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Sphaeromatidae (Crustacea : Isopoda : Flabellifera) from the South China Sea

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Abstract

Collections of sphaeromatids from the northern and western South China Sea are reported. As a result of this study, the number of sphaeromatid species known from this sea has been more than tripled. Descriptions and illustrations of four new species (*Dynoides harrisoni*, *Cerceis sinensis*, *Paracerceis holdichi* and *Paraleptosphaeroma brucei*) from the South China Sea are presented, a new genus, *Chitonosphaera*, is erected for *Gnorimosphaeroma lata* Nishimura, 1968, and records are presented for a further 24 species.

Introduction

The sphaeromatid fauna of the South China Sea is very poorly known; prior to 1990 only a few records from the area (Dana 1853; Miers 1884; Monod 1934; Bruce 1982*a*, 1990) had been published. The most comprehensive works dealing with the West Pacific isopods (Thielemann 1910; Nierstrasz 1931), as far as the fauna of the South China Sea was concerned, were very fragmentary.

Prior to 1990, only 10 species of Sphaeromatidae were known from the South China Sea. Two of these, *Amphoroidella* sp. and *Dynamenopsis* sp., were not identified to species level.

Of the thirty-five species recorded at the present time for the South China Sea, eight (22·9%) are endemic. These are *Cilicaeopsis lepida* Kussakin & Malyutina, 1991; *Dynoides harrisoni* sp. nov.; *Cerceis sinensis*, sp. nov.; *C. orientalis* (Dana, 1853); *Paracerceis holdichi*, sp. nov.; *Paraleptosphaeroma brucei*, sp. nov.; *Amphoroidella* sp. and *Dynamenopsis* sp.

Eleven species (31·4%) [*Lekanesphaera exosphaeroma* (Boone, 1918); *Cymodoce tribullis* Harrison & Holdich, 1984; *Cilicaea crassicaudata* Haswell, 1881; *Zuzara curtispina* Harrison & Holdich, 1984; *Z. digitata* Harrison & Holdich, 1984; *Clianella brucei* Harrison & Holdich, 1984; *Dynamenella liochroea* Harrison & Holdich, 1982*a*; *Paradella octaphymata* Harrison & Holdich, 1982*b*; *Cerceis pustulosa* Harrison & Holdich, 1982*b*; *C. pravipalma* Harrison & Holdich, 1982*b* and *Dynamenella platura* Nobili, 1907] are West Pacific tropical species as they are also found in other parts of the tropical West Pacific. Seven species (20%) are Indo–West Pacific tropical species, as these species [*Cymodoce longistylis* Miers, 1884; *C. pelsarti* Tattersall, 1922; *Cilicaea latreillei* Leach, 1818; *Paracilicaea asiatica* Kussakin, Malyutina & Rostomov, 1990; *Cilicaeopsis whiteleggi* (Stebbing, 1905); *Dynoides serratispinus* Barnard, 1914 and *Dynamenella trachydermata* Harrison & Holdich, 1982*a*] are distributed in various parts of the Indian Ocean, that is in the western part of the vast Indo–West Pacific Region. Another five species (14·3%) are widespread tropical/subtropical species

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[*Sphaeroma walkeri* (Stebbing, 1905); *S. terebrans* Bate, 1866; *S. quoianum* Milne Edwards, 1840; *Paradella dianae* (Menzies, 1962) and *Paracerceis sculpta* (Holmes, 1904)]. These species, presumably, were carried through three oceans by trans-oceanic ships. Finally, four species (11·4%): *Dynoides conchicola* (Nishimura, 1976); *Dynamenella nipponica* (Nishimura, 1969); *Chitonosphaera lata* (Nishimura, 1968) and *Cymodoce acuta* (Richardson, 1904), are found in subtropical waters of Japan as well as in the southern part of the South China Sea.

There is a great faunistic similarity between the South China Sea and north-eastern coast of Australia (20 common species, or 57·1% of the sphaeromatid fauna of the South China Sea). It is not surprising, as it again confirms the homogeneity of the main body of the fauna within the vast Indo-West Pacific biogeographical region (Ekman 1934, 1935, 1953; Gurjanova 1972; Briggs 1974), with the South China Sea and eastern Australia on opposite sides of the Pacific part of this region.

Materials and Methods

This paper is based mainly on collections of isopods made by Soviet-Chinese, Soviet-Indonesian and Soviet-Vietnamese expeditions of 1958–90 from the intertidal zone of southern China (including Hainan Island), Vietnam and Java, and from the sublittoral zone of the Gulf of Tonkin and Nhatrang province (south-eastern Vietnam). A small collection from Cape d'Aquilar (Hong Kong) was also examined. The collection comprises 28 species (belonging to 15 genera) of Sphaeromatidae from the South China Sea, 25 species of which were previously not recorded from this sea. Six of these species were undescribed. Descriptions of two species, *Paracilicae asiatica* and *Cilicaeopsis lepida*, were published earlier (Kussakin *et al.* 1990; Kussakin and Malyutina 1991), and descriptions of the remaining four are given here. All type specimens are preserved in the Zoological Institute, Sanct-Petersbourg (ZIN) or Institute of Marine Biology, Vladivostok (IBM), C.I.S.

The authors consider Hansen's groups (Hemibranchiatae, Eubranchiatae, etc.) to be artifical polyphyletic groups useful only for pragmatic purposes, but not as natural taxa (subfamilies). Consequently, the authors do not accept the subfamily classification of the Sphaeromatidae proposed by Hurley and Jansen (1977) and Iverson (1982). The classification of sphaeromatids into groups proposed by Wägele (1989) is regarded by the authors as more natural.

Taxonomy

Family **SPHAEROMATIDAE** Latreille, 1825

Genus *Lekanesphaera* Verhoeff, 1943

Europosphaera (*Lekanesphaera*) Verhoeff, 1943: 17–174.
Lekanesphaera, Jacobs, 1987: 24–6.

Type species: by monotypy, *Europosphaera* (*Lekanesphaera*) *excavatum* Verhoeff, 1943: 171 (=jun. synonym of *Lekanesphaera monodi* (Arcangeli, 1934), designated by Jacobs, 1987: 24–6.

Remarks

Jacobs listed 13 species of *Lekanesphaera*, all from the north-east Atlantic and Mediterranean, and noted that *Sphaeroma intermedium* (Baker, 1926), from Australia, almost certainly belongs to *Lekanesphaera*. Our examination of this species confirms this supposition.

The European, Mediterranean and north-west African species assigned to *Sphaeroma* were recently revised by Jacobs (1987). This author divides *Sphaeroma* into two genera: *Sphaeroma* s. str. and *Lekanesphaera* Verhoeff, 1943. According to Jacobs, *Lekanesphaera*, as well as *Exosphaeroma* Stebbing, 1990, can be distinguished from *Sphaeroma* Bosc, 1802 by the following characters: maxilliped with slender palp, articles 2–4 more or less lobed, posterior margins bearing a fringe of long, smooth but not plumose setae; raised posterior border of endite with or without a fringe of smooth, not plumose, setae. *Lekanesphaera* can be distinguished from *Exosphaeroma* by the exopod of pleopod 3 being not articulated, or sometimes with a rudimentary articulation in the distal half, and the endopod of pleopod 4 showing a pronounced apical lobe; in having pereopods slender, bearing tergally a more

or less distinct fringe of smooth or semi-plumose setae, especially on merus and ischium; with 1 comb-shaped posterodistal spine and 1 serrated spine on the rostrodistal region of the propodus of pereopod 1.

Lekanesphaera exosphaeroma (Boone)

(Fig. 1*a*)

Sphaeroma exosphaeroma Boone, 1918: 598–9, pl. 90, figs 1–3.—Nierstrasz, 1930: 8; 1931: 192.
Exosphaeroma intermedia Baker, 1926: 243, 278, pl. 39.—Hale, 1929: 34.
Exosphaeroma intermedium Nierstrasz, 1931: 194.
Sphaeroma intermedium Harrison & Holdich, 1984: 294–7, fig. 6.
Lekanesphaera (?) *intermedium* Jacobs, 1987: 7.

Material Examined

Gulf of Thailand: Bangkok, sandy beach, upper intertidal zone, 22.xii.1957, E. Gurjanova and P. Ushakov, 2♂ (one without head) to 7·1 mm.

Remarks

We agree with Harrison and Holdich's (1984) exclusion of this species from *Exosphaeroma*; but according to Jacob's (1987) revision of *Sphaeroma*, this species should now be transferred to *Lekanesphaeroma* Verhoeff, 1943, as the maxillipeds (Fig. 1*a*) (palp articles 2 and 4 bear small but well-defined lobes) and pleopods correspond to the diagnosis of that genus. Harrison and Holdich (1984), in redescribing the Australian species *Exosphaeroma intermedium* Baker, noted the smooth dorsal surface of these appendages, whereas *Sphaeroma exosphaeroma* Boone (according to the original description) possesses

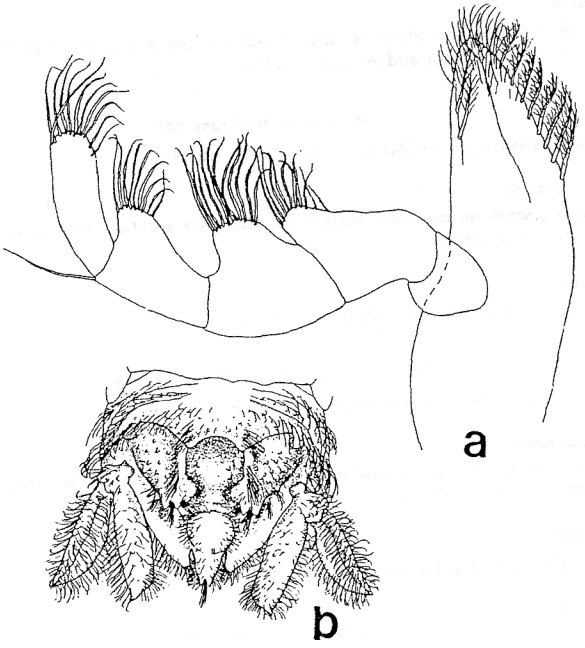

Fig. 1. *a*, *Lekanesphaera exosphaeroma*, maxilliped; *b*, *Cymodoce tribullis*, adult male, pleon and pleotelson, dorsal view.

pereonites that are densely granulated laterally. Based on this, Harrison and Holdich (1984) did not include the two species in the same genus. The specimens we have examined have a finely granulated dorsal surface; the granulation is especially conspicuous along the posterior margins of the pereonites, although it cannot be defined as rough, as Boone (1918) described it in her original description. Nevertheless, as we noticed no other difference between *Sphaeroma exosphaeroma* Boone and *Exosphaeroma intermedia* Baker, we believe that their synonymy is justified.

Distribution

This west-Pacific tropical species is described from the Gulf of Thailand and the Philippines in the north, to Queensland, north-eastern Australia in the south. Within its range it was also found off Aru Island and in the Gulf of Carpentaria.

Genus *Sphaeroma* Bosc 1802

Sphaeroma Bosc, 1802: 182–6 (partim).—Jacobs, 1987: 11–13.

Type species: *Sphaeroma cinerea* Latreille, in Bosc, 1802: 186 (=*Oniscus serratus* Fabricius, 1787: 242), designated by Latreille (1810: 109, 423).

Sphaeroma walkeri Stebbing

Sphaeroma walkeri Stebbing, 1905: 31, pl. 7.—Monod, 1931: 36, figs 5, 23*A*, 43*A–B*; Loyola e Silva, 1960: 41, figs 6, 7; Carlton and Iverson, 1981: 31; Harrison and Holdich, 1984: 279–82, fig. 1; Mak *et al.*, 1985: 75; Jacobs, 1987: 22–4, fig. 6; Bruce, 1990: 552.

Material Examined

Hainan I., in pier fouling samples, 5.vi.1958, 2♂.

Distribution

This circumtropical–subtropical species (see Carlton and Iverson 1981) is widespread across the Pacific, Indian and Atlantic oceans.

Sphaeroma terebrans Bate

For detailed synonymy see Harrison and Holdich 1984: 287.

Material Examined

Hainan I., Sanya, in mangrove stems holes, Mar. 1958 and Dec. 1959, coll. O. Scarlato and E. Gurjanova, 99 specimens.

Distribution

Widespread circumtropical-subtropical species.

Sphaeroma quoianum Milne Edwards

For synonymy see Harrison and Holdich 1984: 282.

Material Examined

Gulf of Tonkin, Kon-Lo, on pier piles, coll. E. Gurjanova, 10.vii.1961, 1♀; Chan-Ka, coll. N. Tzvetkova, 13.viii.1961, 2♂, 2♀.

Distribution

Amphi-Pacific tropical–subtropical species.

Genus *Cymodoce* Leach

Type species: *Cymodoce truncata* Leach, by monotypy.

Cymodoce longistylis Miers

For synonymy see Harrison and Holdich 1984: 311.

Material Examined

Southern China: Nauchjou I.; Hainan I., south-eastern Vietnam, Nachtrang; Boutchan Bay. Intertidal zone, 1958, 1980, 1981, 10♂ to 11·1 mm, 12♀, 2 mancas.

Distribution

Widespread Indo-West Pacific tropical species (see Harrison and Holdich 1984).

Cymodoce pelsarti Tattersall

For synonymy see Harrison and Holdich 1984: 314.

Material Examined

North Vietnam: Gulf of Tonkin; southern Vietnam, Hon-Rua I., intertidal zone, amongst the dead corals on *Sargassum* sp., *Gracilaria* sp. and from wood, July 1990 and Jan. 1981, 4♂ to 9·6 mm, 26♀, 28 mancas.

Distribution

Indo-West Pacific tropical species, ranging from western and north-eastern Australia to Vietnam.

Cymodoce tribullis Harrison & Holdich

(Fig. 1*b*)

Harrison and Holdich, 1984: 304–7, figs 9, 10.

Material Examined

Southern Vietnam, Thu I., lower intertidal zone, stone blocks in the community of Thalassia, 3.v.1984, coll. V. Gulbin, 1♀ (6·6 mm); Catuik I., in driftwood, 9.ix.1988, coll. Y. Yakovlev, 1♂ (6·8 mm).

Remarks

Our male corresponds to the description and figures given by Harrison and Holdich, but has a pointed (rather than blunt) process on the prominent longitudinal ridge either side of the pleotelsonal midline and a somewhat more slender apex of the pleotelson. Probably, these differences are caused by the smaller size of the Asiatic male (the Australian male is 7·87 mm long).

Distribution

West-Pacific tropical species, occurring along the coasts of north-eastern Australia (Queensland) and south-eastern Vietnam.

Genus *Cilicaea* Leach

Type species: *Cilicaea latreillei* Leach, 1818: 342, by monotypy.

Cilicaea latreillei Leach

Cilicaea latreillei Leach, 1818: 349.—Stebbing, 1905: 36–9, pls III(B), VIII; Nierstrasz, 1931: 204, 205, figs 92–6; Harrison and Holdich, 1984; 348; Venudopalan and Wagh, 1987: 133.
Cilicaea latreillei Miers, 1884: 309.—Naylor, 1966: 190, 191.

Material Examined

Southern Vietnam: 11°35′N.,109°37′E., 120 m, rocks, 17.ix.1984, coll. B. Sirenko, 1♂ (12·9 mm), 2♀ to 12·5 mm.

Distribution

Widespread Indo-West Pacific tropical species. *Cilicaea latreillei* has been recorded from Australia by Miers (1884) and Naylor (1966), but Harrison and Holdich (1984) suppose that 'these records are open to some doubt'.

Cilicaea crassicaudata Haswell

For synonymy see Harrison and Holdich 1984: 352.

Material Examined

Gulf of Tonkin south-west of Hainan I., 75 m, 25.vii.1961, E. Gurjanova, 1♂ 10·8 mm; central part of Gulf of Tonkin, 67 m, 12.vii.1961, E. Gurjanova, 2♀ 13·5 mm and 1♂ 14 mm.

Distribution

Previously recorded from the coast of north-eastern Australia (Queensland) and Arafura Sea.

Genus *Cilicaeopsis* Hansen

Type species: *Cilicaea granulata* Whitelegge, 1902, by original designation.

Cilicaeopsis whiteleggi (Stebbing)

For synonymy see Harrison and Holdich 1984: 337.

Material Examined

Coast of Central Vietnam, Tjam I. in the vicinity of Da Nang, in pier fouling samples, 3 m, 21.ix.1988, coll. A. Zvyagintzev, 1♂; southern Vietnam, Vung-Ro Bay, 10 m, Yakovlev, 12♀ and juv.; Van-fong Bay, 5 m, 1♂.

Distribution

From Sri Lanka to the Philippines and north-eastern Australia.

Genus *Zuzara* Leach

Zuzara Leach, 1818: 344.—Hale, 1929: 272, 278; Harrison and Holdich, 1984: 355–6.
Cyclura Stebbing, 1874: 146, 147.
Cycloidura Stebbing, 1878: 36.—Stebbing, 1910: 431; Nierstrasz, 1931: 197.

Type species: *Zuzara semipunctata* Leach, 1818, by monotypy.

Zuzara curtispina Harrison and Holdich

(Fig. 2*b*, *c*)

Zuzara curtispina Harrison and Holdich, 1984: 357–60, figs 33, 34.

Material Examined

Southern Vietnam: Thu I., middle intertidal zone, on sand amongst the stone blocks, 2.v.1984, coll. V. Gulbin, 10 subadult ♂ to 3·5 mm, 8 non-ovigerous ♀ to 3·65 mm.

Remarks

All males examined from the South China Sea are subadult (to 3·5 mm) and have the dorsal median process on pereonite 7 considerably shorter than that of the adult male holotype (length 4·26 mm) described and figured by Harrison and Holdich (1984) from Queensland, but slightly longer than the projection of the subadult male figured by these authors. The dorsal surface of the non-ovigerous female pleotelson has two slight longitudinal elevations, but lacks longitudinal ridges each side of the midline as described and figured by Harrison and Holdich for an ovigerous female. Since, according to these authors,

paratypes, non-ovigerous females, have less pronounced pleotelsonic sculpturing, we have no reason to consider the Asian specimens as a different species.

Distribution

Previously recorded from eastern Australia (northern Queensland); range here extended to south-eastern Vietnam.

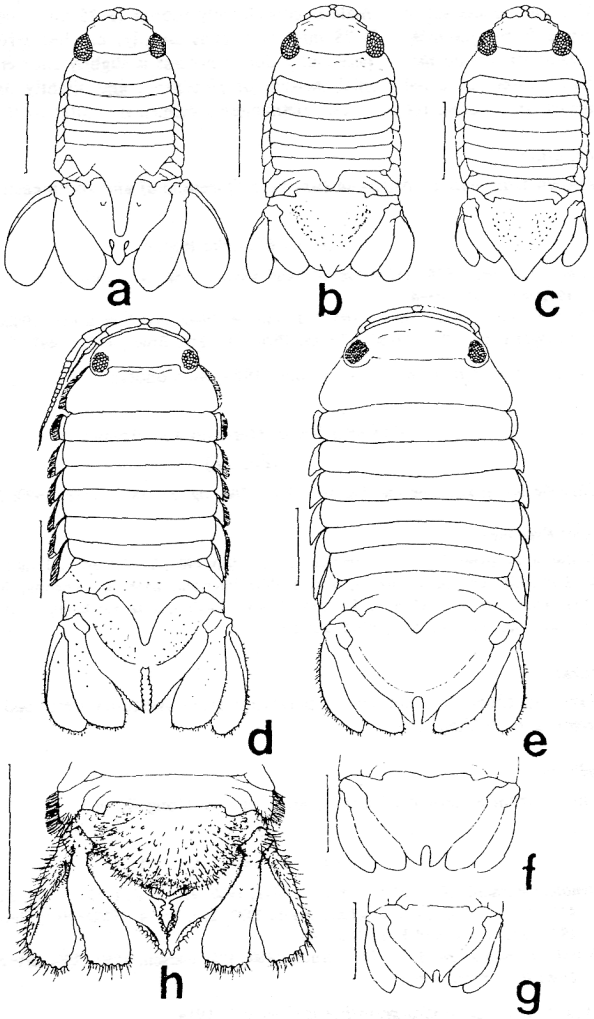

Fig. 2. *a*, *Zuzara digitata*, adult male; *b*, *c*, *Zuzara curtispina*: *b*, subadult male; *c*, female; *d*, *Dynoides serratisinus*, adult male; *e–g*, *Dynoides conchicola*: *e*, *f*, males at different stages of maturity; *g*, female; *h*, *Clianella brucei*, adult male, pleon and pleotelson, dorsal view.

Zuzara digitata Harrison and Holdich

(Fig. 2*a*)

Zuzara digitata Harrison & Holdich, 1984: 360–3, figs 35, 36.

Material Examined

Southern Vietnam: Thu I., middle intertidal zone in sand amongst the stone blocks, 2.v.1984, V. Gulbin, subadult ♂ (3·25 mm).

Remarks

The Vietnamese subadult male is considerably shorter (3·25 mm) than the adult male holotype from Queensland (4·78 mm) and, consequently, has less strongly pronounced characters of mature males: pereonal 7 dorsal process is slightly shorter, not reaching to anterior margin of distal medial incision of pleotelson, and slightly narrower uropodal branches. In all other respects, the Vietnamese specimen is similar to the type specimens.

Distribution

Known from eastern Australia (southern Queensland) and south-eastern Vietnam.

Genus *Clianella* Boone

Clianella Boone, 1923: 152.—Menzies and Glynn, 1968: 58; Iverson, 1982: 250; Harrison and Holdich, 1984: 363–4.
Paradynoides Loyola e Silva, 1960: 101.—Bruce, 1980: 199, 210; Bruce, 1982*b*: 447.
Dynoidella Pillai, 1965: 78–80.—Bruce, 1980: 199, 210; Bruce, 1982*b*: 447.

Type species: *Clianella elegans* Boone, 1923, by monotypy.

Clianella brucei Harrison and Holdich

(Fig. 2*h*)

Clianella brucei Harrison and Holdich, 1984: 366, figs 37, 38.—Bruce, 1990: 551.

Material Examined

Southern Vietnam: Ze I., 7 m, amongst algae, 19.ix.1988, Y. Yakovlev, 1 subadult ♂; Big Catuik Rock, 9.ix.1988, on rocks with oysters, middle intertidal zone, E. Kostina, M. Malyutina, and Yu. Mamkaev, 2♂ to 3·35 mm, 8♀ and 10 juv.; Little Catuik Rock, 10–11.ix.1988, on rocks in middle intertidal zone, M. Malyutina, 2♂ and 2 juv.

Remarks

Asian specimens are similar to paratypes from Australia described and figured by Harrison and Holdich (1984).

Distribution

Known from eastern Australia (Queensland) to Hong Kong.

Genus *Dynoides* Barnard

Dynoides Barnard, 1914: 407.—Loyola e Silva, 1960: 91; Pillai, 1965: 79, 80; Kussakin, 1979: 432, 433; Bruce, 1980: 199, 208, 210; Iverson, 1982: 250; Bruce, 1982*b*: 447; Harrison and Holdich, 1984: 370; Kwon and Kim, 1986: 43.
Dynoidella Nishimura, 1976: 275; Bruce, 1980: 199; Iverson, 1982: 250; Bruce, 1982*b*: 447 (non *Dynoidella* Pillai, 1965).

Type species: *Dynoides serratisinus* Barnard, 1914.

Remarks

About half of the species of this genus have been described in the last 10 years, and eight species of *Dynoides* (including the species described below) are valid: *D. serratisinus*

Barnard, 1914; *D. barnardi* Baker, 1928; *D. dentisinus* Shen, 1929; *D. conchicola* (Nishimura, 1976); *D. brevispinus* Bruce, 1980; *D viridis* Bruce, 1982*b*; *D. spinipodus* Kwon & Kim, 1986; and *D. harrisoni*, sp. nov. We agree with Harrison and Holdich (1984) that *Dynoides amblysinus* Pillai, 1954, and *D. castroi* Loyola e Silva, 1960 (with synonymised *D. brasiliensis* Loyola e Silva, 1960) without pleonal processes must be referred to *Clianella* Boone, 1923. Thus, *Dynoides* has an Indo-West Pacific distribution from Natal and Mozambique to north-eastern Australia in the south, to the northern Sea of Japan and southern Sea of Okhotsk (Kunashir I.) in the north.

Dynoides serratisinus Barnard
(Fig. 2*d*)

Dynoides serratisinus Barnard, 1914: 408, pl. XXXIV F.—Kensley, 1978: 103, fig. 43.

Material Examined

Hong Kong, Cape d'Aguilar, intertidal zone, 1989, coll. C. P. S. Cheng, 1♂ (5·1 mm).

Remarks

Our specimen corresponds with the short descriptions and figures given by Barnard (1914) and Kensley (1978). A sound specific character of *Dynoides serratisinus* is a deep, parallel-sided slit, the margin of which is armed with about seven teeth. In this respect, African and Asiatic specimens are similar. The lengths of the holotype male and our male are about the same (5·0 mm and 5·1 mm). Unfortunately, because of the absence of a detailed modern redescription of typical *Dynoides serratisinus*, the identification of the Asian specimen is doubtful.

Distribution

Previously recorded from the Indian Ocean: south-eastern Africa (Natal, Mozambique). The new record is from the Pacific Ocean: South China Sea, Hong Kong.

Dynoides conchicola (Nishimura)
(Fig. 2*e–g*)

Dynoidella conchicola Nishimura, 1976: 276, figs 1–19.—Nunomura and Nishimura, 1976: 22, fig. 2.
Dynoides conchicola Carvacho, 1985: 187.
Dynoides dentisinus Kussakin and Malyutina, 1987: 51 (partim, specimens from Japan).

Material Examined

Hong Kong, Cape d'Aguilar, intertidal zone, 1989, 6 subadult ♂ to 5·2 mm, 3 ovigerous ♀ to 2·1 mm.

Remarks

The largest male from our material possesses a small process; in the other two it is undeveloped. Three small males are without processes and are practically the same as females with embryos, and very similar to figures of the holotype of *Dynoides conchicola* Nishimura, 1976.

Distribution

Recorded from Southern Japan (Kyushu) and the South China Sea (Hong Kong).

Dynoides harrisoni, sp. nov.
(Figs 3–5)

Material Examined

Holotype. Gulf of Tonkin, Kat-Ba I., intertidal zone, 22.vi.1961, coll. E. Gurjanova, 1♂ (5·8 mm) (ZIN, No. 1/85083).

Paratypes. Gulf of Tonkin, Kon-Lo, 1 m, 10.viii.1961, coll. E. Gurjanova, 2 subadult ♂ (each possessing a genital apophysis, but lacking appendix masculina on pleopod II), 3 juv. specimens; Hainan I., Dzyaotou, on surf rocks, intertidal zone, amongst Sargassum, 18.xii.1959, coll. E. Gurjanova, 1 subadult ♂ (3·75 mm), 1♀ (3·2 mm) and 1 juv.; Hainan I., Malin, intertidal zone, Ostrea community, 1 juv.

Description

Holotype, male

Body convex, with lateral margins almost parallel, about 2·2× as long as maximum width (at pereonite 6). Dorsal surface almost smooth, cephalon and pereonites weakly granulated; ventrolateral body margins fringed with fine setae. Cephalon 2·2× as wide as long, anterior margin sinuous, with short blunt rostral process and clearly pronounced anterolateral angles. Eyes large, moderately prominent, but only central part of each eye pigmented black. Width of pereonites increases slightly from first to sixth. Pereonite 1 distinctly longer than others, which are subequal in length. Lateral margins of pereonite 7 mostly concealed by posterior of pereonite 6. Posterior margin of pleon with stout median process directed posteriorly upwards, extending over anterior half of pleotelson almost to level of base of posteromedial notch. Pleotelson subtriangular, dorsal surface considerably convex in anterior, central parts with broad but shallow medial depression; lateral margins and posterior quarter flat. Narrow deep median notch of pleotelsonic apex with only a small rounded expansion near the base; this notch divides more than $\frac{1}{4}$ of the pleotelson in 2 parts.

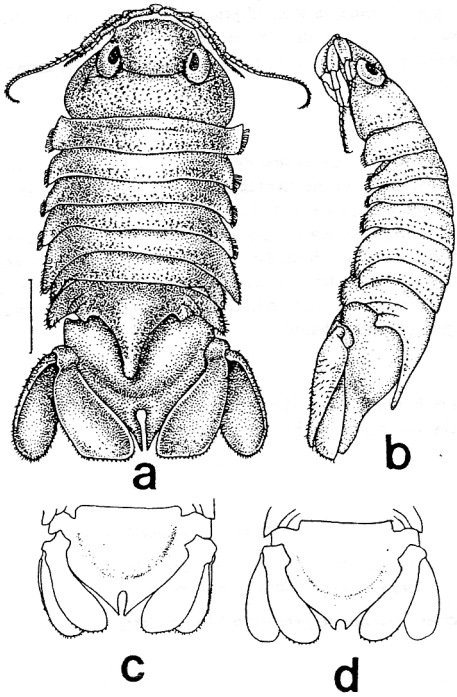

Fig. 3. *Dynoides harrisoni*, sp. nov. *a*, *b*, adult male, holotype: *a*, dorsal view; *b*, lateral view; *c*, subadult male, paratype, pleon, dorsal view; *d*, female, paratype, pleon, dorsal view.

Antennule extending to level of distal end of article 1 of antennal flagellum; basal article large, 2·6× longer but only slightly broader than peduncle article 2; 15-articled flagellum subequal in length to peduncle articles 1 and 2 combined. Antenna extending to posterior border of pereonite 2; peduncle articles subequal in width; 19-articled flagellum more than 1·5× longer than peduncle. Epistome lambdoid, with narrow rounded apex. Mandible with tricusped incisor and elongate tricusped lacinia mobilis; left mandible of 4 stout, hooked, serrated setae; lacinioid seta of right mandible bears 2 teeth, medial one considerably shorter

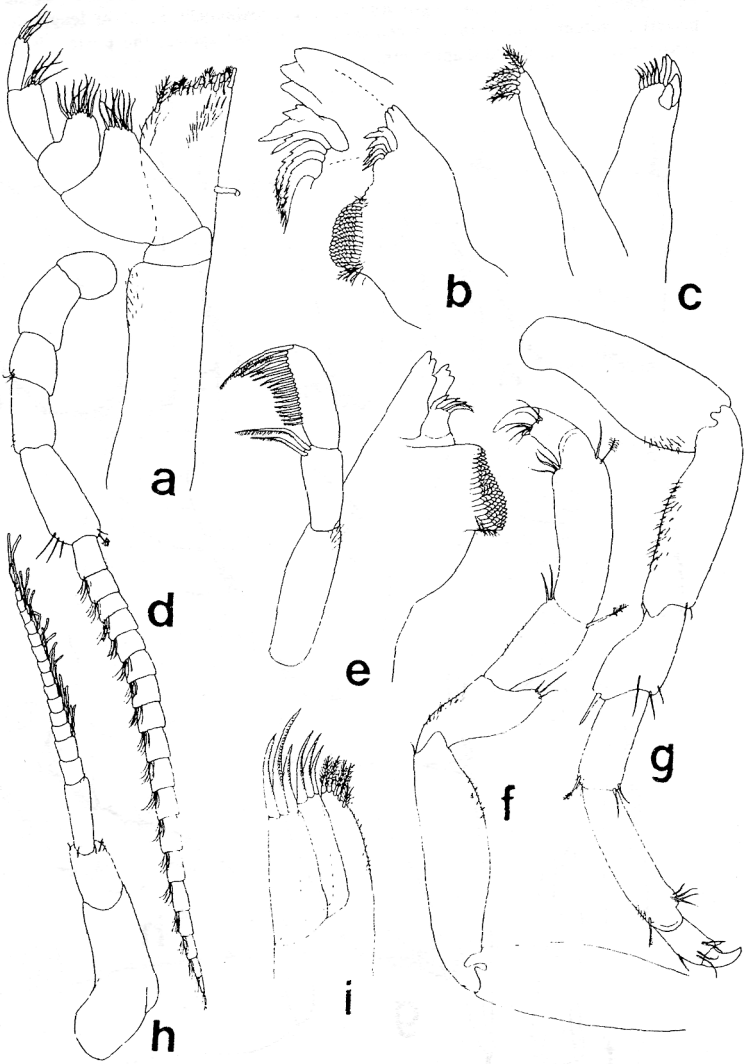

Fig. 4. *Dynoides harrisoni*, sp. nov. adult male, holotype: *a*, maxilliped; *b*, right mandible; *c*, maxillule; *d*, antenna; *e*, left mandible; *f*, pereopod 7; *g*, pereopod 2; *h*, antennule; *i*, maxilla.

than lateral. Maxillule with 4 subequal pectinate spines on endopod, about 10 curved stout spines on exopod. Maxilla with 2 lateral lobes, each with 3 long, slender, curved, pectinate spines; medial lobe with several somewhat shorter pectinate and simple spines. Maxilliped endite with 1 long coupling hook; palp articles 2, and 3 with pronounced lobes; each with row of setae; posterior margins of these articles without setae.

Pereopods relatively slender. Pereopod 1 bearing 2 long stout setae; posterodistal angle of carpus with 1 seta; distal part of ischium with row of few short spines; posterior margin of propodus with short spines, distal angle bearing 2 stout, pectinate and 1 long slender seta. Pereopods 2–7 subequal in length and both approximately equal in length to ischium; posterior margin of ischium with central row of short spines; the posterodistal angle of merus with 1 long needle-shaped seta.

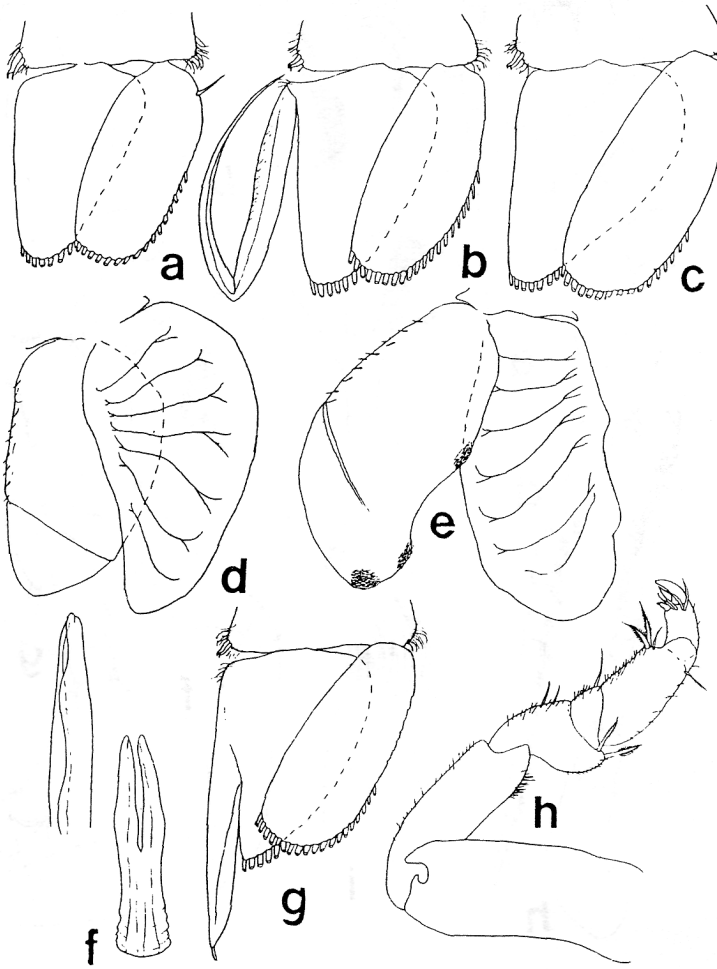

Fig. 5. *Dynoides harrisoni*, sp. nov. *a–f*, *h*, adult male, holotype; *g*, subadult male, paratype: *a–e*, pleopods 1–5; *f*, penes; *g*, pleopod 2; *h*, pereopod 1.

The bases of pleopods 1–3 each with 2 coupling hooks. Pleopod 1 exopod subelliptical in shape, extending just beyond broad, subquadrate endopod. Pleopod 2 exopod subelliptical, endopod subtriangular, both rami subequal in size. Appendix masculina twice as long as endopod, recurved approximately in middle part; its very narrow, needle-shaped distal part directed forward, proximal part linear in outline.

Pleopod 3 exopod relatively narrow, subelliptical, lacking transverse suture; endopod broader and somewhat shorter than exopod. Pleopod 4 exopod with complete transverse suture and narrowly rounded apex. Pleopod 5 exopod with broadly rounded apex; transverse suture incomplete; lateral margin convex, proximal half with slender simple setae; medial margin with 3 squamous patches, 2 distal and 1 medial. Uropod extending just beyond pleotelsonic apex; exopod elongated, ovate, with lateral margin strongly elevated and posterior margin rounded; endopod considerably expanded towards subtruncate posterior border set with short setae and minute spines.

Colour

In alcohol, pale yellowish grey.

Subadult male

Body shape approximately as in adult male, 2·2× longer than maximum width. Penes short, fused in proximal half, tapering slightly to distal ends, with semicircular apexes. Pleopod 2 endopod fused with appendix masculina along most of its length, distal $\frac{1}{3}$ extending beyond ramus apex and bearing distal seta. All pereonites and pleonites with smooth margins. Pleotelson with elliptical apical notch shorter than in adult males. Uropod rami narrow, subelliptical, distally rounded.

The external morphology of females and subadult males shows few differences from adult males, described above.

Remarks

Dynoides harrisoni is easily distinguished from the majority of other species of the genus by the smooth margins of the pleotelsonic notch, which lacks any teeth or serrations. In this respect, *D. harrisoni* bears a resemblance to two Asiatic species: *D. conchicola* (Nishimura, 1976) and *D. spinipodus* Kwon and Kim, 1986. Our species differs from *D. conchicola* in the much wider uropodal branches and the considerably longer pleonal medial process. *D. harrisoni* may easily be distinguished from *D. spinipodus* by the more slender body posteriorly, subtruncated, not rounded, uropodal endopod and rounded, not produced, lateral margins of the cephalon.

Etymology

The epithet honours Dr K. Harrison, well-known isopod worker, for his valuable contributions to the taxonomy of the Sphaeromatidae.

Genus *Dynamenella* Hansen

Dynamenella Hansen, 1905: 107, 126.—Menzies, 1962: 135; Hurley and Jansen, 1977: 32; Kensley, 1978: 89; Harrison and Holdich, 1982*a*: 89–91.

Type species: *Dynamene perforata* Moore, 1902.

Dynamenella nipponica (Nishimura)

(Fig. 6*a*)

Cymodocella nipponica Nishimura, 1969: 335–43, figs 1–5.
Dynamenella nipponica Harrison and Holdich, 1982*a*: 90, 107

Material Examined

South China Sea: southern China, Nanchjou I., intertidal zone, 14.xii.1958, coll. O. Mokievsky, 1 adult ♂, 1 subadult ♂, 2♀ [one ♀ (5·6 mm) bears third stage embryos, according to Kjennerud (1952)], 1 damaged specimen.

Remarks

Our specimen agrees with Nishimura's (1969) description and figures, especially the unique dorsal sculpturing of the pleotelson, so well that we have no doubt in referring it to this species.

Distribution

Known from the Pacific coast of southern Honshu I. and from the northern coast of the South China Sea.

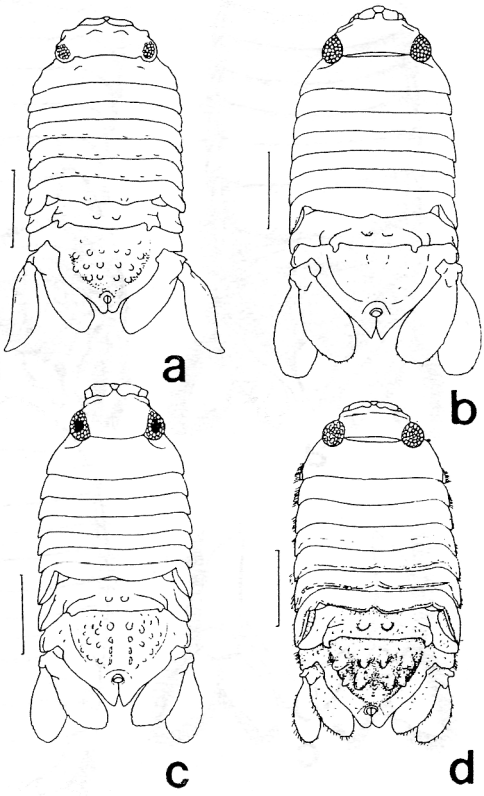

Fig. 6. *a, Dynamenella nipponica; b, Dynamenella liochroea; c, Dynamenella trachydermata; d, Paradella octaphymata.*

Dynamenella liochroea Harrison & Holdich

(Fig. 6*b*)

Dynamenella liochroea Harrison and Holdich, 1982*a*: 91–4, figs 2, 3*a–h*.

Material Examined

South-eastern Vietnam: Nachtrang, Hong-Son, rocky intertidal zone, 11.i.1984, coll. V. Gulbin, 35♂ to 4·35 mm, 28 ovigerous ♀ to 4·7 mm, 48 non-ovigerous ♀, 88 juv.; Hon-Che I., intertidal zone, 9.i.1984, V. Gulbin, 3 juv.

Remarks

The Asiatic specimens agree with the description and figures of types of *D. liochroea* as well that we had no doubt in referring them to this species. Our figured male specimen has a slightly longer uropodal exopod than the holotype figured by Harrison and Holdich, but this slight difference is not found in all Asiatic males.

Distribution

Known from north-eastern Australia; here recorded from south-eastern Vietnam.

Dynamenella trachydermata Harrison & Holdich

(Fig. 6*c*)

Dynamenella trachydermata Harrison & Holdich, 1982*a*: 97–9, fig. 4.

Material Examined

Pacific Ocean: Central Vietnam nr Danang, Tjam I., rocky intertidal zone, 20.ix.1988, coll. Yu. Yakovlev, 1♂ 2·9 mm. **Indian Ocean:** southern coast of Java, Cracal Bay, intertidal zone, 27.viii–9.ix.1962, coll. O. Mokievsky, 8♂, 13♀ to 4·25 mm and 6 juv.

Remarks

Our specimens agree well with the types described and figured by Harrison and Holdich in having a tuberculate pleotelson, in having the transverse tubercle in each side of the midline, and in the form of the apical slit and subapical foramen, but are considerably larger.

Distribution

Known from north-eastern Australia; here recorded from southern Java and central Vietnam.

Genus ***Paradella*** Harrison & Holdich

Paradella Harrison & Holdich, 1982*a*: 101–3, fig. 5.

Type species: *Paradella octaphymata* Harrison and Holdich, 1982*a*, by original designation.

Paradella octaphymata Harrison & Holdich

(Fig. 6*d*)

Paradella octaphymata Harrison & Holdich, 1982*a*: 101–3, fig. 5.

Material Examined

South-eastern Vietnam, Nha Trang, intertidal zone, belt of *Crassostrea mordax*, 4.xii.1980, coll. O. Kussakin, 1♂ (4·2 mm).

Remarks

The Asiatic adult male is the same length as the holotype from Queensland and agrees well with the description and figures given by Harrison and Holdich (1982*a*).

Distribution

West Pacific tropical species. North-eastern Australia and south-eastern Vietnam.

Genus *Cerceis* H. Milne Edwards

Cerceis Milne Edwards, 1840: 220, 221.—Harrison and Holdich, 1982*b*: 433
Paradynamene Richardson, 1905: 305.
Circeis Baker, 1908: 153.

Type species: *Cerceis tridentata* Milne Edwards (1840: 221), by original designation.

Remarks

Twelve species of *Cerceis* are known from the Indo-West Pacific tropical region. Previously, the genus was recorded from Australia in the south, India and the Andaman Islands in the Indian Ocean, and Singapore and the Philippines in the north. These new records extend the range of *Cerceis* to the coasts of Vietnam and southern China. The other species previously placed in *Cerceis*, including *C. carinata* Glynn, 1970, from Venezuela, as Harrison and Holdich (1982*a*) correctly indicated, cannot be retained in this genus.

Cerceis sinensis, sp. nov.

(Figs 7–9)

Material Examined

Holotype. North part of the South China Sea, Nanchjou I., Chuan-U, lower intertidal zone, 10.xii.1958, coll. O. Mokievskij, ♂ (9·1 mm) (ZIN, No. 1/85084).

Paratypes. Same locality, 14.xii.1958, 1♀ (allotype 6·9 mm), 3♂ (7·5–7·7 mm)

Description

Holotype, male

Body moderately convex, lateral margins subparallel, tapering slightly towards anterior end, 2·4× as long as maximum width (at pereonite 6). Dorsal surface of cephalon and pereonites 1–6 smooth, posterior borders sparsely fringed with long setae; posterior margin of pereonite 7 slightly concave in its posteromedial part, with row of small conical tubercles each with setae which are noticeably denser and longer than those on preceding pereonites. Dorsal surface of pleon densely setose and unevenly granulated.

Cephalon about 2·3× as wide as long and 1·2× narrower than pereonite 1. Frontal margin of cephalon almost semicircular, with anterior transverse ridging; small pointed rostrum strongly curved down and only scarcely adjoining acute anterior part of frontal lamina. Posterior margin of cephalon considerably concave, posterolateral angles expanded backward almost to the level of middle of pereonite 1. Eyes small, brown, ovate.

Pereonites 1 and 7 equal in length and longest, together 40% of pereon length. Pereonites 2, 3 and 6 subequal in length, each 1·5× shorter than pereonite 1 or 7, but 1·1× longer than pereonite 4 and 1·3× longer than pereonite 5, the shortest one. Coxae of pereonites 2–5 similar in size and shape, falcate, pointed; those of pereonite 6 strongly produced and obtuse; those of pereonite 7 almost rectangular, with distal rounded corners.

Pleon about $\frac{1}{3}$ of total body length. Pleonite 1 completely separated from others by suture but concealed dorsally by pereonite 7; pleonites 2–4 medially fused, but clearly indicated laterally; posterior margin of pleonite 4 almost straight, without projections or tubercles. Pleonite 2 lateral margins enlarged distally, with produced posterolateral angles. Lateral margins on pleonite 3 almost rectangular; on pereonite 4 narrow, triangular, with posterolateral projections.

Pleotelson roughly pentagonal, tapers evenly towards deep parallel-sided distal notch; anterior margin weakly concave, posterolateral margins almost straight. Dilated anterior half of pleotelson with 3 broad rounded longitudinal ridges, dorsal surface covered with small rounded tubercles; distal part with massive pear-shaped white bulge, tapering and posteriorly extending over posterior notch and posterior of pleotelson.

Frontal lamina broadly lambdoid, anterior margin triangular, acute, posterior margin deeply concave, almost semicircular. Antennule short, recurved, not reaching posterolateral angle of pereonite 1; basal article massive, more than twice as long as wide, anterodistal angle produced forming long pointed process, almost entirely enveloping outer border of article 2 of peduncle; posterodistal angle of article 1 also expanded into acute process but shorter than those on anterodistal angle and does not reach the middle of posterior margin of article 2. Second peduncular article 2·25× shorter and nearly twice as narrow as article 1, but 3× as wide as article 3. Peduncle 1·3× longer than 12-articled flagellum. Antenna extending to posterior of pereonite 2; peduncle slender, all articles of about equal width; article 5 longest, slightly shorter in length than articles 3 and 4 combined and somewhat longer than articles 1 and 2 combined; flagellum 1·4× as long as peduncle, 18-articled. Mandible incisive process relatively narrow, with 4 narrow cusps, 3 composing distal part, and a shorter medial cusp located more proximally; lacinia mobilis almost as wide as incisor,

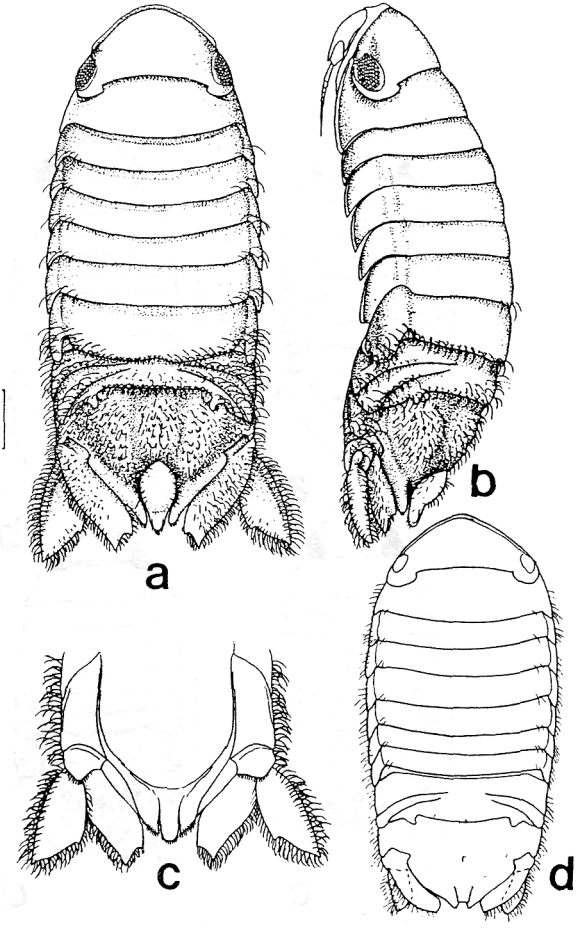

Fig. 7. *Cerceis sinensis*, sp. nov. *a–c*, male, holotype; *d*, female, paratype: *a*, dorsal view; *b*, lateral view; *c*, pleotelson, ventral view; *d*, dorsal view.

with 3 large distal cusps; setal row with about 11 setae, lateral ones distinctly serrated; molar process short, very thick, cylindrical. Maxilliped endite broad, lateral margin strongly convex, medial margin with 1 coupling hook; lateral margins of palp articles 3–5 each bearing 1 small seta, those of article 2 smooth.

Pereopod 1 considerably shorter and more robust than 2–7; basis with posterior margin almost straight, anterior margin convex; anterior margin of ischium with 1 small spine; merus with 1 short spine on posterior margin and further 6 spines at posterodistal margin;

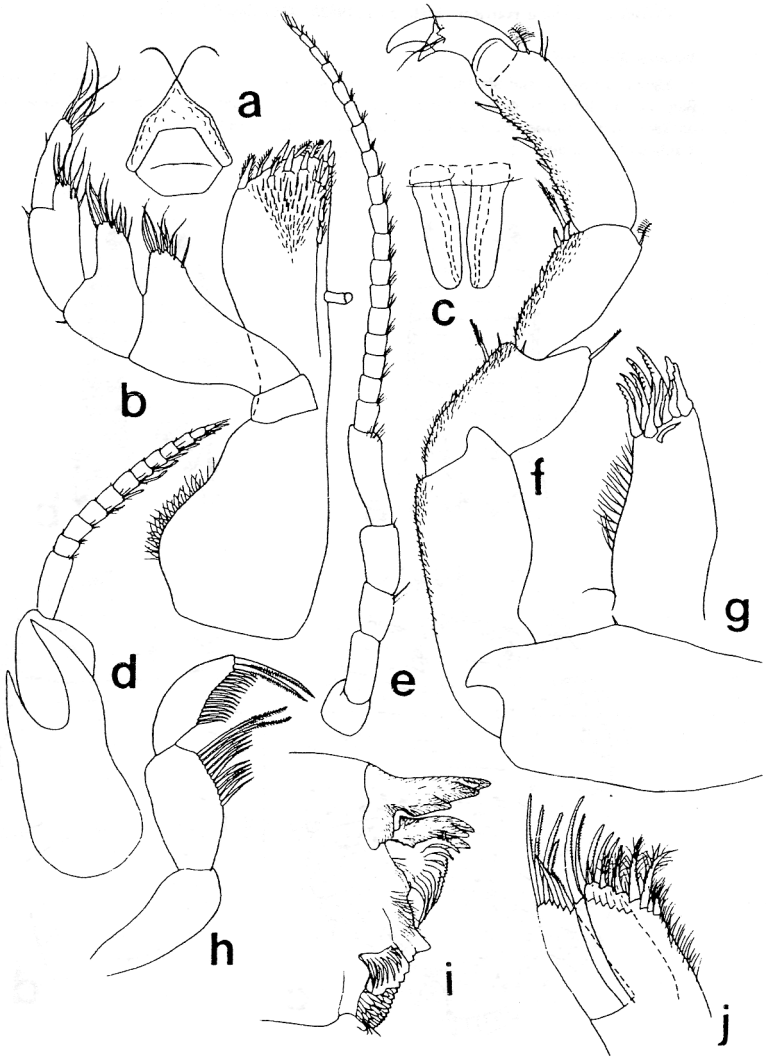

Fig. 8. *Cerceis sinensis*, sp. nov. male, holotype: *a*, epistoma and labrum; *b*, maxilliped; *c*, penes; *d*, antennule; *e*, antenna; *f*, pereopod 7; *g*, outer lobe of maxillule; *h*, mandibular palp; *i*, distal part of left mandible; *j*, maxilla.

anterodistal angle with 1 prominent spine and small spine; carpus small, triangular, with 3 spines on posterior margin; propodus posterior margin with 4 stout long and 3 short spines, anterodistal angle with 2 spines. Pereopods 2–7 with elongated carpi each with 4 large spines on posterior margin, one much longer than others, and with 3 spines on anterodistal angle; merus with expanded rounded-triangular anterodistal angle bearing large acute spine, posterior margin with 1 long and several small spines.

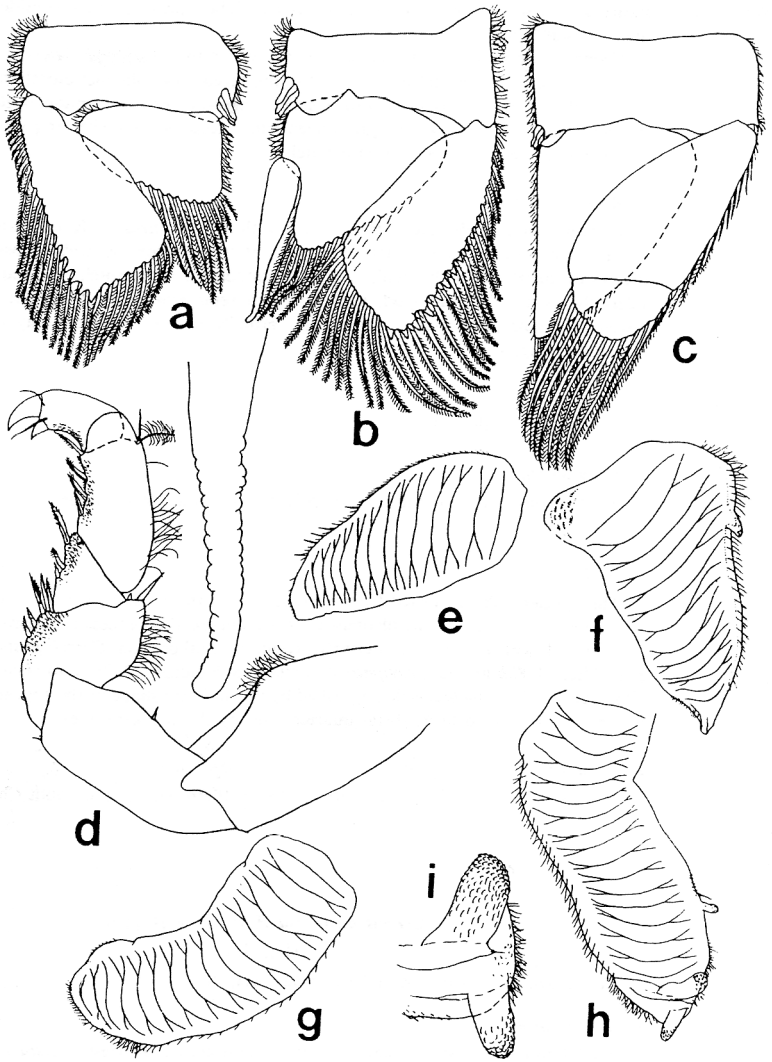

Fig. 9. *Cerceis sinensis*, sp. nov. male, holotype: *a*, pleopod 1; *b*, pleopod 2; *c*, pleopod 3; *d*, pereopod 1; *e*, endopod of pleopod 4; *f*, exopod of pleopod 4; *g*, endopod of pleopod 5; *h*, exopod of pleopod 5; *i*, distal region of exopod of pleopod 5.

Penes each almost rectangular, rounded at distal end, 3·5× as long as wide. Medial margin of pleopod 1 peduncle with 3 coupling hooks; exopod outer margin with 6 distal serrations long, apically pointed, others are short and rounded; endopod broad but short, rounded-triangular in shape. Pleopod 2 exopod lateral margins diverge to obliquely truncate distal margin, lateral margin with 13 pointed serrations along distal $\frac{2}{3}$; endopod shorter, triangular; appendix masculina longer than endopod, extending just beyond exopod distal margin; dilated proximally, distal half tapering strongly to narrow rounded inwardly curving apex. Pleopod 3 rami of subequal length, endopod subtriangular, exopod oblong-ovate, with complete transverse suture. Pleopod 4 exopod almost triangular, lateral margin with proximal triangular tiny serrated lobe. Pleopod 5 exopod with incomplete subterminal suture and bearing 3 very tiny serrated inflated lobes, proximal lobe considerably smaller than 2 distal lobes.

Uropod exopod slightly longer and 1·3× wider than endopod, lateral margin evenly convex and serrated, medial margin distally produced into a distinct bluntly pointed tooth; distal end of exopod produced into a small finger-like process; endopod elongated with subparallel margins, lateral margin convex with exception of posterior $\frac{1}{3}$ which is slightly concave; distal end of endopod with notch.

Allotype, female

Body with subparallel lateral margins and with smooth dorsal surface, bearing only setae, which are more numerous on lateral sides; it is twice as long as wide across pereonite 5. Pleotelson distal end with small, almost rectangular median notch. Uropod exopod considerably shorter than endopod, with long soft setae along lateral margin; distal margin distinctly angular; endopod distal margin broadly rounded, without any projections at distolateral angles.

Colour

Grey-yellow in alcohol.

Body length

9·1 mm (holotype), 6·9 mm (allotype), 7·5–7·7 mm (♂ paratypes).

Remarks

This species is distinguished from most species of the genus by the size and shape of the posteromedian process of the pleotelson. In *C. sinensis* this process is massive, inflated and pear-shaped, with a tapering posteriorly produced distal portion. *Cerceis pustulosa* Harrison & Holdich, 1982*b* and *C. pravipalma* Harrison & Holdich, 1982*b*, also occur in the South China Sea, and *C. sinensis* is distinguished by the different shape of the appendix masculina, which is more curved in its distal quarter, and by the wrinkled apex.

Distribution

Known only from the type locality in the northern part of the South China Sea.

Cerceis pustulosa Harrison & Holdich

(Fig. 1*a*)

Cerceis pustulosa Harrison & Holdich, 1982*b*: 434, fig. 7.

Material Examined

South China Sea: Hainan I., Sanya, on a reef, intertidal zone, amongst *Sargassum* and other algae, 6.xii.1959, 4.i.1960, coll. E. Gurjanova, 1 subadult ♀ (8·3 mm), 1 juv.; Lau Chjou I., intertidal zone, 10.xii.1958. coll. O. Mokievsky, 2♀, 1 subadult ♂, 1 damaged specimen, 1 juv.

Remarks

The Chinese specimens agree well with the description given by Harrison and Holdich (1982*b*), but have the apical pleotelsonic process slightly narrower, nearly pointed, not blunt.

Distribution

Previously reported from north-eastern Australia, Queensland.

Cerceis pravipalma Harrison & Holdich

(Fig. 10*b*)

Cerceis pravipalma Harrison & Holdich, 1982*b*: 436, figs 8–9(*a–f*).

Material Examined

Hainan I.: Sanya and Sin-In; Southern Chinese coast, Lau Chjou I. **Southern Vietnam:** Boutchan Bay, Thu I., Re I., from intertidal zone to depth 25 m, under stones, on stone blocks, amongst and on *Sargassum*, *Padina*, *Hipnea* and other algae, amongst dead corals, 1958–88, 11 adult ♂ to 8 mm, 3 subadult ♂, 2 adult ♀ to 6·3 mm, 3 subadult ♀, 74 juv.

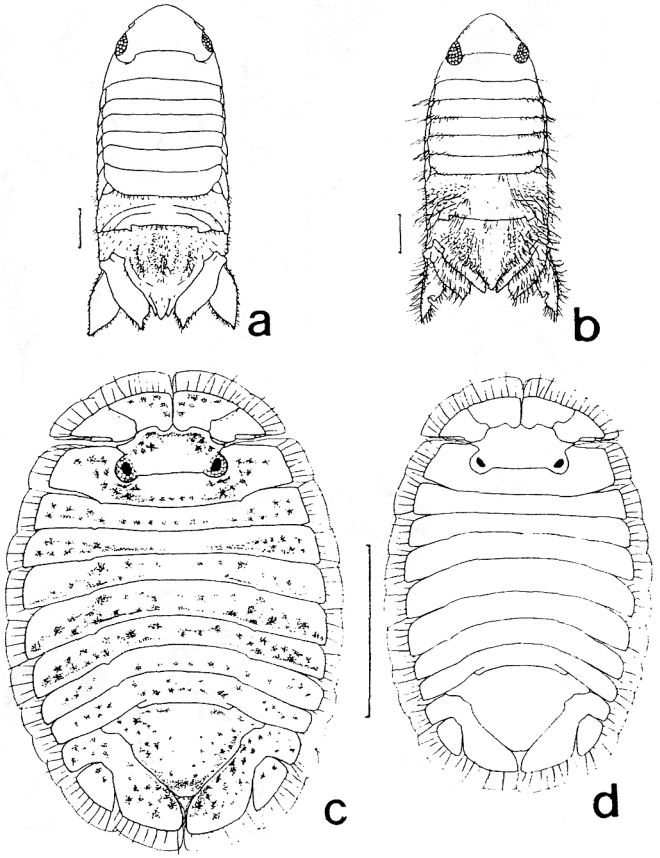

Fig. 10. *a*, *Cerceis pustulosa*; *b*, *Cerceis pravipalma*; *c*, *d*, *Paraleptosphaeroma brucei*, sp. nov.: *c*, adult male, holotype; *d*, ovigerous female, paratype.

Distribution

Previously known from north-eastern Australia (Queensland); range is now extended to the South China Sea.

Genus *Paracerceis* Hansen, 1905

Paracerceis Hansen, 1905: 77, 83, 87, 90, 91, 108, 125–7.—Harrison and Holdich, 1982*b*: 440.
Paracerceis Nierstrasz, 1931: 215.
Sergiella Pires, 1980: 212–18.—Pires, 1981: 219, 220.

Type species: *Naesa caudata* Say, 1818: 482, by original designation (Hansen 1905: 126).

Paracerceis holdichi, sp. nov.

(Figs 11–13)

Material Examined

Holotype. South China Sea: Vietnam, Benhoj Bay, Myodavat Cape, depth 1·5 m, on coralline algae, coll. S. Sheveyko, ♂ length 4·3 mm (ZIN, No. 1/84420).

Allotype. Same locality, ♀ (3·7 mm), No. 2/84420.

Description

Holotype male

Body strongly convex, lateral margins subparallel, 2·3× longer than maximum width across pereonite 6; dorsal surfaces granulated, granulation roughest on posterior pereonites and pleonites; lateral margins fringed with long soft setae, more numerous on posterior half of body and uropods. Cephalon trapeziform, tapering slightly towards anterior margin, about 2× as wide as long, anterior margin with pronounced but short rostrum, narrowly rounded distally. Anterolateral angles of cephalon rounded, thickened, with pair of grooves which conceal antennules. Eyes large, black. Pereonites decreasing slightly in length from anterior to posterior, such that pereonite 1 is 1·4× as long as pereonite 6. Transverse row of small tubercules present on pereonites 3, 4 and 7; 2 rows on pereonites 5 and 6 arising to posterior margin of each segment; on pereonites 3 and 4, rows less pronounced. Lateral margins of pereonites 3–7 also set with small tubercles increasing in size on posterior pereonites and with scattered setae. Free pleonite with 2 pairs of dorsolateral sutures of different length, the posterior ones considerably longer and almost adjoint to each other in middle part of segment; dorsal surface of this pleonite with 5 obscure roughly granulated tubercles, medial one better developed. Pleotelson anterior half with dorsal surface convex and raised above flattened posterior half, roughly granulated, with 5 stout tubercles, median largest with 2 smaller submedian tubercles on either side, remainder anterior to this row. Posterior margin of pleotelson with wide, deep and complex median notch with 3 pairs of teeth, 2 inner pairs are small, distal pair is largest, forming the pleotelsonic apex.

Antennule extending to middle pereonite 1; basal article long, stout, twice as long as wide; article 2 subquadrate, 1·5× narrower and 2·5× shorter than basal article; article 3 long, nearly 1·5× longer but almost twice as narrow as article 2; peduncle 1·37× as long as 8-articled flagellum. Antenna longer than antennula, peduncle relatively narrow, longer than 10-articulated flagellum.

Incisor and lacinia mobilis each with 3 rather obscure teeth. Left mandible setae row with 6 setae, incisor well developed, thick, set with spine-like dents. Maxillule medial lobe with 4 plumose setae, lateral lobe with about 10 spines. Maxilla inner lobe with about 8 pectinate setae; outer lobe inner branch with 6 spines, outer branch with 5 spines. Maxilliped endite with 1 coupling hook and about 11 stout spines on apex and distal part of inner margin; palp articles 2–4 with long lobes, article 5 narrow and almost as wide as lobes of preceding articles.

Pereopod 1 merus with 3 spines on posterior margin and 2 long and 1 short anterodistal spines; carpus with 2 stout spines on posterior margin; propodus relatively stout, with 3 spines and 1 stout broom seta on posterior pargin. Pereopod 2 with merus and carpus elongated; the latter is a little shorter than the former and twice as short as ischium;

propodus is slender and longer than those of pereopod 1. Pereopods 3–7 more robust than pereopod 2, each with elongated basis and ischium, ischium slightly shorter than merus and carpus combined and longer than propodus; latter bearing 4 stout spines on posterior margin. Pleopods 1–3 each with 3 coupling hooks. Pleopod 1 endopod triangular and relatively short; pleopod 2 endopod bears appendix masculina with subapical seta. Pleopod 3 exopod with complete suture. Pleopod 5 exopod with 3 scaled lobes. Uropod large, elongated; exopod long and narrow, slightly curved, almost straight, bluntly pointed apically, margins almost smooth, not serrated.

Allotype, female

Body similar in shape to male, almost 2·3× as long as broad across pereonite 7. Dorsal granulation and setation of body surface and dorsal sculpturing of abdomen less developed in comparison with male. Apex of pleotelson with relatively narrow and shallow median notch. Uropodal endopod well developed, extending just beyond posterior of pleotelson

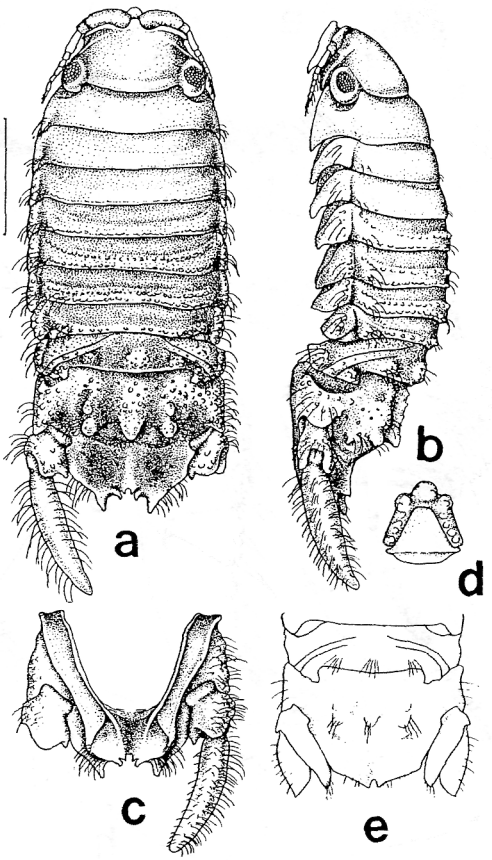

Fig. 11. *Paracerceis holdichi*, sp. nov. *e*, female, paratype; remainder, adult male, holotype: *a*, dorsal view; *b*, lateral view; *c*, pleotelson, ventral view; *d*, epistome and labrum; *e*, pleon and pleotelson, dorsal view.

apex, but not reaching apex of exopod; latter relatively shorter and wider than that in male, apically pointed.

Colour

Male and female, both light greyish yellow in alcohol.

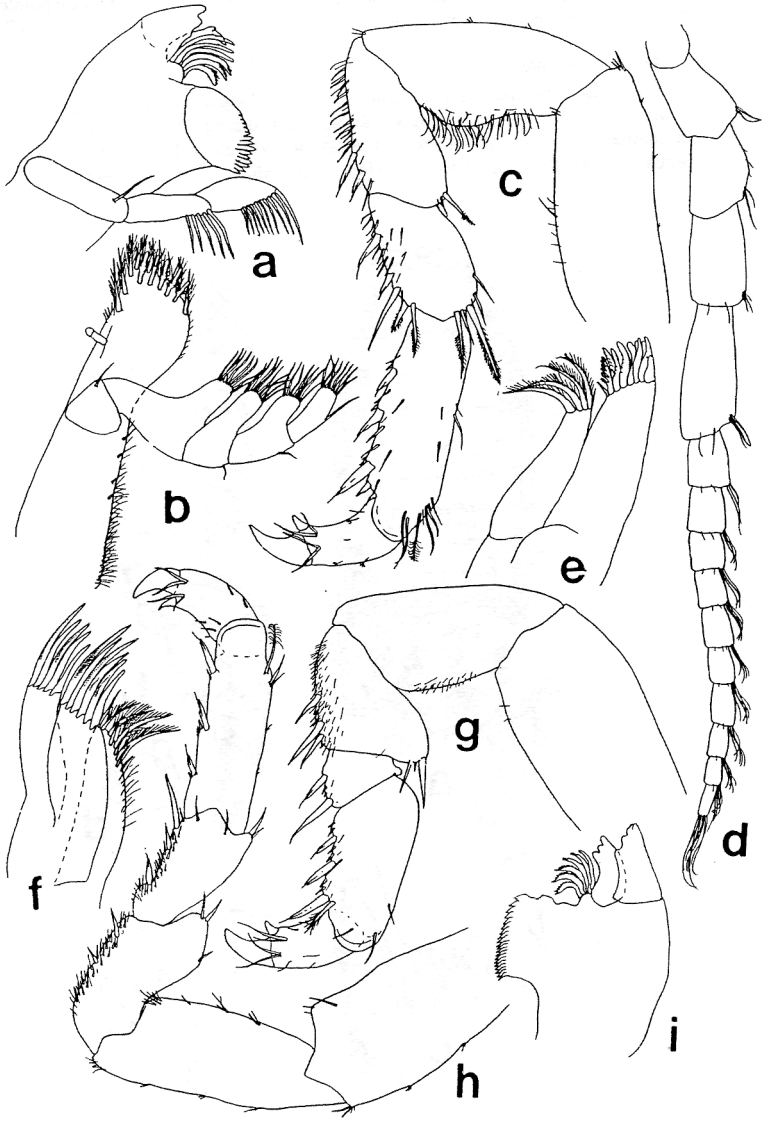

Fig. 12. *Paracerceis holdichi*, sp. nov. male, holotype: *a*, right mandible; *b*, maxilliped; *c*, pereopod 7; *d*, antenna; *e*, maxillule; *f*, maxilla; *g*, pereopod 1; *h*, pereopod 2; *i*, left mandible.

Distribution

Known only from the type locality.

Remarks

There are 14 species of *Paracerceis*. Such species as *P. edithae* Boone, 1930, *P. dollfusi* Lombardo, 1985, *P. cohenae* Kensley, 1984, *P. nuttingi* (Boone, 1921), *P. cordata* (Richard-

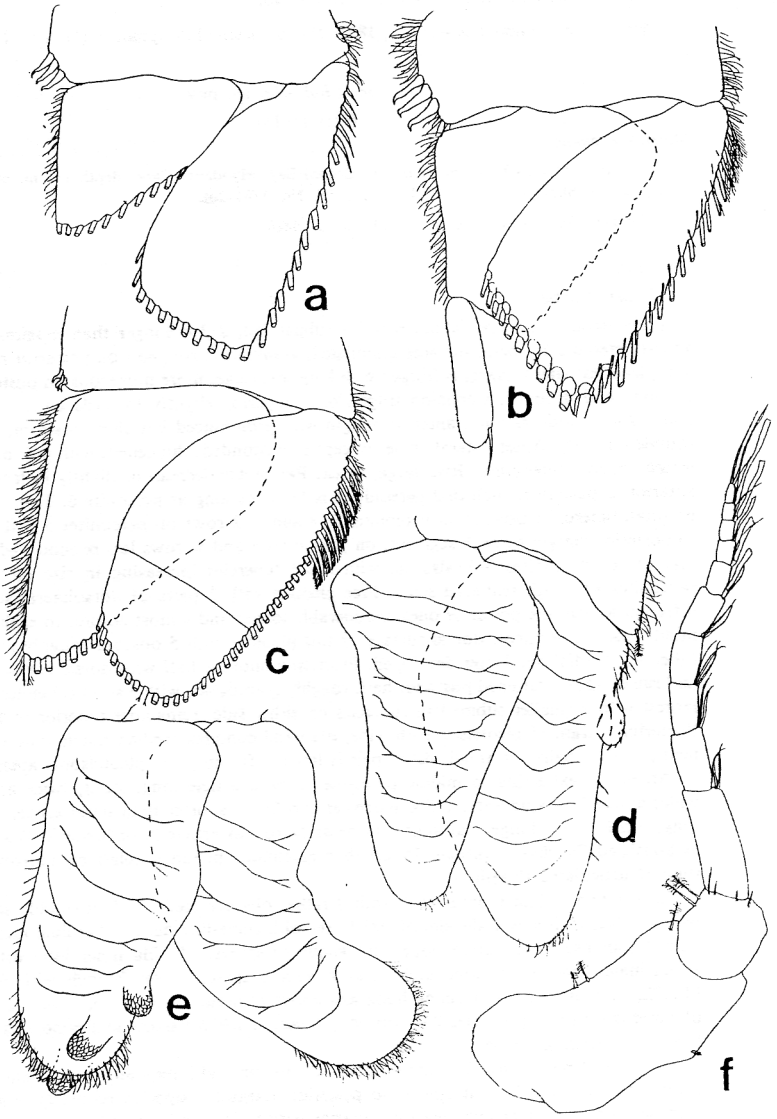

Fig. 13. *Paracerceis holdichi*, sp. nov. male, holotype: *a–e*, pleopods 1–5; *f*, antennule.

son, 1899), *P. glynni* Kensley, 1984, *P. gilliana* Richardson, 1899, and *P. cryptophila* Roman, 1979, differ strikingly from *P. holdichi* in the dorsal sculpturing, and the shape of the distal pleotelsonic incision. *P. holdichi* can be disguished from *P. caudata* (Say, 1818) by the absence of serrations on the outer margin of the uropodal exopods, by the wider but shallower distal notch of the male pleotelson, and by the presence of the conspicuous distal notch on the female pleotelson. This last character distinguishes females of *P. holdichi* from females of *P. tomentosa* (Schultz & McCloskey, 1967), the male of which is unknown. Females of *P. holdichi* differ from females of *P. angulata* (Richardson, 1901) from Florida, the male of which is also unknown, in the wider uropodal exopod and posterior part of the pleotelson, and considerably more prominent, not acute, medial dorsal tubercle of the pleotelson. *P. sculpta* (Holmes, 1904), *P. japonica* Nunomura, 1988, and *P. beddardi* Stebbing, 1905 resemble *P. holdichi* more closely. The male of *P. sculpta* is distinguished by the considerably deeper pleotelsonic notch and the more slender, apically pointed exopods of the uropods, and the female is distinguished by the posterior part of the pleotelson expanded and bearing an obscure notch. The male of *P. japonica* has the distal notch on the pleotelson considerably narrower and deeper, with posterolateral teeth bifurcated, and the two anterior dorsal tubercles of the pleotelson being undeveloped. The female of *P. japonica* has the distal pleotelsonic notch considerably deeper than that of the female of *P. holdichi*, and the uropods are shorter and do not extend beyond the pleotelsonic apex. The female of *P. beddardi*, by contrast, has the distal notch shallower but broader than that of *P. holdichi*, and the posterior part of the pleotelson is narrower and more produced beyond the uropod apex. The male of *P. beddardi* has the exopod of the uropod curved more strongly than that of *P. holdichi*, the distal notch is similar in shape but narrower, the appendix masculina is longer, and the anterior part of the pleotelson bears six tubercles (only five in *P. holdichi*) because there is a well-developed median tubercle in the anterior row, which is absent in *P. holdichi*.

Etymology

The species is named for Dr D. M. Holdich of the University of Nottingham, England, for his contributions to sphaeromatid taxonomy.

Genus *Paraleptosphaeroma* Buss & Iverson

Paraleptosphaeroma Buss & Iverson, 1981: 2, 4, figs 1–3.—Brusca and Iverson, 1985: 28. Kensley and Schotte, 1989: 208.

Type species: *Paraleptosphaeroma glynni* Buss & Iverson, 1981: 4, 8, by monotypy.

Remarks

This genus consists of two recently described species from Panama and from Reunion Island, southern Indian Ocean. Specimens from the South China Sea are morphologically similar to both described species in their general habitus and shape of appendages. However, some slight differences allow the description of a west Pacific specimen as a new species.

Paraleptosphaeroma brucei, sp. nov.

(Figs 10*c*, *d*, 14, 15)

Material Examined

Holotype. South China Sea, northern Vietnam, Gulf of Tonkin, Baitylong I., intertidal zone, under stones and dead corals, 2.vi.1990, coll. M. Malyutina, ♂ (2·2 mm).

Paratypes. Same locality, 2–25.vi.1990, M. Malyutina, 14 samples, 44 adult ♂ up to 2·35 mm, 31♀ with embryos up to 1·98 mm, 72 juv.; south-eastern Vietnam, Sapothe I., 25 m, coarse coral sand, coll. V. Fadeev, 11.ix.1988, 2 subadult ♀.

Description

Holotype, male

Body oval, about 1·2× (while whole contour including antennules and uropods nearly 1·5×) as long as maximum width across pereonite 5. Dorsal surface smooth. Membrana

cingula well developed. Cephalon small, 2·5× wider than long; anterior margin sinuous, with very short rostral process; eyes not large, consisting of about 39–40 dark pigmented ocellae. Pereonite 1 longest; others increasing in width and length from pereonite 2 to 5; last pereonites and free pleonite being subequal in length and decreasing in width from pereonite 6 to pleonite. Pleotelson roughly triangular with slight distal emargination.

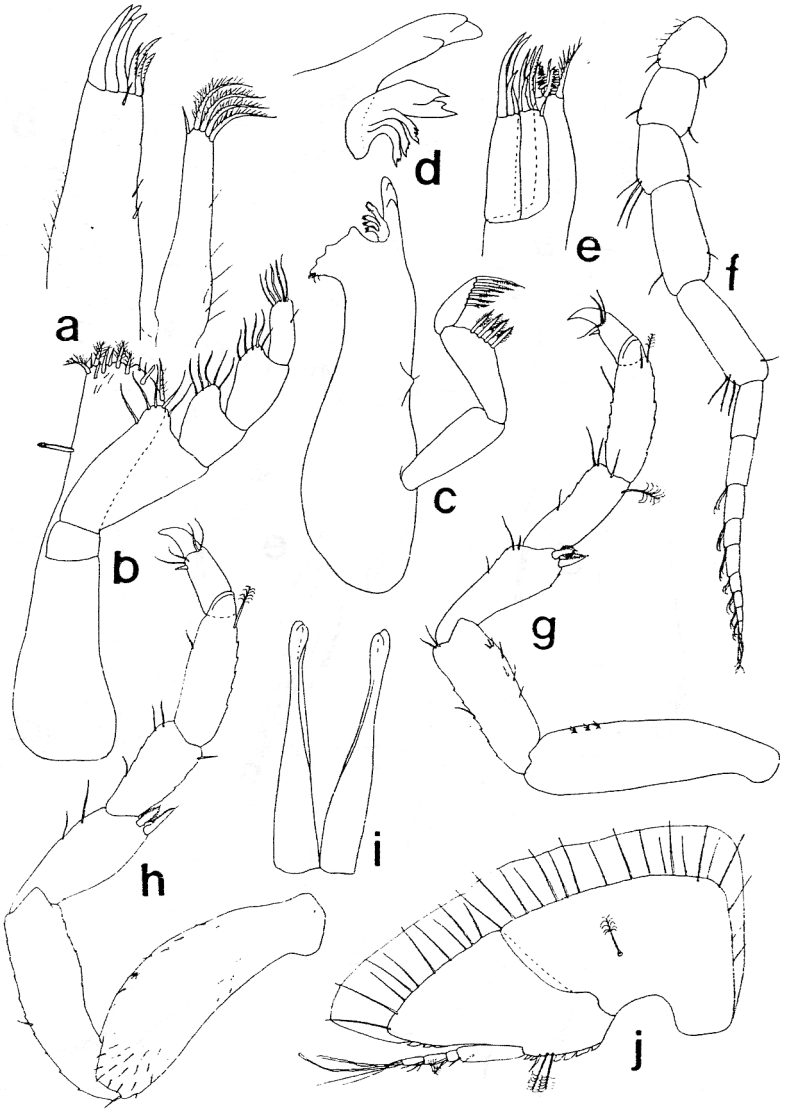

Fig. 14. *Paraleptosphaeroma brucei*, sp. nov. adult male, paratype: *a*, maxillule; *b*, maxilliped; *c*, right mandible; *d*, distal part of left mandible; *e*, maxilla; *f*, antenna; *g*, pereopod 2; *h*, pereopod 3; *i*, penes; *j*, antennule.

Antennule reaching the posterior margin of pereonite 1; basal article 1·7× longer but only slightly wider than article 2; peduncle of article 3 narrow, long, 3·2× longer than wide; flagellum of 4 articles, the first is shortest, article 3 is longest, 1·5× longer than flagellar article 2. Antenna slender, 5-articled peduncle nearly 1·3× longer than flagellum; peduncle

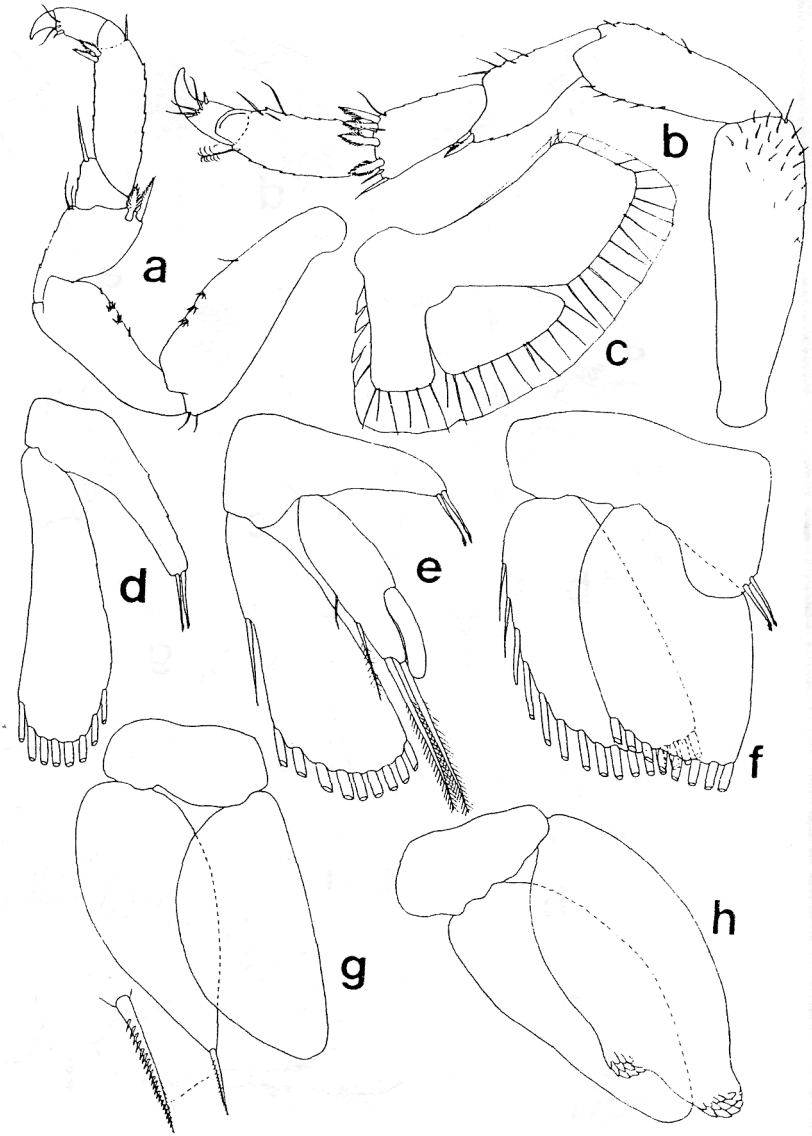

Fig. 15. *Paraleptosphaeroma brucei*, sp. nov., adult male, paratype: *a*, pereopod 1; *b*, pereopod 7; *c*, uropod; *d–h*, pleopod 1–5.

articles 1–3 shorter, their total length 1·5× longer than article 4, articles 4 and 5 longest, subequal in length; flagellum of 9 setose articles.

Mandible incisor elongate, tricusped; lacinia mobilis of left mandible tricusped; palp articles 1 and 2 longest and subequal in length, article 3 narrowest, only half the length of article 2; article 2 with 4, article 3 with 6, setae. Maxillule endopod with 4 curved subequal pectinate setae and 1 straight simple spine-like seta; exopod with about 7 curved spines. Maxilla 2 lateral lobes each with 3 long slender curved spines, inner of these lateral lobes bear additionally 1 distal spine-like seta; medial lobe with 3 distal setae and 2 serrated spines. Maxilliped endite with 1 long coupling hook; palp article 2 longest, about 2·5× longer than article 1 or 3 and nearly 2× longer than article 4; article 4 about 1·3× longer than articles 5 or 3.

Pereopod 1 merus with 2 stout serrated anterodistal spines; triangular carpus with 1 elongated posterodistal spine; propodus with several short spines along posterior and anterior margins, 1 anterodistal seta and 1 strong serrated posterodistal spine. Pereopod 2 slender; merus, carpus and propodus about the same length; posterior margin of these segments with spine-like membranous structures; carpus and merus also with 2–3 simple setae of different length; anterodistal angle of merus with 2 serrated spines, of carpus with 1 seta. Pereopod 3 similar to pereopod 2. Pereopods 4–7 similar to each other. Pereopod 7 carpus with 2 posterodistal and 1 anterodistal seta; propodus posterior margin with 1 short and 2 long setae.

Penes about 6× longer than width at base, tapering to narrow rounded apex; distal half slightly twisted. Pleopod 1 exopod expanded to rounded distal end, about 3× longer than wide, with 8 distal plumose setae. Pleopod 2 exopod 2·7× longer than wide, with 1 plumose seta on lateral margin and 9 distal plumose setae, about twice as long and nearly 1·5× longer than endopod; endopod 2·3× longer than wide, with 5 plumose setae; appendix masculina slightly curved, with rounded apex, extending much beyond distal margin of endopod. Pleopod 3 exopod oval, bearing 15 plumose setae along lateral and distal margins; endopod somewhat wider than exopod, with 8 distal plumose setae. Pleopod 4 endopod oval, without setae; exopod gradually tapering to narrow rounding apex bearing 1 thick plumose seta. Pleopod 5 endopod and exopod oblong-ovate, exopod with 2 rounded distal bosses bearing scale-like structures. Uropod 2·3× as long as wide; endopod with straight distal margin, twice as long as exopod; exopod twice as long as wide, tapering to narrow rounded distal margin.

Female

Quite similar to males in general habitus, except for sexual characters, and length only to 1·98 mm. Up to 11–13 embryos in internal pouch.

Remarks

All three species of *Paraleptosphaeroma* are quite similar in their general habitus and may be distinguished by some small but clear differences in details of the shape and setation of some appendages. It is interesting that the Asiatic species has more features in common with the American than with the Indian species.

The present new species differs from two other species in having the appendix masculina only slightly curved, and in having many more ocellae. This species agrees only with *P. indica* (Müller 1990) in having nine flagellar articles on antenna (6–7 in *P. glynni*), but differs from *P. indica* and agrees with *P. glynni* in having about 15 long plumose setae (only six setae in *P. indica*) on the exopod of pleopod 2. Pleopod 1 exopod in *P. glynni* with 10, in *P. indica* with 9, and in *P. brucei* with 8 marginal setae. Pleopod 2 endopod bears 1 short and 2 long plumose setae, in *P. glynni* 3–5 short, simple setae, and in *P. indica* 5 long, plumose setae. Article 2 of mandibular palp in *P. indica* with 3 setae, in *P. brucei* with 4 setae, and in *P. glynni* with 3–4 setae.

Etymology

This species is named for Dr Niel Bruce, who has greatly furthered the study of Isopoda, especially of the Australian region.