

Comontocypris gen. nov., a marine interstitial new genus of the family Pontocyprididae (Crustacea: Ostracoda)

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Abstract

Comontocypris gen. nov., a new ostracod genus from the Comoros is described. It is the first fully described pontocypridid living in an interstitial environment. Its affinities with related genera and its systematical position are discussed.

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

Résumé

Comontocypris gen. nov., un nouveau genre d'ostracode des Comores est décrit. Parmi les Pontocyprididae c'est le premier genre décrit en détail qui vit dans le milieu interstitiel. Les relations avec d'autres genres de la famille et la position systématique du nouveau genre sont discutées.

Mots-clefs: Ostracoda, faune interstitielle, les Comores, faune marine.

1. Introduction

Interstitial ostracods live in the water filled cavities between the grains of the sediment. They are not restricted to a particular family, but at least fifteen families of the subclass Podocopa have representatives in the interstitial habitat (HARTMANN, in DANIELOPOL & HARTMANN, 1986). Interstitial Pontocyprididae, however, were unknown until recently, when MADDOCKS & ILIFFE (1986, p. 63) described a first interstitial pontocypridid from an inland marine cave of Bermuda. Because they disposed of only one specimen, they described it briefly and left it in open nomenclature ("New Genus, New Species"). The discovery of a second pontocypridid genus, *Comontocypris* gen. nov., in a sediment sample from the Comoros, confirms the presence of the family Pontocyprididae in the interstitial habitat. It is a genus with highly adapted valves, resembling in shape and size many other interstitial ostracods belonging to different families.

2. Systematics

Ordo Podocopida MULLER, 1894
Superfamily Cypridacea BAIRD, 1845
Family Pontocyprididae MULLER, 1894
Genus *Comontocypris* gen. nov.

Derivation of name: contraction of Comoros and *Pontocypris*.

Type-species: *Comontocypris arenaria* gen. nov., sp. nov. (here designated).

Gender: feminine.

Diagnosis: very small, elongate valves, with flattened ventral side; postero-ventral margin interiorly displaced; antenna without swimming setae; third segment of cleaning limb with thick and proximally displaced seta.

Discussion: see below.

Comontocypris arenaria gen. nov., sp. nov.
(Figs. 1 - 24)

Derivation of name: Latin *arenarius* = sandy.

Type-locality: The Comoros, Grande Comore, 1 Km N of Moroni, in front of "Hotel Coelacanth", depth: 15 m.

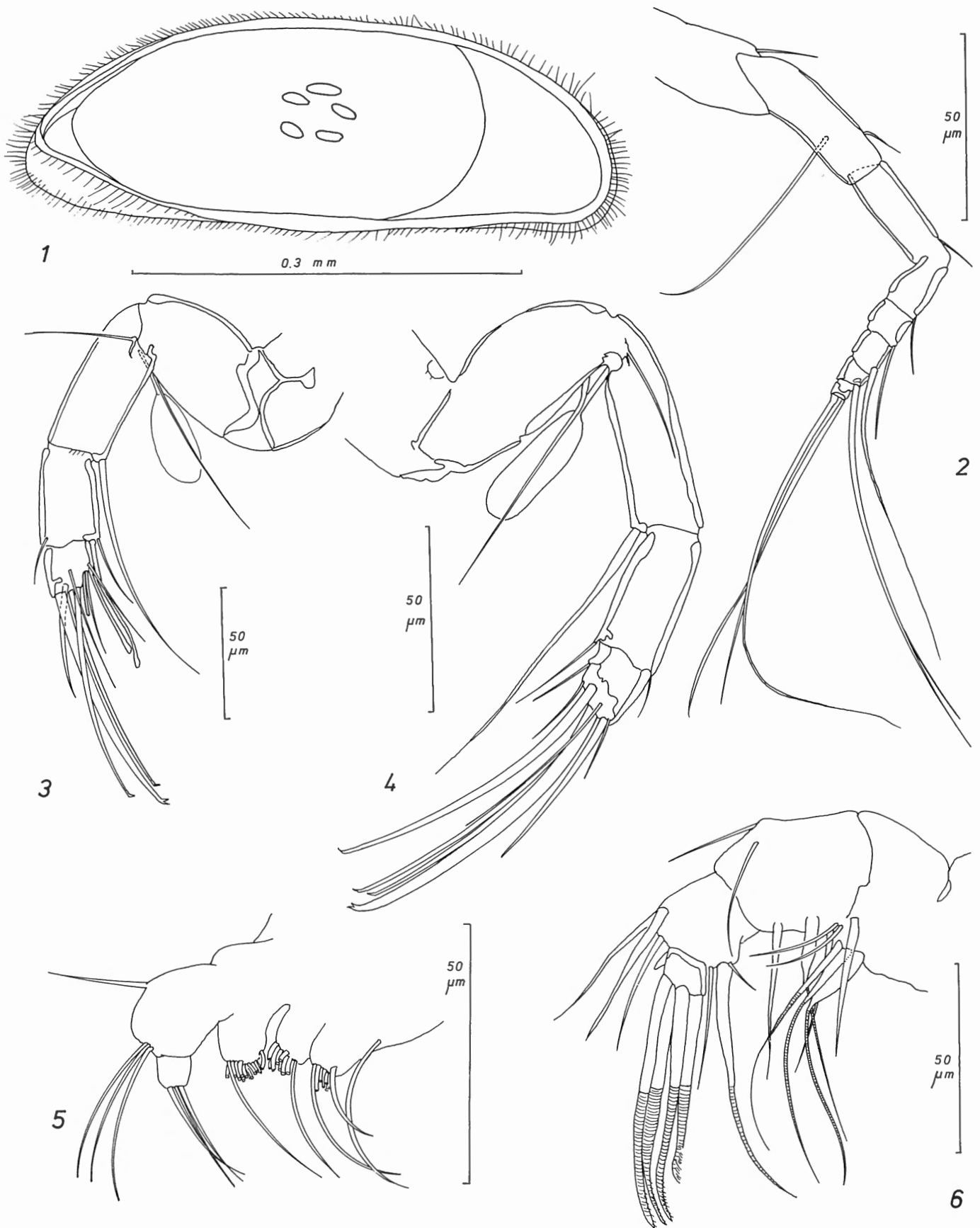
Holotype: a dissected male with valves (O.C. 1199a) and soft parts (O.C. 1199b).

Allotype: a dissected female with valves (O.C. 1200a) and soft parts (O.C. 1200b).

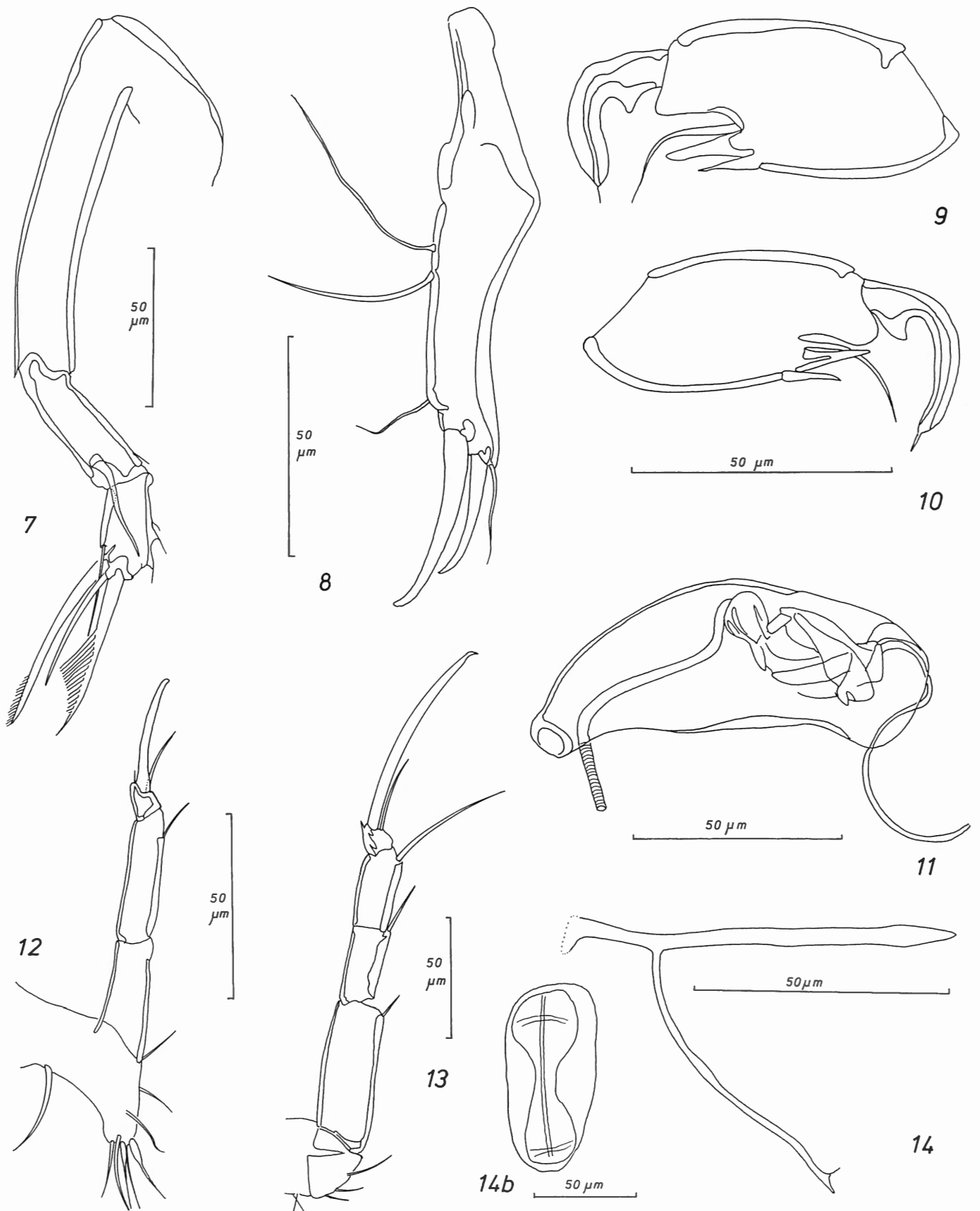
Paratypes: eight dissected specimens (four males and four females) (O.C. 1201 - O.C. 1208).

DESCRIPTION

Valves very small and very elongate and relatively thickshelled; anterior margin broadly rounded; posterior margin pointed; dorsal margin gently arched; ventral margin nearly straight; ventral side flattened; postero-ventral margin innerly displaced. Carapace in dorsal view inflated with parallel lateral margins, rounded posterior extremity and pointed, beakshaped anterior extremity; right valve overlapping left one.



Figs. 1-6. *Comontocypris arenaria* gen. nov., sp. nov., Grande Comore, The Comoros.
 Fig. 1. Left valve, male, internal view, paratype (O.C. 1205). – Fig. 2. Antennula, female, allotype. – Fig. 3. Antenna, male, holotype. – Fig. 4. Antenna, female, allotype. – Fig. 5. maxillule, male, holotype. – Fig. 6. mandibular palp, male, paratype (O.C. 1201).



Figs. 7-14. *Comontocypris arenaria* gen. nov., sp. nov., Grande Comore, The Comoros.

Fig. 7. Cleaning limb, male, holotype. – Fig. 8. Furca, male holotype. – Fig. 9. Right male clasping apparatus, holotype. – Fig. 10. Left male clasping apparatus, holotype. – Fig. 11. Male copulatory appendage, paratype (O.C. 1205). – Fig. 12. Maxilla (P1), female, allotype. – Fig. 13. Walking leg (P2), male, holotype. – Fig. 14. Furcal attachment, male, paratype (O.C. 1201). – Fig. 14b. Zenker's organ, male, paratype (O.C. 1203).

Ventral view: flattened ventral surface with numerous spiky hairs, mostly in the anterior and posterior areas. Anterior inner lamella very broad, with large anterior vestibulum; posterior lamella narrow, with small vestibulum; lamellar chitinous selvage in the anterior and antero-ventral area; marginal pore canals very indistinct, but probably straight, short and numerous; valve margin rather hairy; central muscle scar pattern large, consisting of five scars.

Valve surface: completely smooth; covered with numerous spiky hairs. No sexual dimorphism in the valves.

Antennula: eight-segmented; segment ratios (in micrometer): 23: 46: 30: 18: 9: 8: 7: 5; proximal segment long and slender; distal segments becoming shorter towards the tip; distal part with some long setae; swimming setae less developed than in other pontocypridids.

Antenna: four-segmented (segments 4 and 5 fused); length-ratios of endopodite segments: 60: 35: 16; exopodite consisting of a long seta with a very short tooth-like bristle at its base; Y-aesthetasc large, suboval, and implanted on a flexible tubular basis; natatory setae absent (in both sexes); under a high power microscope four very indistinct remnants of the natatory setae can be seen; male antenna with three long terminal claws, and a short one (less than half the length of the long claws); the longest claw with beak-shaped distal extremity, other claws simple; female antenna with four long terminal claws and a shorter one (more than half the length of the long claws); male antenna with two long club-like "male setae" inserted medio-ventrally on the ultimate segment.

Mandible: endopodite four-segmented; chaetotaxy (dorsal/ventral): 0/4, 2/5, 3/3 and four large and distally annulated terminal claws; masticatory process with about eleven simple, sharp claw-like teeth.

Maxillule with a two-segmented elongate palp; proximal segment of palp inflated and bearing four strong setae; distal segment small and subquadrate; lobes with numerous long and simple setae; epipodite bearing about seventeen Strahlen.

Maxilla: without respiratory plate; three-segmented and pediform in female; in male transformed to large clasping apparatus, with large curved distal hook-shaped grasping organ and one slender seta and two stout medio-ventral spines; left and right clasping organs are symmetrical.

Walking leg (P2): five-segmented; length ratios of second to fifth segments and claw: 58 (S2): 32 (S3): 30 (S4): 14 (S5): 83 (Cl.).

Cleaning limb (PS): four-segmented; third segment with thick and proximally displaced seta; fourth segment with four terminal claws; largest claw pectinate with regularly diminishing barbs; second claw weakly pectinate distally; third claw shorter, slender and smooth; length ratios of segments: 64: 104: 48: 25.

Furca with two large distal claws and two slender distal setae; two long posterior setae; furcal attachment with almost straight central axis and long and somewhat curved dorsal branch.

Copulatory appendage small, oblong and translucent; small labyrinth and long, enrolled copulatory tube. Ductus ejaculatorius a very simple tubular structure with swollen ends and without spines. Eyes absent. Trailing setae at the postero-ventral valve margin absent.

Colour of specimens fixed with formol and preserved in alcohol: brownish.

Dimensions:

Holotype: length 0.45 mm, height 0.16 mm.

Allotype and paratypes: length 0.44-0.46 mm; height 0.15-0.17 mm.

Occurrence:

The species was only found at the type-locality, at a depth of 15 m, in a sandy sediment; leg.: Dr. Med. W. WELLENS, 24 November 1985 (Station number 3).

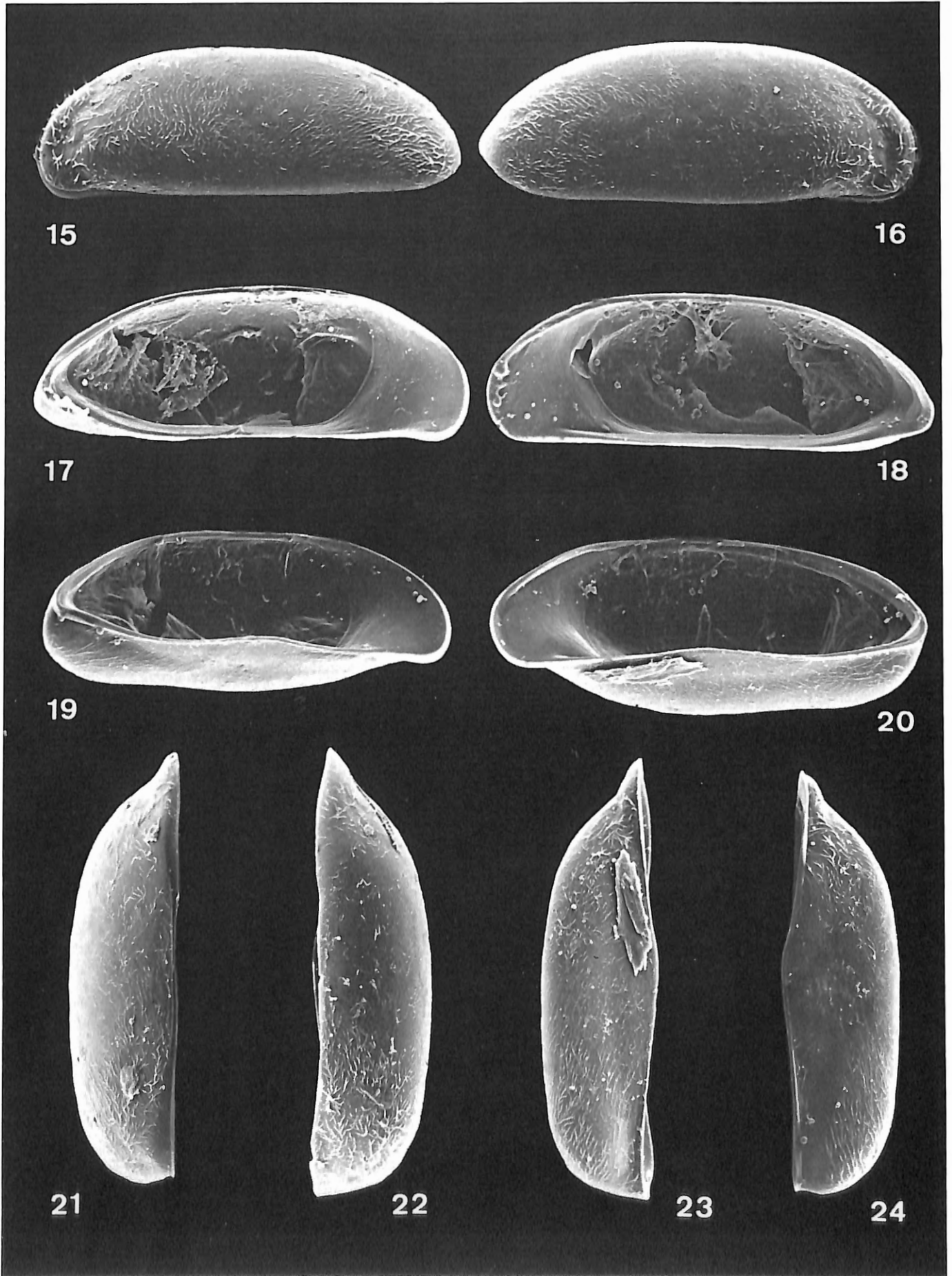
3. Discussion

By its very particular shape (typical for interstitial ostracods) the new genus can be easily distinguished from other genera of the family Pontocyprididae (see MADDOCKS, 1969). *Pontocypris* SARS, 1866, *Propontocypris* (*Propontocypris*) SYLVESTER-BRADLEY, 1947, *Propontocypris* (*Propontocypris*) MADDOCKS, 1969 and *Propontocypris* (*Schedopontocypris*) MADDOCKS, 1969 differ significantly by their subtriangular shape and their thin and laterally compressed carapaces.

The genus *Argilloecia* SARS, 1866 has elongate valves, and some species, such as *A. minor* MÜLLER, 1894, have almost the same small dimensions as the new

Figs. 15-24. *Comontocypris arenaria* gen. nov., sp. nov., Grande Comore, The Comoros. Magnification: 180 ×.

Fig. 15. Left valve, male, lateral view, paratype (O.C. 1203). – Fig. 16. Right valve, male, lateral view, paratype (O.C. 1203). – Fig. 17. Left valve, female, internal view, paratype (O.C. 1204). – Fig. 18. Right valve, female, internal view, paratype (O.C. 1204). – Fig. 19. Left valve, female, ventro-lateral internal view, paratype (O.C. 1207). – Fig. 20. Right valve, female, ventro-lateral internal view, paratype (O.C. 1207). – Fig. 21. Left valve, male, dorsal view, paratype (O.C. 1205). – Fig. 22. Right valve, male, dorsal view, paratype (O.C. 1205). – Fig. 23. Right valve, female, ventral view, paratype (O.C. 1207). – Fig. 24. Left valve, female, ventral view, paratype (O.C. 1207).



genus and species described here. However, all known *Argilloecia*-species, including those of the subgenus *A. (Robustoargilloecia)* HARTMANN, 1986, lack the ventral flattening of the carapace, and have different soft parts.

Species of the genus *Australoecia* MCKENZIE, 1967 are larger, have thick-shelled valves and lack the ventral flattening as well. The soft parts are markedly different (see MADDOCKS, 1977).

Species of the genus *Maddocksella* MCKENZIE, 1981 have large robust shells with strong left valve overlap. The genus *Aratrocypris* WHATLEY *et al.*, 1985 is characterised by a broad laterally compressed plough-like structure. In the latter two genera the flat ventral side of the carapace is absent.

Argilloecia-, *Australoecia*-, *Maddocksella*- and *Aratrocypris*-species have a rosette-shaped muscle scar pattern and a more or less narrow anterior vestibulum with irregular line of concrescence. In *Comontocypris arenaria* the muscle scar pattern and the anterior vestibulum are very much like in *Pontocypris* and *Propontocypris*.

The recently described "New Genus" of MADDOCKS & ILIFFE (1986, p. 63) from Walshingham Cave (Bermuda) is very small and elongate, but has a completely different anterior vestibulum with a very irregular antero-ventral line of concrescence. The muscle scar pattern resembles the one of *Argilloecia*.

The soft parts of the new genus reflect an anatomy very similar to the one of *Propontocypris (Schedopontocypris)*. *C. arenaria* nov. gen., nov. spec. lacks antennal swimming setae. *P. (Schedopontocypris)*-species have slightly reduced antennal swimming setae in comparison to species of *P. (Propontocypris)* and *P. (Ekpontocypris)*. The setae of the antennula are less developed in *Comontocypris* than in *Propontocypris*.

As in *P. (Schedopontocypris)*-species, *C. arenaria* has a cleaning limb with three terminal setae: a smooth one, a distally weakly pectinate seta and a seta with numerous regularly diminishing barbs.

Furthermore the distal seta of the third segment is much thickened and proximally displaced.

If we divide the family Pontocypridae in two groups: a first group with *Pontocypris*, *Propontocypris* and *Pontocyprina* and a second group with *Argilloecia (Argilloecia)* and *A. (Robustoargilloecia)*, *Australoecia*, *Abyssocypris*, *Maddocksella*, *Aratrocypris* and "New Genus" of MADDOCKS & ILIFFE (1986), then the new genus *Comontocypris* certainly belongs to the

first group, which is characterised by normally developed antennula and antenna and by a large furca. In the "*Argilloecia*-group" the antennula and the antenna are often much stronger developed, with many large claw-like setae, and the furca is more or less reduced. The second group was already called "*Argilloeciine pontocyprids*" by MCKENZIE (1981, p. 105). The discovery of an interstitial new genus of the family Pontocypridae is not unusual. Interstitial ostracods can be found in at least fifteen other families of the subclass Podocopa (HARTMANN, in DANIELOPOL & HARTMANN, 1986). It is therefore not surprising that among Pontocypridae, which is a common family in the marine realm, some species became adapted to the interstitial habitat.

There are at least two interstitial genera in the family Pontocypridae. The first one is the new genus *Comontocypris* which is described here in detail.

The second genus, belonging to the "*Argilloecia*-group", is the unnamed "New Genus" of MADDOCKS and ILIFFE (1986) from Bermuda. I found one female of this genus in a sediment sample from Villi Varu Island, Republic of the Maldives, Indian Ocean (Leg.: F. FIERS, 3 december, 1984). The species from Villi Varu has the same valve shape and irregular line of concrescence as the species of Bermuda. The soft parts are almost identical. There may be slight differences in the setation of the appendages of both species, but this needs more detailed analysis.

It is generally accepted that interstitial ostracods show some particular morphologic trends. For marine ostracods this phenomenon is extensively discussed by HARTMANN (1973), MADDOCKS (1976), GOTTWALD (1983) and HARTMANN (in DANIELOPOL & HARTMANN, 1986). Some of these general trends are clearly demonstrated by the new genus *Comontocypris*: reduction of size and very elongate, dorso-ventrally compressed valves. The soft parts are less affected. The most striking feature is the loss of swimming setae. For the rest the soft parts of *Comontocypris* are very similar to the ones of *Propontocypris (Schedopontocypris)*.

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