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# On a small collection of Antarctic sea cucumbers (Echinodermata; Holothuroidea) from Léopold III Bay and vicinity

by Claude MASSIN

## Summary

Eleven Holothuroidea species were collected during two Belgian-Dutch expeditions (1964-65; 1966-67) to Léopold III Bay and vicinity. Five species have a wide Antarctic distribution: *Bathyplotes bongraini , Heterocucumis liouvillei, H. steineni, Psolus charcoti, and Rhipidothuria racovitzae. R*are, recently described species *Taeniogyrus magnibaculus* and *Echinopsolus parvipes* have also been found. Moreover, one new species belonging to the genus *Echinopsolus* is reported. All the species collected are new to the Dronning Maud Land that shows a strong holothurian faunal affinity with the Weddell Sea.

Key **words.** Antarctic, Dronning Maud Land, Holothuroidea, synonymy, new species.

## Introduction

Two Belgian Dutch expeditions (1964-65 and 1966-67) to the Antarctic, especially to the Léopold III Bay and vicinity (Dronning Maud Land) were organised by the Royal Belgian Institute of Natural Sciences (RBINS). The main aim of these expeditions was to study the plankton. Few bottom samples were taken. The material was sorted on board ship, and housed in the collections of the RBINS. Up until now, only a part of this material has been studied. Among the echinoderms the Asteroidea were studied by STAMPANATO (1991). The present paper describes a small collection of sea cucumbers from the above-mentioned expeditions.

## Material and methods

Holothuroid specimens were collected by trawl (5 m opening) between 200 and 300 m depth. at 6 different stations (Table 1).

Three samples of Antarctic material were labelled "station 238". However, the data for this station are Desroches Islands (Amirantes, Seychelles), 13.iii.1967, reef flat. The date, the depth, and the fact that the samples contain Antarctic material clearly indicate that there is a mistake in the labelling. The correct station number is presumed to be 236. The zone investigated is included in Dronning Maud Land (DML). For location of the study area see figure 1 in GRIFFITHS *et al.*, 2009.

Acronyms

A.W.I.: Alfred Wegener Institute

Table 1. – Stations where sea cucumbers were sampled

| Station | date | Location | Depth (m) | Gear |
|---|---|---|---|---|
| Expedition 1964-65 (reference RBINS IG 23283) | | | | |
| 215 | 28.i.65 | Léopold III Bay | 234 | Trawl |
| 217 | 20.i.65 | Penguins Bay | 270 | Trawl |
| 224 | 03.ii.65 | Glacier Bay | 223 | Trawl |
| Expedition 1966-67 (reference RBINS IG 23694) | | | | |
| 232 | 25.i.67 | 70°17'S-24°15'E | 300 | Trawl |
| 235 | 01.ii.67 | 70°13'5"S-24°15'E | 200-300 | Trawl |
| 236 | 03.ii.67 | 70°19'S-24°14'E | 200 | Trawl |

DML: Dronning Maud Land
RBINS: Royal Belgian Institute of Natural Sciences
ZMH: Zoologisch Museum Hamburg

## Results

The material amounts to 37 specimens representing 11 species.

### Aspidochirotida Grube, 1840
### Synallactidae Ludwig, 1894
### *Bathyplotes* Oestergren, 1896
### *Bathyplotes bongraini* Vaney, 1914
(Figs 1A-E)

*Bathyplotes bongraini* Vaney, 1914: 5, pl. 1, fig. 4, pl. 2, figs 4, 7-9, 11, 12; O'Loughlin: 2002: 301; Solis-Marin 2003: 130; O'Loughlin *et al.* 2009: 10-11.
*Bathyplotes fuscivinculum* Gutt, 1990b: 121: figs 4-6, tab. II; 1991: 324.

Material examined: 8 specimens from station 232.

Description: Size range 190x 35 mm to 210 x 50 mm. Colour in alcohol grey-white. Body depressed dorso-ventrally with the bivium clearly separated from the trivium by a row of large papillae which extend dorsally around the tentacles. A few small tube feet surround the tentacles ventrally.

Mouth ventral, anus terminal, slightly dorsal in some specimens. Mouth surrounded by 16-18 tentacles each retracted in a furrow. Dorsal papillae large, more or less in four rows. Ventrally, tube feet in two rows in each ambulacrum, particularly so close to the anus. Skin smooth, thin. Longitudinal muscles very large, double, flat, attached. Gonad well developed, up to 2/3 of body length.

Ossicles: body wall tables with 4-5 arms (Fig. 1A), 170-190 µm across and 90-110 µm high. Nearly all tables broken with pillars separated from arms. Many ossicles partly corroded by the preserving fluid. Each arm of table forked or perforated distally (Fig. 1B). Pillars are connected by 1-3 cross beams, smooth or with a few spines terminally. Tentacles and tube feet with slightly curved rods. Lateral papillae with tables as in body wall (Fig. 1C). Top of the papillae with strait, Y-shape or X-shape rods (Fig. 1D), 150-350 µm long, and a small end plate (Fig. 1E) 200 µm across.

Distribution: *B. bongraini* has a wide Antarctic distribution (O'Loughlin, 2002) from Bellingshausen Sea to Eastern Antarctica. The present record fills a gap between the Weddell Sea and Kemp Land. The species is new to the DML. In Léopold III Bay the population is locally abundant (8 specimens in one trawl).

Discussion: I agree with O'Loughlin (2002) that *Bathyplotes. fuscivinculum* Gutt, 1990 is a junior

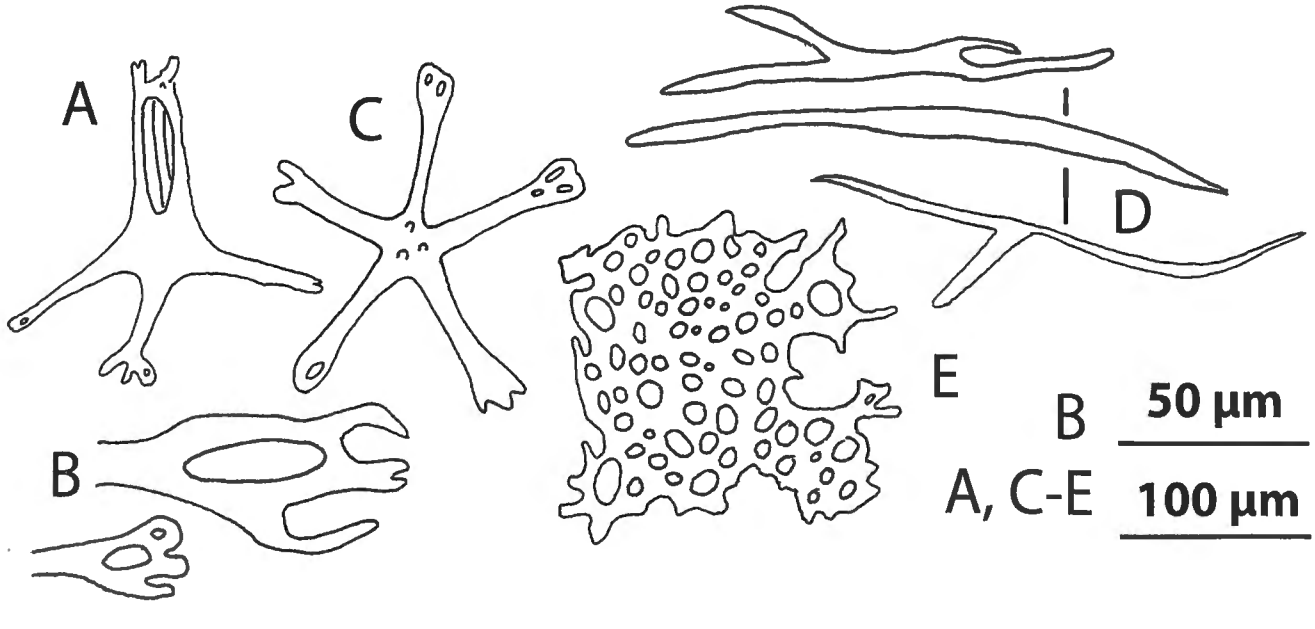


Fig. 1. – *Bathyplotes bongraini* Vaney, 1914. A: Table of body wall; B: extremities of arms of tables; C: tables of lateral papillae; D: rods of lateral papillae; E: end plate of lateral papillae.

synonym of *B. bongraini* VANEY, 1914. Local high density has already been observed in Weddell Sea by GUTT & KLAGES (1991).

**Elasipodida THÉEL, 1882**
**Elpidiidae THÉEL, 1879**
***Rhipidothuria* HÉROUARD, 1901**
***Rhipidothuria racovitzai* HÉROUARD, 1901**
(Figs 2A-B)

*Rhipidothuria racovitzai* HÉROUARD, 1901: 42; HÉROUARD, 1906: 7, pl.1, figs 1-3; HANSEN, 1975: 131; O'LOUGHLIN, 2002: 320.
*Rhipidothuria racowitzai*; GEBRUK, 1990: 81, fig. 28, 3-4; GEBRUK, 1994 148, fig. 1; O'LOUGHLIN *et al.*, 2009: 10.
*Achlyonice violaecuspidata* GUTT, 1990b: 123, figs 7-10; GUTT, 1991: 147; GUTT & PIEPENBURG, 1991: 279; GEBRUK, 1994: 148; GUTT & STARMANS, 1998: tab. 2; O'LOUGHLIN *et al.*, 2009: 10.

MATERIAL EXAMINED: 12 specimens from station 233, and 2 specimens from station 236.

DESCRIPTION: Length 41 to 60 mm, width 4.5 to 7.5 mm. Colour in alcohol yellowish to greyish. Tentacles, mouth and tips of some tube feet tinged with violet. Body elongate, flattened dorso-ventrally. Specimens in poor condition, papillae and tube feet not present. Tentacles 8-10, short, peltate, united by a brim. Mouth ventral, anus terminal. Calcareous ring made of 5 pieces, each piece reduced to a star-shaped structure of five rods. Longitudinal muscles well developed, flat, double.

OSSICLES: only straight to curved rods in body wall, tube feet (Fig. 2A) and tentacles (Fig. 2B). In the tentacles they are 70-300 µm long and in the tube feet 100-420 µm long. Some curved rods are V-shaped.

DISTRIBUTION: *R. racovitzae* is a circumpolar species (O'LOUGHLIN, 2002). The present record fills a gap between the Weddell Sea and the Kemp Land (Eastern Antarctica). The species is new to the DML. The species is locally abundant (GUTT & PIEPENBURG, 1991; present observation).

DISCUSSION: I follow GEBRUK's taxonomy (1994) because he had at hand the type material of *Rhipidothuria racovitzai* and *Achlyonice violaecuspidata.* However; a doubt remains concerning the cross shape spicules, supposed to be characteristic of *R. racovitzai*, These have not been observed in the specimens from the Weddell Sea and DML, and have never been illustrated. by earlier workers

According O'LOUGHLIN (2002) these cross shaped

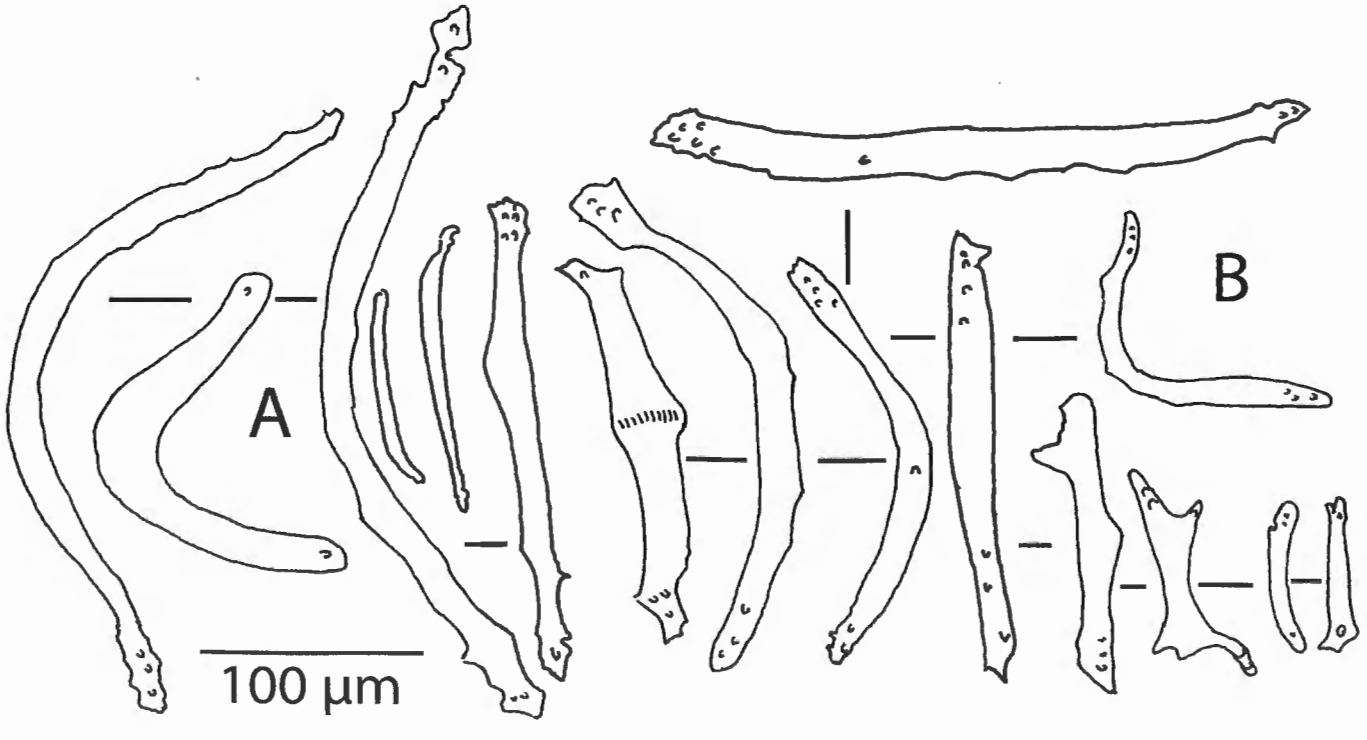


Fig. 2. – *Rhipidothuria racovitzai* HÉROUARD, 1901. A.: rods of tube feet; B: rods of tentacles

spicules would be contamination by sponge spicules.

**Apodida Brandt, 1835**
**Chiridotidae Oestergren, 1898.**
***Taeniogyrus* Semper, 1868**
***Taeniogyrus magnibaculus* Massin & Hétérier, 2004**
(Fig. 3A)

*Taeniogyrus magnibaculus*, Massin & Hétérier, 2004: 441, Fig. 2a-g.

Material examined: 1 specimen from station 235, and 2 specimens from station 236, Holotype and paratype, Weddell Sea, station 135, Halley transect, Agassiz trawl, Expedition Polarstern IX/3, depth 226 m, coll. A.W.I., 04.ii.1991, RBINS IG 30057.

Description: Specimens cylindrical, 13, 24 and 66 mm long 3.0, 4.3, and 6.5 mm wide, respectively. Body wall corrugated covered by very long (up to 18 mm) sponge spicules. Body wall greyish-yellow, tentacles orange.

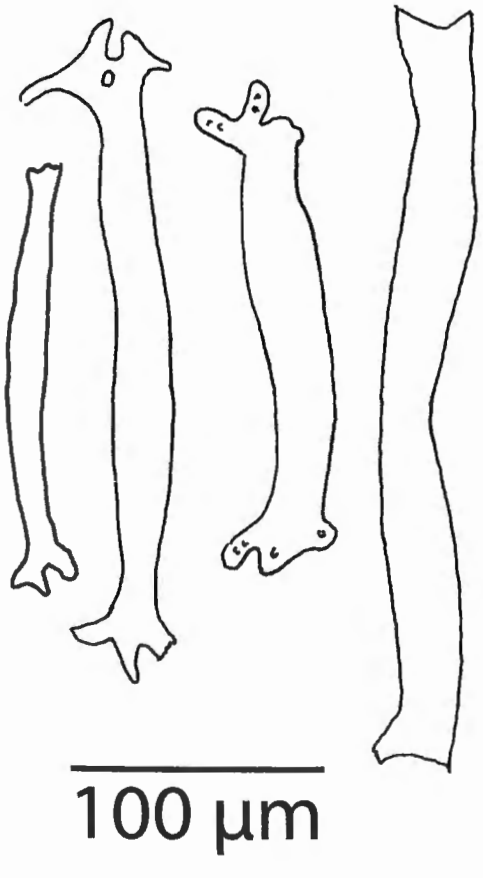


Fig. 3. – *Taeniogyrus* magnibaculus Massin & Hétérier, 2004. Rods of tentacles..

Mouth and anus terminal. Tentacles 12, short with 5-6 short digits.

Ossicles: body wall with wheels (115-170 µm across) gathered in heaps, and hooks (150-200 µm long). Tentacles with rods, 160-290 µm long, straight with forked and/or perforated extremities (Fig. 3A). Ossicles of the 24 mm long specimen are identical (shape and size) with the ones of the largest specimen.

Distribution: *T. magnibaculus* was known only from the type material collected on see urchin spines in the Weddell Sea. The species is new to the DML.

Remarks: There is no difference in the ossicle size and shape between adult (72 mm long) and juvenile (24 mm long) specimens (compare Fig. 2g of Massin & Hétérier, 2004 and present Fig. 3A). I have no information on the possible relationship of the present specimens with sea urchins.

**Dendrochirotida Grube, 1840**
**Cucumariidae Ludwig, 1894**
***Microchoerus* Gutt, 1990**
***Microchoerus splendidus* Gutt, 1990**
(Figs 4A-F; Pl. 1A-B)

Cucumariidae sp. I Gutt, 1988: 22.
*Microchoerus splendidus* Gutt, 1990a: 107, figs 8-11; Gutt, 1991: 147; O'Loughlin *et al.*, 1994: 552; O'Loughlin, 1994: 541, 545.

Material examined: one specimen from station 236; ossicle preparations of paratype ZMH E7136.

Description: Body barrel-shaped, 28.5 long, 8.5 and 14.0 mm wide at the narrower and larger diameter (Pl. 1A-B). Colour in alcohol grey white. Mouth and anus terminal. Mouth surrounded by 10 dendritic tentacles, two ventral ones very small. Anus covered by five calcified anal papillae. Tube feet very large, restricted to ambulacra, 10-15 per ambulacrum. Skin thick, smooth to the touch. Calcareous ring *Cucumaria*-like.

Ossicles: body wall with only a few small knobbed, perforated plates (Fig. 4A), 150-240 µm long with up to ten perforations. Ventral tube feet, with perforated plates (Fig. 4B-C), rounded with large holes (Fig. 4B) or small holes (Fig. 4C); Those with small holes up to 220µm across. End plate 400 µm across, comprising several pieces. Tentacles with same perforated plates

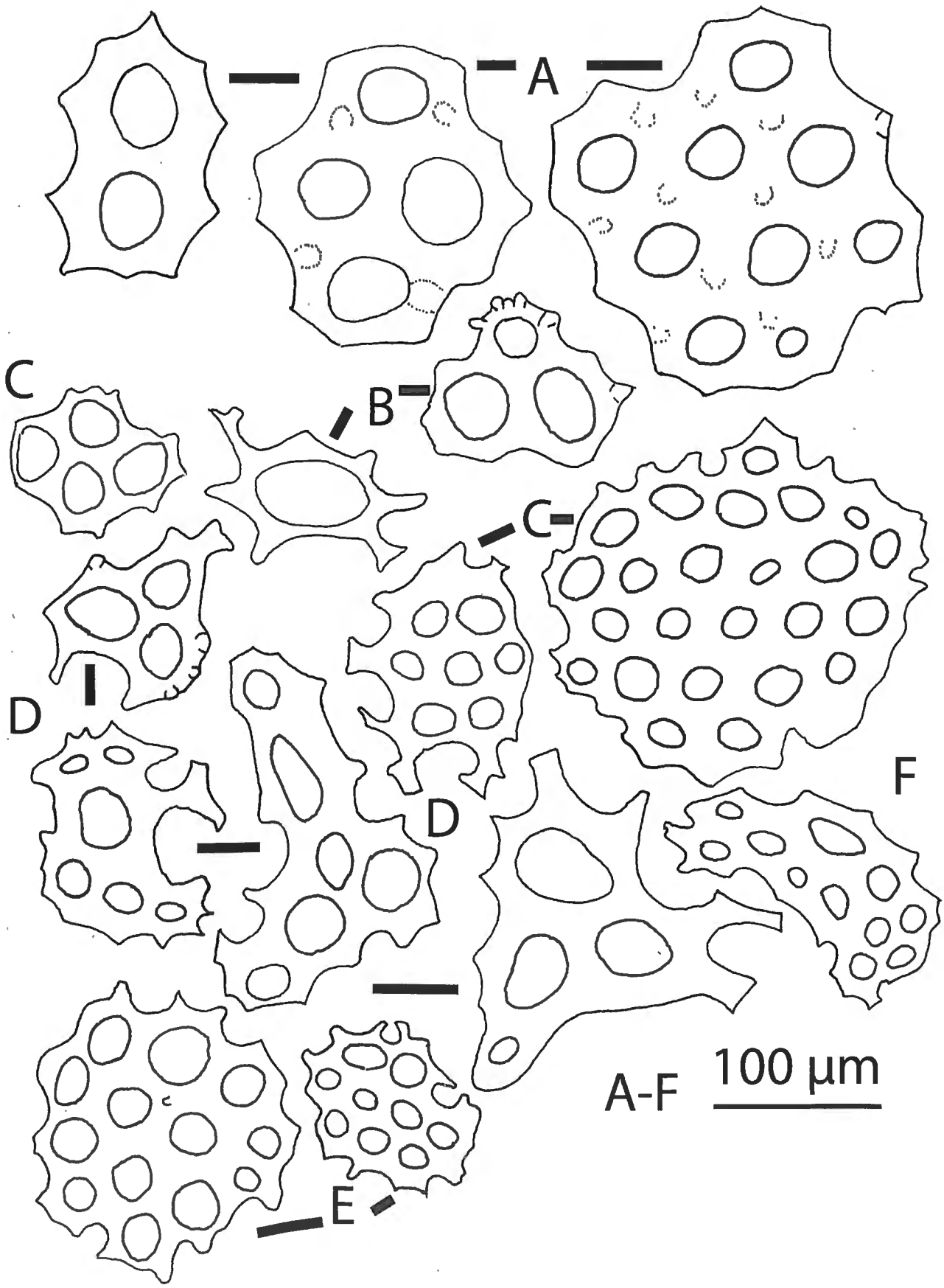


Fig. 4. – *Microchoerus splendidus* Gutt, 1990. A: perforated plates of body wall; B: plates of tube feet (large holes); C: plates of tube feet (small holes); D: plates of tentacles (large holes); E: plates of tentacles (small holes); F: elongated, curved plate of tentacles.

as tube feet. Those with large holes are 100-200 µm across (Fig. 4D) and those with small holes, 100-170 µm across (Fig. 4E). A few perforated plates, elongated and slightly curved (Fig. 4F) are also present in the tentacles.

DISTRIBUTION: *M. splendidus* was known from the Weddell Sea and the Prydz Bay. It is new to the DML.

REMARKS: the ossicle assemblage and tube feet distribution of the observed specimen fit well with the original description. The only difference is the presence of 5 anal teeth in the DML specimen. However, it must be noted that the presence/absence of teeth/papillae around the anus is not mentioned for all the specimens described by GUTT (1990a).

### *Cucumaria* de BLAINVILLE, 1830
### *Cucumaria attenuata* VANEY, 1906a
(Figs 5A-E, Pl 1G)

*Cucumaria attenuata* VANEY, 1906a: 404 ; VANEY, 1906b: 10, Fig. 5a, b, figs 12, 13, Fig. 21 a, b, Fig. 22; EKMAN, 1925: 69; EKMAN, 1927: 403 (cited as a synonym of *Cucumaria georgiana*); PANNING, 1955: 41; CHERBONNIER, 1974: 601, 605; O'LOUGHLIN *et al.*, 2009: 12.

MATERIAL EXAMINED: one specimen from station 224.

DESCRIPTION: Length 28 mm; body cylindrical, tapering anteriorly and with a short tail posteriorly (Pl. 1G). Mouth and anus terminal. Mouth surrounded by 10 tentacles, one genital papillae between mouth and tentacles. Anus guarded by two circles of 5 papillae. Body wall parchment like, very thin; Tube feet very large, located only along the radii in a single row; 7-10 tube feet per radius along the body length (Pl. 1G). Calcareous ring comprising ten pieces, radial and interradial having the same height and width; radial plate V-shaped posteriorly (Fig. 5A). One Polian vesicle; one stone canal directed upward and ending in an oval madreporic plate located close to the calcareous ring.

OSSICLES: In the body wall, large (190-450 µm across), knobbed, rounded perforated plates (Fig. 5B). These plates are few, well separated. In the tube feet, perforated plates smooth or knobbed, rounded or elongated (Fig. 5C). In the tentacles very numerous perforated plates, highly variable in size (140-350 µm long) and form (Fig. 5D-E).They are smooth or slightly knobbed.

DISTRIBUTION: *C. attenuata* was known from the Graham Land, Low Island, South Orkney and Adélie Land. However, its distribution is most probably much larger, because of problems of synonymy (see below). It is new to the DML.

DISCUSSION: General anatomy is typical of a Cucumariinae (see PANNING, 1949). The presence of only thin, smooth or slightly knobbed perforated plates in the body wall is characteristic of the genus *Cucumaria*. The present specimen is close to *Cucumaria attenuata* VANEY, 1906a), a species which was considered as a synonym of *C. georgiana* by EKMAN (1927), and PANNING (1955). Later *C. attenuata* was recognized as a valid species by CHERBONNIER (1974) and O'LOUGHLIN *et al.* (2009). I follow this point of view in the present paper.

The specimen at hand is nearly three times larger than the holotype (28 versus 11 mm long, respectively) and a genital papillae is present. It must be considered to be an adult whereas the holotype is a juvenile (VANEY, 1906b). The difference observed in the size of the body wall ossicles (190-450 µm across versus 200 µm, respectively) and the frequency of the body wall ossicles (few and well separated versus numerous and overlapping, respectively), could be linked to the body size. Many dendrochirotes exhibit a significant evolution in their ossicle assemblage with growing size (see MASSIN, 1994).

### *Cucamba* O'LOUGHLIN, 2009
### (*in* O'LOUGHLIN *et al.*, 2009)
### *Cucamba psolidiformis* (VANEY, 1908)
(Figs 6A-D; Pl. 1C-D)

*Cucumaria psolidiformis* VANEY, 1908: 21, pl..2, figs 17,18, pl. 4, figs 51-53.
*Cucamba psolidiformis*; O'LOUGHLIN *et al*, 2009: 2, tab. 1 (list of citations and synonymy).

MATERIAL EXAMINED: one specimen from station 232.

DESCRIPTION: The specimen is 29 mm long, cylindrical anteriorly (6.4 mm across) tapering posteriorly to a very narrow tail (1.6 mm across) (Pl. 1C). Colour in alcohol whitish-yellow. Skin parchment-like, rough to touch. Mouth and anus terminal. Tentacles fully retracted. Anus surrounded by two circles of papillae: outer circle of long papillae, inner circle of small papillae. Large tube feet restricted to ambulacra (Pl. 1D), 20-25 along complete length of body in one or two rows. Interradial surface densely crowded with very tiny tube feet

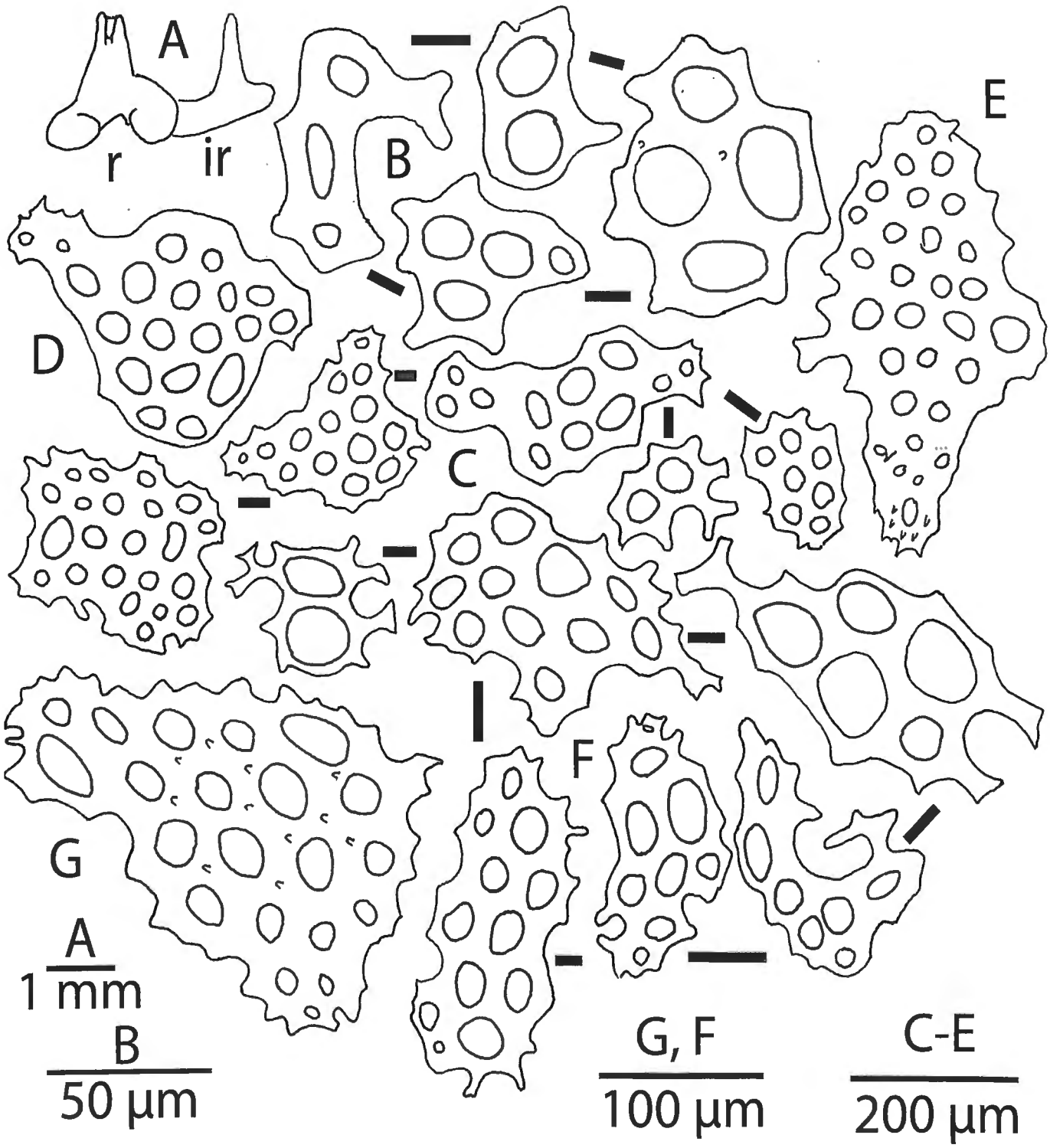


Fig. 5. – *Cucumaria attenuata* VANEY, 1906a. A: calcareous ring (r: radial piece; ir: interradial piece); B: small perforated plate of dorsal body wall; C: tube feet perforated plates; D: tube feet perforated plate with spiny extremity; E: perforated plate from tentacles; F: large triangular plate from the tentacles with small knobs.

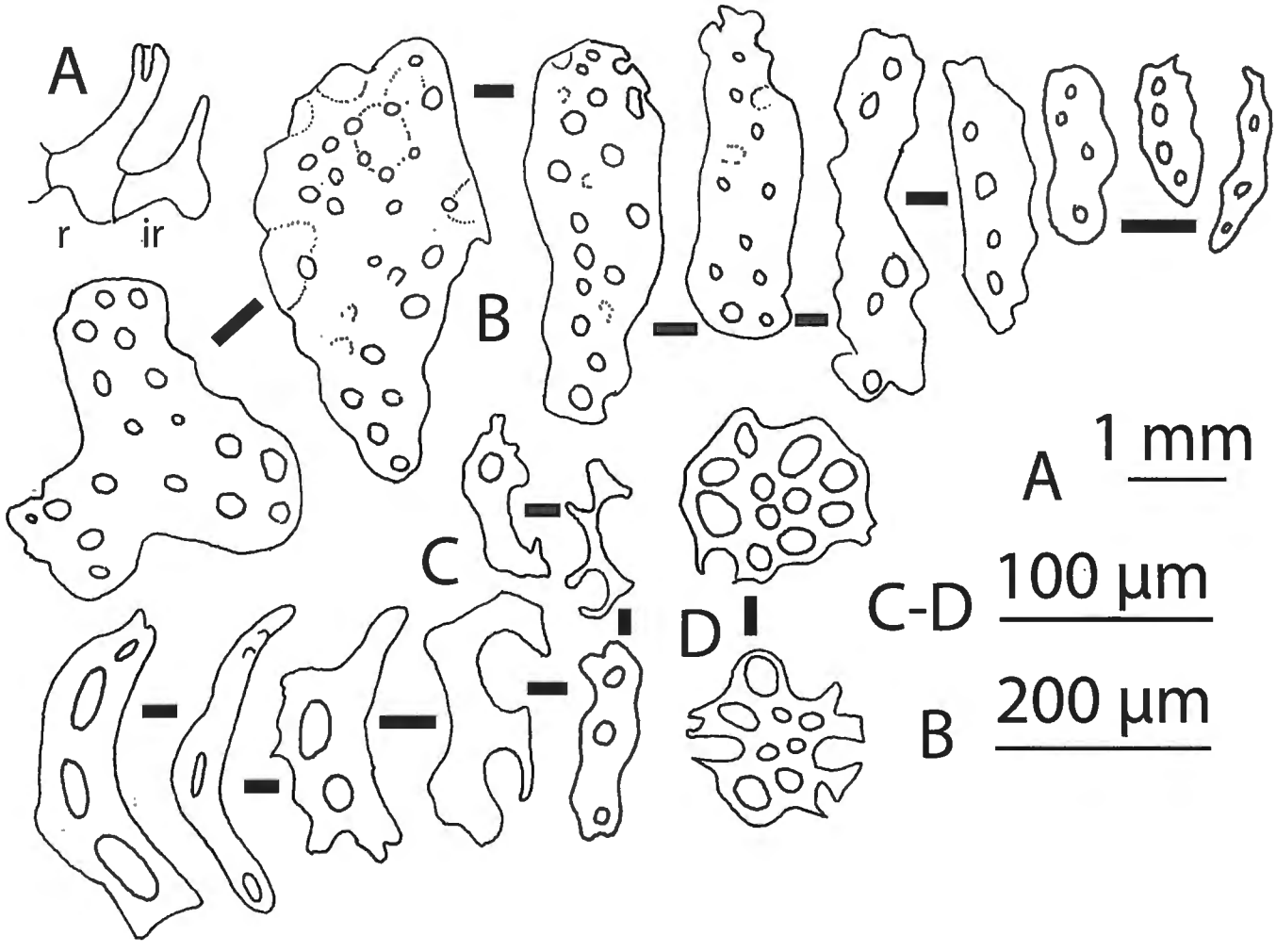


Fig. 6. – *Cucamba psolidiformis* (VANEY, 1908) A: Calcareous ring (r: radial piece; ir: interradial piece); B: plates of body wall; C: rods of the tube feet; D: end plate of tube feet.

(Pl. 1D). Calcareous ring (Fig. 6A) with radial and interradial plates of same width and height. Top of radial plate with notch for insertion of longitudinal muscle.

OSSICLES: body wall with massive irregular perforated plates, 150-400 µm long (Fig. 6B). Large plates slightly knobbed. Small tube feet with curved perforated rods (Fig. 6C), 60-140 µm long, and a small terminal plate (Fig. 6D), 50-90 µm across.

DISTRIBUTION: *C .psolidiformis* was known from the Bellinghausen Sea, the Peninsula Antarctica, South Orkney, the Weddell Sea and Prydz Bay. It is new to the DML and fills a gap between the Weddell Sea and Prydz Bay.

DISCUSSION: The specimen from Léopold III Bay fits particularly well with the definition of the genus *Cucamba* O'LOUGHLIN et al., 2009. The ossicles of the tube feet (rods and end plate) are very similar to those of *Cucamba psolidiformis* (compare figs 52-53 of VANEY, 1908 with the present Fig. 6 C-D). Dorsal knobbed plates are very similar to those of *Cucumaria armata* VANEY, 1908 a species considered by O'LOUGHLIN *et al.* (2009) as a junior synonym of *C. psolidformis*. I agree with this synonymy.

On the other hand, O'LOUGHLIN *et al.*(2009) consider *Cucamaria conspicua* to be a synonym of *Cucamba psolidiformis* (VANEY, 1908). I do not agree with this decision. The original description of *Cucumaria conspicua* is based on a juvenile (10 mm long; few and very long tube feet). Because of the high variability of ossicle assemblage between juveniles and adults in many Antarctic dendrochirotes (see EKMAN, 1925; 1927; PANNING, 1955; MASSIN, 1994; O'LOUGHLIN, 2002) it is very difficult to consider two species as synonyms when one is known only as a juvenile and the other as an adult. Specimens of intermediate size are

needed also. Moreover, if *Cucamba psolidiformis* is the adult form and if ossicle changes are similar to those of *Cucumaria georgiana* (a closely related species) we expect few large perforated plates in the body wall of *Cucamba psolidiformis*. But according to VANEY (1908) these ossicles are abundant in the body wall of *Cucamba psolidiformis*. The presence in *Cucumaria conspicua* and in *Cucumba psolidiformis* of the same tube feet assemblage (few and large tube feet along the ambulacra and numerous and small in the inter-ambulacra) is in my judgement, not sufficient to consider *Cucumaria conspicua* as a synonym of *Cucamba psolidiformis*, as proposed by O'LOUGHLIN *et al.* (2009), especially when their ossicle assemblages are very different. In the present state of knowledge it is better to consider *Cucumaria conspicua* and *Cucamba psolidiformis* as distinct species.

### *Heterocucumis* PANNING, 1949
### *Heterocucumis steineni* (LUDWIG, 1898)

*Cucumaria steineni* LUDWIG, 1898: 30, pl. 2, figs 22-24
.*Heterocucumis steineni;* MASSIN, 1994:130, figs 5-16; O'LOUGHLIN, 2002: 317 (synonymy and citations).
*Ekmocucumis steineni*; PAWSON, 1969: pl. 22, map 4.

MATERIAL EXAMINED: one specimen from station 215, and two from station 217.

DESCRIPTION: Specimens 12.5 x 5.0, 18.0 X 7.5 and 28.0 X16.0 mm (length and width, respectively).

DISTRIBUTION: *H. steineni* has a widespread Antarctic and sub-Antarctic distribution (PAWSON, 1969; GUTT, 1988; O'LOUGHLIN, 2002). The species is new to the DML.

REMARKS: Both specimens fit well the description of EKMAN (1925) and MASSIN (1994).

### *Staurocucumis* EKMAN, 1927
### *Staurocucumis liouvillei* (VANEY, 1914)

*Cucumaria liouvillei* VANEY 1914; 12, pl. 3, figs 1-3.
*Staurocucumis liouvillei;* EKMAN, 1927: 363, figs 7-8; O'LOUGHLIN, 2002: 318 (synonymy & citations).

MATERIAL EXAMINED: two specimens from station 215, and one from Station 236.

DESCRIPTION: Specimens 26.5 X 9.0, 29.5 X 13.0 and 47.0 X 19.0 mm.

DISTRIBUTION: *S. liouvillei* has a widespread Antarctic and sub-Antarctic distribution (VANEY, 1914; Pawson, 1969; CHERBONNIER, 1974; GUTT, 1988; MASSIN, 1994; O'LOUGHLIN, 2002; O'LOUGHLIN et al., 2009). The species is new to the DML.

REMARKS: The specimen of only 26.5 mm long has already the ossicles of adults (plates with denticulate holes).

### Psolidae PERRIER, 1902
### *Psolus* JAEGER, 1833
### *Psolus charcoti* VANEY, 1906a
(Figs 7A-E; Pl. 1E-F)

*Psolus charcoti* VANEY, 1906a: 406; VANEY, 1906b: 21, pl. 1, Fig. 6a,b; EKMAN 1925: 119, Fig. 29a-h; EKMAN,1927: 416; PAWSON, 1969: map 5; CHERBONNIER, 1974: 608; ARNAUD, 1974: 584, 651; GUTT, 1988: 23; GUTT,1991a: 147, GUTT, 1991b: 323, tab. 1; GUTT *et al*, 2007: 1328; O'LOUGHLIN, 2009: 14; O'LOUGHLIN *et al.* 2009: 13.

MATERIAL EXAMINED: one specimen from station 224.

DESCRIPTION: specimen 10.8 mm long, 5.0 mm wide. (Pl. 1E-F). Specimen contracted, tentacles partly withdrawn. Ventral sole partly visible, shorter than body length. Ventral tube feet very large, 8-10 in lateral rows. Dorsally numerous pustules (Pl. 1E). Mouth and anus terminal. Anus surrounded by small overlapping scales.

OSSICLES: dorsal body wall with an inner layer of large, multilayered perforated plates, triangular or quadrangular, 550 to 600 µm across and an outer layer of irregular, small, perforated plates with 2-4 holes (Fig. 7A), 50-90 µm across, some basket-like. Ventral tube feet with irregular small perforated plates, (Fig. 7B) 60-120 µm long, and large rounded or elongate (Fig. 7C) plates (up to 100 µm long). The elongate plates curved, some with a hand like extremity (Fig. 7D). Top of the tentacles with rounded perforated plates, 60-140 µm across (Fig. 7E).

DISTRIBUTION: Bellinghausen Sea, Antarctic Peninsula, Biscoe Bay, Low Island, Weddell Sea, East Antarctic, Adélie Land. The species is new to the DML.

DISCUSSION: The size of the specimen and the low number of large ventral tube feet, suggest that the specimen under study is a juvenile. However, despite missing information (presence/absence of tube feet in the mid ventral radius, sole size, and number of fully developed tentacles) I believe we are dealing with *Psolus charcoti*. The tube feet distribution, the ossicle assemblage and the osssicle size are very similar to the one of a juvenile (11 m long) of *P. charcoti* described by EKMAN (1925: 120). Moreover, whatever the length of the body, *P. charcoti* is characterised by the absence of true basket in the dorsal body wall (VANEY, 1906b, EKMAN, 1925).

### *Echinopsolus* GUTT, 1990
### *Echinopsolus parvipes* MASSIN, 1992

*Echinopsolus parvipes* MASSIN, 1992: 179, figs 1-5.

MATERIAL EXAMINED: one specimen from station 236, and the type serie (see MASSIN, 1992).

DESCRIPTION: Specimen 19 mm long, 10 mm across.

DISTRIBUTION: *Echinopsolus parvipes* was known from the Weddell Sea (MASSIN, 1992). It is new to the DML.

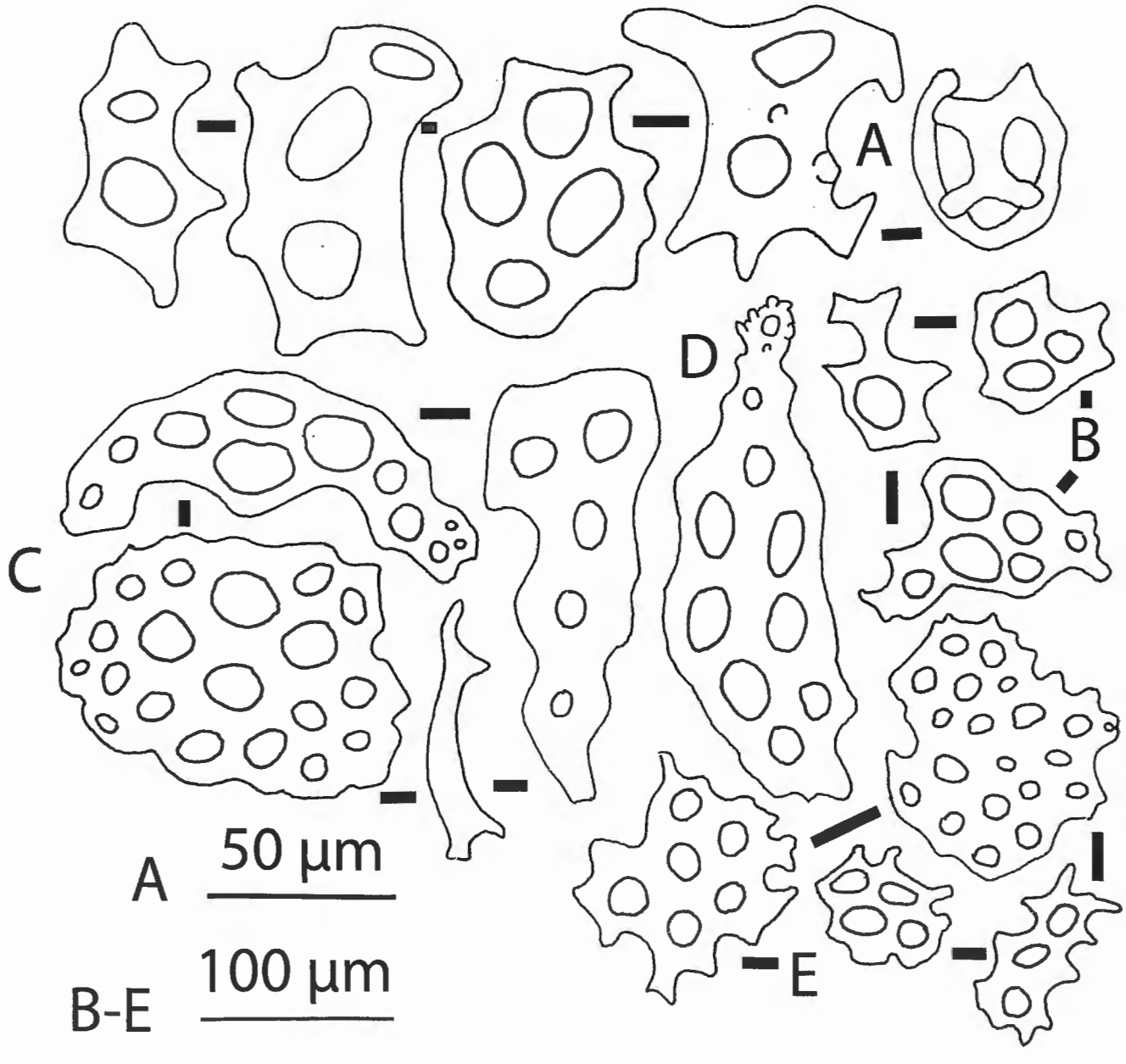


Fig. 7. – *Psolus charcoti* VANEY, 1906a. A: ossicles of dorsal body wall; B: small perforated plate from large ventral tube feet; C: large perforated plates from large ventral tube feet; D: perforated plates from large ventral tube feet with a hand-like process at one extremity; E: perforated plates from top of tentacles.

REMARKS: The specimen was not attached to a sea urchin spine as was the case with earlier collected specimens from the Weddell Sea (MASSIN, 1992). But the ventral sole and the position of the ventral tube feet clearly indicate that the specimen was fixed on a cylindrical support.

***Echinopsolus excretiospinosus n.* sp**
(Figs 8A-D, 9A-B; Pl. 1H-J)

MATERIAL EXAMINED: one specimen from station 224,

DESCRIPTION:.Length 18 mm. Body cylindrical, widest at mid-body. (Pl. 1H-J). Body wall thin and smooth to the touch. Colour in alcohol whitish. Mouth and anus terminal. Mouth surrounded by 10 equal dendritic tentacles. Tube feet very large, in one row along the ventro-lateral radii (Pl. 1 H); 8-10 tube feet along body length. The few tube feet in the mid ventral radius are restricted to the anterior part. Dorsally no tube feet but a few papillae. (Pl. 1J). Gonad present comprising a bunch of ten undivided tubules.

OSSICLES: Dorsal body wall with numerous, large, overlapping, single-layered perforated plates, triangular or rounded, 380-600 µm long (Fig. 8A), some with a spiny process. Under low magnification these plates are clearly visible with the spiny process protruding to the outside.

Tube feet with very irregular perforated plates, smooth or slightly knobbed, 140-500 µm long (Fig. 8B), some also with a spiny process. End plate of ventral tube feet 350 µm across. No end plate in the dorsal body wall. Tentacles with perforated plates (Fig. 8C-D), 100-350 µm long. Most of these plates are smooth, except some large knobbed ones (Fig. 8D). Ventral body wall with two kinds of smooth perforated plates: small ones, 140-280 µm across with large perforations (Fig. 9A) and large ones , 200-350 µm across with small perforations (Fig. 9B).

ETYMOLOGY: The name of the new species is a combination of the Latin words "*excretio*" meaning excrescence or process and "*spinosus* "spiny. It refers to the perforated plates with a spiny process.

DISCUSSION: The specimen under study presents most of the characteristic of the genus *Echinopsolus* GUTT, 1990: mouth and anus terminal, ten equal dendritic tentacles, ventral sole with large tube feet restricted to the radii, no dorsal tube feet. It is an adult (gonad present) and its size is in the range of the two known *Echinopsolus: E acanthocola* GUTT, 1990 and *E. parvipes* MASSIN 1992. Since we are dealing with adults of the same size, differences in the ossicle assemblage can be used as distinguishing characters. *E. excretiospinosus* n. sp is characterised by single layered perforated plates, some of them with a spiny process, and by the absence of large dorsal papillae.

## General discussion

Eleven species of sea cucumber were collected by the two RBINS expeditions, eight of which are dendrochirotes. The 3 others belong to the aspidochirotes, elasipods and apodids. The dominance (60 to 80% of species diversity) of the dendrochirotes in Antarctic shallow waters (0-300 m) has often been reported (VANEY, 1908, 1914, EKMAN 1925, 1927, GUTT 1988, 1991, present work). The cold and plankton rich waters of Antarctica obviously favour the suspension-feeding species.
All the species here identified, are new to the DML. This reflects principally the lack of data for this area rather than a high faunal diversity. With the data at hand we can only say that the holothurian fauna of DML shows a close affinity with that of the Weddell Sea.

## Acknowledgments

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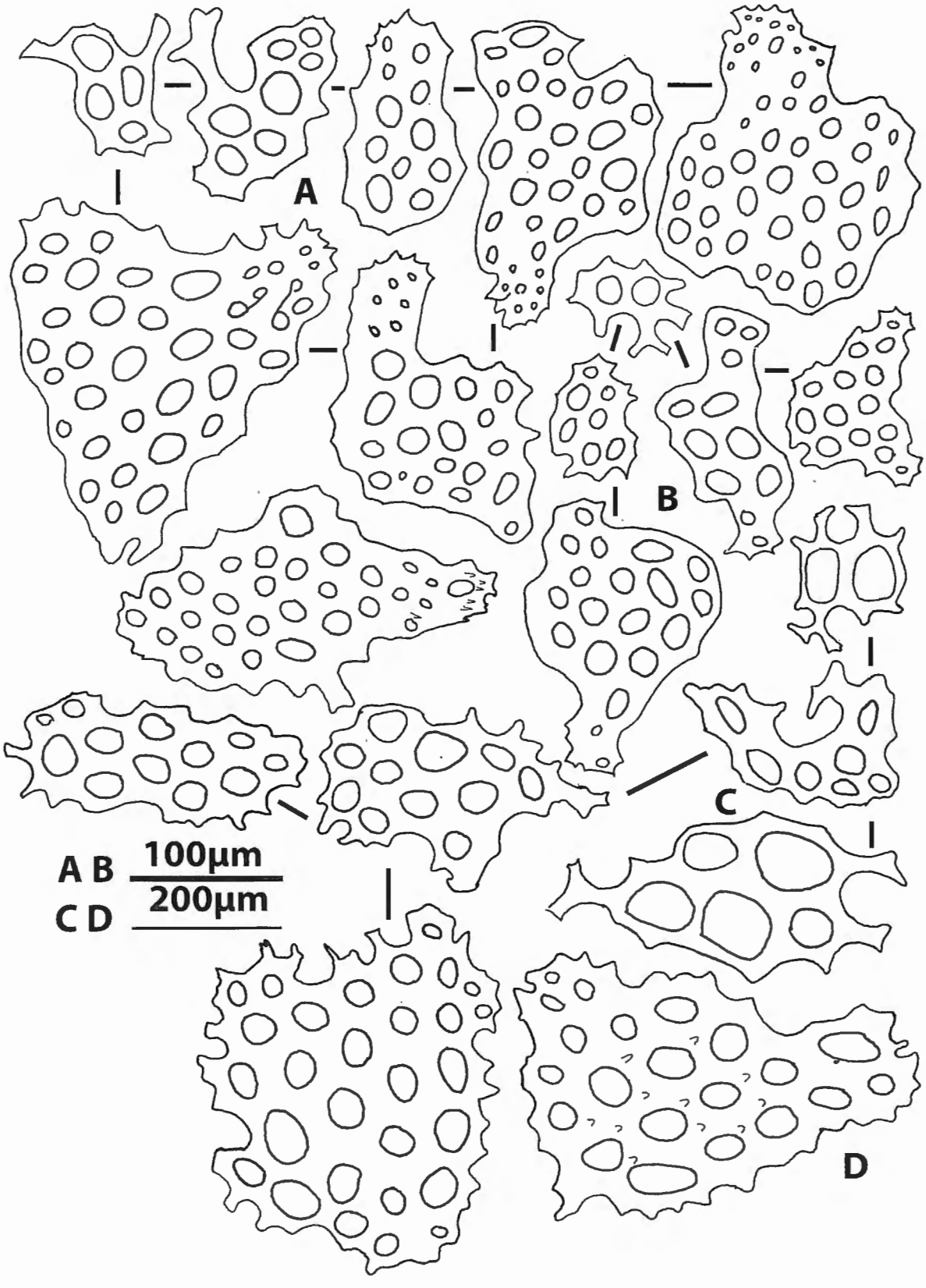


Fig. 8. – *Echinopsolus excretiospinosus* n. sp. A: ossicles of dorsal body wall; B ossicles of tube feet: C-D: ossicles of tentacles.

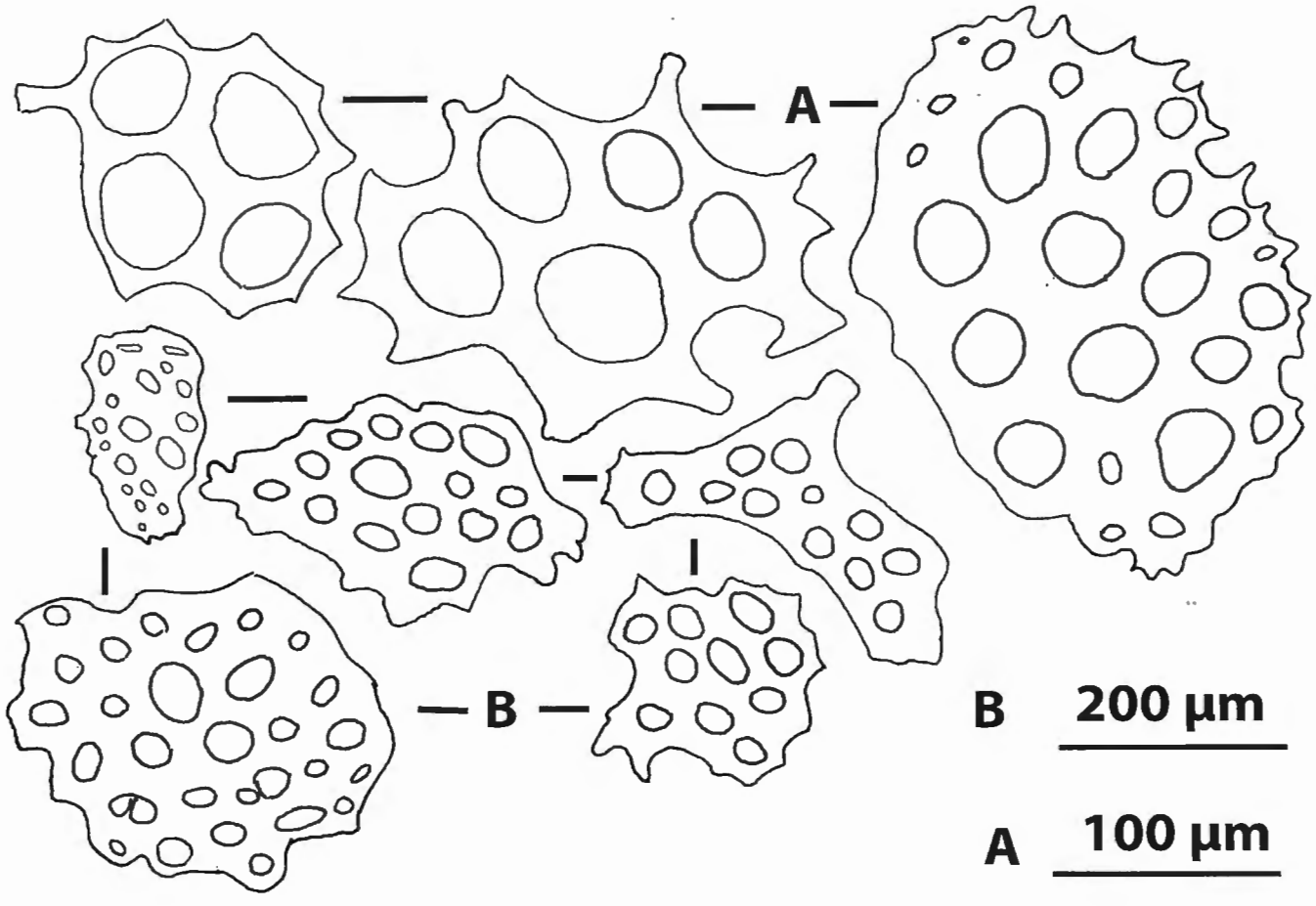


Fig. 9. – *Echinopsolus excretiospinosus* n.sp. A: small ossicles of ventral sole: B: large ossicles of ventral sole.

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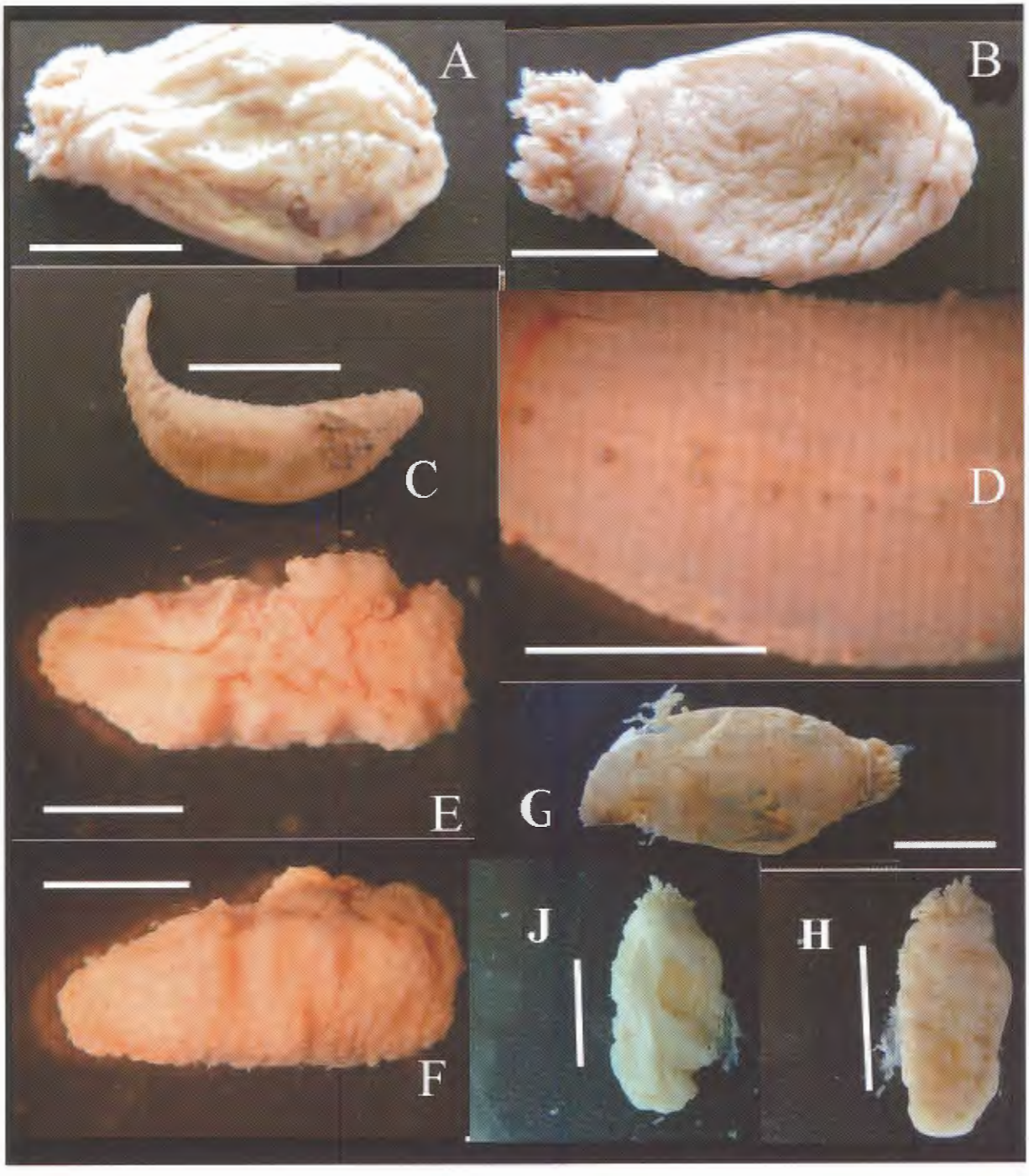


Plate 1. – *Microchoerus splendidus* GUTT, 1990a. A: ventral view; B: dorsa view.
*Cucamba psolidiformis* (VANEY, 1908). C:general view; D: close-up of tube feet radius.
*Psolus charcoti* VANEY, 1906a. E: ventral view; F: dorsal view.
*Cucumaria attenuata* VANEY, 1906a. G: general view.
*Echinopsolus excretiospinosus* n. sp. H: ventral view; J: dorsal view.
Scales A, B, C, G, H, J: 1 cm
Scales D, E, F: 5 mm