

Two interesting new marine interstitial Ostracoda (Crustacea) from the Comoros, with the description of *Danipussella* gen. nov.

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Abstract

A new interstitial ostracod genus and species, *Danipussella serpentina* gen. nov. sp. nov., from the Comoros (Grande Comore) is described and figured. Its affinities with related genera and species are discussed. The species occurs together with another interesting species, *Saipanetta kennesi* sp. nov. which is also extensively described and figured, and compared with related species.

Key-words: Ostracoda, interstitial fauna, the Comoros, marine fauna, taxonomy.

Résumé

Danipussella serpentina gen. nov. sp. nov., nouveau genre et nouvelle espèce d'ostracode interstitiel des îles Comores (Grande Comore) est décrit et figuré. Les relations avec d'autres genres et espèces sont discutées. Une deuxième espèce intéressante a été trouvée associée à *D. serpentina*. Il s'agit de *Saipanetta kennesi* qui est également décrite en détail et comparée à d'autres espèces du genre.

Mots-clés: Ostracoda, faune interstitielle, îles Comores, faune marine, taxonomie.

Introduction

Sediment samples from Grande Comore (The Comoro Islands), collected by the "Groupe Plongée" of the "Expédition Karthala" in 1981, yielded some very interesting interstitial ostracods. Two species are described in this paper. The first is *Danipussella serpentina* gen. nov. sp. nov., which is described in detail. The new genus is certainly a pussellid but differs in many aspects from the genus *Pussella*. Together with *Pussella* and *Anchistrocheles* it is the third genus of the family Pussellidae. The second species, *Saipanetta kennesi* sp. nov., is the sixth species of the genus *Saipanetta* (*S. bensoni* probably belongs to the genus *Cardobairdia*).

Both species were found in the same sediment sample, together with other interstitial ostracods, among them a new *Saida*-species, which will be described later.

Systematic account

Order PODOCOPIDA MULLER, 1894
Suborder Podocopina SARS, 1866
Superfamily Bairdiacea SARS, 1865
Family Pussellidae DANIELOPOL, 1976
(in MADDOCKS, 1976)

Genus *Danipussella* gen. nov.

Derivation of name :

In honour of Dr. Dan DANIELOPOL (Institut für Limnologie, Mondsee, Austria).

Type-species :

Danipussella serpentina gen. nov. sp. nov. (here designated).

Gender :

Feminine.

Diagnosis :

Medium-sized smooth valves with two large hollow spines on the anterior margin; posterior part elongated, without spines; large posterior vestibulum; fourth segment of male first leg not fused with claw; copulatory appendage with two large processes pointing in anterior direction; furca reduced to a small bristle.

Discussion :

See below.

Danipussella serpentina gen. nov. spec. nov.
(Fig. 1-14, 39, 40, 42-44)

Derivation of name :

From Latin *serpentinus* (= snake-like), because of the long snake-like process on the male copulatory organ.

Type-locality :

The Comoros, Grande Comore, Foumboni, at a depth of 14 m, in coral sand.

Holotype :

A dissected male with valves (O.C. 1320a) and soft parts (O.C. 1320b).

Allotype

A dissected female with valves (O.C. 1321a) and soft parts (O.C. 1321b).

Paratypes

Six dissected and mounted specimens, and one isolated left valve (O.C. 1322-1328).

DESCRIPTION

Medium-sized, thin, translucent and shiny valves; dorsal margin gently arched; ventral margin concave near the middle; posteroventral margin convex; posterior part of valves in lateral view narrowly elongated, triangular and pointed; anterior margin straight, perpendicularly connected with the dorsal and ventral margins; anterior extremity of valves bearing two large hollow spines, opening into the vestibulum; anterior lamella moderately wide; inner margin parallel to anterior margin; posterior inner lamella wide, forming a large posterior vestibulum; posterior extremity without spines; muscle scar pattern consisting of four small scars.

Antennule seven-segmented; segments five, six and seven very short and bearing long setae, about twice as long as the antennule. Antenna with a very small bristle-like exopodite on a very indistinct third segment; endopodite two-segmented, first endopodal segment consisting of two fused segments; long curved and slender terminal claw. Mandible: gnathobasis with seven teeth; first (= dorsal) tooth large with a lamellar shape; palp four-segmented; second segment with long ventro-distal bristle; third segment with one dorso-distal and one ventro-distal seta; fourth segment with two fine terminal setae and one slightly thicker claw-like seta.

Maxillule with three long and slender endites and a somewhat shorter unsegmented palp; palp with three terminal setae and a dorso-distal seta; first endite with a small claw, a short seta and a spoon-like claw; second endite with one short claw and a spoon-like claw; third endite with two setae; two long mouthward directed setae.

First leg (maxilla): four-segmented; first segment bearing two long ventral setae inserted on the same basis (epipodite?) and a dorso-distal seta; male terminal claw longer than female one; last segment not fused with claw in male. Second leg: slender, with one ventro-distal seta on the first segment and a long and slender terminal claw.

Third leg: as the second leg but with longer terminal claw. Furca: very small, only a tiny bristle on a strongly reduced shaft.

Copulatory appendage: with a short and coiled copulatory tube and two large processes pointing in anterior direction; dorso-distal process almost straight and lamellar; proximal (= anterior) process a long and serpentiform clasping organ.

Abdominal bristle: very fine, slightly longer than furcae. Oesophageal chewing apparatus and brush-like organs present.

Dimensions (including anterior spines):

Holotype, right valve: length 0.59 mm, height 0.19 mm.

Allotype, left valve: length 0.52 mm, height 0.18 mm.

Occurrence:

The species was found living in coral sand in the type-locality, Fomboni (E. Grande Comore) at a depth of 14 m (1st August 1981, station no. 6). A single empty valve (O.C. 1328) was also found in a sediment sample from Chindini (S. Grande Comore) at a depth of 10 m (19 August 1981, station no. 167).

DISCUSSION

When comparing *Danipussella serpentina* with *Pussella botosaneanui* DANIELOPOL, 1973, the type-species of the genus *Pussella*, and with *Pussella danielopoli* MADDOCKS, 1976 the former shows some remarkable characteristics. The valves of *D. serpentina* are markedly elongated and show a subtriangular pointed posterior extremity (in lateral view). In *Pussella*-species the posterior extremity is much shorter, and furthermore the postero-ventral margin is set with two or more spines. In *D. serpentina* the postero-ventral margin is smooth, i.e. without spines. According to DANIELOPOL (1980, and *in litt.* 21 april 1988) many interstitial ostracods have elongated and pointed valves (e.g. the genus *Phreatocandona* DANIELOPOL, 1973) as an adaptation to physically and/or biologically stable habitats.

The maxillule of *D. serpentina* bears four setae (three terminal setae and a dorso-distal one) on the palp, three setae on the first endite and two setae on the second and third endite. In *P. botosaneanui* the chaetotaxy is as follows: palp with one seta, first, second, and third endite with two setae (DANIELOPOL, 1976). *P. danielopoli* has still another chaetotaxy: palp with two setae, first and second endite with two setae and third endite with three setae (MADDOCKS, 1976). *Anchistrocheles*-species have more setae on palp and endites. In *P. botosaneanui* the first leg shows a strong sexual dimorphism. In males it is built as a clasping apparatus mainly by the fusion of the fourth segment with the incurving terminal claw. In *D. serpentina* the first leg is hardly different from the female one, and the terminal claw is not fused with the fourth segment. Furthermore the male first leg of *P. botosaneanui* has two strong bristles on the antero-distal margin of the second segment, which are absent in the female first leg. Those bristles are also lacking in the male first leg of *D. serpentina*.

The male and female first leg of *P. danielopoli* and of *D. serpentina* bears two long setae on the ventral side of the first segment. They are probably homologous with the strongly developed vibratory plate of Bairdiidae and of *Anchistrocheles*. *P. botosaneanui* has only one ventral seta on the first segment.

The copulatory appendages of *P. botosaneanui* and *D. serpentina* show very remarkable differences. *P. botosaneanui* has a large L-shaped, ventrally oriented process which resembles a spoon. A second process is lacking. *D. serpentina* has two large processes, both pointing in anterior direction: an almost straight dorso-distal lamellar process and a proximal long serpentiform process. Both species have a coiled copulatory tube. The copulatory appendage of *P. danielopoli* is unknown.

The furca of *D. serpentina* is very strongly reduced to a bristle-like structure in which one can indistinctly recognize the strongly reduced shaft and a single terminal seta. In *P. botosaneanui* the furca has a large and strong shaft bearing two slender subdistal bristles. In *P. danielopoli* the furca is somewhat reduced, but it still consists of a well delineated shaft with two long terminal setae.

Finally, *D. serpentina* has markedly larger valves (length: 0.59 mm) than *P. botosaneanui* (length: 0.26 mm) and *P. danielopoli* (length: 0.26 mm). The taxonomic value of this feature can only be established when other species of the new genus *Danipussella* become available. *Anchistrocheles*-species differ in many aspects from *Danipussella*, more particularly by the different shape of the valves, the presence of setae on the proximal segments of the antennule, the different setation of the antenna and the maxillule, by the presence of a large vibratory plate on the first leg, by the well developed furca, and by the different structure of the copulatory organ.

Suborder Metacopina SYLVESTER-BRADLEY, 1961
 Superfamily Healdiacea HARLTON, 1933
 Family Saipanettidae MCKENZIE, 1968
 Genus *Saipanetta* MCKENZIE, 1968

Saipanetta kennesi sp. nov.
 (Fig. 15-32, 33-38, 41)

Synonymy :

? *Saipanetta* sp. BONADUCE *et al.*, 1980, p. 177, pl. 7, figs 12, 13.

Derivation of name :

After Mr. J.-L. KENNES (Bonlez, Belgium) who collected the material, in collaboration with the "Groupe Plongée" of the "Expédition Karthala 81".

Type-locality :

The Comoros, Grande Comore, Foumboni, at a depth of 14 m, in coral sand.

Holotype :

A dissected female with valves (O.C. 1329a) and soft parts (O.C. 1329b).

Allotype :

A dissected male, with valves (O.C. 1330a) and soft parts (O.C. 1330b and O.C. 1330c).

Paratypes :

Three dissected males (O.C. 1331 - O.C. 1333) and thirty empty valves and carapaces, mostly juveniles (O.C. 1334 - O.C. 1339).

DESCRIPTION

Valves very small, translucent brownish and strongly inflated; sexual dimorphism pronounced; dorsal margin nearly straight, anterior margin evenly rounded; posterior margin obliquely rounded in females and in males; ventral margin straight in males and convex in females; valves strongly inflated in dorsal view, males ovoid with maximum width near the middle and females somewhat wedge-shaped, with maximum width in the posterior third; valves completely smooth. Inner lamella very narrow, with a few very fine indistinct marginal pore canals; hinge indistinctly merodont; muscle scar pattern a very large circular aggregate of about 27 close-packed scars in the adults; muscle scar pattern in juveniles as in the adults, with up to 26 scars. Antennule: six-segmented; second segment long and broad, with a bundle of seven medio-ventral setae; third segment slightly shorter than the combined lengths of the fourth, fifth and sixth segments; the last three segments with long setae.

Antenna: very robust, five-segmented; exopodite with one short and two long setae; first endopodal segment with a clump of six (maybe seven) stalked petaloid appendages, the stalks having a different transparency and looking dark under the microscope (black on figure 19). In shape and position they resemble much the Y-aesthetasc of the Cypridacea. The second endopodal segment also bears a long proximo-ventral, distally ringed aesthetasc. Large and stout terminal claw, having about the same length as the endopodite.

Mandible coxale relatively small; teeth small and simple; large distally toothed dorsal seta; epipodite with seven Strahlen; palp four- (five-) segmented; first and second segment indistinctly sutured; last segment with six curved claws with a remarkably swollen proximal part.

Maxillule: vibratory plate with 17 hirsute Strahlen without any gap in spacing; palp large and three-segmented; for setation see fig. 16. First thoracic leg (maxilla) with large basal podomere; anterior margin masticatory with numerous spines of varying length; posterior part with a vibratory plate with at least 9 Strahlen; endopodite of female relatively small and three-segmented; male endopodite larger, modified as a slightly asymmetrical clasping organ; left male thoracic leg podomeres longer than right ones; posterior dorso-distal seta of right male limb more than three times as long as left one; large curved terminal claw.

Second thoracic leg pediform, five-segmented and sexually dimorphic; female leg robust, bearing a vibratory plate with one long and two short Strahlen; male leg slender and bearing a vibratory plate with only one long Strahl. Third thoracic leg four-segmented in females and five-segmented in males, both having a vibratory plate with three Strahlen (maybe four in the males); very long, slightly curved terminal claws.

Furca : broad furcal shaft with a short posterior seta and four distal claws in the males, but with only three claws in the single female studied.

Copulatory appendage relatively large, attached to the body by a large chitinous shaft; hemipenis with a large dorso-distal hook.

Abdominal bristle : long and slender; posterior portion of body segmented : six segments are indistinctly visible.

Zenker's organ : oval, with a central tube surrounded by a complicated pattern of spiral bands.

Colour of specimens fixed in formol and preserved in alcohol : translucent brown.

Dimensions :

Holotype, female left valve : length 0.40 mm, height 0.22 mm.

Allotype, male, left valve : length 0.39 mm, height 0.18 mm.

Allotype, male, right valve : length 0.38 mm, height 0.17 mm.

Occurrence :

The species was found in the type-locality, Grande Comore, Fomboni, at a depth of 14 m, living in coral sand (1st August 1981, station no. 6), but was also recorded by BONADUCE *et al.* (1980) from the Gulf of Aqaba (Red Sea) as ? *Saipanetta* sp. I also found two empty valves of the species in a sediment sample from Far Garden Reef, Naama, Red Sea (leg. Dr. W. WELLENS, 7 April 1986). It is interesting to note that *S. kennesi* was found living together with *D. serpentina*. This is not the first time that a *Saipanetta*-species was found together with a pussellid. MADDOCKS (1976, p. 199) already reported the association of *P. danielopoli* with *Saipanetta brooksi*.

DISCUSSION

Up to now to seven *Saipanetta*-species have been described : *S. claudi* (McKENZIE, 1967), *S. kelloughae* MADDOCKS, 1972, *S. bensoni* MADDOCKS, 1972, *S. brooksi* MADDOCKS, 1973, *S. mckenziei* TEETER, 1975, *S. tumida* (BRADY, 1890) and *S. kennesi* sp. nov.

S. kelloughae has two ventro-distal setae on the fourth segment of the antennule; *S. kennesi* has only one. The former species differs also by the structure of the copulatory appendage, which lacks the large dorso-lateral hook-like process. Furthermore the male as well as the female furca has four terminal claws. *S. kennesi* has only three in the female. The male first leg of *S. kelloughae* is as in *S. kennesi*.

In *S. claudi* the second segment of the antennule bears a clump of nine proximo-ventral bristles (only seven in *S. kennesi*). The antenna of *S. claudi* shows a very large barbed subterminal claw. In *S. kennesi* the homologue structure is a short bristle. The proximal part of the six mandibular terminal unguis is not swollen as in *S. kennesi*. The male first leg of *S. claudi* has a shorter first segment and a markedly shorter second segment. In *S. kennesi* both segments are very long. The male furca of *S. claudi* has three distal claws (four in *S. kennesi*) and finally the poste-

rior segments of *S. claudi* have a dorso-distal spine on each segment.

Of all known species *S. brooksi* is probably most related to the new species described here. The antennule has more setae on the proximal segments and very long setae on the distal ones. The antenna shows a clump of nine sensory "setae", and the terminal unguis of the mandibular palp are not swollen proximally. The female furca has four claws and the male copulatory appendage resembles the one of *S. kennesi*, but it has a smaller dorso-distal look, extending beyond the distal margin. The male first leg is as in *S. kennesi*.

The soft parts of *S. tumida* are only partially known, but judging from the figures given by McKENZIE (1970) this species certainly differs by the very short segments of the male first leg, giving this leg a pronounced prehensile palp-like appearance. The terminal claw is as long as the combined lengths of both segments (in this respect *S. tumida* shows some resemblance to *S. claudi*). Judging from McKENZIE's figures (1970) the copulatory appendage of *S. tumida* differs considerably from the one of *S. kennesi*, but this needs confirmation by restudying the existing material or preferably by detailed study of new material of *S. tumida*.

S. mckenziei is only known from its hard parts. Although differences between valves of *Saipanetta*-species are relatively small, *S. mckenziei* differs by the sharper posterior carapace extremity (in dorsal view), by its subsagittate shape and its ventro-lateral overhang, especially posteriorly in right valves. Furthermore *S. kennesi* is markedly smaller. Size is not a characteristic *in se*, but in interstitial ostracods it is probably not unimportant. Finally *S. bensoni* differs from our new species by its thick-shelled and very large valves (holotype, right valve length 0.97 mm, left valve length 1.04 mm), by the high selvage around the free margin of the right valve, by the presence of only three terminal claws on the mandibular palp and by the absence of spiral bands on the Zenker's organ. It has to be mentioned that ? *S. bensoni* MADDOCKS *sensu* SCHORNIKOV and GRAMM, 1974 has four terminal claws on the mandibular palp. On the basis of valve characteristics VAN DEN BOLD (1974) assumed that *Saipanetta bensoni* is very probably a *Cardobairdia*. This was also suggested by SCHORNIKOV and GRAMM (1974), stressing the similarities between the valves of *S. bensoni* and *Cardobairdia balcombensis* McKENZIE, 1967, *C. ovata* VAN DEN BOLD, 1960 and *C. boldi* PIETRZENIUK, 1969. As far as the soft parts are concerned *Cardobairdia bensoni* differs from *Saipanetta*-species by the structure of the Zenker's organ and by the lower number of terminal claws on the mandibular palp. On the basis of the morphology of the male first leg the genus *Saipanetta* can be divided in two species-groups : group 1 having long first legs (long first and second segments) comprising *S. brooksi*, *S. kelloughae* and *S. kennesi* and group 2 having short first legs (short first and very short second segments) comprising *S. claudi* and *S. tumida*. *C. bensoni* has also short male first legs.

Much has been said about the systematical position of the Saipanettidae. I agree with McKENZIE (1975) and

MADDOCKS (1973 and 1976) that the family Saipanettidae is related to the Cypridacea and probably Darwinulacea. Whether Cypridacea, Darwinulacea and Healdiacea (including Saipanettidae) belong to the Metacopina, or, as suggested by DANIELOPOL (1972), to the suborder Podocopa including Cytheridae, Bairdiidae, Saipanettidae, Terstricytheridae, Darwinulidae and Cyprididae representing six independent phylogenetic lines belonging to a single group, remains open for debate.

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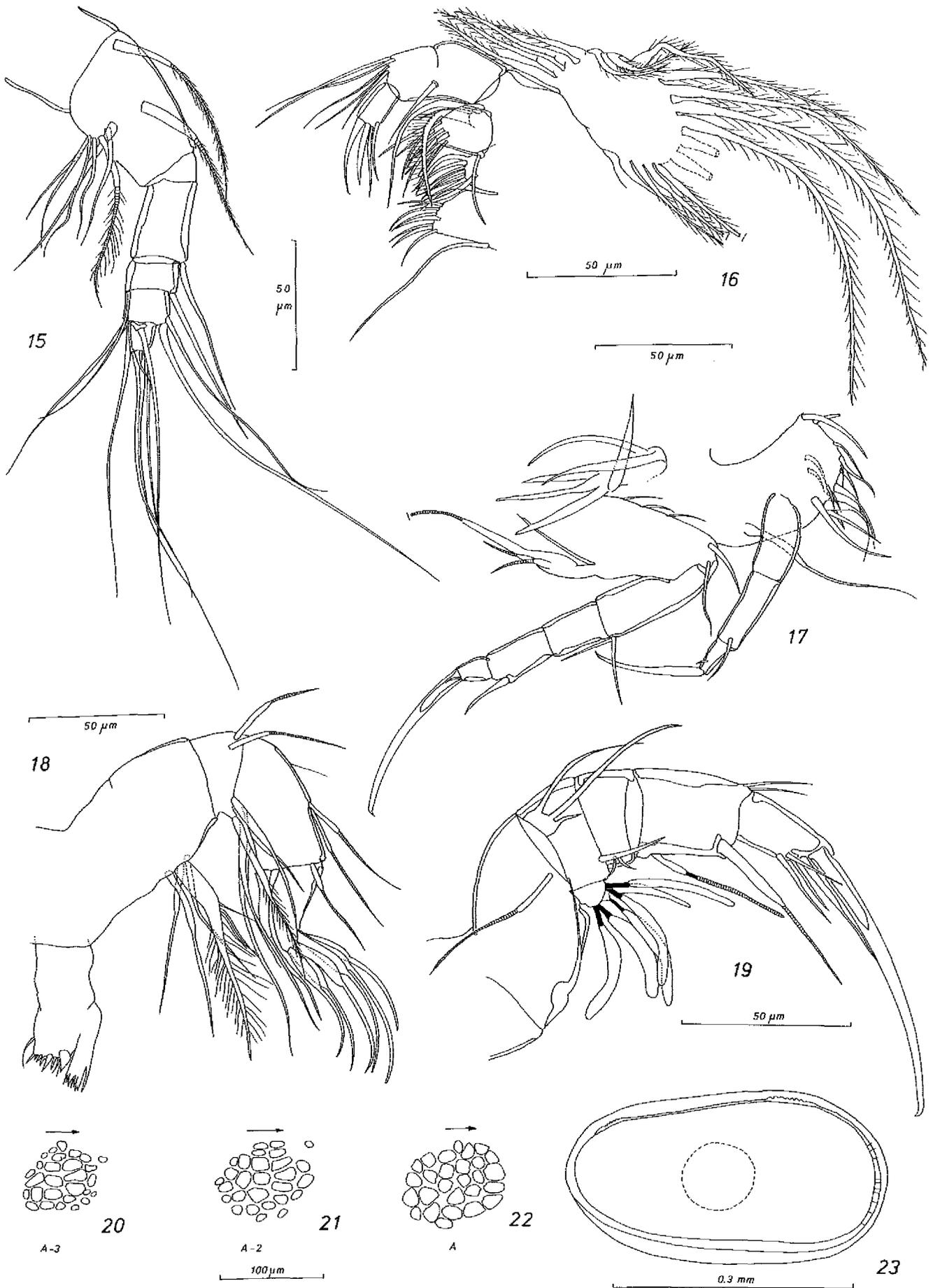
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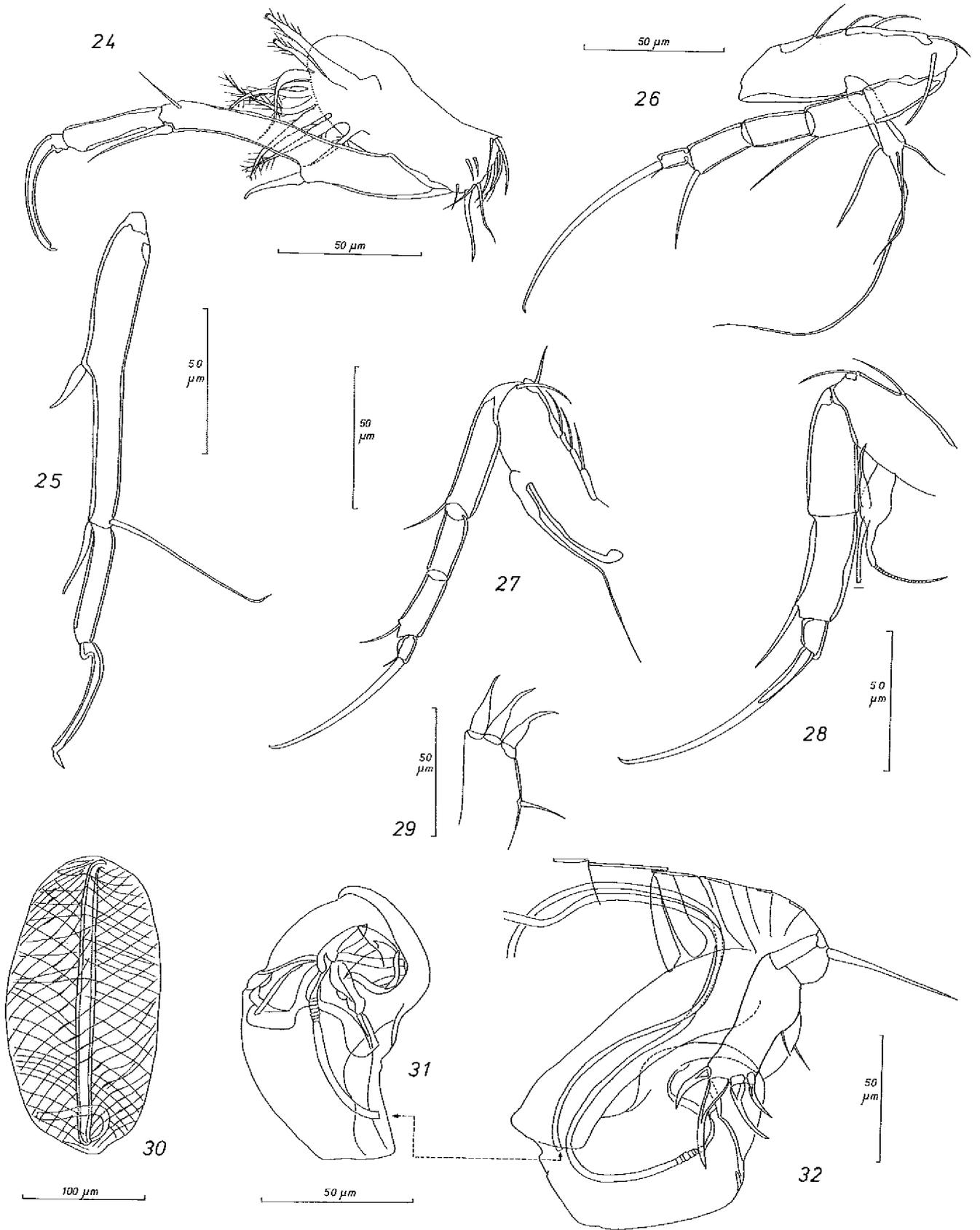
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Fig. 1-14. – *Danipussella serpentina* gen. nov. sp. nov., Fouboni, Grande Comore. ▷
Fig. 1. Male left valve, internal view, holotype. – Fig. 2. Male right valve, internal view, holotype. – Fig. 3. Antennule, male, holotype. – Fig. 4. Antenna, male, paratype (O.C. 1325). – Fig. 5. Mandible, male, paratype (O.C. 1325). – Fig. 6. Second leg, male, paratype (O.C. 1322). – Fig. 7. First leg, female, allotype. – Fig. 8. First leg, male, holotype. – Fig. 9. Maxillule, female, allotype. – Fig. 10. Brush-like organ, male, paratype (O.C. 1323). – Fig. 11. Third leg, male, paratype (O.C. 1322). – Fig. 12. Copulatory appendage, male, holotype. – Fig. 13. Oesophageal chewing apparatus, male, paratype (O.C. 1325). – Fig. 14. Abdominal spine and furcae, male, holotype.

Fig. 15-23. – *Saipanetta kennesi* sp. nov., Fouboni, Grande Comore. ▷
Fig. 15. Antennule, female, holotype. – Fig. 16. Maxillule, male, paratype (O.C. 1333). – Fig. 17. First and second leg, female, holotype. – Fig. 18. Mandible, female, holotype. – Fig. 19. Antenna, female, holotype. – Fig. 20. AMS, juv. A-3, left valve, paratype (O.C. 1337). – Fig. 21. AMS, juv. A-2, left valve, paratype (O.C. 1336). – Fig. 22. AMS, adult female left valve, paratype (O.C. 1335). – Fig. 23. Female left valve, internal view, holotype.







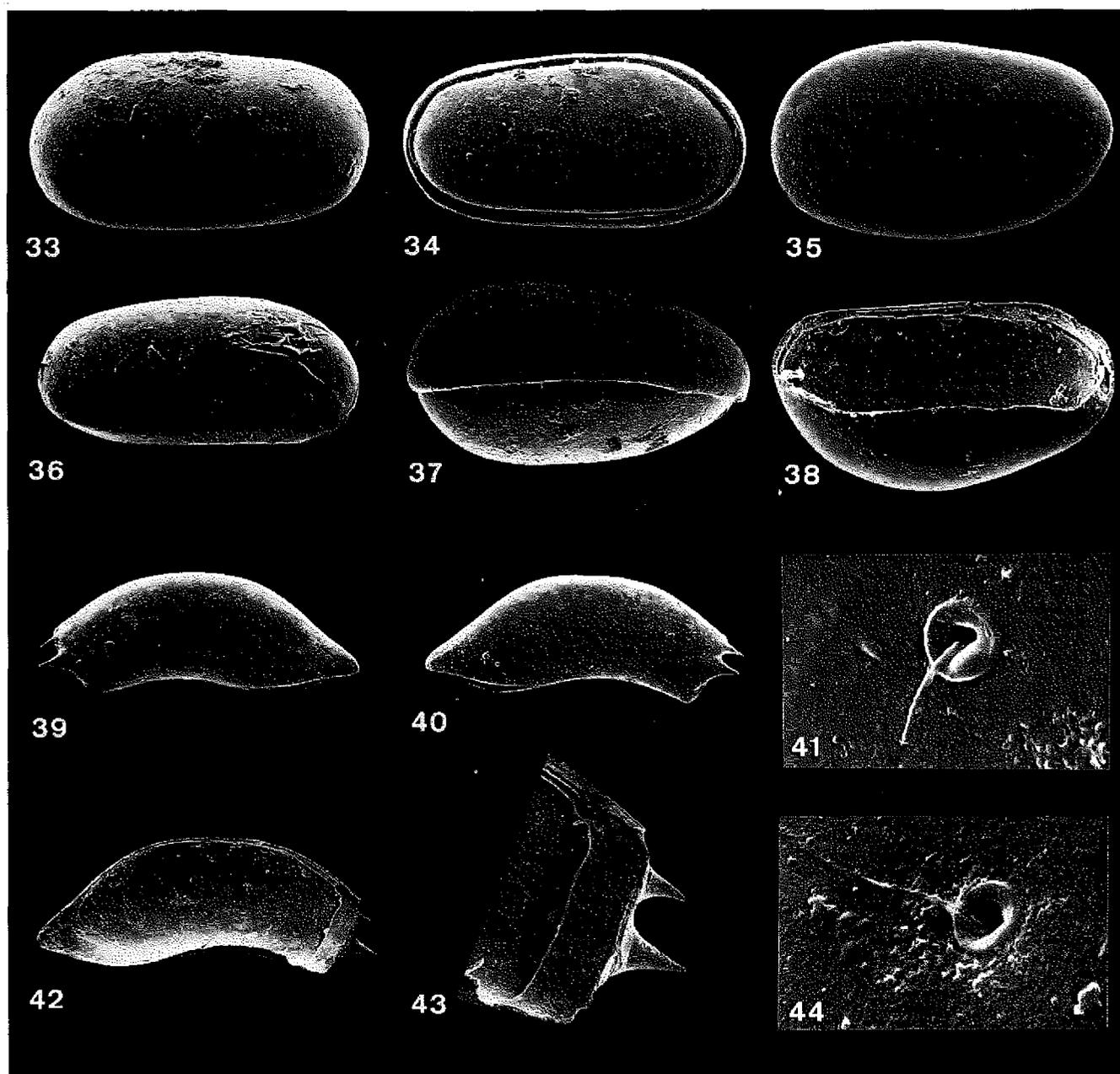


Fig. 33-38, 41. – *Saipanetta kennesi* sp. nov., Foubboni, Grande Comore.

Fig. 33. Male left valve, lateral view, paratype, $\times 130$ (O.C. 1338). – Fig. 34. Male carapace, lateral view, paratype, $\times 130$ (O.C. 1338). – Fig. 35. Female left valve, lateral view, paratype, $\times 130$ (O.C. 1339). – Fig. 36. Male right valve, lateral view, paratype, $\times 130$ (O.C. 1331). – Fig. 37. Male carapace, dorsal view, paratype, $\times 130$ (O.C. 1338). – Fig. 38. Female left valve, internal view, paratype, $\times 130$ (O.C. 1339). – Fig. 41. Normal pore, female left valve, paratype, $\times 3140$ (O.C. 1339).

Fig. 39-40, 42-44. – *Danipussella serpentina* gen. nov. sp. nov. All specimens are from Foubboni, Grande Comore, with exception of the specimen of Fig. 42, 43 which is from Chindini (S. Grande Comore).

Fig. 39. Left valve, lateral view, male, paratype, $\times 90$ (O.C. 1327). – Fig. 40. Right valve, lateral view, male, paratype, $\times 90$ (O.C. 1327). – Fig. 42. Left valve, internal view, paratype, $\times 90$ (O.C. 1328). – Fig. 43. Detail of same left valve, $\times 315$. – Fig. 44. Normal pore, right valve, male, paratype, $\times 4400$ (O.C. 1327).

◁ Fig. 24-32. – *Saipanetta kennesi* sp. nov., Foubboni, Grande Comore.

Fig. 24. Left male first leg, paratype (O.C. 1331). – Fig. 25. Right male first leg, paratype (O.C. 1333). – Fig. 26. Male third leg, paratype (O.C. 1333). Fig. 27. Male second leg, paratype (O.C. 1333). – Fig. 28. Female third leg, holotype. – Fig. 29. Female furca, holotype. – Fig. 30. Zenker's organ, allotype. – Fig. 31. Male copulatory appendage, allotype. – Fig. 32. Male copulatory appendage and furca, allotype.