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New bryozoan taxa from a biodiversity hotspot in the Eastern Weddell Sea

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SUMMARY - *New bryozoan taxa from a biodiversity hotspot in the Eastern Weddell Sea* - A total of 112 species of cheilostomate Bryozoa are reported from a station in the eastern Weddell Sea, Antarctica, sampled by R.V. *Polarstern* cruise ANT-XXIV/2 (ANDEEP-SYSTCO). Twelve new species are described, distributed among the genera *Micropora*, *Melicerita*, *Membranicellaria*, *Arachnopusia*, *Exochella*, *Aimulosia*, *Buffonellodes*, *Spigaleos* and *Reteporella*, and a new genus and species are recognized in each of the Calloporidae and Lacernidae. Four other species are reported for the first time from the Weddell Sea. The number of species (112) for a single sample is extremely high for Antarctic shelf waters.

RIASSUNTO - *Nuovi taxa di briozoi da un'area ad elevata biodiversità nel Mare di Weddell orientale* - Un totale di 112 specie di briozoi cheilostomi è stato segnalato da una singola stazione nell'area orientale del Mare di Weddell, Antartide, campionato dalla R.V. *Polarstern* durante la crociera ANT-XXIV/2 (ANDEEP-SYSTCO). Sono state descritte dodici nuove specie (distribuite tra i generi *Micropora*, *Melicerita*, *Membranicellaria*, *Arachnopusia*, *Exochella*, *Aimulosia*, *Buffonellodes*, *Spigaleos* e *Reteporella*), e un nuovo genere e specie sono stati descritti nelle famiglie Calloporidae e Lacernidae. Quattro specie sono state segnalate per la prima volta nel Mare di Weddell. Il numero di specie (112) proveniente da un singolo campione è estremamente elevato per le acque continentali antartiche.

Keywords: taxonomy, Antarctic, Bryozoa, Cheilostomata, Weddell Sea

Parole chiave: tassonomia, Antartide, Briozoi, Cheilostomati, Mare di Weddell

1. INTRODUCTION

Bryozoans comprise a major component of the benthos in certain parts of Antarctica (Bullivant 1967; Dayton *et al.* 1974). Hayward (1995a) has summarized the history of taxonomic investigations of Bryozoa in Antarctica, especially those based on collections made by various expeditions sampling Antarctic benthos. These works have given a comprehensive, though still incomplete, picture of species-level diversity. It was, however, the inception of underwater photography that gave evidence of the abundance and biomass of bryozoans at certain locations, assumed to be correlated with that diversity, beginning with the 1958-59 and 1959-60 International Geophysical Year programs and their extensions (Bullivant 1959a,b; 1961), particularly in the Ross Sea. Bryozoans from the Weddell Sea, however, have only recently been explored (Arntz & Gutt 1997; Zabala *et al.* 1997; Gontar & Zabala 2000; Gontar 2002, 2003, 2008; Barnes & Kuklinski 2010) and new species continue to be described (Figuerola *et al.* 2013). We report here on the Cheilostomata found in the residue of a single Rauschert dredge sample from the eastern Weddell Sea that had been taken by R.V. *Polarstern* for Amphipoda. The residue comprised about four litres of coarse sand, small pebbles, sponge spicules and bryozoan debris. What is remarkable is the high species diversity of the Bryozoa found at this one

station, accompanied moreover, by considerable species richness of Amphipoda in the sample. The Bryozoa alone comprised 112 species, comprising considerable taxonomic novelty — 12.5 percent of the species and two genera are new to science and four other species are reported for the first time in the Weddell Sea.

The purpose of this paper is to report on the singular diversity of the Bryozoa from the *Polarstern* sample and describes the taxa that are new to science.

2. MATERIALS AND METHODS

The bryozoans examined here were extracted from about 4 liters of ethanol-preserved material collected by Henri Robert of the Royal Belgian Institute of Natural Sciences (RBINS) from a single station in the eastern Weddell Sea (R.V. *Polarstern* cruise ANT-XXIV/2 (ANDEEP-SYSTCO), Stn 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge). Colonies and fragments were isolated and photographed using a NOVEX-AP7 stereobinocular microscope equipped with a NIKON D50 or D90 and adapter. Representative samples of species of special interest were prepared for examination with an Environmental Scanning Electron Microscope (ESEM), FEI Quanta 200. With the

exception of those that could lose spines, the fragments were immersed overnight in dilute domestic bleach, washed in tap water and air dried. With some exceptions they were coated with gold to improve the SEM photography. The complete list of species found is reported in Tab.1. All specimens are deposited in the Royal Belgian Institute of Natural Sciences (RBINS) with the same IG nr 31272.

3. SYSTEMATICS

Suborder NEOCHEILOSTOMINA d'Hondt, 1985
Superfamily CALLOPOROIDEA Norman, 1903
Family CALLOPORIDAE Norman, 1903

Platypyxis gen. nov.

Derivatio nominis. Greek *platys*, flat, *pyxis*, box, alluding to the relatively large shallow zooids.

Diagnosis. Colony encrusting, multiserial. Autozooids large with large opesia, cryptocyst very narrow, confined to opesial rim, granular; gymnocyst negligible or slightly developed proximally. No spines. Subvicarious to interzooidal avicularia present, cross bar absent. Ooecium with narrow peripheral calcified ectooecium and a relatively large frontal area of membranous ectooecium over an exposure endooecium. Interzooidal communications via multiporous mural septula.

Type species *Membranipora inconstantia* Kluge, 1914

Remarks. A new genus is established here to accommodate *Membranipora inconstantia* Kluge, 1914 and a new species described below. Hayward & Thorpe (1989) and Hayward (1995a) included *M. inconstantia* in the genus *Crassimarginatella* Canu, 1900 but it differs from the type species, *Crassimarginatella crassimarginata* (Hincks, 1880) in several important features, notably the consistently large size of the zooids with minimal development of cryptocyst and gymnocyst, the absence of a pivot bar in the avicularium, a large exposure of ooecial endooecium, and mural septula instead of basal pore-chambers (dietellae).

Platypyxis weddellensis sp. nov. (Fig. 1A)

Derivatio nominis. Pertaining to the Weddell Sea.

Material. Holotype: RBINS IG31272/BRYT01: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert.

Description. Colony forming thin, flat, unilaminar sheets. Autozooids oval to irregular, separated by narrow grooves, 0.8-1.0 x 0.6-0.8 mm; with narrow border of smooth gymnocystal calcification and narrow granular cryptocystal rim of almost constant width around opesia except at distal end. Spines absent. Basal wall partly or

wholly uncalcified. Avicularia large, 0.84 x 0.46 mm; interzooidal, infrequent; with smoothly calcified cystid; rostrum directed distally, proximal third with well-developed, granular cryptocyst below small condyles, distal portion rounded. Ovicells and ancestrula not observed.

Measurements. Opesia length (n = 20) 0.78 ± 0.06 mm (mean ± SD); opesia width (n = 20) 0.60 ± 0.06 mm.

Remarks. The non-ovicelled colony is small, 6 x 8 mm, attached to the basal side of an erect unilaminar bryozoan and possesses two avicularia; the ancestrular region is lacking. It differs from the type species, *Platypyxis inconstantia* comb. nov., in having a small area of autozooidal gymnocyst and a small granular cryptocyst in the avicularium.

Family CHAPERIIDAE Jullien, 1888

Chaperiopsis patulosa (Waters, 1904) (Fig. 1 B-C)

1904 *Chaperiopsis patulosa* Waters, p. 33, pl. 2, fig. 5

Material. RBINS IG31272/BRY28: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. Small colony fragment.

Description. Colony unilaminar, encrusting. Autozooids irregularly oval to spatulate, raised distally. Opesia occupying half to two thirds of distal frontal surface, rounded with nearly straight proximal border, surrounded by depressed broad granular cryptocystal rim. Thick cylindrical oral spines, 2 distolateral to orifice, bifurcating and bending proximally inwards, and 2 straight distal spines that are occasionally forked. Spines persisting in ovicelled zooids. A columnar avicularium that sometimes seems jointed near its distal end placed distally on non-ovicelled autozooids. Lateral and proximal gymnocyst smooth; an avicularium with columnar cystid placed proximal to opesia. Ovicell prominent, recumbent on distally succeeding autozoid, ectooecium smooth, with large rounded frontal foramen. Ovicell surmounted by 1-2 avicularia with columnar cystids. Rostrum of all avicularia shortly triangular.

Remarks. This is the first illustration of Antarctic *Chaperiopsis patulosa* since Waters' (1904) original description of the type material from the Bellingshausen Sea by Waters (1904). Kluge (1914) described, but did not figure *C. patulosa* from Wilhelm II Land; d'Hondt & Redier (1977) listed it from Kerguelen without description or figures and Gontar & Zabala (2000) reported the species from a single station in the Kapp Norvegia area. Hayward & Thorpe (1988) attributed material from the southern Patagonian Shelf to Antarctic *C. patulosa* and this material was subsequently described and figured as such by Hayward (1995a). After closer examination of Waters' drawings, Hayward & Winston (2011) described this Patagonian material as *Chaperiopsis auriculata*.

Tab. 1 - List of species.
 Tab. 1 - Lista delle specie.

Species	Remarks
<i>Acanthophragma polaris</i>	
<i>Aimulosia weddellensis</i> sp. nov.	new species
<i>Adelascopora secunda</i>	
<i>Amastigia</i> cf. <i>cabereoides</i>	
<i>Amastigia solida</i>	
<i>Arachnopusia aquilina</i>	first record from Weddell Sea
<i>Arachnopusia</i> cf. <i>tubula</i>	
<i>Arachnopusia multiporosa</i> sp. nov.	new species
<i>Arachnopusia tumida</i> sp. nov.	new species
<i>Astochoporella cassidula</i>	
<i>Austroflustra vulgaris</i>	
<i>Beania erecta</i>	
<i>Bostrychopora dentata</i>	
<i>Buffonellodes antarctica</i>	
<i>Buffonellodes umbonata</i> sp. nov.	new species
<i>Buffonellodes</i> sp.	
<i>Bugulella klugei</i>	second record from Weddell Sea
<i>Caberea darwinii</i>	
<i>Camptoplites areolatus</i>	+ ancestrula
<i>Camptoplites bicornis</i>	
<i>Camptoplites bicornis</i> var. <i>quadriavicularis</i>	first record from Weddell Sea
<i>Camptoplites giganteus</i>	
<i>Camptoplites retiformis</i>	
<i>Camptoplites retiformis</i> var. <i>tenuispina</i>	first record from Weddell Sea
<i>Camptoplites tricornis</i>	
<i>Carbasea curva</i>	
<i>Cellaria aurorae</i>	
<i>Cellaria coronata</i>	
<i>Cellaria incula</i>	
<i>Cellaria moniliorata</i>	
<i>Cellarinella dubia</i>	second record from Weddell Sea
<i>Cellarinella laytoni</i>	
<i>Cellarinella njegovanae</i>	
<i>Cellarinella</i> cf. <i>foveolata</i>	
<i>Cellarinella rogickae</i>	
<i>Chaperiopsis</i> sp.	
<i>Chaperiopsis patulosa</i>	first illustration since Waters 1904
<i>Chaperiopsis quadrispinosa</i>	
<i>Cornucopina flexuosa</i>	
<i>Cornucopina pectogemma</i>	
<i>Cornucopina polymorpha</i>	
<i>Dendroperistoma projecta</i>	
<i>Ellisina antarctica</i>	
<i>Ellisina constantia</i>	
<i>Eminoecia carsonae</i>	
<i>Escharella</i> cf. <i>watersi</i>	8 spines on all autozooids, even on ovicellated
<i>Exochella quadrispinosa</i> sp. nov.	new species
<i>Fenestrulina antarctica</i>	second record from Weddell Sea
<i>Fenestrulina exigua</i>	8 spines
<i>Fenestrulina</i> cf. <i>exigua</i>	9 spines
<i>Fenestrulina parvipora</i>	redescription
<i>Fenestrulina proxima</i>	
<i>Himantozoum antarcticum</i>	
<i>Hippothoa flagellum</i>	first record from Weddell Sea
<i>Isoschizoporella secunda</i>	
<i>Isoschizoporella similis</i>	
<i>Isoschizoporella virgula</i>	
<i>Isosecuriflustra angusta</i>	basal attachment described
<i>Isosecuriflustra tenuis</i>	
<i>Klugerella antarctica</i>	second record from Weddell Sea

Tab. 1 - Continued.

Tab. 1 - Continua.

Species	Remarks
<i>Kymella polaris</i>	
<i>Lacerna hosteensis</i>	second record from Weddell Sea
<i>Larvaporu mawsoni</i>	
<i>Melicerita depressa</i> sp. nov.	new species
<i>Melicerita transversa</i> sp. nov.	new species
<i>Melicerita obliqua</i>	
<i>Melicerita lingulata</i>	first record from Weddell Sea
<i>Membranicellaria pellucens</i> sp. nov.	new species
<i>Micropora aspinosa</i> sp. nov.	new species
<i>Micropora brevissima</i>	
<i>Microporella stenopora</i>	
<i>Ministiaphila belgica</i> gen. et sp. nov.	new genus, new species
<i>Nematoflustra flagellata</i>	
<i>Notoplites antarcticus</i>	
<i>Notoplites drygalskii</i>	
<i>Notoplites klugei</i>	first record from Weddell Sea
<i>Notoplites vanhoffeni</i>	
<i>Orthoporidra branchyrhyncha</i>	
<i>Orthoporidra compacta</i>	
<i>Orthoporidra stenorhyncha</i>	
<i>Osthimosia bicornis</i>	
<i>Paracellaria wandeli</i>	
<i>Pemmatoporella marginata</i>	
<i>Platytypyx weddellensis</i> gen. et sp. nov.	new genus, new species
<i>Polirhabdotos inclusum</i>	
<i>Reteporella hippocrepis</i>	
<i>Reteporella gelida</i>	
<i>Reteporella frigida</i>	
<i>Reteporella lepralioides</i>	
<i>Reteporella dudekemi</i> sp. nov.	new species
<i>Rhamphosmittina bassleri</i>	
<i>Smittina antarctica</i>	
<i>Smittina alticollarita</i>	
<i>Smittina directa</i>	
<i>Smittina</i> sp.	
<i>Smittina curvirostrata</i> sp. nov.	new species
? <i>Smittina</i> sp.	
<i>Smittoidea albula</i>	
<i>Smittoidea malleata</i>	
<i>Smittoidea ornatipectoralis</i>	
<i>Spigaleos horneroides</i>	
<i>Spigaleos elegans</i> sp. nov.	new species
<i>Stomhypselosaria watersi</i>	second record from Weddell Sea
<i>Swanomia belgica</i>	
<i>Swanomia brevimandibulata</i>	
<i>Swanomia membranacea</i>	
<i>Systemopora contracta</i>	
<i>Talivittaticella frigida</i>	
<i>Thrypticocirrus contortuplicata</i>	
<i>Thrypticocirrus phylactelloides</i>	
<i>Thrypticocirrus rogickae</i>	
<i>Toretocheilum turbinatum</i>	long, jointed spines
<i>Turritigera cribrata</i>	

Superfamily FLUSTROIDEA Fleming, 1828
 Family FLUSTRIDAE Fleming, 1828
Isosecuriflustra angusta (Kluge, 1914)
 (Fig. 1 D)

1914 *Flustra angusta* Kluge, p. 653, pl. 31, fig. 2, text-fig. 32.
 1995a *Isosecuriflustra angusta* Kluge, 1914 - Hayward,
 p.66, fig. 59 (cum syn.).

Material. RBINS IG31272/BRY29: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. A colony attached to a small pebble (20 x 12 x 6 mm), unbleached and air dried. RBINS IG31272/BRY30: Several erect fragments from other colonies in ethanol.

Description. Small encrusting colony (7 x 8 mm) with 9 erect, bilaminar bushy tufts, each up to 20 mm long and to 12 mm wide at bifurcations. Autozooids in tufts elongate, more or less parallel-sided and narrow, 1.0-1.6 x 0.2-0.4 mm, frontal surface entirely membranous. Encrusting autozooids oval, 0.8-1.2 mm x 0.5-0.8 mm, lateral walls with more substantial calcification, opesia bordered by cryptocystal rim. Avicularia equal to those in erect tufts, cystid 0.3 x 0.2 mm, rostrum directed distolaterally, mandible shortly triangular with sharp downward-projecting distal tooth. Erect tufts connected to encrusting base by membranous tissue spreading over several zooids, forming a columnar joint where autozooids arise.

Remarks. Although *Isosecuriflustra angusta* has been widely reported in Antarctic waters, the basal attachment of the colony remained unknown (Hayward 1995a). Autozooids of the colony base are distinctly shorter and wider than autozooids of erect tufts.

Superfamily BUGULOIDEA Gray, 1848
Family BUGULIDAE Gray, 1848
Bugulella klugei (Hastings, 1943)
(Fig. 1 E)

1943 *Erymophora klugei* Hastings: 470.
1995a *Bugulella klugei* (Hastings, 1943) - Hayward, p. 93 (cum syn.).

Material. RBINS IG31272/BRY31: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. Colony fragment.

Description. Colony erect or creeping, uniserial and branching. Autozooids clavate, comprising tubular proximal portion and expanded distal portion bearing frontal membrane. Opesia with distinct rim, widest proximally, 2 short distal spines (probably sometimes 4). Avicularia and ovicells not observed. Each autozooid arising from basodistal wall of its predecessor; dichotomy formed by budding an autozooid from proximobasal wall of expanded portion of autozooid, forming a side branch; or a second bud distobasally producing a slender tubular structure parallel with proximal portion of new autozooid; dichotomy comprising 2 buds arising from distobasal wall of autozooid, giving rise to a pair of back-to-back growing zooids with elongated proximal tubular portion - their proximal portion parallel in first half, diverging in second half; at diverging point both tubular portions are linked but separated by septum.

Remarks. Very little material has ever been collected (Hayward 1995a). This is the second record of *Bugulella*

klugei from the Weddell Sea following the mention by Barnes & Kuklinski (2010) of material from 1030 m; they gave no description or illustrations.

Family CANDIDAE d'Orbigny, 1851
Notoplites klugei (Hasenbank, 1932)
(Fig. 1 F)

1932 *Menipea klugei* Hasenbank - p.369, text-fig. 33.
1995a *Notoplites klugei* (Hasenbank, 1932) Hayward, p. 136, fig. 105 (cum syn.).

Material. RBINS IG31272/BRY32: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. A few non-ovicelled colony fragments.

Description. Colony erect, branches biserial and bifurcating; internodes straight. New branches jointed at base proximal to opesia of first autozooid. Opesia with flaring opesial rim, broadest proximally. No spines or scuta. Frontal avicularium immediately proximal to opesia, rostrum triangular, almost perpendicular to frontal plane.

Remarks. This species has been reported on three occasions, from Bouvet Island, Wilhelm II Land and the Ross Sea (Hayward 1995a); this is the first record from the Weddell Sea.

Superfamily MICROPOROIDEA Gray, 1848
Family MICROPORIDAE Gray, 1848
Micropora aspinosa sp. nov.
(Fig. 2 A)

Derivatio nominis. A-, privative prefix; Latin, *spinosus*, -a, -um (adjective): spiny.

Material. Holotype: RBINS IG31272/BRYT02: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. A colony fragment growing on an erect plate of another cheilostome, together with *Micropora brevisima* Waters, 1904, prepared for SEM, stub 16. Paratypes: RBINS IG31272/BRYT03:10 colonies in ethanol from the same sample. Other material: small colony fragments in ethanol.

Description. Colony encrusting. Autozooids rather flat, 0.65-0.85 x 0.3-0.6 mm, with lateral rim surrounding frontal membrane. Cryptocyst entire, underlying frontal membrane. Opesia coextensive with orifice, semicircular, 3 times as wide as long, proximal edge straight. Spines absent, even in newly budded autozooids. Lateral wall not forming a pair of prominent knobs adjacent to opesia. Cryptocyst finely granular, with 15-30 small pores; opesiules large and slit-like, each with a single, stellate pore just proximal to it. Avicularia infrequent, distal to autozooid, slightly longer than width of opesia, rostrum elongate-triangular, acute to frontal

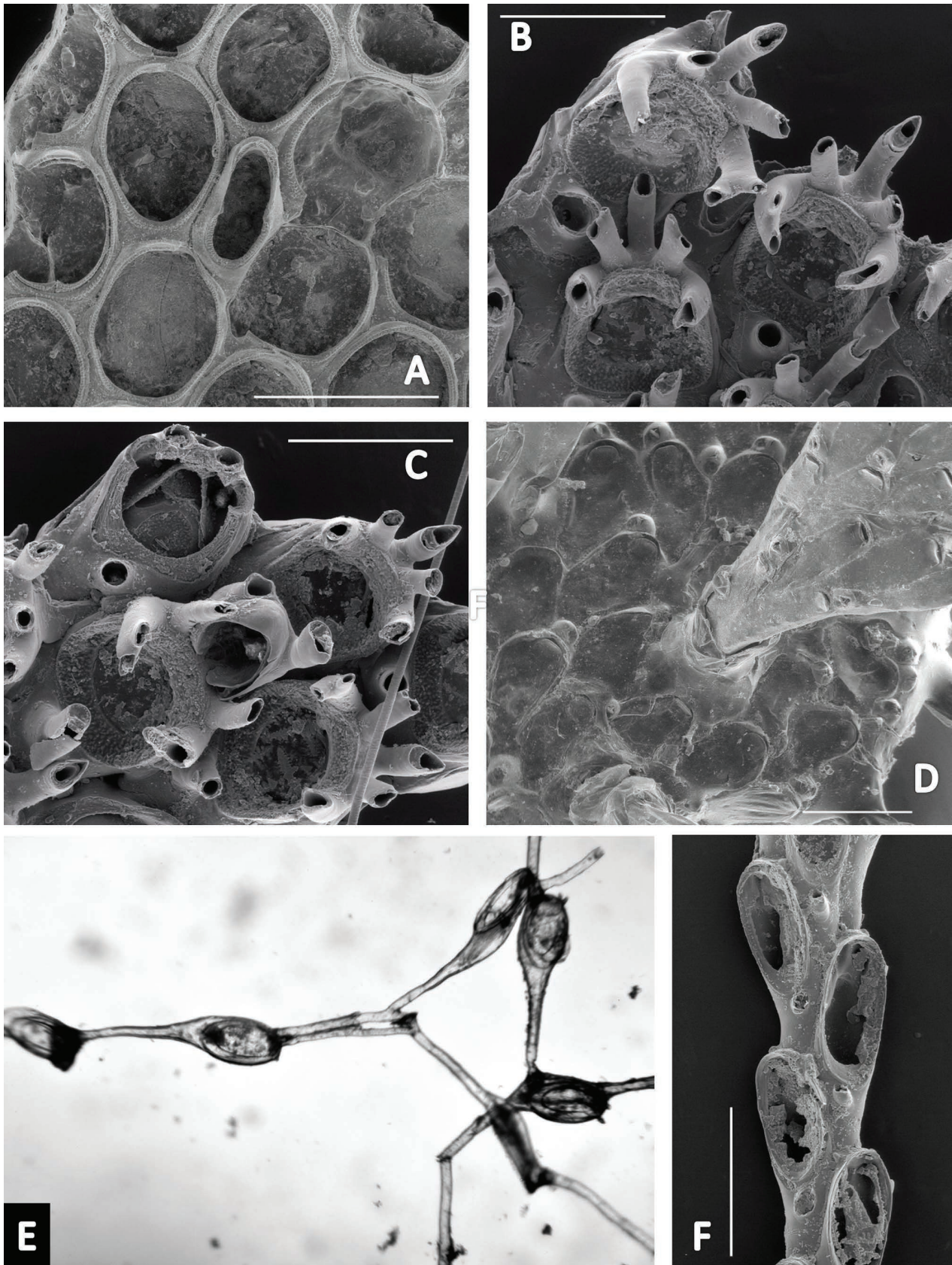


Fig. 1 - A. *Platypyxis weddellensis* gen. nov., sp. nov. Holotype. Scale bar: 1 mm. B.-C. *Chaperiopsis patulosa* (Waters, 1904). Scale bar: 500 μ m. D. *Isolecuriflustra angusta* (Kluge, 1914): colony base. Scale bar: 1 mm. E. *Bugulella klugei* (Hastings, 1943). Light microscopy. F. *Notoplites klugei* (Hasenbank, 1932). Scale bar: 500 μ m.

Fig. 1 - A. *Platypyxis weddellensis* gen. nov., sp. nov. Olotipo. Scala: 1 mm. B.-C. *Chaperiopsis patulosa* (Waters, 1904). Scala: 500 μ m. D. *Isolecuriflustra angusta* (Kluge, 1914): base di una colonia. Scala: 1 mm. E. *Bugulella klugei* (Hastings, 1943). Immagine allo stereomicroscopio. F. *Notoplites klugei* (Hasenbank, 1932). Scala: 500 μ m.

plane, distolaterally directed. Ovicell about as wide as long, finely granular, aperture with smooth rim, becoming thick and prominent in later ontogeny and sometimes umbonate. Embryo pale straw-yellow; no avicularia associated with ovicell. Basal pore-chambers large, present in autozooids and avicularia.

Measurements. Autozooid length (n = 10) 0.77 ± 0.07 mm (mean \pm SD); autozooid width (n = 10) 0.43 ± 0.10 mm. Opesia length (n = 10) $192 \mu\text{m} \pm 9 \mu\text{m}$; opesia width (n = 10) $65 \mu\text{m} \pm 3 \mu\text{m}$. Opesia width/length (n = 10) 2.95 ± 0.12 (mean \pm SD).

Remarks. The material differs from endemic Antarctic *Micropora brevissima* Waters, 1904 in the longer rostrum, wider opesia, absence of avicularia associated with an ovicell and larger basal pore-chambers. The new species is very similar to *Micropora notialis* Hayward & Ryland, 1993 but differs in the absence of spines, even in newly budded autozooids; the knobs on each side of the opesia are absent or hardly developed and the apertural rim of the ovicell is more pronounced, not peaked medially. Furthermore, the opesia is relatively narrower, being three times as wide as long, against two-and-a-half times in *M. notialis*, which ranges from Cape Horn to the Falkland Islands and off the southern Patagonian Shelf, ranging south to South Georgia and the Palmer Archipelago (Hayward & Ryland 1993).

Superfamily CELLARIOIDEA Fleming, 1828

Family CELLARIIDAE Fleming, 1828

Melicerita depressa sp. nov.

(Fig. 2 B-C)

Derivatio nominis. Latin, *depressus*, -a, -um (adjective): depressed, with reference to the surface that is depressed between two longitudinal cryptocystal ridges.

Material. Holotype: RBINS IG31272/BRYT04: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, $70^{\circ}23.94'$ S, $08^{\circ}19.14'$ W to $70^{\circ}23.89'$ S, $08^{\circ}18.67'$ W, 595-602 m, Rauschert dredge, collected by Henri Robert. A bifurcate colony fragment, 23 mm long. Paratypes: RBINS IG31272/BRYT05: colony fragment 4.7 mm long and 1.1 mm wide, dry, prepared for SEM, stub 17. RBINS IG31272/BRYT06: two colonies; 13 and 23 mm long, in ethanol. *Other material:* seven small colony fragments.

Description. Colony a thin, flat blade up to 23 mm height, maximally 3 mm wide, able to bifurcate. Autozooids hexagonal, flat, $0.5\text{-}0.7 \times 0.3\text{-}0.4$ mm, separated by thin raised ridges, in rows of 2 to 8 individuals that curve slightly towards colony margins. Cryptocyst granular, its central area concave, flanked by curving lateral cryptocystal ridges not meeting proximally. Opesia in distal half of autozooid, reniform, half width of autozooid; a stout blunt denticle in each proximal corner, no distal denticles. Ovicell aperture crescentic, about $1/3$ width of opesia. Avicularia interzooidal, cystid occupying half to $2/3$ area of an autozooid, polygonal; rostrum as wide as opesia (0.17 mm) or wider, semicircular.

Remarks. The colony fragment is similar to *Melicerita latilaminata* Rogick, 1956 and *Melicerita flabellifera* Hayward & Winston, 1994 except that the cryptocyst is markedly depressed between prominent cryptocystal ridges developed at each side of the opesia. Avicularia are about two thirds the area of an autozooid, compared to half the area of an autozooid in *M. latilaminata*. In *M. flabellifera* avicularia are frequent, as large as an autozooid and the rostrum is wider than opesia. Both species develop much larger colonies. The new species has cryptocystal ridges at both sides of the opesia similar to those in *Melicerita digeronimoi* Rosso, 1992 but the shape of the opesia is different. The latter species develops a straight-edged proximal lip with cusped corners. Rosso (1992) presented a key to all recent *Melicerita* species described to date; Hayward (1995a) presented descriptions and a key of all recent Antarctic species until 1995. More-recently described species are: *Melicerita temaukeli* Moyano, 1997, *Melicerita articulata* d'Hondt & Gordon, 1999, *Melicerita laurifolia* d'Hondt & Gordon, 1999, *Melicerita alternans* d'Hondt & Gordon, 1999 and *Melicerita brasiliensis* Vieira, Gordon, Souza & Haddad, 2010.

Melicerita transversa sp. nov.

(Fig. 2 D)

Derivatio nominis. Latin, *transversus*, -a, -um (adjective): transverse, with reference to the transverse orientation of the opesia in lateral autozooids.

Material. Holotype: RBINS IG31272/BRYT07: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, $70^{\circ}23.94'$ S, $08^{\circ}19.14'$ W to $70^{\circ}23.89'$ S, $08^{\circ}18.67'$ W, 595-602 m, Rauschert dredge, collected by Henri Robert. Colony fragment, 21 mm long. Paratypes: RBINS IG31272/BRYT08: colony fragment prepared for SEM; RBINS IG31272/BRYT09: 15 colony fragments in ethanol.

Description. Colony forming a thin, flattened, unbranched, sabre-like or straight rod up to 60 mm height, with a width of 5-7 mm; ridged transversely by presumed growth checks at intervals of 4-6 mm. Autozooids regularly hexagonal in middle of branch, less so laterally as autozooid rows curve towards colony margins. Cryptocyst coarsely granular, deeply concave between raised and very prominent lateral walls. Opesia situated in distal half of autozooid; crescentic, very narrow; proximal lip angular and reflected, distal border raised and cap-like. Towards colony margins, opesia increasingly orientated acutely to long axis of autozooid, eventually orientated 90° at colony margin. No avicularia observed. Ovicelled autozooids in clusters, ovicell aperture widely V-shaped, about same width as opesia. Ovicells near colony margin asymmetrical with aperture oblique to the long axis of branch. Multiporous septula in lateral walls. Lophophore pale yellow in preserved material.

Measurements. Autozooid length (n = 20) 0.85 ± 0.07 mm (mean \pm SD); autozooid width (n = 20) 0.45 ± 0.05 mm.

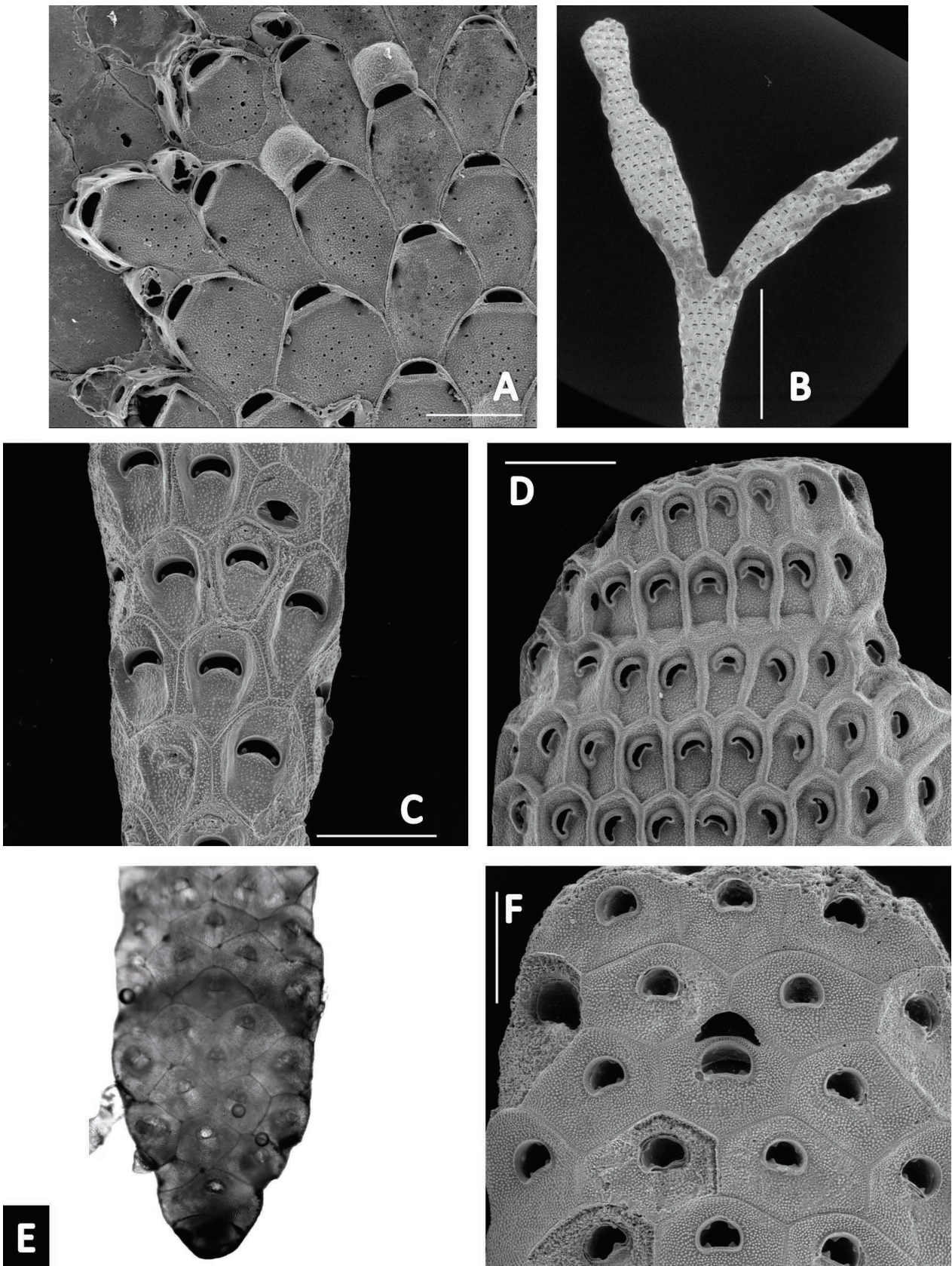


Fig. 2 - A. *Micropora aspinosa* sp. nov. Holotype. Scale bar: 500 μ m. B.-C. *Melicerita depressa* sp. nov. B. Holotype. Scale bar: 5 mm. C. Paratype, autozooids and avicularium. Scale bar: 500 μ m. D. *Melicerita transversa* sp. nov. Holotype. Scale bar: 1 mm. E.-F. *Melicerita lingulata* Liu & Hu, 1991: E. colony base, light microscopy. F. autozooids and an ovicell. Scale bars: 500 μ m.

Fig. 2 - A. *Micropora aspinosa* sp. nov. Olotipo. Scala: 500 μ m. B.-C. *Melicerita depressa* sp. nov. B. Olotipo. Scala: 5 mm. C. Paratipo, autozooidi e un aviculario. Scala: 500 μ m. D. *Melicerita transversa* sp. nov. Olotipo. Scala: 1 mm. E.-F. *Melicerita lingulata* Liu & Hu, 1991: E. base di colonia allo stereomicroscopio. F. autozooidi e un'ovicella. Scale: 500 μ m.

Remarks. The colony is similar to that of *Melicerita obliqua* (Thornely, 1924) (see Hayward 1995a, p. 177, fig 128 C, D). Lateral walls of autozooids are more prominently raised and the opesia is much narrower, with a thickened distal border. As they approach the colony margin, autozooidal opesiae of *M. transversa* sp. nov. are increasingly orientated more acutely to the long axis of the autozooid such that those at the margin are nearly transverse.

Melicerita lingulata Liu and Hu, 1991
(Fig. 2 E-F)

1991 *Melicerita lingulata* Liu & Hu, p. 49, fig. 9A-H.

Material. RBINS IG31272/BRY33: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. Two colonies resp. 10 and 13 mm long, prepared for SEM. RBINS IG31272/BRY34: Two entire colonies in ethanol, 7 and 10 mm long, 2 mm wide.

Description. Colony erect, bilaminar, comprising a single flattened blade, unbranched, up to 10 mm height and 2 mm width, with maximum of 5 autozooids in transverse row. Autozooids very wide, generally hexagonal, pentagonal near colony margin; those in middle of branch nearly as wide as long. Cryptocyst coarsely granular, autozooids separated by thin ridges. Opesia situated in distal half of autozooid, semicircular, two proximal and two distal denticles. Opesia of ovicelled autozooids prominently wider than opesia of non-ovicelled autozooids. Aperture of ovicell crescentic, broader than opesia of brooding zooid, at extreme distal end of autozooid. Avicularia not observed. Colony attached to substratum by rhizoids.

Measurements. Autozooid length (n = 5) 0.49 ± 0.02 mm (mean \pm SD); autozooid width (between two distolateral corners) (n = 6) 0.67 ± 0.02 mm; autozooid width of zooids in the middle of the branch (n=3) 0.59 ± 0.05 mm. Opesia width 0.175 mm, in ovicelled autozooid 0.225 mm, width ovicell aperture 0.300 mm.

Remarks. *Melicerita lingulata* has widely hexagonal, flat autozooids with a distally rounded outline, straight-edged opesiae and a comparatively large ovicell aperture. These characters distinguish it from all other *Melicerita* species (Hayward & Winston 2011). The widely hexagonal autozooids are shared with subantarctic *Melicerita subantarctica* d'Hondt, 1984 and *Melicerita atlantica* Busk, 1884 (Rosso 1992). The latter species, from the Argentinian continental slope, differs from *M. lingulata* in its larger autozooids (0.64 long x 0.89 wide) and larger opesiae (± 0.28 mm wide) that are located in the center of the autozooid; the species appears to lack distal denticles (Busk 1884). *M. subantarctica* is known from the French Austral Islands in the vicinity of Léna. It also has particularly short, wide zooids, 0.50 long x 0.75 mm wide, and the opesia is semicircular in the distal half of the zooid. Autozooids are also arranged in five series and are parallel-sided (cf. d'Hondt 1984, pl. III, 1). *M. subantarctica* seems to be identical in all

aspects to *M. lingulata* except for autozooid length, all measurements being some 10-20 % larger than in the latter species.

The colony form of the present material is identical to that described by Liu and Hu (1991) from the north of the Antarctic peninsula at a depth of 654 m, but the colony base (Fig. 2 E) differs from the young triangular colonies described by Hayward & Winston (2011) from *Eltanin* Cruise 7, station 457. The present material is the first collected in the Weddell Sea.

Stomhypselosaria watersi Hayward & Thorpe, 1989
(Fig. 3 A)

1989b *Stomhypselosaria watersi* Hayward & Thorpe, p. 945, fig. 11;

1995a *Stomhypselosaria watersi* Hayward & Thorpe, 1989b - Hayward, p. 174, fig. 126B,C.

Material. RBINS IG31272/BRY35: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. Small, unbranched colony fragment prepared for SEM, RBINS IG31272/BRY36: Small, unbranched colony fragment in ethanol.

Diagnosis. Colony stout, cylindrical, thickly calcified, unjointed. Opesia with straight, slightly reflected proximal lip, indented in each proximal corner. Prominent cryptocystal ridges developed on each side of opesia.

Remarks. This is the second record from the Eastern Weddell Sea, following that of Gontar & Zabala (2000) from the Kapp Norvegia area. This species is known from the Ross Sea, Bellingshausen Sea, South Sandwich Isles and Signy Island, and also from the Patagonian Shelf (Hayward 1995a).

Family Membranicellariidae Levinsen, 1909
Membranicellaria pellucens sp. nov.
(Fig. 3 B-D)

Derivatio nominis. Latin, *pellucens* (present participle of the verb *pellucere*), translucent, with reference to the light calcification of the colony and its translucence.

Material. Holotype: RBINS IG31272/BRYT10: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S 008°19.14' W to 70°23.89' S 008°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. Colony fragment prepared for SEM. Paratypes: RBINS IG31272/BRYT11: colony with rhizoids, 15 mm high; RBINS IG31272/BRYT12: eight colony fragments, the largest fragment 42 mm long and 11 mm wide and bifurcate.

Description. Colony erect, developing broad, flat, bilaminar lobes, branching, unjointed; attached by chitinous rhizoids. Autozooids separated by distinct raised sutures, quadrangular to hexagonal. Frontal membrane under-

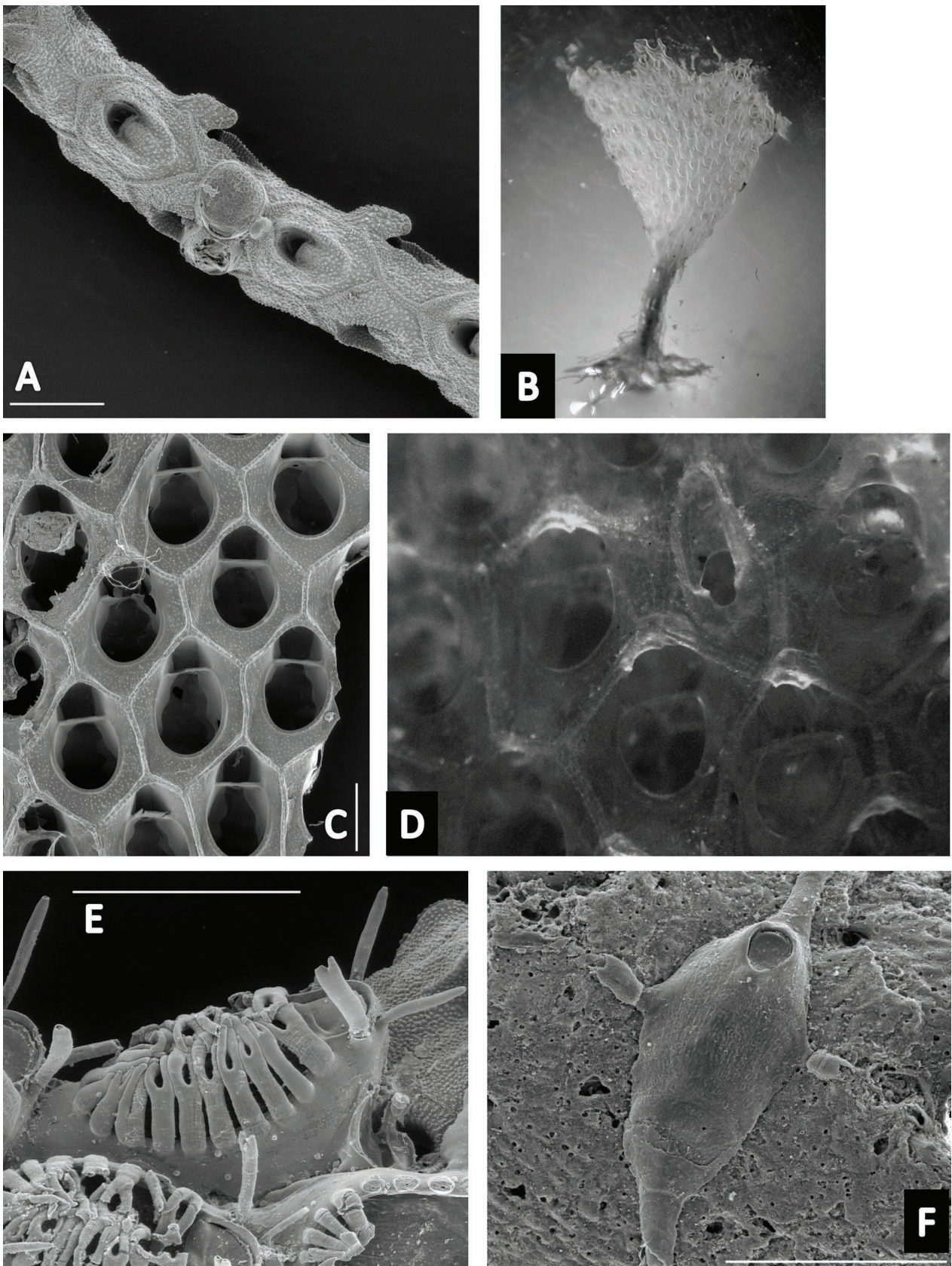


Fig. 3 - A. *Stomhypselosaria watersi* Hayward & Thorpe, 1989. Scale bar: 500 μ m. B.-D. *Membranicellaria pellucens* sp. nov.: B. Paratype, light microscopy. C. Holotype, ovicelled autozooids. Scale bar: 500 μ m. D. Paratype, avicularium and ovicelled autozooids, light microscopy. E. *Klugerella antarctica* (Kluge, 1914). Scale bar: 500 μ m. F. *Hippothoa flagellum* Manzoni, 1870 Scale bar: 300 μ m.
 Fig. 3 - A. *Stomhypselosaria watersi* Hayward & Thorpe, 1989. Scala: 500 μ m. B.-D. *Membranicellaria pellucens* sp. nov. B. Paratipo, allo stereomicroscopio. C. Olotipo, autozooidi ovicellati. Scala: 500 μ m. D. Paratipo, aviculari e autozooidi ovicellati, allo stereomicroscopio. E. *Klugerella antarctica* (Kluge, 1914). Scala: 500 μ m. F. *Hippothoa flagellum* Manzoni, 1870. Scala: 300 μ m.

lain by a hyaline, shallowly concave cryptocyst with finely granular surface; opesia oval, situated in centre of cryptocyst and equivalent to more or less half total zooid length; vertical walls connected to basal wall in a zigzag pattern; multiporous septula in lateral and distal walls, sometimes with a much larger central pore. Operculum relatively large, with prominent marginal sclerite. Ovicell immersed, with arched, trifoliate apertural rim distal to independent orifice closed by a narrow sclerite, separated from maternal autozooid by distal wall, with distal part of autozooidal operculum overlying this wall. Maternal zooid and ovicell communicating through one large and several small pores. Autozooids towards the tapering proximal end of colony each producing a rhizoid, forming a basally spreading bundle attached to substratum. Opesiae of zooids producing rhizoids narrowed by cryptocystal calcification to 1-2 small lacunae distally. Edges of colony thin, including kenozooids with reduced opesiae and vicarious avicularia. Rarely a vicarious avicularium in middle of branch, this elongate, with raised semi-elliptical rostrum directed distally, palate with elongate-oval opesia, mandible articulating against pair of knob-like condyles.

Measurements. Non-ovicelled autozooids: all measurements are for $n = 2$, mean \pm SD: autozooid length 1.33 ± 0.03 mm; autozooid width 0.80 ± 0.09 ; opesia length 0.85 ± 0.09 mm; opesia width 0.59 ± 0.08 mm. Ovicelled autozooids: all measurements are for $n = 20$, mean \pm SD: autozooid length 1.13 ± 0.05 mm; autozooid width 0.88 ± 0.07 mm; opesia length 0.55 ± 0.04 mm; opesia width 0.48 ± 0.02 mm.

Remarks. *Membranicellaria pellucens* sp. nov. resembles *M. dubia* (Busk, 1884), but is not heavily calcified and is even translucent; the cryptocyst is not coarsely nodular but finely granular; zooids are larger, the opesia is larger and the opesia is longer than half the zooid length. There are now three known species of *Membranicellaria*: *M. dubia* is described and illustrated in Hayward & Winston (2011) and the existence of another species, from the Patagonian region and yet to be formally described, was presented at the 2013 IBA conference in a poster entitled "Cheilostome bryozoan diversity from the southwest Atlantic region: is Antarctica really isolated?"

Infraorder ASCOPHORINA Levinsen, 1909
Superfamily CRIBRILINOIDEA Hincks, 1879
Family CRIBRILINIDAE Hincks, 1879
Klugerella antarctica (Kluge, 1914)
(Fig. 3 E)

1914 *Membraniporella antarctica* Kluge, p. 677, pl. 33, fig. 7.
1995a *Klugerella antartica* Kluge, 1914 - Hayward, p. 185, fig. 131D,E (cum syn.).

Material. RBINS IG31272/BRY37: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. Two small colonies on other bryozoans, e.g. *Swanomia brevimandibulata* (Moyano, 1969).

Description. Colony encrusting. Autozooids with smooth gymnocystal band and frontal shield comprising 8-10 pairs of flattened costae, each bifurcating distally and fused along midline of autozooid. Oral spines 4, proximal pair spatulate to bifid. No ovicells or avicularia observed.

Remarks. This is the second record of *K. antarctica* from the Weddell Sea, following an earlier report from the Kapp Norvegia area by Gontar & Zabala (2000). This species was previously known only from the Kaiser Wilhelm Coast, off the South Shetlands and in the Ross Sea (Hayward 1995a).

Superfamily HIPPOTHOOIDEA Busk, 1859
Family HIPPOTHOIDAE Busk, 1859
Hippothoa flagellum Manzoni, 1870
(Fig. 3 F)

Material. RBINS IG31272/BRY38: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. A colony encrusting a pebble.

Description. Colony encrusting, consisting of uniserial chains of autozooids with a cruciform branching pattern. Autozooids clavate with filiform proximal and oval distal portion. Primary orifice with proximal sinus, broadest distally.

Remarks. Only one species in this genus has been recognized in Antarctic waters, probably occurring throughout the Antarctic shelf seas (Hayward 1995a); this is the first record for the eastern Weddell Sea.

Superfamily ARACHNOPUSIOIDEA Jullien, 1888
Family ARACHNOPUSIIDAE Jullien, 1888
Arachnopusia aquilina Moyano, 1970
(Fig. 4 A)

1970 *Arachnopusia aquilina* Moyano, 261, pl. 1, figs 1-4; pl. 2, figs 5-8;
1995a *Arachnopusia aquilina* Moyano, 1970 - Hayward, p. 189, fig. 132C,D.

Material. RBINS IG31272/BRY39: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. One non-ovicelled colony fragment prepared for SEM.

Description. Colony forming a bilaminar sheet. Autozooidal boundaries hard to distinguish in later ontogeny. Frontal shield finely granular, with 10-21 variably and unequally sized foramina, each with smoothly calcified rim, together forming smooth fields on surface. Proximal edge of aperture thickened with a triangular or quadrangular lobe. A single distolateral spine and very rarely a second distal spine present, oval in section, persisting in late ontogeny. Lateral-oral avicularia paired, equal-sized or one much larger than other; rostrum parallel to apertural plane,

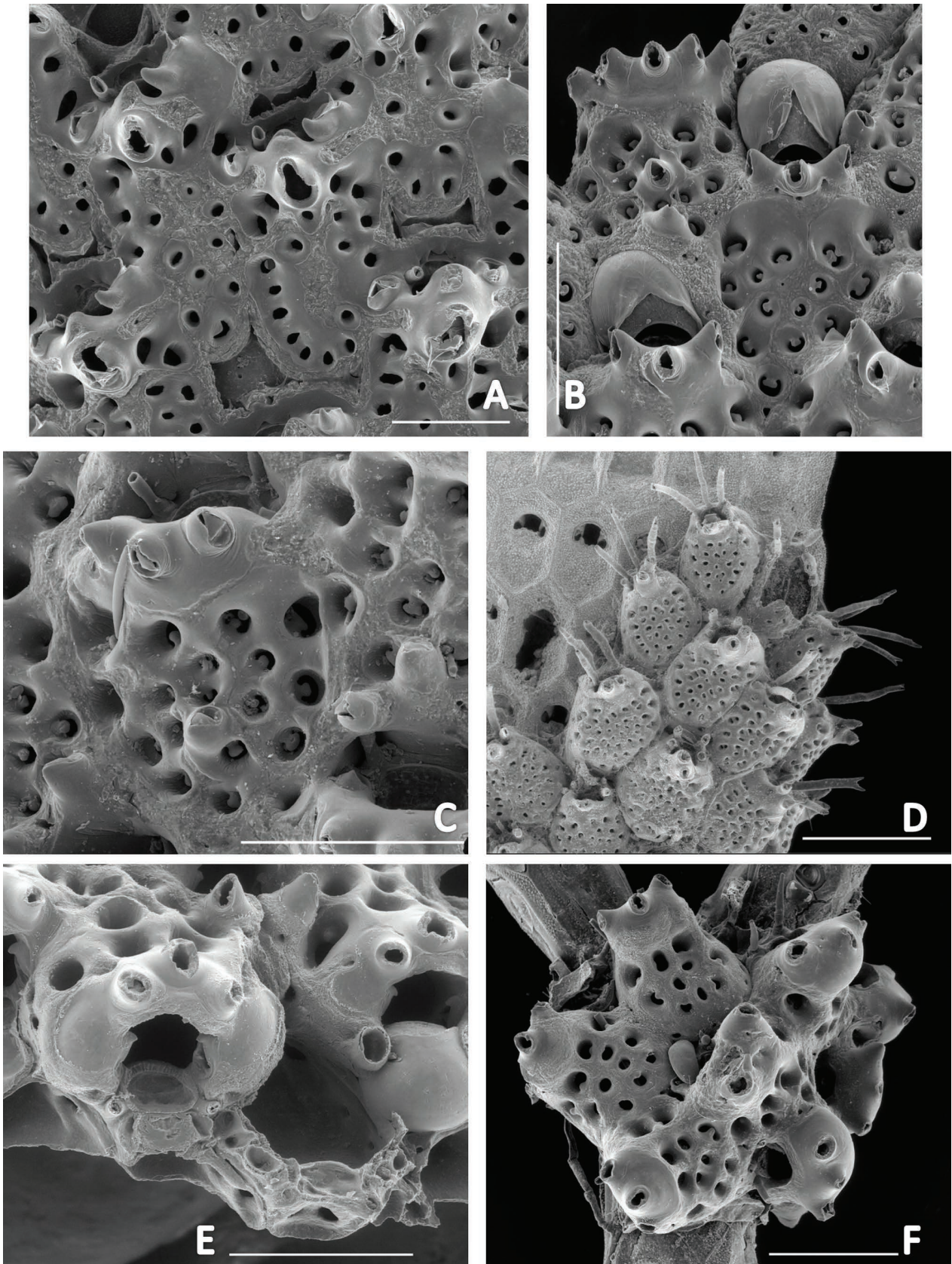


Fig. 4 - A. *Arachnopusia aquilina* Moyano, 1970. Scale bar: 500 μ m. B.-C. *Arachnopusia* cf. *tubula* Hayward & Thorpe, 1988. B. Ovicelled autozooids. Scale bar: 400 μ m. C. Autozooid. Scale bar: 500 μ m. D. *Arachnopusia multiporosa* sp. nov. Holotype. Scale bar: 1 mm. E.-F. *Arachnopusia tumida* sp. nov. E. Holotype, edge of large colony. Scale bar: 500 μ m. F. Paratype, young colony. Scale bar: 500 μ m. Fig. 4 - A. *Arachnopusia aquilina* Moyano, 1970. Scala: 500 μ m. B.-C. *Arachnopusia* cf. *tubula* Hayward & Thorpe, 1988. B. Autozooidi ovicellati. Scala: 400 μ m. C. Autozoide. Scala: 500 μ m. D. *Arachnopusia multiporosa* sp. nov. Olotipo. Scala: 1 mm. E.-F. *Arachnopusia tumida* sp. nov. E. Olotipo, margine di una grande colonia. Scala: 500 μ m. F. Paratipo, giovane colonia. Scala: 500 μ m.

directed proximally, elongate-triangular. A single median subapertural avicularium present, rostrum perpendicular to frontal plane, distally directed.

Remarks. This is the first record for the Weddell Sea of this endemic Antarctic species, reported from several localities around the South Shetland Islands and off Oates Land (Hayward 1995a).

Arachnopusia cf. tubula Hayward & Thorpe, 1988
(Fig. 4 B-C)

Material. RBINS IG31272/BRY40: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. Colony fragment about 2 by 3 mm, prepared for SEM. RBINS IG31272/BRY41: a very young colony composed of 3 autozooids with spines intact.

Description. Frontal shield with 15-20 small to very small foramina, each almost occluded by round to mushroom-shaped ligula. Foramina more or less reniform, internally grooved, embedded in large, smooth-surfaced fields in the finely granular frontal shield. Up to 5 spines in early ontogeny, long, some forked near their distal end. In later ontogeny 1-4 broken spines may be visible. Proximal rim of aperture with projecting fan of 3-5 small columnar avicularia, their rostra distally directed. Median avicularium facing proximally; lateral avicularia facing proximolaterally to laterally. 1-2 avicularia may occur elsewhere on frontal shield of autozooids or at distal rim of aperture. Ovicell with triangular area of entooecium exposed frontally, covered with finely granular calcification in later ontogeny. Apertural rim continuing across frontal surface of ovicell, bearing 1-3 avicularia.

Remarks. The sole specimen resembles *Arachnopusia tubula* as described by Hayward & Thorpe (1988), a species known only from the South Shetland Islands (Hayward 1995a) and the Kapp Norvegia area (Gontar & Zabala 2000). The numbers of spines and avicularia are higher in present material.

Arachnopusia multiporosa sp. nov.
(Fig. 4 D)

Derivatio nominis. Latin, *multiporosus*, *-a*, *-um* (with many pores), adjective combining the Latin prefix *multi-* (many) and the adjective *porosus*, *-a*, *-um* deriving from the Greek noun, πόρος (passage, pore), with reference to the many foramina in the frontal shield.

Material. Holotype: RBINS IG31272/BRYT13: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. A small colony prepared for SEM.

Description. Colony encrusting, unilaminar. Autozooids oval, convex, boundaries distinct, 0.8-0.9 x 0.6-0.7

mm. Frontal shield thickly calcified, smooth-surfaced, with 20-30 small foramina, some twinned, being divided by a ligula. Oral spines 3-5, a few forked distally, articulated basally, cylindrical, hollow and of irregular width, comprising 1 distal, flanked by 2 distolateral and often 1 proximolateral spine, in ancestrular region a 5th proximolateral spine on opposite side. Proximal rim of aperture with 1-3 small avicularia. Avicularia with distally tapering cystid, short or long and cylindrical, often bent. Rostrum terminal, shortly triangular and distally directed. Ovicells not observed.

Measurements. All measurements are for n = 12, mean ± SD: autozooid length 0.89 ± 0.04 mm; autozooid width 0.66 ± 0.05 mm.

Remarks. The species most closely resembles *Arachnopusia ferox* Hayward & Thorpe, 1988 in the large number of foramina, in having up to three subapertural avicularia and the persistence of oral spines in later ontogeny. *A. ferox* has a grossly enlarged spine and large avicularia. The present species often has an extra spine, not enlarged, some bifid distally, and the avicularia are small and irregularly placed.

Arachnopusia tumida sp. nov.
(Fig. 4 E-F)

Derivatio nominis. Latin, *tumidus*, *-a*, *-um* (adjective): swollen, with reference to the swollen proximal lip.

Material. Holotype: RBINS IG31272/BRYT14: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. Colony fragment prepared for SEM, stub 8. Paratype: RBINS IG31272/BRYT15: very young colony on *Cellaria* sp., prepared for SEM.

Description. Autozooids oval, convex, 0.6-0.7 x 0.5 mm, boundaries indistinct. Frontal shield with 8-12 large foramina, some developing a ligula; this small, triangular or quadrate, long and narrow, in some cases reaching opposite side and dividing foramen into 2 smaller foramina. Proximal rim of aperture with projecting fan of 3 columnar avicularia, each with incomplete crossbar or proximal bar swollen, with 3-4 avicularia. Apertural plate broad, concave. Inside aperture a tiny avicularium on each side, facing medially, superficially resembling a denticle or condyle. Oral avicularia with elongate triangular rostrum, 0.075 mm long, abruptly curving distally. Frontal avicularia with short triangular rostrum, 0.1 mm long, directed distally, central one facing proximally, lateral avicularia facing laterally, crossbars incomplete. Oral spines 2-3 in young zooids, 1 broken spine observed in some zooids in later ontogeny, lateral to ovicell. Ooecial cover bearing 2-3 avicularia.

Remarks. Boundaries in a mature colony are so indistinct that no accurate measurements could be made. This distinctive species develops a swollen proximal apertural lip bearing 3-4 tiny avicularia and, within the aperture, a minute avicularium on each side, each facing medially.

Other species, for example *A. aquilina*, develop similar lateral-oral avicularia but these face distally instead of medially. *Arachnopusia columnaris* Hayward & Thorpe, 1988 has one inward-tilted oral avicularium and a similar number of foramina but differs from the new species in having 3-4 spines persisting in later ontogeny and the proximal apertural rim is not swollen and bears only 1-3 avicularia.

Superfamily LEPRALIELLOIDEA Vigneaux, 1949
Family EXOCHELLIDAE Bassler, 1934

Exochella quadrispinosa sp. nov.
(Fig. 5 A-B)

Derivatio nominis. Latin, *quadri-*: prefix meaning four or four times; *spinus*-, -a, -um (adjective): spiny, with reference to the constant number of four oral spines.

Material. Holotype: RBINS IG31272/BRYT27: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. Colony on stone.

Description. Colony an unilaminar sheet. Autozooids large, more or less hexagonal, convex, separated by distinct grooves; 0.8-1.0 x 0.6-0.9 mm. Frontal shield finely nodular, with 8-12 large marginal pores, developing ridges between them that converge to a prominent, angular, medioproximal mucro. Primary orifice semicircular with quadrangular medioproximal lyrula and distinct triangular proximolateral condyles; 4 closely spaced, short, very thick, flattened oral spines present. Avicularia single, paired or absent, near lateral or proximal margin of autozoid, variably directed, rostrum broadly scaphoid, with rounded tip. Large basal pore-chambers, interior wall of each comprising a multiporous septulum with a horizontal row of communication pores. Ovicells not observed.

Measurements. Autozoid length (n = 10) 0.90 ± 0.08 mm (mean ± SD); autozoid width (n = 10) 0.74 ± 0.08 mm. Primary orifice width ± 0.23 mm, length ± 0.15 mm.

Remarks. Hayward (1995a) described and illustrates six Antarctic species; *Exochella hymanae* (Rogick, 1956) and the present species are distinguished from all others by their rounded avicularian rostrum. *Exochella quadrispinosa* sp. nov. is the only Antarctic species with four oral spines.

Family LEPRALIELLIDAE Vigneaux, 1949
Acanthophragma polaris Hayward, 1993
(Fig. 5 C)

1993 *Acanthophragma polaris* Hayward, p. 288, fig. 2C,D.

Material. RBINS IG31272/BRY42: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. Non-ovicelled colony not bleached but prepared for SEM.

RBINS IG31272/BRY43: Ancestrula and two zooids in ethanol.

Description. All characters are as previously described in *A. polaris*, except that in the present colony all zooids possess five spines instead of six. All spines are cylindrical and jointed basally, the distalmost spine is thin and not bifurcated, the two more-proximal spines are twice as broad and bifurcate and the proximalmost spines bend outward.

Remarks. *Acanthophragma* is presently monotypic and is known from the Ross Sea (Hayward 1993), Weddell Sea (Barnes & Kuklinski 2010) and Bellingshausen Sea (Lopez-Fé 2005). Moyano (2005) reported "*A. polaris*?" from the South Sandwich Islands.

Family SCLERODOMIDAE Levinsen, 1909
Cellarinella dubia Waters, 1904
(Fig. 5 D)

1904 *Cellarinella dubia* Waters, p. 58, pl. 8, figs 12a,b, text-fig. 2;

1995a *Cellarinella dubia* Waters, 1904 - Hayward, p. 217, figs 142F, 143A (cum syn.).

Material. RBINS IG31272/BRY44: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. A fragment prepared for SEM. RBINS IG31272/BRY45: Several colony fragments in ethanol.

Description. Colony attached by rhizoids, comprising a slender cylindrical branch about 1 mm wide, dichotomously branching. Autozooids in alternating whorls of 4-7, elongate, fusiform, lateral boundaries hidden by reticulate ridges on colony surface, orifice clearly visible in frontal view, with medioproximal notch. A small distolaterally directed avicularium on both sides of the peristomial notch. No ovicells observed.

Remarks. A small colony in RBINS comprising part of "Type material Waters" is unrecognizable. The present material is more similar to that illustrated by Waters (1904, pl. 8b) in the shape of the apertural notch and the distance between the two avicularia than is shown in Hayward (1995a, fig. 143A). This is the second record from the Weddell Sea, following an earlier report from the Kapp Norvegia area (Gontar & Zabala 2000). There are two other Antarctic records, both doubtful (Hayward 1995a); Waters' (1904) Bellingshausen Sea material was possibly wrongly labeled and Livingstone (1928) reported specimens from an unknown locality that was only presumed to be Antarctic.

Superfamily SMITTINOIDEA Levinsen, 1909
Family SMITTINIDAE Levinsen, 1909

Smittina sp. 1
(Fig. 5 E)

Material. RBINS IG31272/BRY46: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January

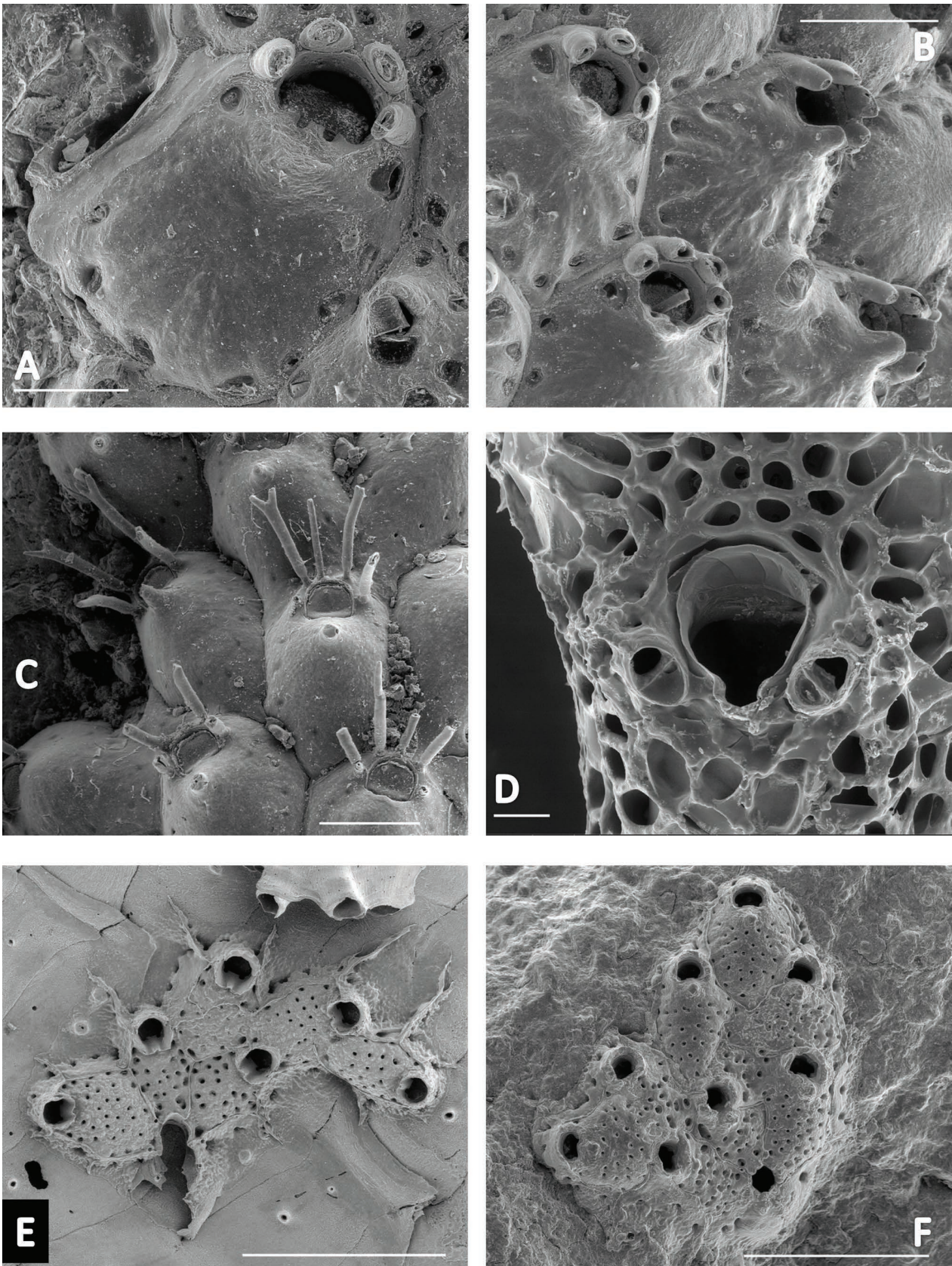


Fig. 5 - A.-B. *Exochella quadrispinosa* sp. nov. A. autozooide lungo il bordo di una colonia e un aviculario. Scala: 250 μ m. B. autozooidi e aviculario al centro della colonia. Scala: 500 μ m. C. *Acanthophragma polaris* Hayward, 1993. Scala: 500 μ m. D. *Cellarinella dubia* Waters, 1904. Scala: 100 μ m. E. *Smittina* sp. 1. Scala: 1 mm. F. ?*Smittina* sp. 2. Scala: 1 mm.

2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert.

Description. Colony small, neanic, comprising a broken ancestrula (apparently tatiform with few widely spaced spines) budding 3 daughter zooids and 3 subsequent autozooids. Frontal shield uniformly porous. Primary orifice wider than long, lyrula short and broad, nearly half as wide as orifice, with projecting corners; condyles rounded. No oral spines. Peristome projecting and flaring, longitudinally ridged distally, straight proximally with a ridge, suggesting a developing avicularian cystid that would be completely enclosed by peristome. Ovicells not present.

Measurements. Autozooid length (n = 6) 0.60 ± 0.04 mm (mean \pm SD); autozooid width (n = 6) 0.38 ± 0.05 mm. Primary orifice width (n = 1) $142 \mu\text{m}$, lyrula width (n = 1) $63 \mu\text{m}$.

Remarks. The sole colony too young to determine the identity of the specimen.

Smittina curvirostrata sp. nov.
(Fig. 6 B-D)

Derivatio nominis. *Curvirostratus*, -a, -um, Latin adjective created herein and combining *curvatus*, -a, -um (past participle of the Latin verb *curvare*), curved, and *rostratus*, -a, -um, having a beak, with reference to the avicularium bending laterally.

Material. Holotype: RBINS IG31272/BRYT16: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert.

Description. Colony encrusting, forming unilaminar sheets. Frontal shield uniformly porous. Primary orifice with short, broad lyrula, half as wide as orifice, with projecting corners; condyles rounded, pointing mid-proximally. No oral spines. Peristome thickened, entire, its distal portion continuous with calcification of daughter zooid. Avicularium small, about 0.1 mm long, lodged within peristome immediately proximal to lyrula, rostrum acute to frontal plane, widening distally, proximally directed, bending laterally; crossbar stout, without columella, palate with extensive foramen. Frontal shield developing a stout conical umbo immediately proximal to peristome; peristome and marginal areas of frontal shield coarsely granular. Ovicells not observed. Ancestrular region present but overgrown by autozooids.

Measurements. Autozooid length (n = 10) 1.04 ± 0.08 mm (mean \pm SD); autozooid width (n = 10) 0.66 ± 0.04 mm. Primary orifice width ± 0.24 mm.

Remarks. There are numerous Antarctic species of *Smittina* and it is probable that more will be described (Hayward 1995a). Like the present species, some have a suboral avicularium entirely enclosed within the peristome; in *Smittina abditavicularis* Rogick, 1956 the avicularium

is hidden and transversely orientated; in *Smittina pileata* (Waters, 1904) condyles are inconspicuous and avicularia are sporadic; in *Smittina rogickae* Hayward & Taylor, 1984, *Smittina pocilla* Hayward & Thorpe, 1990 and *Smittina glebula* Hayward & Thorpe, 1990 autozooids are much smaller; in *Smittina incernicula* Hayward & Thorpe, 1990 the crossbar has a thick columella. In *Smittina anecdota* Hayward & Thorpe, 1990, the condyles are rounded-quadrangular, the lyrula rectangular. In the present species the avicularium bends laterally, a feature not seen in any other *Smittina* species from the Antarctic.

?*Smittina* sp.
(Fig. 5 F, 6 A)

Material. RBINS IG31272/BRY47: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. Small colony incorporating an ancestrula, three periancestrular autozooids and five other autozooids.

Description. Colony encrusting. Frontal shield uniformly porous with stellate pores. Primary orifice wider than long, with short, straight-edged lyrula, 1/3 as wide as orifice; condyles rounded-quadrangular. No oral spines. Peristome thickened, developed distally and laterally, not proximally. Proximal to orifice a pronounced umbo. No avicularia observed.

Measurements. Autozooid length (n = 6) 0.64 ± 0.08 mm (mean \pm SD); autozooid width (n = 6) 0.42 ± 0.07 mm. Primary orifice (n = 1) width ± 0.37 mm, length 0.23 mm

Remarks. This specimen has several characters in common with *Smittina pileata*, e.g. the orifice and lyrula and the lack of avicularia, but in the latter species the lyrula is broader, three quarters total width of the proximal border, and condyles are small and inconspicuous. In the absence of ovicells one cannot exclude the possibility that the specimen belongs to *Thrypticocirrus*.

Superfamily SCHIZOPORELLOIDEA Jullien, 1883
Family MICROPORELLIDAE Hincks, 1879
Fenestulina antarctica Hayward & Thorpe, 1989a
(Fig. 6 E)

1989a *Fenestulina antarctica* Hayward & Thorpe, p. 371, figs 1A-C.

Material. RBINS IG31272/BRY48: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. Many colony fragments present in the sample.

Diagnosis. Colony forming small encrustation on small pebble, damaged. Frontal shield thickly calcified with large, closely spaced stellate pores over entire surface. Primary orifice wider than long, 1 distal spine base present (as in fig. 172B in Hayward 1995a). Ascopore narrowly crescentic, close to longitudinal midpoint of autozooid.

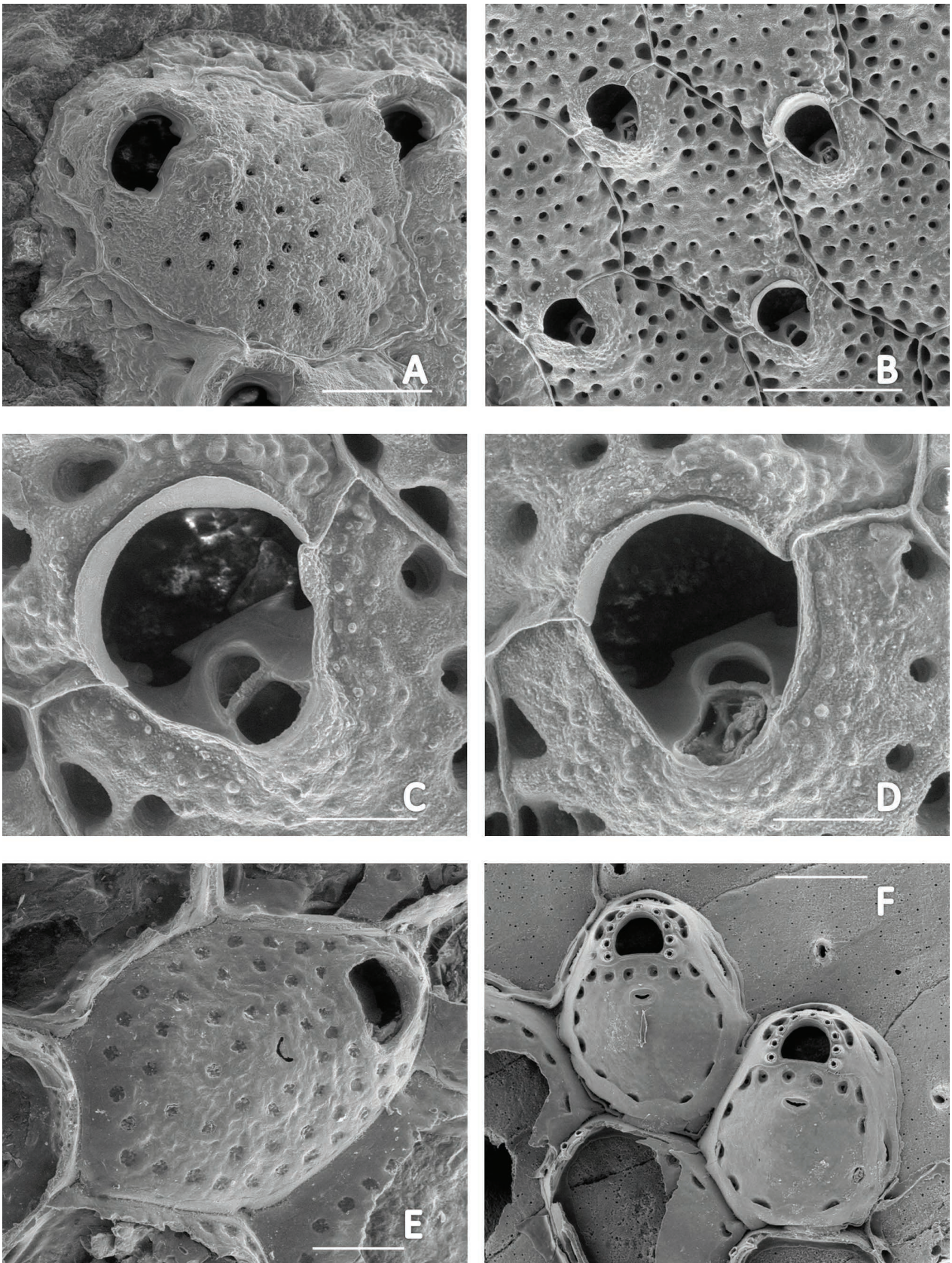


Fig. 6 - A. ?*Smittina* sp. 2. Scale bar: 200 μ m. B.-D. *Smittina curvirostrata* sp. nov. Holotype: B. autozooids. Scale bar: 500 μ m; C.-D. orifice. Scale bar: 100 μ m. E. *Fenestulina antarctica* Hayward & Thorpe, 1989. Scale bar: 250 μ m. F. *Fenestulina* cf. *exigua* (Waters, 1904). Scale bar: 250 μ m.

Fig. 6 - A. ?*Smittina* sp. 2, scala: 200 μ m. B.-D. *Smittina curvirostrata* sp. nov. Olotipo: B. Autozooidi. Scala: 500 μ m. C.-D. Orificio. Scala: 100 μ m. E. *Fenestulina antarctica* Hayward & Thorpe, 1989. Scala: 250 μ m. F. *Fenestulina* cf. *exigua* (Waters, 1904). Scala: 250 μ m.

Remarks. This is the second record of *Fenestrulina antarctica* from the Weddell Sea, following an earlier report from the Kapp Norvegia area by Gontar & Zabala (2000).

Fenestrulina cf. exigua (Waters, 1904)
(Fig. 6 F)

Material. RBINS IG31272/BRY49: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. One colony with 9 oral spines on each autozoid. RBINS IG31272/BRY50: Several colonies of *Fenestrulina exigua* with 8 oral spines.

Description. Colony forming small encrusting patch. Autozooids oval to hexagonal, convex, separated by distinct grooves, with lateral walls forming conspicuous border around each frontal shield. Frontal shield smoothly calcified, a single series of marginal, elongate pores and a single series of round pores between ascopore and orifice. Ascopore transversely oval, thick-rimmed, with a slit-like foramen; distance between ascopore and orifice equivalent to orifice length. Orifice as wide as long, bordered by 9 oral spines. No ovicellate autozooids found.

Remarks. *Fenestrulina exigua* sensu stricto has been reported from the Weddell Sea (Barnes & Kuklinski 2010) but one of our colonies consistently has nine oral spines instead of eight, raising the question of conspecificity. *Fenestrulina exigua* and the present material are both very similar to *F. parvipora* (Waters, 1904) in all aspects except for the number of oral spines.

Fenestrulina parvipora (Waters, 1904)
(Fig. 7 A)

Material. Lectotype: Co-type Waters present in Brussels. Other material: RBINS IG31272/BRY51: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert.

Redescription (present material only). Colony forming small encrusting patches. Autozooids oval to hexagonal, convex, separated by distinct grooves, 0.5-0.8 x 0.3-0.6 mm. Frontal shield proximal to orifice bordered by a ridge following lateral walls and proximal border of orifice. Frontal shield smoothly calcified, a single series of marginal, elongate pores, a single series of rounded pores between ascopore and orifice and 2 clusters of (1), 2 or 3 (4) pores in a row, distolateral to oral spines. Ascopore transversely oval, thick-rimmed, with slightly raised borders and slit-like foramen; distance between ascopore and orifice equivalent to orifice length. Orifice slightly wider than long, bordered by 6 oral spines, 4 apparently persisting in ovicelled autozooids. Spines basally jointed, some with jointed distal acute process; proximal pair widening distally, with scars of 2 jointed extensions.

Ovicell elongate-oval, surface texture unknown. Large basal pore-chambers. Ancestrula tatiform.

Remarks. The type material of *Fenestrulina parvipora* no longer exists. The specimen figured by Hayward (1995a) corresponds to Waters' (1904) description and figures but additional specimens are required for this taxon to be formerly redescribed as recommended by Hayward (1995a). A co-type is present in RBINS. *F. parvipora* was reported from the Weddell Sea by Zabala *et al.* 1997. *F. parvipora* (six spines), *F. exigua* (eight spines) and *F. cf. exigua* (above) with nine spines resemble each other in all aspects of the frontal surface, especially the marginal pores, the pores between the orifice and ascopore and the distolateral pore clusters; they differ primarily only in spine number. The number of spines is constant within a colony in non-ovicelled autozooids.

Family LACERNIDAE Jullien, 1888
Toretocheilum turbinatum Hayward, 1995b
(Fig. 7 B)

1995b *Toretocheilum turbinatum* Hayward, p. 217, fig. 2.
1995a *Toretocheilum turbinatum* Hayward, 1995b - Hayward, p. 250, fig. 155E,F.

Material. RBINS IG31272/BRY52-53-54: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. Three colonies were isolated from the sample, BRY53 incorporates an ancestrula.

Description. Colony encrusting; autozooids thickly calcified, with marginal pores only. Primary orifice with median proximal sinus. Oral spines 6 (up to 7 in periancestrular region), thick, jointed at their base; some simple, others composed of a series of up to 4 jointed kenozooids, reaching a length of 1.5 times zooid length. Frontal shield with faint ridges radiating from a thick, spike-like suboral umbo towards the periphery, surrounded by a band of smooth calcification. Large basal pore chambers present. Ancestrula tatiform surrounded by 10 basally jointed spines.

Remarks. This species was reported earlier from the Weddell Sea by Arntz & Gutt (1997) and Barnes & Kuklinski (2010). The presence of long jointed spines and the ancestrula are documented for the first time.

Lacerna hosteensis Jullien, 1888
(Fig. 7 C)

1888 *Lacerna hosteensis* Jullien.; 48, pl. 1, fig. 2 (as *Lacerna de Carforti*).
1995a *Lacerna hosteensis* Jullien, 1888 - Hayward, p. 255, fig. 157B-D.

Material. RBINS IG31272/BRY55: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert.

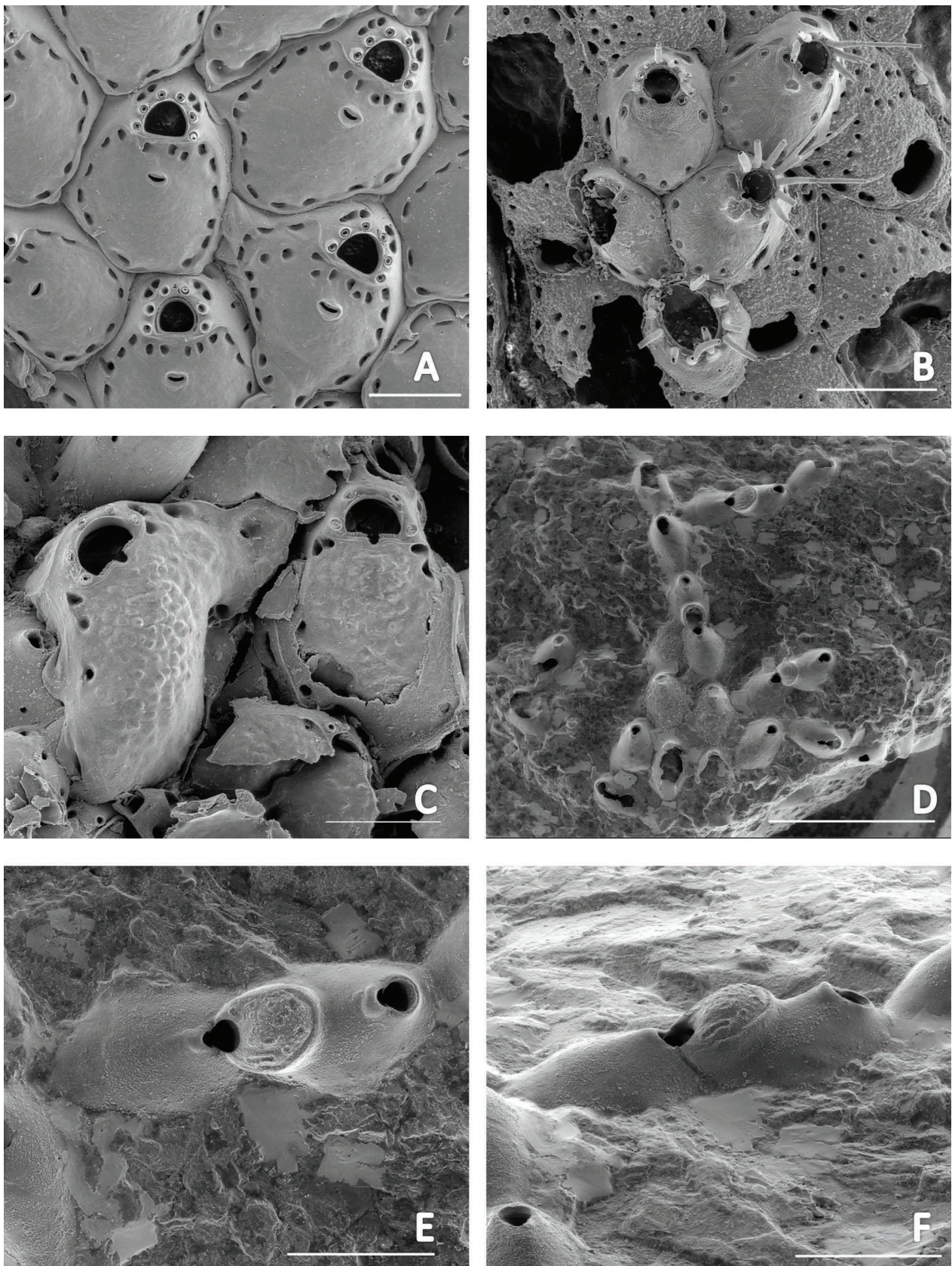


Fig. 7. A. *Fenestrulina parvipora* (Waters, 1904). Scale bar: 250 μm . B. *Toretocheilum turbinatum* Hayward, 1995, ancestrula and long jointed spines on autozooids. Scale bar: 500 μm . C. *Lacerna hosteensis* Jullien, 1888. Scale bar: 250 μm . D.-F. *Ministiaphila belgica* gen. nov., sp. nov. Holotype: D. colony. Scale bar: 500 μm . E.-F. Two autozooids and ovicell. Scale bar: 500 μm .
 Fig. 7. A. *Fenestrulina parvipora* (Waters, 1904). Scala: 250 μm . B. *Toretocheilum turbinatum* Hayward, 1995, ancestrula e lunghe spine articolate su autozooidi. Scala: 500 μm . C. *Lacerna hosteensis* Jullien, 1888. Scala: 250 μm . D.-F. *Ministiaphila belgica* gen. nov., sp. nov. Olotipo: D. Colonia. Scala: 500 μm . E.-F. due autozooidi e un'ovicella. Scala: 500 μm .

Very small colony, only few autozooids, prepared for SEM.

Diagnosis. Colony forming an irregular encrusting patch. Autozooids slightly convex, with irregular outline. Primary orifice transversely D-shaped, wider than long, with narrow U-shaped sinus; condyles distinct, toothbrush-like and extending from the sinus to each proximolateral corner of orifice. Oral spines 4-5.

Remarks. This species normally has many lateral pores in a single or double row, whereas the present neanic material has autozooids with a few marginal pores in a single row. *L. hosteensis* is known from Cape Horn to the South Shetland Islands that may mark the limit of its penetration into Antarctic waters (Hayward 1995a). This is the second report from the Weddell Sea following the earlier record by Gontar & Zabala (2000).

Ministiaphila gen. nov.

Diagnosis. Colony uniserial. Autozooids subpyriform, the frontal shield smooth, imperforate, lacking even areolar-septular pores. Orifice broadly cleithridiate with acute condyles. No oral spines or avicularia. Ovicell recumbent, with large flat endooecial tabula; ectooecium mostly membranous with calcified margin.

Derivatio nominis. Latin prefix *mini-*, small; Greek noun, $\sigma\tau\alpha$, pebble; Greek verb $\phi\iota\lambda\acute{\epsilon}\omega$, to love, alluding to the affinity of the sole known species to small pebbles. Its gender is feminine.

Type species
Ministiaphila belgica sp. nov.

Ministiaphila belgica sp. nov.
(Fig. 7 D-F)

Derivatio nominis. With reference to the 1897-99 voyage of S.Y. *Belgica* to the Antarctic in which many novel Bryozoa were collected. The name is a noun in apposition.

Material. Holotype: RBINS IG31272/BRYT17: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. Small colony on pebble, prepared for SEM.

Description. Colony of the runner type, forming linear uniserial chains of repent zooids that occasionally branch at right angles or an oblique angle from narrowest part of parent zooid to form new rows. Autozooids longer than wide, generally subpyriform but ranging from oval to pyriform, 0.6-0.8 x 0.4-0.5 mm, widest more-or-less mid-length, frontal shield smooth, imperforate, lacking even areolar-septular pores, highest suborally where there is a slight elevation adjacent to orificial sinus. Orifice broadly cleithridiate, angled downwards distally, with acute inward-pointing condyles separating large subcircular anter from small transversely sickle-shaped poster (sinus).

No oral spines or avicularia. Ovicell recumbent on distal zooid, with large, flat, slightly uneven endooecial tabula; ectooecium mostly membranous with calcified margin that merges into zooidal cryptocyst.

Measurements. Autozooid length (n = 5) 0.73 ± 0.05 mm (mean \pm SD); autozooid width (n = 5) 0.49 ± 0.02 mm. Primary orifice (n = 2) width ± 0.12 mm, length 0.14 mm.

Remarks. *Smittia reptans* (Waters, 1904, p. 72, pl. 4, fig. 11), collected during the *Belgica* expedition, bears a superficial resemblance to *M. belgica* sp. nov. insofar as it also forms runner-type colonies. The zooids of *S. reptans* are, however, distinctly claviform and widest distally and, although not illustrated in most zooids (depicted as having a schizoporelloid orifice), Waters indicated a lyrula-like structure in one zooid and commented on it in his description. He also mentioned minute pores in the zooids so it is apparent that our material is not conspecific. Like lacerinids generally, *Ministiaphila* gen. nov. has an ovicell with a largely membranous ectooecium. Unusually, the frontal shield is completely imperforate.

Family BUFFONELLODIDAE Gordon & d'Hondt, 1997
Aimulosia weddellensis sp. nov.
(Fig. 8 A-B)

Derivatio nominis. Latin, *weddellensis*, *-is*, *-e*, adjective deriving from Weddell and alluding to the Weddell Sea, where the type material of the species was collected.

Material. Holotype: RBINS IG31272/BRYT18: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. Small colony prepared for SEM. Paratypes: RBINS IG31272/BRYT19: small colony prepared for SEM; RBINS IG31272/BRYT20: small colony, dry, uncoated.

Description. Colony forming small unilaminar patch. Autozooids oval to hexagonal, convex, separated by deep grooves; 0.4 x 0.35 mm. Primary orifice wider than long, proximal edge sinuous, with short angular lyrula; condyles wide, short, rounded. Articulated oral spines 4-5, with 2 persisting in ovicelled autozooids. Frontal shield smooth, finely granular in late ontogeny. Marginal pores 2-4, small. Suboral avicularium prominent, palate of rostrum semielliptical, perpendicular to frontal plane; cystid columnar, in proximal lip of peristome, projecting above lyrula but not reaching tip of prominent, spiky suboral umbo. Peristome with lateral triangular flap on each side. Ovicells wider than long, smooth, with frontal umbo and distal pore.

Measurements. Autozooid length (n = 3) 0.42 ± 0.02 mm (mean \pm SD); autozooid width (n = 3) 0.35 ± 0.01 mm. Primary orifice (n = 1) width 100 μ m, length 65 μ m.

Remarks. *Aimulosia weddellensis* sp. nov. resembles *A. antarctica* (Powell, 1967) but the avicularium is smaller, does not quite reach the tip of the oral umbo and its palate is perpendicular to the frontal plane, angled at 90 degrees

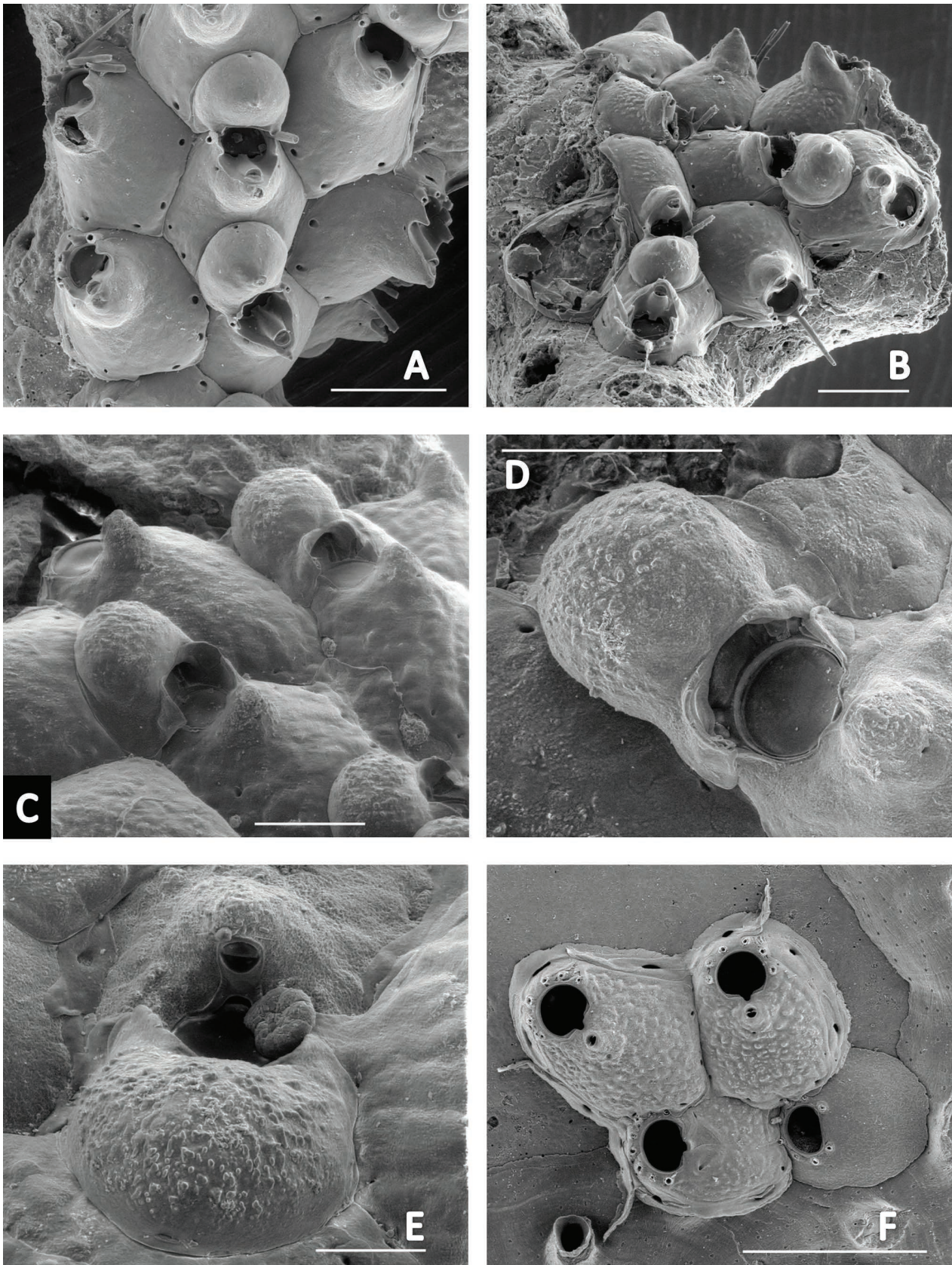


Fig. 8. A.-B. *Aimulosia weddellensis* sp. nov.: A. Holotype. Scale bar: 250 μ m. B. Paratype. Scale bar: 250 μ m. C.-F. *Buffonellodes umbonata* sp. nov.: C.-D. Holotype. Scale bar: 200 μ m. E. Holotype. Scale bar: 100 μ m. F. Paratype, ancestrula and periancestrular zooids. Scale bar: 500 μ m.

Fig. 8. A.-B. *Aimulosia weddellensis* sp. nov.: A. Olotipo. Scala: 250 μ m. B. Paratipo. Scala: 250 μ m. C.-F. *Buffonellodes umbonata* sp. nov.: C.-D. Olotipo. Scala: 200 μ m. E. Olotipo. Scala: 100 μ m. F. Paratipo, ancestrula e zooidi periancestrulari. Scala: 500 μ m.

with the proximal part of the rostrum. Further, the marginal pores are not areolate (separated by ridges) in later ontogeny. *A. weddellensis* was found during the EASIZ cruise R-18 (Arntz & Gutt 1997); *A. antarctica* is also known from the Weddell Sea (Barnes & Kuklinski 2010).

Buffonellodes umbonata sp. nov.
(Fig. 8 C-F)

Derivatio nominis. Latin, *umbonatus*, -a, -um: adjective deriving from the latin noun *umbo*, -onis, central shield protrusion. The name alludes to the prominent suboral umbo.

Material. Holotype: RBINS IG31272/BRYT21: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. Paratype: RBINS IG31272/BRYT22: ancestrula, a periancestrular autozooid and two daughter zooids.

Description. Colony encrusting, unilaminar. Frontal shield nodular, imperforate except for single series of small marginal areolar-septular pores. Primary orifice wider than long, with straight proximal edge and small U-shaped sinus; 4 short oral spines in non-ovicelled autozooids at colony margin. Suboral avicularium small with semicircular mandible distally in a prominent umbo, a small pore at opposite proximal side of umbo. Ovicell dependent-hyperstomial, recumbent on distally succeeding autozooid, imperforate except for 1 distal pore, not closed by autozooidal operculum; proximal margins of ovicell produced as peristomial lappet either side of orifice. No peristome in non-ovicelled zooids. Basal pore-chambers present. Ancestrula like normal zooid but smoothly calcified, orifice without sinus, 8 evenly spaced oral spines, 2 of them proximal to orifice; first periancestrular zooid like normal autozooid, orifice with sinus, 8 oral spines laterally and distally surrounding orifice, lacking avicularium; next periancestrular zooids with 6 oral spines and avicularium.

Measurements. Holotype: Autozooid length (n = 10) 0.50 ± 0.03 mm (mean \pm SD); autozooid width (n = 10) 0.40 ± 0.05 mm. Primary orifice (n = 1) width 108 μ m, length 88 μ m.

Paratype: Autozooid length (n = 2) 0.53 ± 0.04 mm (mean \pm SD); autozooid width (n = 2) 0.38 ± 0.04 mm. Primary orifice (n = 1) width 130 μ m, length 123 μ m.

Remarks. *Buffonellodes umbonata* sp. nov. differs from *Buffonellodes antarctica* Hayward, 1991 in the possession of oral spines in early ontogeny and in having prominent lateral peristomial flaps in ovicelled zooids. *Ralepripria conforma* Hayward, 1991 is not dissimilar in overall morphology but the frontal shield has minute pseudopores. The paratype specimen represents the ancestrular region of *B. umbonata* sp. nov.

?*Buffonellodes* sp.
(Fig. 9 A)

Material. RBINS IG31272/BRY56: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January

2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. Small colony prepared for SEM.

Description. Colony encrusting, unilaminar. Frontal shield coarsely nodular, with prominent marginal pores. Primary orifice as wide as long, with U-shaped sinus occupying about 1/3 orificial width between wide, rounded condyles; 3 oral spines in newly budded autozooids. Suboral avicularium small, with semicircular mandible, perpendicular to frontal plane, distally in a prominent umbo. Developing a thickly calcified lateral peristome, flaring distally. Basal pore-chambers present.

Measurements. Autozooid length (n = 4) 0.56 ± 0.04 mm (mean \pm SD); autozooid width (n = 4) 0.48 ± 0.12 mm.

Remarks. The species resembles *Buffonellodes* but, in the absence of ovicells and suboral avicularia, precise generic attribution is not possible.

Superfamily CELLEPOROIDEA Johnston, 1838
Family CELLEPORIDAE Johnston, 1838
Spigaleos horneroides (Waters, 1904)
(Fig. 9 B)

Material. RBINS IG31272/BRY57: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. RBINS IG31272/BRY58: 40 colony (-fragments) in ethanol.

Description. Colony erect, branching, cylindrical. Autozooids in whorls of 4, separated by indistinct grooves. Frontal shield finely granular, with fine longitudinal grooves and wrinkles; marginal pores few, seen as narrow, elongate tubes with light microscopy. Peristome deep, concealing primary orifice, enclosing a single medioproximal avicularium, with a triangular rostrum acute to frontal plane, proximally directed, and a lyrula-like knob projecting distally into secondary orifice. Peristome distinctly notched on either side of avicularium. Ovicells elongate and partly immersed.

Remarks. A rare species, known only from Waters (1904) '*Belgica*' specimens from the Bellingshausen Sea and a single colony from the Ross Sea (Hayward 1995a). Arntz & Gutt (1997) and Gontar & Zabala (2000) reported this species from the Kapp Norvegia area and from Vestkap.

Spigaleos elegans sp. nov.
(Fig. 9 C-E)

Derivatio nominis. Latin *elegans* (adjective), elegant, referring to its elegant, thin, smooth-surfaced morphology.

Material. Hototype: RBINS IG31272/BRYT23: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station

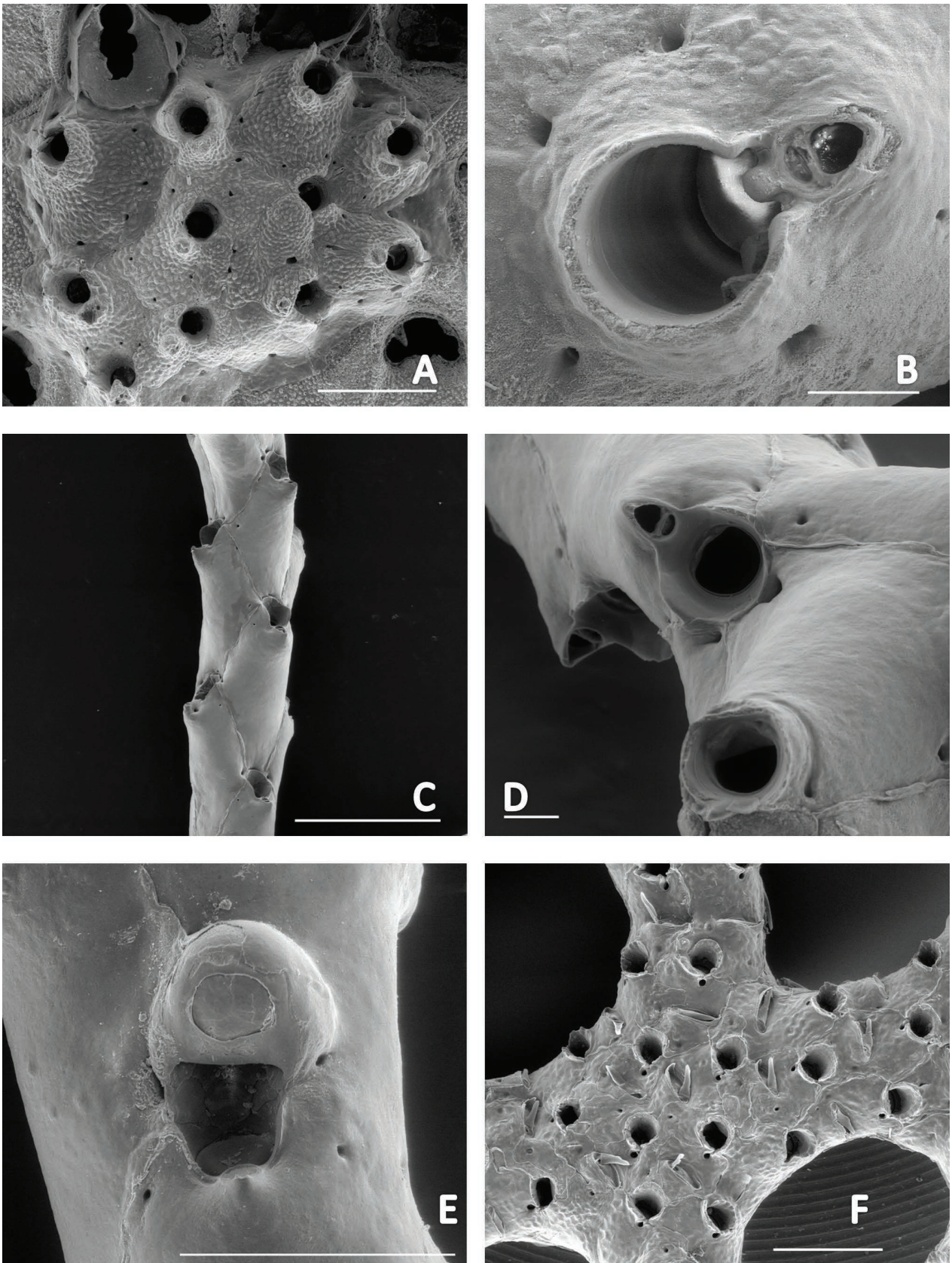


Fig. 9. A. ?*Buffonellodes* sp. Scale bar: 500 μ m. B. *Spigaleos horneroides* (Waters, 1904). Scale bar: 100 μ m. C-E. *Spigaleos elegans* sp. nov.: C. Holotype. Scale bar 1.0 mm. D. Holotype. Scale bar: 100 μ m. E. Paratype, ovicell. Scale bar: 500 μ m. F. *Reteporella dudekemi* sp. nov. Holotype. Scale bar: 500 μ m.

Fig. 9. A. ?*Buffonellodes* sp. Scala: 500 μ m. B. *Spigaleos horneroides* (Waters, 1904). Scala: 100 μ m. C-E. *Spigaleos elegans* sp. nov.: C. Olotipo. Scala 1.0 mm. D. Olotipo. Scala: 100 μ m. E. Paratipo, ovicella. Scala: 500 μ m. F. *Reteporella dudekemi* sp. nov. Olotipo. Scala: 500 μ m.

48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. Paratypes: RBINS IG31272/BRYT24: three large colony fragments; RBINS IG31272/BRYT25: small colony fragment with an ovicell.

Description. Colony erect, dichotomously branched, branches cylindrical, slightly curved, thin, 0.6 mm wide, height exceeding 20 mm. Autozooids in back-to-back pairs, orifices facing in 4 directions. Frontal shield smoothly calcified with sparse, round pores. Autozooids elongate-hexagonal, strongly convex, with distinct boundaries. Primary orifice slightly wider than long, proximal edge with short rectangular sinus. Each autozoid with medioproximal, suboral avicularium, its rostrum perpendicular to frontal plane, directed proximally, broadly triangular, slightly hooked distally; crossbar stout with blunt, indistinct columella. Primary orifice facing distally, hidden by deep flaring peristome with lateral flaps and by suboral avicularium. Ovicell with imperforate area of entoecium exposed frontally.

Measurements. Autozoid length (n = 3) 1.00 to 1.36 mm, autozoid and colony width 0.62 mm, orifice 0.14 mm wide.

Remarks. The characters of the orifice and the avicularium resemble *Spigaleos striatula* Hayward & Winston, 2011, in which zooids are not growing in back-to-back pairs, orifices face all on one half of the colony circumference, pores are slit-like, zooidal boundaries are indistinct, the peristome lacks lateral flaps and the frontal shield is more striated; the avicularium is acute to the frontal plane, the columella is more prominent and the foramen is more like a transverse slit. The new species has a smoother surface than *S. horneroides*, the branches are narrower, secondary orifices lack the lyrula-like tooth and the latter species is not arranged in back-to-back autozooidal pairs.

Family PHIDOLOPORIDAE Gabb and Horn, 1862

Reteporella dudekemi sp. nov. (Fig. 9 F)

Derivatio nominis. *Reteporella dudekemi* sp. nov. is dedicated to Cedric d'Udekem d'Acoz, for giving us the opportunity to study this residual material after extracting the Amphipoda. The name is genitive.

Material. Holotype: RBINS IG31272/BRYT26: Cruise ANT-XXIV/2 (ANDEEP-SYSTCO), station 48-1, 12 January 2008, 70°23.94' S, 08°19.14' W to 70°23.89' S, 08°18.67' W, 595-602 m, Rauschert dredge, collected by Henri Robert. A small colony fragment, 6 mm wide and 8 mm high, prepared for SEM.

Description. Colony erect, branching; reticulate, maximum size and architecture unknown. Fenestrulae oval, 0.6-1.0 mm wide x 0.8-1.3 mm long; trabeculae 0.6-1.3 mm wide, consisting of 2-5 autozooidal series. Autozooids 0.44-0.55 mm x 0.28-0.40 mm, convex, separated by narrow sutures. Frontal shield finely nodular with 1-3 marginal pores. Orifice wider than long, broadest proximally; proximal border shallowly concave, primary ori-

fice hidden by projecting peristome. Distal oral spines 4 in young autozooids, scars of 1-2 spines rare in later ontogeny. Peristome developed as slightly flaring rim, consisting of 2-4 projecting lappets originating from surrounding zooids, proximal lappet produced by autozoid itself, with rounded, eccentrically placed notch that closes distally to form a pseudospiramen. Inner side of peristomal lappets longitudinally ridged. Avicularia on frontal colony surface numerous, oval or elongate-triangular. Oval avicularia rare, observed only on kenozooids without orifice, normal to frontal plane. Elongate-triangular avicularia in proximal half of autozoid, acute to frontal plane, rostrum directed laterally, curved upwards distally. Ovicells not observed, basal surface of colony not observed.

Measurements. Autozoid length (n = 10) 0.49 ± 0.03 mm (mean ± SD); autozoid width (n = 10) 0.33 ± 0.05 mm. Elongate avicularium length (n = 10) 0.18 ± 0.01 mm, oval avicularium length (n = 2) 0.08 and 0.11 mm, orifice width (n = 2) 128 µm, orifice length (n = 2) 102 µm.

Remarks. The above description is based on a small unbleached colony fragment. As this is the only fragment, we could not verify colony architecture, the primary orifice, condyles, ovicells or basal surface. Nevertheless this is a very distinctive species, readily recognized by its laterally directed, elongate-triangular avicularia, acutely imbedded in the proximal frontal surface of each autozoid.

4. CONCLUSIONS

The number of species (112) in this single sample is extremely high for Antarctic shelf waters, comparable to high diversities known for some other parts of the world. For example, Gordon (1989) reported high single-station bryozoan diversities in Cook Strait (115 species) and southern South Island (127 species) in New Zealand and Taylor & Gordon (2003) noted approximately 300 bryozoan species in a small (20 x 10 km) area of Spirits Bay, northern New Zealand, in New Zealand's marine-biodiversity 'hotspot'. Here, seven of 52 stations yielded bryozoan species diversities exceeding 100 species (respectively 101, 105, 108, 112, 122, 136, 139 species per station) (Gordon, unpubl.). Moreover, the Weddell Sea sample yielded 14 new bryozoan species and two new genera, with four additional species constituting new records for the Weddell Sea, indicating that further exploration of the area may yield additional undiscovered biodiversity.

Some of the dredged colonies are well preserved as a consequence of having been first fixed in ethanol. Subsequent sorting, first for amphipods and again for Bryozoa did not compromise the quality of the specimens; some tiny and rare colony fragments, of *Bugulella klugei* and *Notoplites klugei* for example, could be extracted intact, and long, jointed spines were still present in fragile taxa such as *Toretocheilum turbinatum*. The present study demonstrates well that samples collected with the intent of studying disparate other taxa can nevertheless yield excellent bryozoan material. An earlier survey for bryozoans on bivalves in the "empty shell collection of Gilson" in the same Museum repository likewise yielded very surprising results (De Blauwe 2009, p. 292, 352).

Taxonomically, the genera are typical of the Antarctic/Southern Ocean region. The finding of a third species of the otherwise rare and little-known genus *Membranicellaria* is noteworthy, as is the discovery of a new genus of the mainly austral family Lacernidae. The new genus of Calloporidae includes two yet-undescribed deep-sea species from the New Zealand region (Gordon, pers. obs.).

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It was serendipitous that we were able to study this material. Henri Robert (RBINS) decided to keep the whole sample and not to sort the Amphipoda on board R.V. *Polarstern* owing to lack of time. When sorting the amphipods, Cédric d'Udekem d'Acoz recognized the exceptional richness of the bryozoans in the sample. He decided not to discard the sample residue, which is the usual procedure, and proposed that the first author have a look at it. The residue was held at RBINS and, had the first author not enquired as to the presence of Antarctic Bryozoa in the museum, it might have been overlooked. Sampling was performed in the framework of the Belgian Scientific Research Programme Antarctic "BIANZO II project (SD/BA/02A)". We thank Henri Robert for sampling during ANDEEPSYSTCO Cruise ANT-XXIV/2. This paper is registered as CAML (Census of Antarctic Marine Life) publication No. 84 and contribution No. 181 to ANDEEP. Dennis Gordon's participation in the writing of the paper was supported by NIWA under Coasts and Oceans Research Programme 2, Marine Biological Resources: Discovery and definition of the marine biota of New Zealand (2012/13 SCI).

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