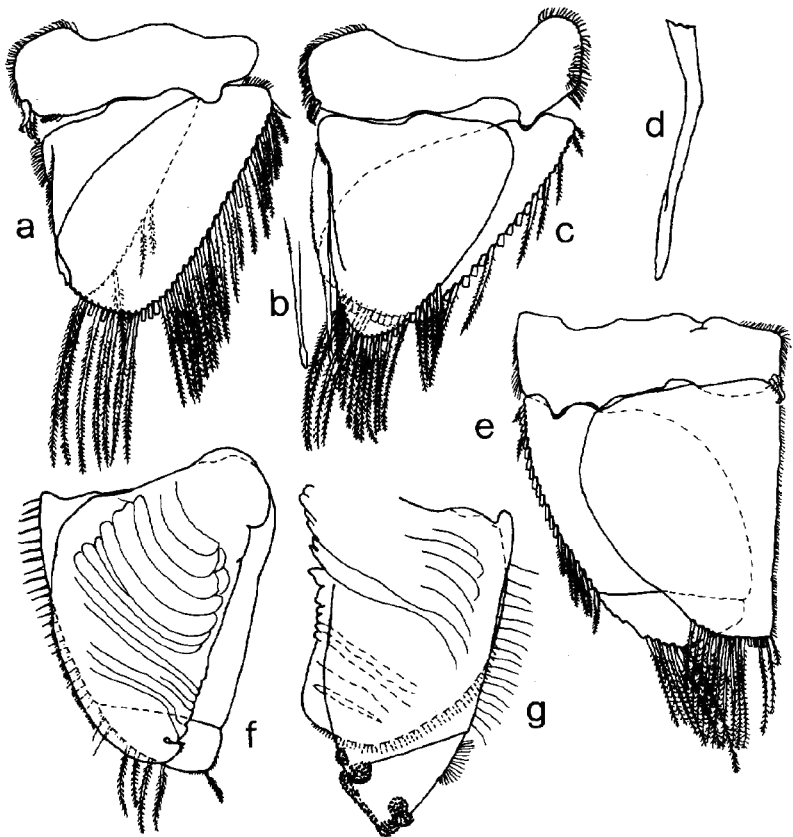


Fig. 12. — *Paracilicæa mossambica*. Appendages (ZMUF 2179); a, pleopod I; b, apex of appendix masculina; c, pleopod II; d, hemipene; e-g, pleopods III-V respectively.

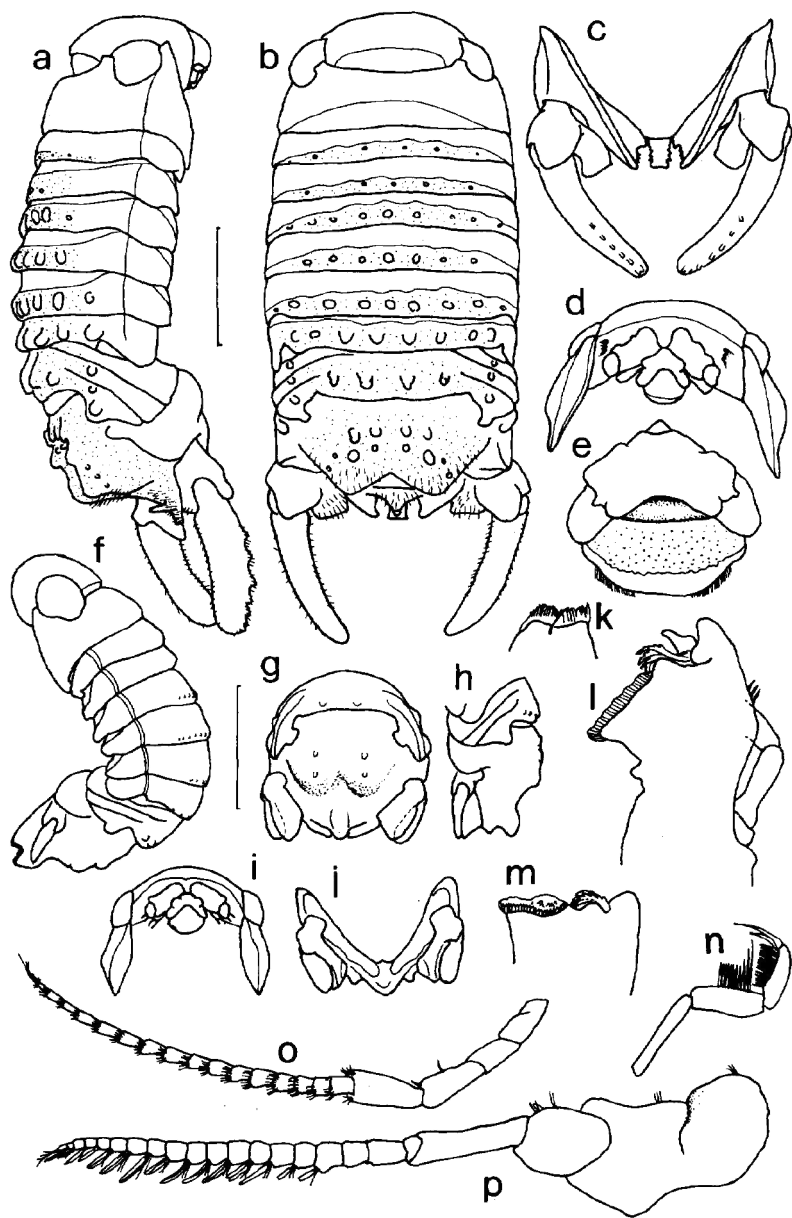


Fig. 13. — *Paracilicæa nodosa* n. sp. Adult male (ZMUF 2174); *a*, body, lateral view; *b*, body, dorsal view; *c*, pleotelson without setae, lateral view; *d*, cephalon, ventral view; *e*, epistome. Female (ZMUF 2476); *f*, body, lateral view; *g-h*, pleon and pleotelson, dorsal and lateral view; *i*, cephalon, ventral view; *j*, pleotelson, ventral view; scale line = 2 mm. Appendages (ZMUF 2172, 2173); *k-l*, left mandible; *m*, right mandible; *n*, mandibular palp; *o*, antenna II; *p*, antenna I.

margins with about 43 long plumose setae; appendix masculina about as long as endopod, narrowing abruptly from about mid-length, tapering to an acute apex. Pleopod III: endopod subtrapezoid, distal margin with 16 long plumose setae; exo-

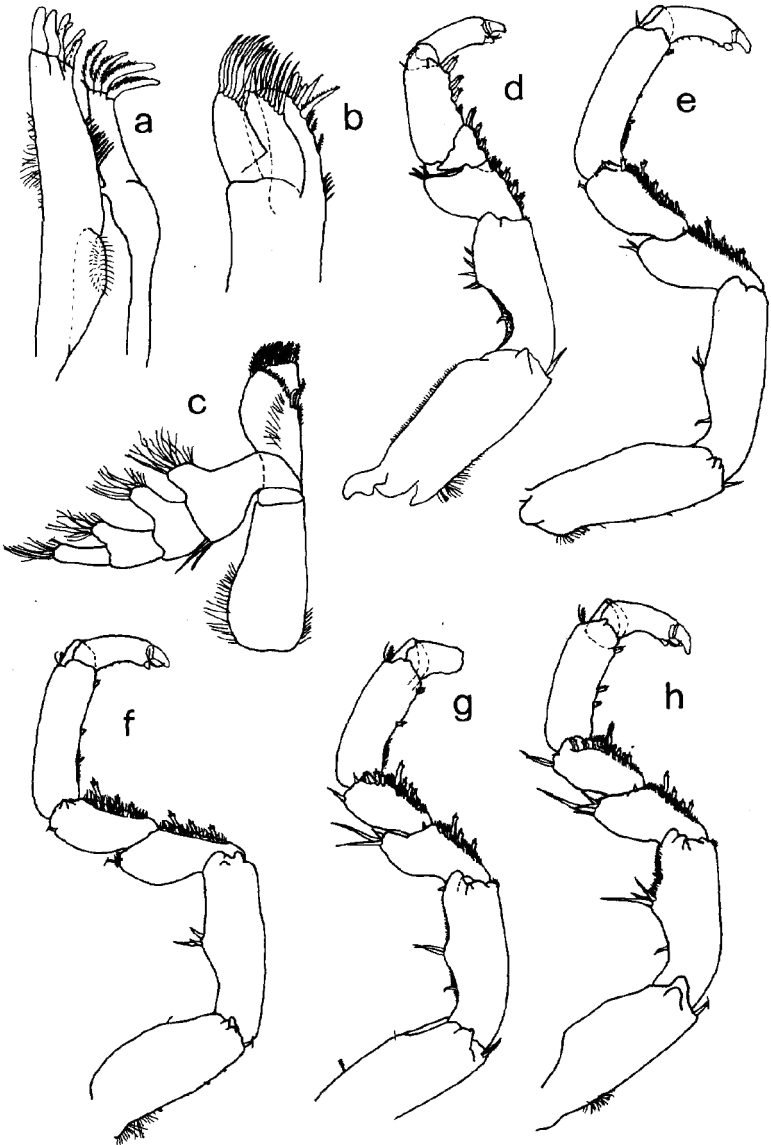


Fig. 14. — *Paracilicæa nodosa* n. sp. Appendages (ZMUF 2172, 2173); a, maxilla I; b, maxilla II; c, maxilliped; d-h, pereopods I-V respectively.

pod ovate with a transverse suture on distal quarter, lateral and distal margins with about 50 long plumose setae. Pleopod IV: exopod with transverse suture on distal fifth, with about 60 setae on lateral and distolateral margins. Pleopod V: exopod with transverse suture on distal sixth, lateral margin with 21 spines, distal region of medial margin with 6 finely scaled bosses.

Uropod: endopod pubescent, distally truncate; exopod weakly medially curved, ventral margin bearing 6 tubercles, the distal tubercle being bifid.

Female. Pereonites IV-VII glabrous and slightly granulated on posterior side. Pleon with two submedial swellings on either side. Pleotelson with two submedial

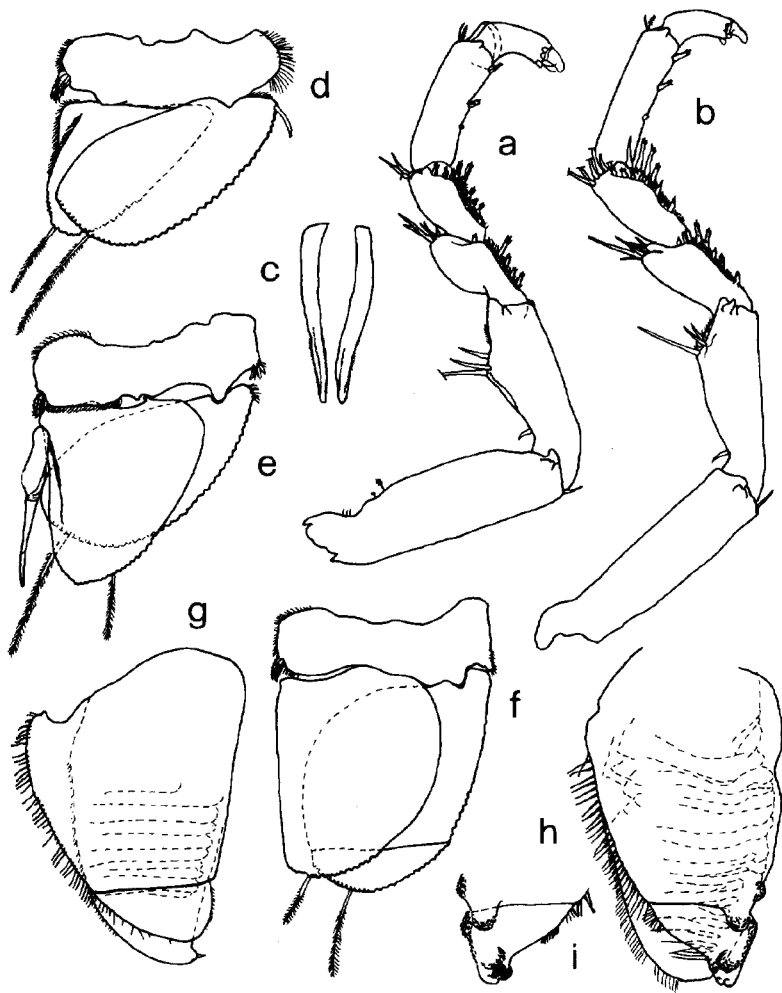


Fig. 15. — *Paracilicæa nodosa* n. sp. Appendages (ZMUF 2173); a-b, pereopods VI-VII; c, penes; d-h, pleopods I-V respectively; i, distal margin of pleopod V.

bosses smaller than those on male, each with 2 tubercles on lateral side; posterior margin median tooth with round raised apex. Uropodal endopod distally truncate, exopod subovate.

Derivatio nominis. The name refers to the knotty (lat. nodus = knot) aspect of the tergal side of males.

Habitat. Infratidal, subtidal.

Remarks. *P. nodosa*, although presenting a similar median tooth with a subconical, dorsally protruding tubercle, differs by the following characters from *P. eupyga* from the Red Sea. The exite of maxilla I has 6 spines instead of 10; the posterior margin of pereonal segments has a single line of tubercles. Two transverse lines of granules can be seen, not described by NOBILI (1906), on the anterior side of pleotelson. In the examined material the endopod of the uropods is more reduced and the exopod is thinner, bowed and with six tubercles on the ventral side. Moreover the comparison between females shows strong deep morphological differences in the pleotelson of the two species, in *P. eupyga* the posterior margin is truncate and the four tiny tubercles are lacking (Fig. 16).

***Paracilicæa peniculata* n. sp. (Figs 17-19)**

Material examined. Holotype: ♂ (11.3 mm), Somalia, Sar Uanle sup. zone 1, 2 October 1972, leg. G. Messana, ZMUF 2184.

Male. Body glabrous and finely granulated. Pereonites I-VII smooth; posterior margin of pereonite VII with two feeble submedial bosses. Pleon with two submedial bosses ellipsoid posteriorly elongate. Pleotelson with two large submedial bosses, both with a very high median row on the surface (in lateral view it appears as a crest) and five tubercles forming a semicircle around the posterior apex of the row. Posterior margin median tooth subrectangular flanked by basal low rounded tubercles, lateral teeth subtriangular. Penes tapering, with a longitudinal groove medially covered with strong small spines and with margin denticulate.

Antenna I: peduncle articles I-II with plumose setae on medial part; flagellum with 21 articles. Antenna II: peduncle article V with distally simple setae and

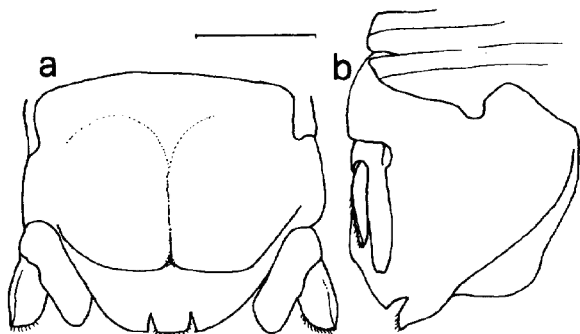


Fig. 16. — *Paracilicæa eupyga*. Female (MNHN Is 3473); a-b, pleotelson dorsal and lateral view; scale line = 1 mm.

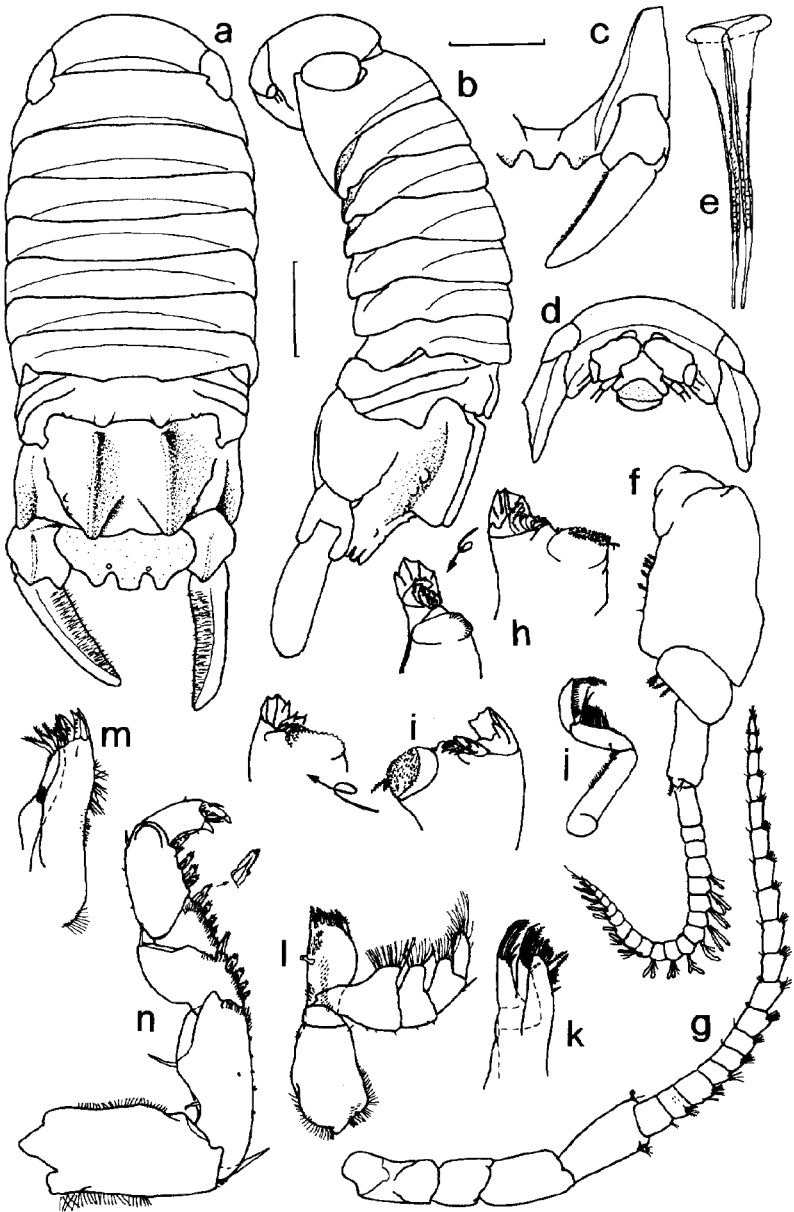


Fig. 17. — *Paracilicæa peniculata* n. sp. Adult male (holotype MZUF 2184); a-b, body, dorsal and lateral view; c, pleotelson, ventral view; d, cephalon, ventral view; scale lines = 2 mm. Appendages; e, peneis; f, antenna I; g, antenna II; h, right mandible; i, left mandible; j, mandibular palp; k, maxilla II; l, maxilliped; m, maxilla I; n, pereopod I.

plumose setae; flagellum with 18 articles. Left mandible: spine row of 5 dentate spines, lacinia mobilis tricuspidate, semicircular incisor process with four pointed

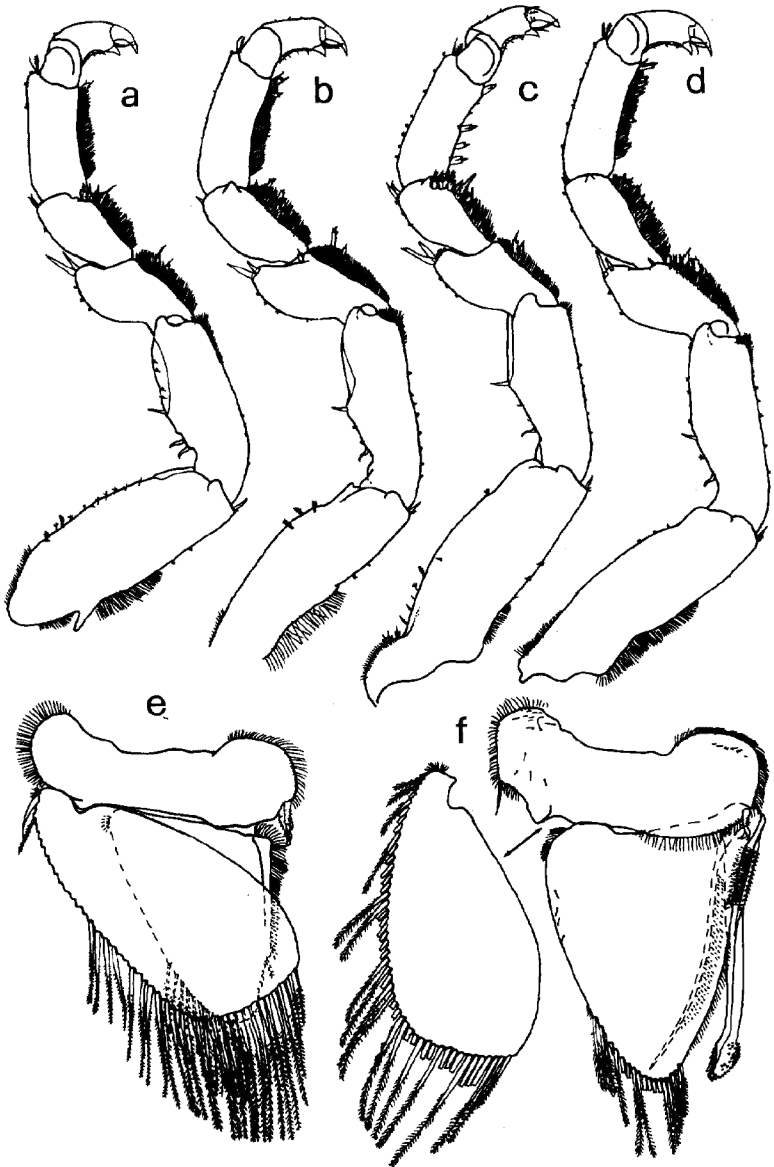


Fig. 18. — *Paracilicsea peniculata* n. sp. Appendages (holotype MZUF 2184); a-d, pereopods II-V respectively; e-f, pleopods I-II.

cusps. Palp: articles II-III with 13 and 18 plumose setae respectively on distal half of sternal margin. Right mandible: spine row of 7 dentate spines, incisor process

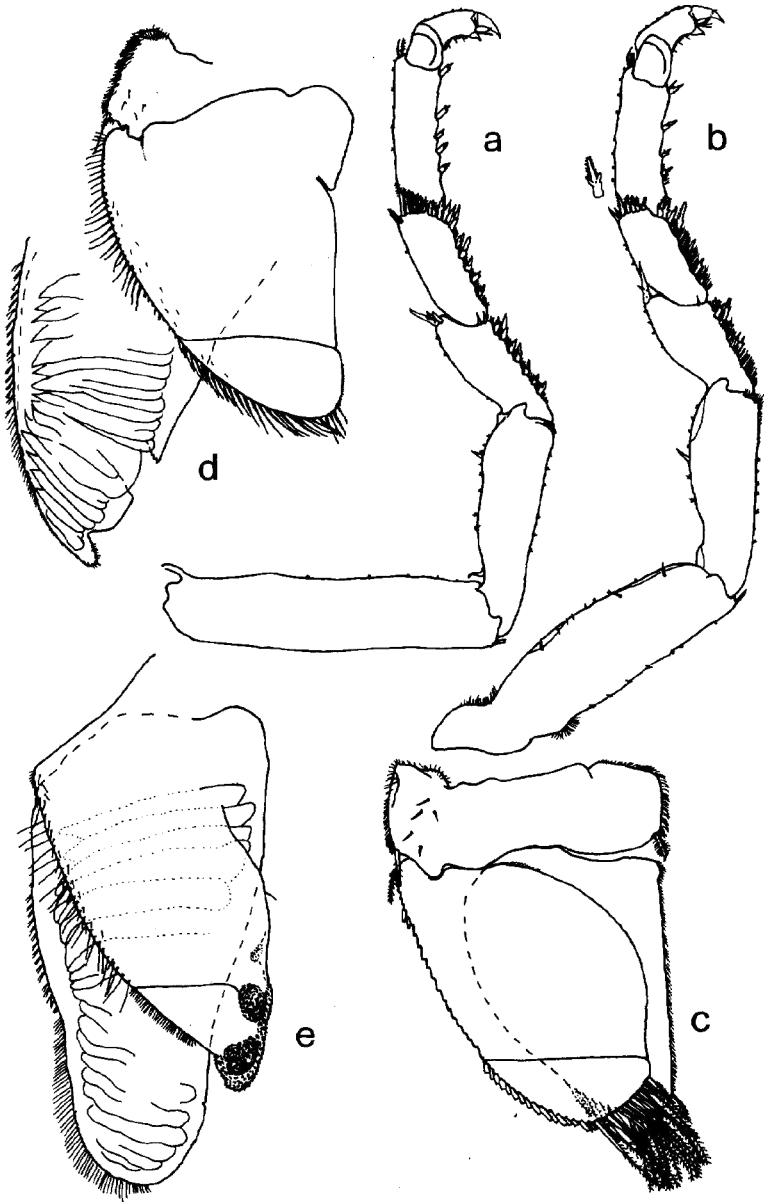


Fig. 19. — *Paracilicæa peniculata* n. sp. Appendages (holotype MZUF 2184); a-b, pereopods VI-VII; c-e, pleopods III-V respectively.

quadricuspidate. Maxilla I: endite with 4 plumose distal spines; exite with 6 distal robust slightly dentate spines. Maxilla II: endite with about 13 distal strong dentate spines; exite with both lobes bearing 8 distal spines. Maxilliped: endite with 10 distal robust plumose spines, distal article with 2 long plumose spines on surface and transverse row of setae; proximal part with stout setae and scale-spines.

Pereopod I robust; basal with a long robust spine on distosternal corner; ischium as long as basis, tergal margin with a squat proximal spine and a median long robust spine, sternal margin with small ψ -shaped setae; merus about 1/3 the length of the ischium, sternal margin with 6 distally serrate and proximally expanded spines, tergal margin with a distal long robust spine; carpus length about as merus, but without a lobe on tergal margin, with 4 distally serrate and proximally expanded spines on sternal margin; propodus more than the length of the carpus, sternal margin with spines as on carpus, tergal margin with small ψ -shaped setae; dactylus about half the length of the propodus with an apical robust, acute unguis, stocky accessory unguis with acute apex and setae, sternal margin crested. Pereopods II-V about equal in size, thinner than pereopod I; carpus as long as merus. Pereopods VI and VII longer than preceding ones, VII longer than VI, more setose.

Pleopods I-III peduncles with 4-2-3 coupling spines respectively. The plumose setae of pleopod margins are broadened at the base. Pleopod I: endopod subtriangular with about 28 long plumose setae on distal margin, medial part with proximal longitudinal fold and slim dense setae on margin; exopod ellipsoid, apically slightly truncate, with lateral and distal margins with about 47 long plumose setae and a proximolateral spine. Pleopod II: endopod subtriangular with 18 long plumose setae on distolateral margin, proximal fold bordered with a few slim setae on medial margin; exopod ellipsoid with about 49 distal long plumose setae; appendix masculina about as long as endopod, covered with short spines, distally enlarged. Pleopod III: endopod subtrapezoid with 19 long plumose setae on distal margin; exopod ovate with transverse suture on distal fourth, lateral and distal margins with about 52 long plumose setae. Pleopod IV: exopod with transverse suture on distal fifth, with about 64 strong setae on lateral and distal margins. Pleopod V: exopod with transverse suture on distal fourth, lateral margin with 27 spines, distal region of medial margin with 5 finely toothed bosses.

Uropod basis dorsally carinate; exopod excavated and setose on the inner side.

Derivatio nominis. The epithet refers to the "scrubbing brush" (lat. peniculus) appearance of the carpus and merus of pereopods II-V.

Habitat. Intertidal.

Remarks. The pleotelson morphology is similar to that of *P. hanseni*, *P. clavus* and *P. cordylina*. The morphology of the pereopods is similar to that of *P. watamuae*. The uropods are concave, medially pubescent, similar to those of *P. flexilis* and *P. stebbingi*.

The only male specimen examined is clearly distinguishable from all the known species of the genus *Paracilicæa*. *P. peniculata* has a deep incision and a well developed median tooth in the posterior margin of the pleotelson and does not have the small tubercles on pereonites VI-VII and on pleonites III-IV present in *P. cordylina*. The appendix masculina is as long as the endopod of pleopod II and distally enlarged, while in *P. cordylina* its distal third extends beyond the endopod and is apically tapered. *P. flexilis* does not have the highly developed median bosses with the longitudinal ridge present in the pleotelson of the new species. *P. watamuae* can be distinguished by the stocky exopod of the uropods, with round apex, endopod about 3/5 the length of the exopod, while in *P. peniculata* it is only a small boss on the medial side of the peduncle.

Paracilicæa uncinata n. sp. (Figs 20-22)

Material examined. Holotype: ♂ (4.7 mm), ZMUF 2188; allotype: ♀ with oostegites (4.1 mm), ZMUF 2189; 7 December 1976. Paratypes: 2 immature, 7 December 1976, ZMUF 2190; 1♂ (non-measurable), 29 November 1976, ZMUF 2191. Somalia, Sar Uanle, intertidal plateau; leg. G. Chelazzi and M. Vannini.

Male. Body smooth. Cephalon anteriorly with two submedial setose points, anterior margin carinate. Pereonites I-VI with posterior margins thick and bearing 8 setose points. Pereonite VII with posterior margin thick, two submedial weak bosses and with coxal plate shorter than those of pereonites I-VI, thus lacking more lateral setose point. Pleon glabrous with 8 setose points on posterior part, the more median ones on two submedial bosses overhanging the pleotelson. Pleotelson slightly granulated with two large submedial bosses posteriorly projecting, with an L-shaped crest, bearing a posterior fringe of setae. Posterior part lower than proximal part and with a median rhomboid, flat, thickened area projecting posteriorly. The subquadrate posterior median tooth is distally upbent and with a fringe of setae; two subrectangular bosses are present on either side of the median tooth, forming with their median part the setose lateral teeth apically rounded. Penes, distal part with scale-spines and rounded apex.

Antenna I: peduncle articles I-II strong, with scale-spines, simple and plumose setae; flagellum with 10 articles. Antenna II equal in length to antenna I; peduncle article I strong with scale-spines on lateral margin; flagellum with 12 articles. Left mandible: spine row of 5 dentate spines, lacinia mobilis tricuspidate, incisor process monocuspidate. Right mandible: spine row of 6 dentate spines, incisor process monocuspidate. Palp: articles II and III bearing on sternal margin 6 and 12 plumose setae respectively. Maxilla I: exite with 9 distal strong spines. Maxilla II: endite with 6 distal robust plumose spines, medial margin with 6 spines and setae; exite with both lobes bearing 8 robust slightly dentate spines. Maxilliped: endite with 8 distal plumose spines, distal article with a longitudinal row of setae and a long plumose seta on surface.

Pereopods with total surface bearing simple setae and y-shaped setae, sternal surface of merus and carpus with scale-spines. Pereopod I: basis with a long spine on distosternal corner; ischium about half as long as basis, strong, with a proximal squat spine and a median group of 4 long robust spines on tergal margin, sternal margin pubescent; merus about half as long as than ischium, sternal margin with 3 distally serrate and proximally expanded spines, tergal margin with a group of 2 distal spines; carpus half the length of the merus with 2 distally serrate and proximally expanded spines on sternal margin; propodus 3 times as long as carpus, tergal margin with 3 distally serrate and proximally expanded spines and a long distal spine; dactylus about half the length of the propodus with apically robust acute unguis, stocky accessory unguis with acute apex and 3 long setae. Pereopods II-V about equal in size, thinner than pereopod I, carpus as long as merus. Pereopods VI-VII longer than preceding ones, the VII longer than VI, and more spinose; sternal margins of carpus and merus with spines arranged in two parallel lines.

Pleopods I-III peduncles with 3-3-2 coupling spines respectively. Pleopod I: endopod subtriangular with 18 long plumose setae on distal margin, medial margin pubescent with a proximal fold; exopod ellipsoid with lateral and distomedial margins with about 30 long plumose setae. Pleopod II: endopod subtriangular with

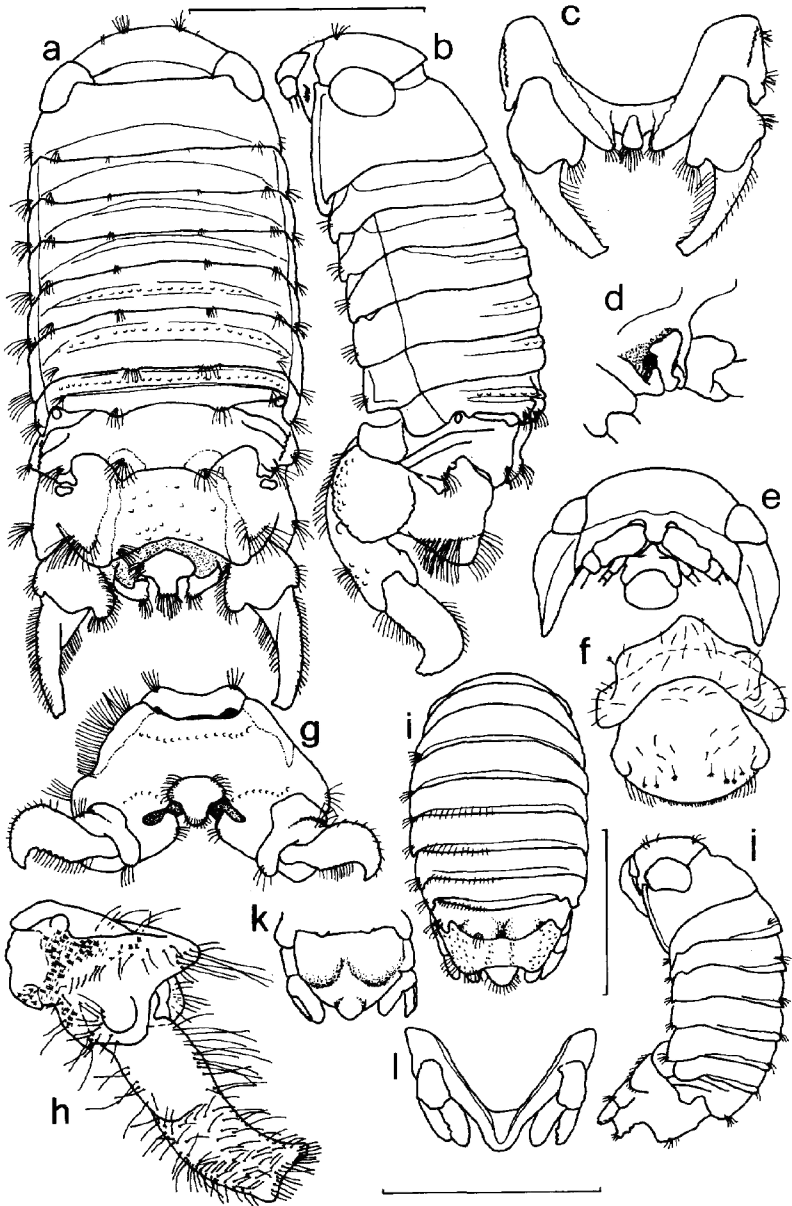


Fig. 20. — *Paracilicsea uncinata* n. sp. Adult male (holotype ZMUF 2188); a-b, body, dorsal and lateral view; c, pleotelson, ventral view; d, posterior margin of pleotelson, slanting view; e, cephalon, ventral view; f, epistome and labrum; g, pleon and pleotelson, posterior view; h, uropod. Female (allotype ZMUF 2189); i-j, body, dorsal and lateral view; k-l, pleotelson, dorsal and ventral view. Scale lines = 2 mm.

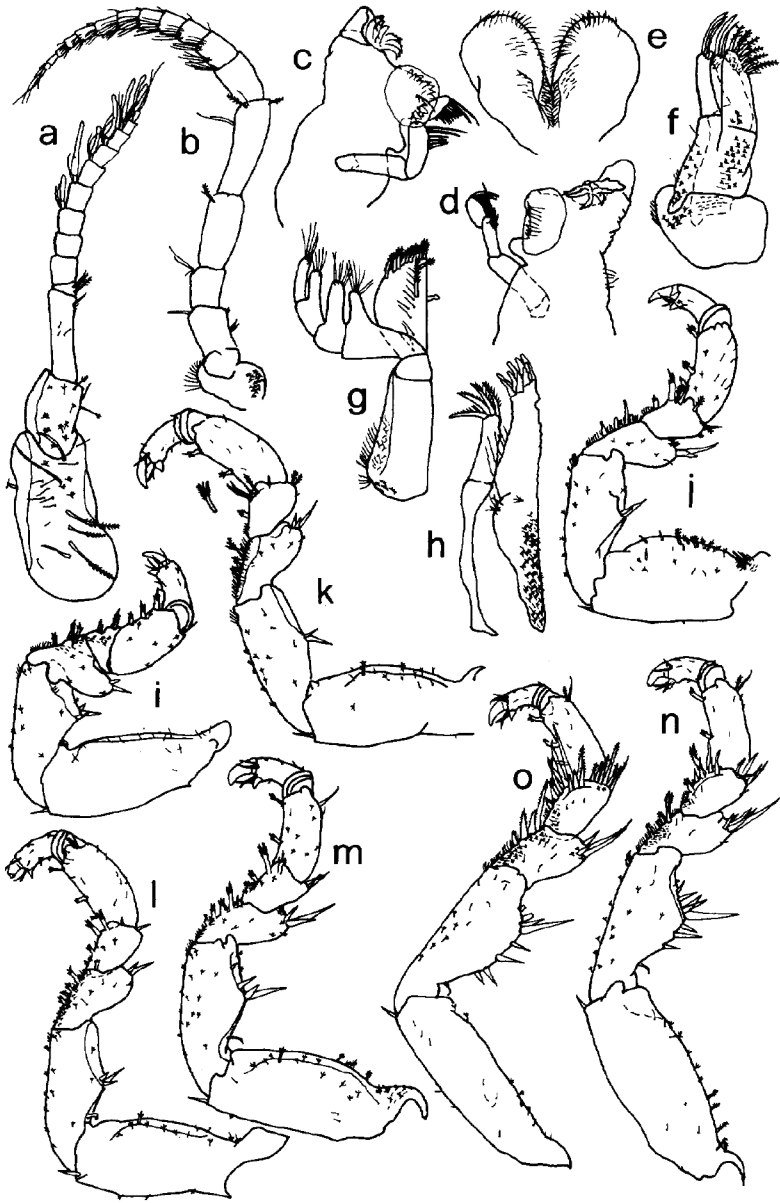


Fig. 21. — *Paracilicæa uncinata* n. sp. Appendages (ZMUF 2191); a, antenna I; b, antenna II; c, right mandible; d, left mandible; e, paragnath; f, maxilla II; g, maxilliped; h, maxilla I; i-o, pereopods I-VII respectively.

about 13 long plumose setae on distal margin, proximomedial margin with scale-spines and a proximal fold; exopod ellipsoid with about 30 marginal long plumose setae; appendix masculina extending beyond endopodite for the distal fourth of its length, with two proximal longitudinal lines of small spines, distal part pubescent and bearing scale-spines, tapering to a round apex. Pleopod III: endopod subtrapezoid with 12 long plumose setae on distal margin; exopod ovate with transverse suture on distal fourth, lateral and distal margins with about 30 long plumose setae. Pleopod IV: exopod with transverse suture on distal fourth, slim setae on distal margin, lateral margin with about 11 strong setae. Pleopod V: exopod with transverse suture on distal fourth, lateral margin with about 11 spines, distal part of medial margin with 5 finely toothed bosses.

Uropod: endopod setose and with round apex; exopod laterally compressed, medially slightly curved, setose and with ventrally bent truncate apex.

Female. Pereonites with slim setae and setose points on posterior margin similar to the adult male. Pleon with two submedial dorsal low bosses. Pleotelson anterior part with two submedial bosses; distal part depressed; posterior margin with median large projection setose. Uropods not extending beyond pleotelsonic apex; exopod apically truncate with serrate lateral margin.

Derivatio nominis. The name of the species alludes to the hook-shaped appearance of the uropods.

Habitat. Intertidal.

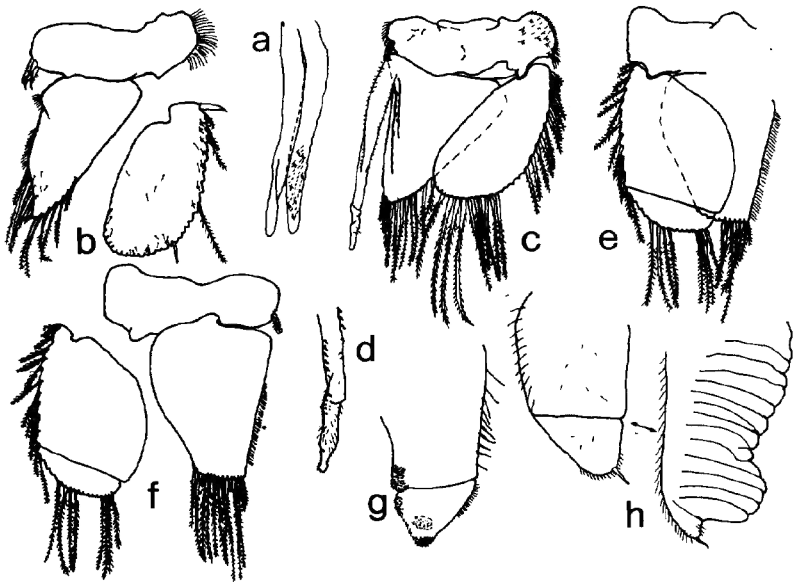


Fig. 22. — *Paracilicæa uncinata* n. sp. Appendages (ZMUF 2191); a, penes; b-c, pleopods I-II; d, apex of appendix masculina; e-f, pleopod III; g-h, pleopods IV-V.

Remarks. The material described here is similar to *P. asiatica* from Southeast Asia. The two species can be easily distinguished by the presence, in both sexes of the new species, of a coxal plate of pereonite VII shorter than that of pereonite VI. Also, the penes of *P. asiatica* are apically truncate and not rounded as in *P. uncinata* while the distal part of the appendix masculina is enlarged and not tapered. Females of *P. asiatica* have a rounded posterior pleotelsonic margin, with a less enlarged median tooth. The two species can also be distinguished by the shape of the median pleotelsonic tooth of the male, which is subtriangular in *P. asiatica* and subquadrate in *P. uncinata*.

WORLD LIST OF THE SPECIES OF THE GENUS *PARACILICÆA*

The specific name and synonymies, with bibliographic references, are listed for each of the 20 species currently included in the genus. The geographic distribution and the habitat are shown.

P. asiatica Kussakin, Malyutina & Rostomov 1990

Paracilicæa asiatica KUSSAKIN et al. 1990: 81-87, figs 1-3; MÜLLER 1995: 368.

Distribution. South China Sea, Eastern Indian Ocean.

Habitat. Intertidal.

P. aspera Harrison & Holdich 1984

Paracilicæa aspera HARRISON & HOLDICH 1984: 327-329, 384, figs 19-20; KUSSAKIN et al. 1990: 86.

Distribution. Queensland.

Habitat. Infratidal, subtidal.

P. clavus Barnard 1955

Paracilicæa clavus BARNARD 1955: 72, fig. 34C; MONOD 1971a: 951; ROMAN 1979: 278; HARRISON & HOLDICH 1984: 384; KENSLEY 1984: 271; KUSSAKIN et al. 1990: 86.

Distribution. Mozambique, Madagascar.

Habitat. Intertidal.

P. cordylina Kensley 1984

Paracilicæa cordylina KENSLEY 1984: 268-272, figs 29-30; KUSSAKIN et al. 1990: 86.

Distribution. South Africa.

Habitat. Deep-shelf (280-454 m).

P. eupyga (Nobili 1906)

Cymodoce eupyga NOBILI 1906: 1-3, tav. 7, figs 1-18.

Paracilicæa eupyga, HARRISON & HOLDICH 1984: 384; KUSSAKIN et al. 1990: 86; MÜLLER 1995: 374.

Distribution. Red Sea.

Habitat. Infratidal, subtidal.

Notes. The holotype of *P. eupyga* could not be found in, either the Museo Zoologico or the Stazione Zoologica di Napoli because of the destruction of part of the collections during the II World War. The examination of other type material from the MNHN (Is 3473) revealed that the specimens are apparently three females and not two females and one male (one specimen was dissected, in very bad conditions and no slides could be found of the male pleopod II).

P. falcata n. sp.
(see)

P. flexilis Baker 1928

Paracilicoea flexilis BAKER 1928: 55-56, pl. IV, figs 1-4.

Paracilicaea flexilis, NIERSTRASZ 1931: 206; MONOD 1971a: 951; ROMAN 1979: 278; HARRISON & HOLDICH 1984: 384; KENSLEY 1984: 271; KUSSAKIN et al. 1990: 86.

Distribution. Western Australia.

Habitat. Infratidal, subtidal.

P. gigas Baker 1928

Paracilicoea gigas BAKER 1928: 54-55, figs 1-4.

Paracilicaea gigas, NIERSTRASZ 1931: 206; MONOD 1971a: 951; ROMAN 1979: 278; HARRISON & HOLDICH 1984: 384; KUSSAKIN et al. 1990: 86.

Distribution. Australia.

Habitat. Infratidal, subtidal.

P. hanseni Stebbing 1910

(see)

P. keijii Javed 1990

(see)

P. mirabilis n. sp.

(see)

P. mossambica Barnard 1914

(see)

P. peniculata n. sp.

(see)

P. pubescens (Milne Edwards 1840)

Sphaeroma pubescens MILNE EDWARDS 1840: 209.

Cymodocea pubescens, HASWELL 1881: pl. 17, fig. 1.

Cilicæa latreille (F.), MIERS 1884: 308-309.

Paracilicaea (?) *pubescens*, BAKER 1926.

Paracilicaea pubescens, HALE 1929; MONOD 1971a: 951, 953; HARRISON & HOLDICH 1984: 325-327, 384, fig. 8; KUSSAKIN et al. 1990: 86.

Distribution. Australia.

Habitat. Infratidal, subtidal.

P. setosa Müller 1995

Paracilicaea setosa MÜLLER 1995: 361-368, figs 53-82.

Distribution. Kenya.

Habitat. Intertidal.

P. stebbingi Baker 1926

Paracilicaea stebbingi BAKER 1926: 263-264, 278; NIERSTRASZ 1931: 206; HALE 1933: 559; MONOD 1971a: 951; HARRISON & HOLDICH 1984: 330-332, 384, fig. 21; JAVED 1990a: 26-27; KUSSAKIN et al. 1990: 86.

Distribution. Queensland.

Habitat. Infratidal, subtidal.

P. teretron Barnard 1955

Paracilicæa teretron BARNARD 1955: 70-71, fig. 34(a-b). ROMAN 1970: 168, 197; 1979: 152, 278. MONOD 1971a: 951, 953. KENSLEY 1984: 271. HARRISON & HOLDICH 1984: 384. KUSSAKIN et al. 1990: 86.

Distribution. Mozambique, Madagascar.

Habitat. Intertidal.

P. uncinata n. sp.

(see)

P. watamuae Müller 1995

Paracilicæa watamuae MÜLLER 1995: 368-374, figs 83-107.

Distribution. Kenya.

Habitat. Subtidal (0.5 m).

P. nodosa n. sp.

(see)

Incertae sedis

? *Paracilicæa dakini* (Tattersall 1922)

Cilicæopsis dakini TATTERSALL 1922: 13-14, pl. 2 figs 25-29, pl. 3 fig. 34.

Paracilicæa dakini, KUSSAKIN et al. 1990: 87, 90.

? *Paracilicæa dakini*, HARRISON & HOLDICH 1984: 325, 384.

Distribution. Southeastern Australia.

Habitat. Infratidal, subtidal.

? *Paracilicæa fimbriata* Kussakin, Malyutina & Rostomov 1990

Paracilicæa fimbriata KUSSAKIN et al. 1990: 87-90, figs 4-5.

Distribution. Java Sea.

Habitat. Infratidal, subtidal.

? *Paracilicæa hamata* (Baker 1908)

Cymodoce hamata BAKER 1908: 141-142, pl. IV figs 1-11.

Paracilicæa hamata, NIERSTRASZ 1931: 206; BARNARD 1955: 71; MONOD 1971a: 951; KENSLEY 1984: 271; KUSSAKIN et al. 1990: 86.

? *Paracilicæa hamata*, HARRISON & HOLDICH 1984: 325, 384.

Distribution. South Australia.

Habitat. Infratidal, subtidal.

? *Paracilicæa septemdentata* (Baker 1910)

Cymodoce septemdentata BAKER 1910: 80 (figs).

Paracilicæa septemdentata, MONOD 1971a: 951; KENSLEY 1984: 271; KUSSAKIN et al. 1990: 87, 90.

? *Paracilicæa septemdentata*, HARRISON & HOLDICH 1984: 325, 384.

Distribution. Southern Australia.

Habitat. Infratidal, subtidal.

ACKNOWLEDGEMENTS

We would like to thank Dr W. Wranik, Rostock, for sending us the material he collected during his research in Yemen, Dr D. Defaye of the MNHN, Ms M. Lowe of the BMNH, Dr Paglialonga of the "Stazione Zoologica" and Dr N. Maio of the "Museo Zoologico dell'Univer-

sità" of Naples for the help they gave us in the search for the specimens. Our warmest thanks to Neil Bruce, St Lucia Old and Roberto Argano, Rome, who critically and constructively reviewed the manuscript, thus making a fundamental contribution to its publication.

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