New and little known species of Bryozoa from Iberian Atlantic waters

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ABSTRACT
A new species of Cheilostomatous Bryozoa, collected in the Strait of Gibraltar area (Gulf of Cádiz) and previously cited as *Hincksina sceletos* (Busk, 1858), is described. *Hincksina calpensis* n. sp. is characterized by presenting a shield of 15-18 spines covering the frontal surface, the small, flattened oral spines in ovicellate zooids, and the short, oval vicarious avicularia transversally directed. Material collected in the Gulf of Cádiz is here reported as *Setosella* sp., characterized by presenting oval autozooids proximally truncate asymmetrically, arranged in spiral series; D-shaped opesia slightly wider than long, with a distinct distal lunula, and a pair of long, asymmetric opesiules with denticulate inner edges; the ancestrula presents a trifoliated opesia. This material seems to differ from *Setosella vulnerata* (Busk, 1860), a presumed widely distributed species that however presents some variability not correctly studied yet. The genus *Clavodesia* Harmelin & d'Hondt, 1992 is re-described, and its type species, *C. biradiculata* Harmelin & d'Hondt, 1992 is considered as a junior synonym of *Nellia clavula* Hayward, 1978, a species originally described from the NW Bay of Biscay. Finally, a colony collected in the Atlantic coast of the Iberian Peninsula is considered closely similar to *Setosella cavernicola* Harmelin, 1977, a species previously known only from Mediterranean caves.

KEY WORDS
Bryozoa,
Clavodesia,
Hincksina,
Setosella,
NE Atlantic,
NW Mediterranean,
Iberian Peninsula,
new species.

RÉSUMÉ
Espèces peu connues de bryozoaires des eaux atlantiques ibériques avec la description d'une nouvelle espèce.
Une espèce nouvelle de bryozoaire Chilostome, récoltée aux environs du détroit de Gibraltar (golfe de Cadix) et citée précédemment comme *Hincksina sceletos*

(Busk, 1858), est décrite. *Hincksina calpensis* n. sp. est caractérisée par la présence d'un bouclier de 15-18 épines qui couvre la surface frontale, de petites épines orales aplaties dans les zooïdes ovicellés, et de petits aviculaires vicariants de forme ovale, orientés transversalement. Le matériel récolté dans le golfe de Cadix est cité ici comme *Setosella* sp., caractérisée par des autozoïdes ovales rangés en séries spirales, dont l'extrémité proximale est tronquée asymétriquement ; l'opésie en forme de D légèrement plus large que long, avec une lunula distale marquée et une paire d'opésiules longues, asymétriques, avec son bord interne denticulé ; l'ancestrula présente une opésie trifoliée. Ce matériel semble différer de *Setosella vulnerata* (Busk, 1860), une espèce à vaste répartition, mais qui présente pourtant une certaine variation pas encore correctement étudiée. Le genre *Clavodesia* Harmelin & d'Hondt, 1992 est redécrit et son espèce type, *C. biradiculata* Harmelin & d'Hondt, 1992, est considérée comme un synonyme junior de *Nellia clavula* Hayward, 1978, espèce décrite originellement du nord-ouest du golfe de Gascogne. Enfin, une colonie récoltée sur la côte atlantique de la péninsule Ibérique ressemble fortement à *Setosella cavernicola* Harmelin, 1977, une espèce connue jusqu'à présent uniquement des grottes sous-marines de la Méditerranée.

MOTS CLÉS
Bryozoa,
Clavodesia,
Hincksina,
Setosella,
Atlantique
nord-oriental,
Méditerranée
nord-occidentale,
péninsule Ibérique,
espèce nouvelle.

INTRODUCTION

Although a complete catalogue does not exist yet, the bryozoan fauna of the Iberian Peninsula is at present one of the best known in European waters. Approximately 450 recent species were reported, including 300 in Atlantic waters and 260 in Mediterranean waters. Despite this, our overall knowledge is still fragmentary and undoubtedly includes taxonomic mistakes and gaps, which are gradually being corrected (e.g., Reverter-Gil *et al.* 2009, 2011; Souto *et al.* 2010a, b, c; 2011 a, b; in press; Nikulina *et al*. in press). The present article falls within the context of the Iberian Fauna Project, a long-term research project in which we aim to combine and update all previous records of Bryozoa from the Iberian Peninsula and Balearic Islands. Access to original reference material and, above all, the use of the scanning electron microscope (SEM) enable better characterization and taxonomical assessment of species. Using SEM with environmental chamber allows now to revise precisely type material stored in collections.

In the present study, a re-description of the genus *Clavodesia* Harmelin & d'Hondt, 1992 is included, establishing the synonymy of *Nellia clavula* Hayward, 1978 and *Clavodesia biradiculata* Harmelin & d'Hondt, 1992. A new species, previously reported from the Strait of Gibraltar area as *Hincksina sceletos* (Busk, 1858) is described. Material collected from the same area is here reported as *Setosella* sp. owing to several differences with *Setosella vulnerata* (Busk, 1860), the type species of the genus; this species has been reported from different areas but presents some variability not completely described. Finally, a colony collected in the Atlantic coast of the Iberian Peninsula is considered to be similar to *Setosella cavernicola* Harmelin, 1977 a species only known from Mediterranean caves.

MATERIAL AND METHODS

Some Iberian material held in the Muséum national d'Histoire naturelle, Paris (MNHN) and in the Museo Nacional de Ciencias Naturales, Madrid (MNCN), as well as samples of our own collection, were examined. We have also revised some specimens sent by Dr J.-G. Harmelin, originally collected by the BALGIM sampling survey in the Gulf of Cádiz and material from off Cassis (southern France).

The samples were examined with a Wild MZ16 stereomicroscope and uncoated material was photographed in a Zeiss EVO LS15 scanning electron microscope. Measurements were taken with the ImageJ Software on the SEM photographs. They are expressed in millimetre and included in the Tables.

ABBREVIATIONS

NHM Natural History Museum, London;
MNHN Muséum national d'Histoire naturelle, Paris.

SYSTEMATICS

Family CALLOPORIDAE Norman, 1903

Genus *Clavodesia* Harmelin & d'Hondt, 1992

TYPE SPECIES. — *Nellia clavula* Hayward, 1978 (senior subjective synonym of *Clavodesia biradiculata* Harmelin & d'Hondt, 1992).

CORRECTED DIAGNOSIS. — Colony erect, calcified, unjointed, with 4-6 series of membraniporiform autozooids. Gymnocyst reduced; opesia extensive; cryptocyst granular, reduced laterally and distally, more or less developed proximally. Small oral spines present. Distal autozooids of the colony prominent. Avicularia adventitious, lateral. Ovicell terminal, closed by the zooidal operculum. Ancestrula tubular, with two proximal calcified roots, inconstant.

Clavodesia clavula (Hayward, 1978) n. comb. (Fig. 1; Table 1)

Nellia clavula Hayward, 1978: 212, fig. 2g.

Clavodesia biradiculata Harmelin & d'Hondt, 1992: 35, fig. 1a, b.

MATERIAL EXAMINED. — Lectotype of *Clavodesia biradiculata* (designated here): MNHN 15493 (with other species). BALGIM stn DW11, 36°44.2'N, 9°31.4'W, 1505-1540 m, 29/V/1984.

DISTRIBUTION. — *Clavodesia clavula* n. comb. has been collected in the NW Bay of Biscay, 1550 m depth (Hayward 1978 as *Nellia clavula*) and in three stations in the Gulf of Cádiz between 1523 and 1530 m depth (Harmelin & d'Hondt 1992 as *Clavodesia biradiculata*).

TABLE 1. — Measurements in mm of *Clavodesia clavula* n. comb. (MNHN 15493).

Measurements	Mean ± sd	Range	N
Zooidal length	0.557 ± 0.0729	0.486-0.678	8
Zooidal width	0.337 ± 0.0278	0.305-0.357	3
Orifice width	0.141 ± 0.0141	0.131-0.151	2
Avicularia length	0.094 ± 0.0050	0.089-0.099	3
Avicularia width	0.060 ± 0.0010	0.059-0.060	3
Ovicell length	0.159	–	1
Ovicell width	0.266	–	1
Ovicell depth	0.203	–	1

DESCRIPTION

Colony erect, calcified; initially claviform with a single series of autozooids, later up to six series around the axis. Joined to the substratum by chitinous rhizoids projecting from two long proximal calcified roots, inconstant. Autozooids subrectangular with rounded extremes; basal zooids tapering proximally. Opesia oval, occupying almost the whole length of the autozooid, surrounded by a raised, crenellate rim. Gymnocyst reduced, smooth. Cryptocyst finely granular; reduced laterally and nearly absent distally; more or less developed proximally. Operculum terminal, semicircular. A pair of short, cylindrical spines in the distal angles, distally directed. Distal extreme of the colony irregularly shaped; autozooids with a free portion projecting distally. Two small adventitious avicularia, placed on the lateral gymnocyst one-half the distance down the margin; mandible short, oval, directed outwards. Ovicell terminal, globular, projecting distally in the tip of the colony, but not frontally; ectooecium membranous, entooecium uniformly granular; closed by the zooidal operculum. Ancestrula tubular, with two proximal calcified roots, inconstant; walls densely punctured, without opesia, and with a terminal square operculum. Polypide occupying almost all the length of the ancestrula.

This description is based on the examined colony as well as on previous descriptions of the species (Hayward 1978 as *Nellia clavula*; Harmelin & d'Hondt 1992 as *Clavodesia biradiculata*). Original measurements are included in Table 2.

REMARKS

Hayward (1978) described a new species, named *Nellia clavula*, from a small colony 2.5 mm long,

TABLE 2. — Original measurements in mm of *Clavodesia biradiculata* Harmelin & d'Hondt, 1992.

Measurements	Data
Zooidal length	0.80
Zooidal width	0.32-0.35
Opesia length	0.60
Lateral cryptocyst	0.07
Proximal cryptocyst	0.15-0.30
Spine	0.07-0.08
Avicularia length	0.07-0.08
Avicularia width	0.08
Ovicell length	0.20
Ovicell width	0.25
Ancestrula length	1.40-1.60
Ancestrula width	0.20
Ancestrular operculum width	0.13
Calcified roots	0.40

collected by the *Thalassa* expedition at 1550 m depth in the NW part of the Bay of Biscay (stn Z447, 48°47.4'N, 11°14.3'W, 27/X/1973). This colony, the holotype of the species, is conserved at the MNHN (no. 7914); we haven't had the opportunity to revise ourselves this material, which was kindly revised for us by L. M. Vieira.

Later, Harmelin & d'Hondt (1992) described a new species, placed in a new genus, named *Clavodesia biradiculata*, collected by the BALGIM expedition in three stations at the Gulf of Cádiz at 1523-1530 m depth. The authors did not mention how many colonies of this species have been collected in each station; only the holotype, coming from the station CP108, is referred in the original description (MNHN 12742) but no registration number for other material is given. Moreover, it is not said which specimen is figured, though probably the holotype; the two optical photographs included do not allow a detailed observation of some characters. However, the holotype is now so very badly preserved that no information can be obtained from its study. The only material we have been able to examine is a small colony, coming from the BALGIM stn DW11 (see Material examined), a locality that is referred in the original description of the species; this sample is labelled, with more species, as "*Clavodesia biradiculata* n g nov sp" (literally). Therefore, this colony belongs to the type series of the species, and is designated here as the lectotype of *C. biradiculata* (ICZN 1999: arts 74.1, 74.7).

The holotype of *N. clavula* and the lectotype of *C. biradiculata* are closely similar (see Fig. 1 and Hayward 1978: fig. 2g). Therefore, how the differences between the descriptions by Hayward (1978), Harmelin & d'Hondt (1992) and our own observations can be explained? We believe that they are due to some misinterpretation of several characters by the previous authors, caused perhaps by the scarcity of material and the lack of SEM observations, as explained bellow.

Hayward (1978) points out that the colony of *N. clavula* soon widens from its base with the growth of four lines of zooids forming two alternating groups of paired zooids with a quadrangular section. However, in his figure (Hayward 1978: fig. 2g) can be seen that a fifth series of autozooids begins on the edge of the colony; this five series are clearly seen in the original material (L. M. Vieira pers. comm. December 2010). On the other hand, Harmelin & d'Hondt (1992) pointed out that *C. biradiculata* has up to six lines of autozooids; this is consistent with their figure of the holotype, with a quadrangular section (Harmelin & d'Hondt 1992: fig 1a, b) and also with the lectotype designated here.

After the original description and the colony revised, the autozooids of *C. biradiculata* bear a pair of small distal spines (see Fig. 1); these are not seen in the original figure (Harmelin & d'Hondt 1992: fig. 1a, b). Hayward (1978) described no spines in *N. clavula*, but in the holotype of this species there is at least one spine (L. M. Vieira pers. comm. December 2010); as the spines are small and not very conspicuous to the binocular, it would be necessary to take SEM photographs to confirm if more spines are present. Anyway, it is not impossible that the spines were really reduced in the material from the Bay of Biscay as a result of the geographic variability of the species.

Hayward (1978) assumed that *N. clavula* has jointed branches, but these are not present in the holotype of the species, neither in the lectotype of *C. biradiculata*, or the description by Harmelin & d'Hondt (1992), who have revised more material.

The measurements of the autozooids of the lectotype of *C. biradiculata* are similar to the zooids

FIG. 1. — *Clavodesia clavula* n. comb. (MNHN 15493): **A**, view of the colony; **B**, autozooid; **C**, ovicellate zooids. Scale bar: A, 400 µm.

figured by Hayward (1978) but shorter than those measured by Harmelin & d'Hondt (1992) (see Tables 1; 2). However, these authors did not indicate if their measurements were made on different colonies or only on the holotype, which is a larger colony. Therefore, it is possible that the basal zooids in a colony were shorter than subsequent ones.

Harmelin & d'Hondt (1992) strangely defined the lateral avicularia as an inconstant vicarious one, 0.30 mm long. However, the avicularia are clearly adventitious; this interpretation is consistent with the description of Hayward (1978) and the lectotype of *C. biradiculata*, but also with the figure of its holotype.

Harmelin & d'Hondt (1992) pointed out that the colony of *C. biradiculata* anchors itself to the substrata through a pair of long roots coming from the ancestrula. This ancestrula does not appear in the

TABLE 3. — Measurements in mm of *Hincksina calpensis* n. sp. (holotype: MNHN IB-2009-1520).

Measurements	Mean ± sd	Range	N
Zooidal length	0.454 ± 0.0319	0.392-0.512	13
Zooidal width	0.303 ± 0.0198	0.279-0.340	13
Area length	0.386 ± 0.0229	0.334-0.417	13
Area width	0.218 ± 0.0105	0.197-0.234	13
Operculum length	0.083 ± 0.0062	0.071-0.095	13
Operculum width	0.110 ± 0.0070	0.099; 0.126	13
Avicularia length	0.175 ± 0.0193	0.142-0.198	17
Avicularia width	0.105 ± 0.0138	0.091-0.140	17
Mandible length	0.063 ± 0.0079	0.053-0.078	17
Mandible width	0.073 ± 0.0062	0.062-0.083	17
Ovicell+avicularium length	0.182 ± 0.0054	0.173-0.186	6
Ovicell+avicularium width	0.183 ± 0.0092	0.174-0.198	6

colony of *N. clavula*, but neither in the lectotype of *C. biradiculata*, which have a similar size. Therefore, it is possible that the colony does not develop the long roots when it is too small or that it may have broken.

Finally, Hayward (1978) did not find ovicells in *N. clavula*. In the original description of *C. biradiculata*, Harmelin & d'Hondt (1992) reported the existence of a single terminal ovicell in the holotype, but the lectotype presents several terminal ovicells. It is possible that the ovicells get immersed in the colony as this grows, as stated by Harmelin & d'Hondt (1992), but the upper lip of the aperture, curved and granular, should be visible over the distal end of the bearing autozooid.

As a conclusion, in our opinion the descriptions and material of *N. clavula* and *C. biradiculata* refer to a single species, *Nellia clavula* Hayward, 1978, according to the principle of priority (ICZN art. 23.1).

Hayward (1978) placed its species in the genus *Nellia* Busk, 1852 because of the shape of the internode, arrangement of zooids and the paired lateral avicularia; but especially in the assumption that the species has jointed branches. According to Gordon (1989) the genus *Nellia* is characterized by presenting colonies erect, jointed, dichotomously branched, the branches four-sided in cross section; the zooids present proximal gymnocyst and smooth cryptocyst, but no spines; the avicularia are adventitious and the ovicell is recumbent. However, as it was pointed out further above, in the description by Harmelin & d'Hondt (1992), who have revised more material, it is not included any branching or articular joints, and they do not even appear in the lectotype of *C. biradiculata* nor in the holotype of *N. clavula*. Moreover, as it has already been stated, the colonies can have more than four zooecial series, the gymnocyst is very reduced, the cryptocyst is granular and spines appear. Therefore, we believe *N. clavula* can not be placed in the genus *Nellia*.

Harmelin & d'Hondt (1992) have correctly erected a new genus for the species, and have discussed its position, but assuming the presence of a vicarious avicularia and that the ovicell opens via an independent pore. Gordon (2011) places the genus *Clavodesia* in the Calloporidae, position which seems correct, although this family is getting too large and complicated nowadays. The colony form of *C. clavula* n. comb. seems reminiscent of that in *Bryocalyx* Cook & Bock, 2000, a calloporid genus. This taxon also has an elongated ancestrula anchored by rhizoids. However, this genus lacks cryptocyst, marginal spines and avicularia, and its ovicell is not closed by the zooidal operculum.

Family FLUSTRIDAE Fleming, 1828
Genus *Hincksina* Norman, 1903

Hincksina calpensis n. sp.
(Figs 2; 3A, B; Table 3)

Hincksina sceletos – Harmelin & d'Hondt 1992: 32, pl. 1, figs A-C.

HOLOTYPE. — MNHN IB-2009-1520: BALGIM stn DR42, 35°54.5'N, 6°13.3'W, 135 m. One colony on a shell.

PARATYPES. — MNHN IB-2009-1521: BALGIM stn DR151, 35°55.2'N, 5°25.4'W, 115 m. One colony on a fragment of a shell. — MNHN IB-2009-1522: Cassis, Cassidaigne Canyon, 300 m. One colony on a fragment of a shell.

DISTRIBUTION. — *Hincksina calpensis* n. sp. has been collected in the area of the Strait of Gibraltar at 115 m and 135 m depth and in the Cassidaigne Canyon (southern France) at 300 m depth.

ETYMOLOGY. — From *Mons Calpe*, the Latin name for Gibraltar.

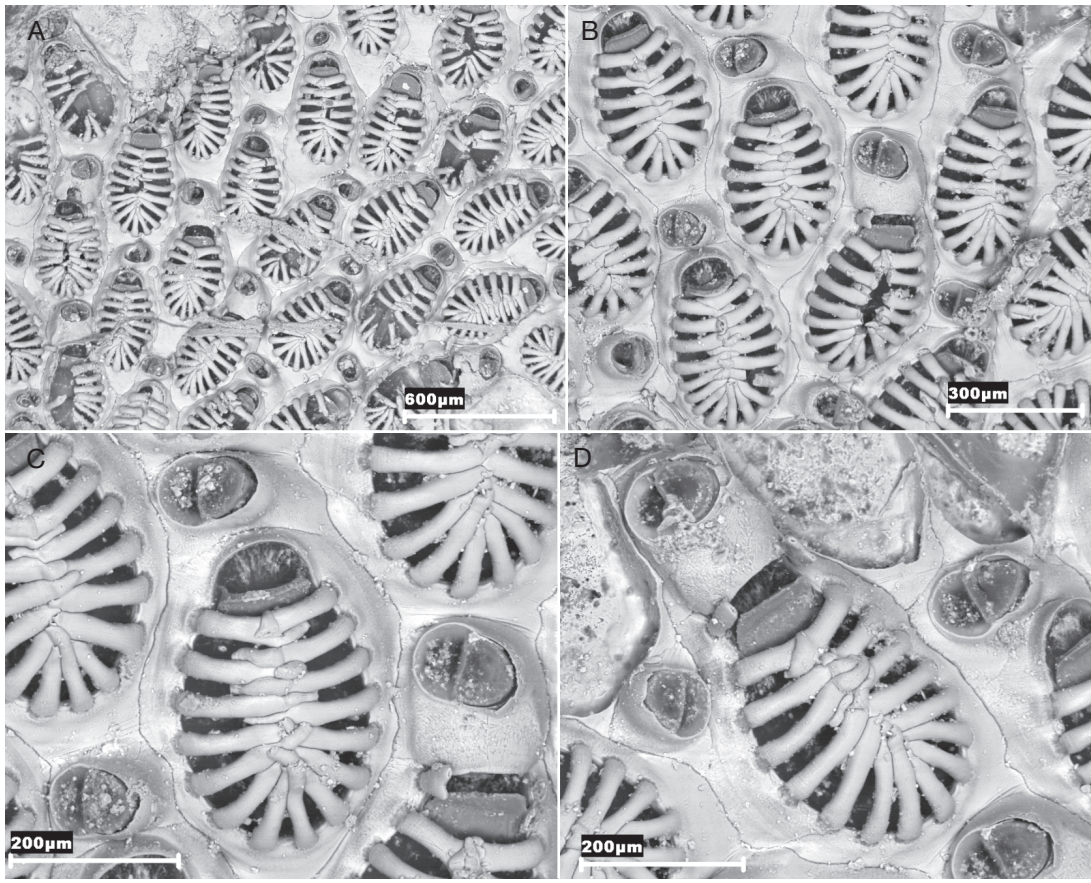

FIG. 2. — *Hincksina calpensis* n. sp. (holotype MNHN IB-2009-1520): **A**, **B**, views of the colony; **C**, autozooid; **D**, ovicellate zooid.

DESCRIPTION

Colony encrusting, unilaminar. Autozooids oval, arranged in irregular series. Gymnocyst developed, especially in the proximal end. Frontal membrane, except for the operculum, obscured by a convex shield of 15-18 stout, flattened spines, intertwined and fused in the midline of the autozooid. Oral spines often absent in non-ovicellate zooids; when present, similar to spines in ovicellate zooids, short, flattened, subtriangular, sometimes with the beginning of a bifurcation. Avicularia interzooidal, as many or even more than autozooids; often placed distally to an autozooid. Mandible short, rounded, transversally directed; opesia semicircular, slightly wider and shorter than the mandible. Ovicell immersed in the distal avicularium, globular, conspicuous. Perianestrular zooids with a less developed gymnocyst; oral spines always present, and marginal spines slender.

REMARKS

This species was originally reported in the area of the Strait of Gibraltar by Harmelin & d'Hondt (1992) as *Hincksina sceletos*, a species only reported from Madeira at that time (Busk 1858; Hincks 1880; Waters 1898; Norman 1909). The holotype of this species is held at the NHM (1899.7.1.1144), as well as two colonies collected by Norman (NHM 1908.3.23.1). We have examined some photographs of these samples (see Fig. 3C-E) kindly sent by B. Berning, who will redescribe the species in a future paper. Some other material of *H. sceletos* was conserved in the Waters collection at the Manchester

Museum; unfortunately, it seems that these slides have been mislaid.

The original material from Gibraltar area we have revised shows several important differences with *H. sceletos*. Some of them had already been mentioned previously by Harmelin & d'Hondt (1992).

Hincksina calpensis n. sp. has 15-18 marginal spines covering the frontal membrane; they are flattened, and they intertwine and tighten over the zooid midline. In *H. sceletos* the number of marginal spines is smaller (9-15 according to different authors), and they are laterally compressed, curved, rib-like in the words of Busk (1858) or even falciform (see Fig. 3D and Waters 1898: pl. 49, fig. 5). On the other hand, in both species there is some variability in the development of the marginal spines: in *H. calpensis* n. sp. the periancestrular autozooids present slender, not flattened, marginal spines; in *H. sceletos* the autozooids in a concave area of a colony also present thinner spines (B. Berning pers. comm. September 2011). Finally, some periancestrular zooids in *H. calpensis* n. sp. may show a duplicate frontal shield (inner and outer) as a result of regeneration processes (see Fig. 3A).

The oral spines in *H. calpensis* n. sp. are often missing in non ovicellate zooids, being present in periancestrular zooids and in ovicellate ones; they are small, flattened and may even show a beginning of bifurcation with uncalcified pores in the tips. In *H. sceletos* the oral spines are present in all the autozooids; they are also flattened, hollow, but with three or up to five tips, and much developed (see Fig. 3C, D). The ovicell has not been formally described in this species, though Hincks (1880) reported it as "rounded, smooth and silvery".

The avicularia are clearly smaller in *H. calpensis* n. sp.: 0.175 mm against about 0.23 mm in the holotype of *H. sceletos*, and even longer in the Norman material of this species (see Fig. 3E). Moreover, they are almost always transversally directed, while in *H. sceletos* they are often distally directed.

Finally, the gymnocyst is well developed in *H. calpensis* n. sp., while it is absent in *H. sceletos*.

Harmelin & d'Hondt (1992) indicated that on a specimen collected in the NW Mediterranean (Porquerolles Island) at 150 m depth, the features of the oral and opesial spines were intermediate between the Gibraltar form and that described at Madeira; we examined several photographs of this specimen, which may correspond to *H. calpensis* n. sp. We also have examined a similar colony, sent by J.-G. Harmelin, collected in the Cassidaigne Canyon at 300 m depth. In this specimen the zooids and the spines show a development similar to the periancestrular zooids of the holotype of *H. calpensis* n. sp., i.e. oral spines are always present (though small), marginal spines are slender, and the gymnocyst is less developed. These minor differences would have a geographic and/or ecological origin.

Hincksina calpensis n. sp. must be then a Mediterranean species, while *H. sceletos* would represent an Atlantic, closely related species.

Family Setosellidae Levinsen, 1909
Genus *Setosella* Hincks, 1877

Setosella sp.
(Fig. 4; Table 4)

Setosella vulnerata – Harmelin & d'Hondt 1992: 28 (part or whole).

Material examined. — MNHN 15487: BALGIM stn DW07, 36°46.1'N, 9°27.0'W, 1139-1144 m, 29/V/84. One colony on grain of sand. — MNHN IB-2009-1523: BALGIM stn DR71, 33°52.1'N, 8°07.4'W, 155 m, 06/VII/84. One colony on grain of sand.

Other material examined. — All material labelled as *Setosella vulnerata* (Busk, 1860): MNHN 1981: *Travailleur*, D. 41, NE Atlantic, 1094 m. MNHN 1982: *Travailleur*, D. 2 (1re sér.) NE Atlantic, 1068 m. MNHN 1983: *Travailleur*, D. 49, NE Atlantic, 3700 m. MNHN 2344 (part): *Travailleur*, D. 41, NE Atlantic, 1094 m. MNHN 6961 (part): *Thalassa* T471, NE Atlantic, 562-574 m. MNHN 962 (part): *Thalassa* T471, NE Atlantic, 562-574 m. MNHN 7002: *Thalassa* X343, NE Atlantic, 600-655 m. MNHN 7023 (part): *Thalassa* X359, NE Atlantic, 605-630 m. MNHN 7032 (part): *Thalassa* X374, NE Atlantic, 570-582 m. MNHN 7098 (part): *Thalassa* W422, NE Atlantic, 700-850 m. MNHN 7240 (part): *Thalassa* Y434, NE Atlantic, 620 m. MNHN 7302 (part): *Thalassa* 1968, NE Atlantic, 695-760 m. MNHN 7621 (part): *Thalassa* U852, NE Atlantic, 615-645 m. MNHN 7634 (part): *Thalassa* W436, NE Atlantic, 499-600 m. MNHN 8323 (part): *Thalassa* X362, NE Atlantic, 585-600 m. MNHN 8324 (part): *Thalassa* X340, NE Atlantic, 860-910 m. MNHN 8331: *Thalassa* X343,

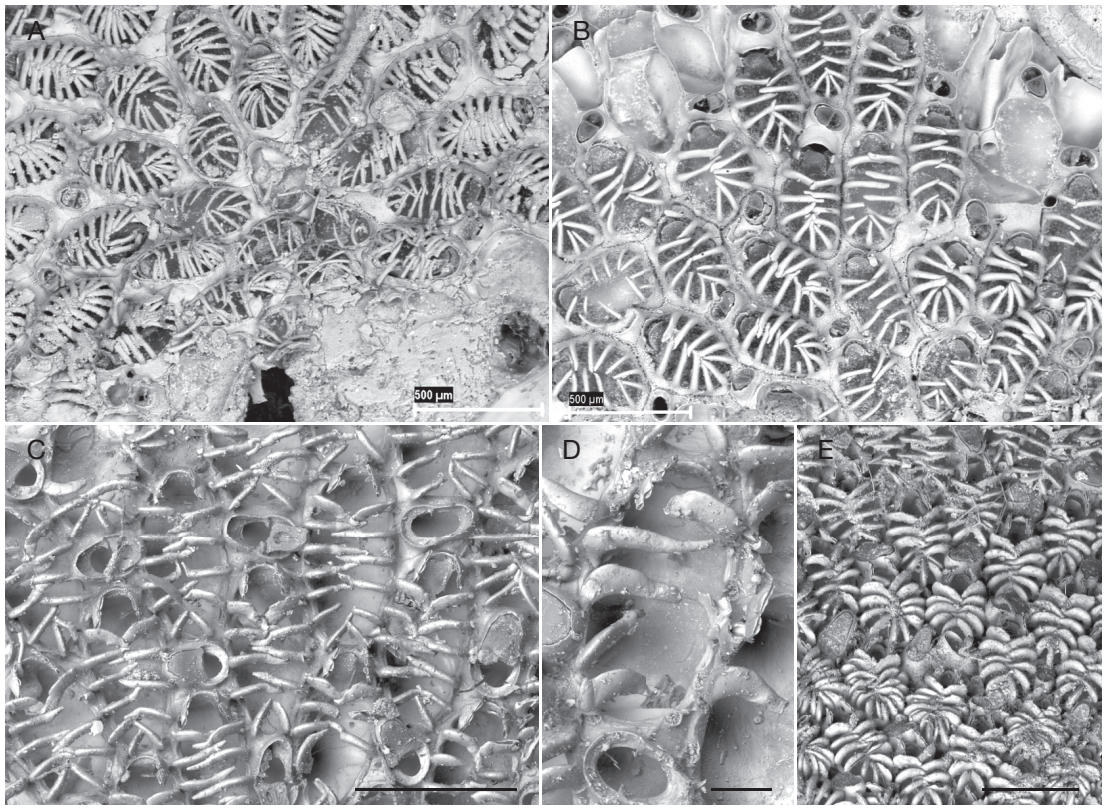

FIG. 3. — **A**, **B**, *Hincksina calpensis* n. sp.: **A**, holotype (MNHN IB-2009-1520) periancestrular area; **B**, paratype (MNHN IB-2009-1522) colony from Cassidaigne; **C**-**E**, *Hincksina sceletos* (Busk, 1858); **C**, holotype (NHM 1899.7.1.1144), view of the colony; **D**, same, detail of an autozooid with falciform spines; **E**, specimen NHM 1908.3.23.1, view of the colony. Scale bars: C, 300 µm; D, 100 µm; E, 500 µm. Photos C, D and E sent by B. Berning.

NE Atlantic, 600-655 m. MNHN 8387 (part): *Thalassa* X352, NE Atlantic, 545-580 m. MNHN 8363 (part): *Thalassa* X353, NE Atlantic, 635-655 m. MNHN 8365: *Thalassa* X341, NE Atlantic, 800-840 m. MNHN 8392 (part): *Thalassa* X348, NE Atlantic, 600-900 m MNHN 8395: *Thalassa* X342, NE Atlantic, 700 m. MNHN 8414 (part): *Thalassa* Y400, NE Atlantic, 800 m. MNHN 8415 (part): *Thalassa* Y405, NE Atlantic, 1170 m. MNHN 8454: *Thalassa* X345, NE Atlantic, 525-550 m. MNHN 9334: *Thalassa* X345, NE Atlantic, 525-550 m. MNCN 25.03/3126: Alborán Island, Mediterranean, 118 m. MNCN 25.03/3149: Columbretes Island, Levante, Mediterranean, 80 m. Dr Harmelin personal collection: *Thalassa* X313, NE Atlantic, 580-525 m; SEAMOUNT 1, DW63, NE Atlantic, 630 m; SEAMOUNT 2, DW188, NE Atlantic, 310-300 m; off Port-Cros Island & Gabinière Islet, Mediterranean, 300-350 m; off La Ciotat, L'Esquine Bank, Mediterranean, 100 m.

DISTRIBUTION. — *Setosella* sp. has been collected in two NE Atlantic locations, off Cape St. Vincent (Portugal) and off Casablanca (Morocco).

DESCRIPTION

Colony encrusting, unilaminar, forming circular sheets of autozooids and vibracularia. Autozooids irregularly oval to sub-rhomboid; proximal extreme sometimes obliquely truncate, especially in periancestrular zooids. Lateral walls raised forming a fine, even rim. Frontal surface almost occupied by a finely granular cryptocyst, depressed, its distal third gently raised forming the proximal border of the opesia, straight or slightly concave. Opesia D-shaped, slightly wider than long, nearly coextensive with the operculum; with a distinct lunula in its distal border. Two long, slit-like opesiules in the deeper

TABLE 4. — Measurements in mm of *Setosella* sp. (MNHN 15487).

Measurements	Mean ± sd	Range	N
Zooidal length	0.367 ± 0.0419	0.310-0.444	14
Zooidal width	0.225 ± 0.0265	0.172-0.275	14
Opesia length	0.062 ± 0.0073	0.050-0.074	14
Opesia width	0.072 ± 0.0065	0.070-0.088	14
Vibracularia length	0.092 ± 0.0066	0.077-0.102	10
Vibracularia width	0.076 ± 0.0122	0.057-0.091	10
Ovicell length	0.052	–	1
Ovicell width	0.123	–	1
Ancestrula length	0.266 ± 0.0014	0.265-0.267	2
Ancestrula width	0.211 ± 0.0007	0.210-0.211	2
Ancestrular opesia length	0.113 ± 0.0042	0.110-0.116	2
Ancestrular opesia width	0.123 ± 0.0035	0.120-0.125	2

area of the cryptocyst, near the lateral walls of the zooid; the inner edge with some fine denticles; generally asymmetric, frequently the left opesiula longer. Small interzooidal vibracularia, oval, placed distal or disto-lateral to each autozooid, with a wide oval opesia, slightly narrower in the middle. Chitinous seta slender and long, even twice as long as an autozooid. Ovicell subimmersed, oval, with an oval depressed area with a central, circular pore. Ovicellate zooids tending to be shorter and wider distally; orifice of ovicellate zooids irregularly bell-shaped. Ancestrula oval, half the size of an autozooid; cryptocyst smooth occupying more than a half of the frontal surface, extending laterally; opesia irregularly trifoliated. Astogenesis beginning with two disto-lateral autozooids, each one giving rise to a clockwise spiral series, surrounding the ancestrula. Size of the autozooids increasing gradually, apparently losing the spiral arrangement; occasionally an autozooid giving rise to a left zooid, this producing a new clockwise whorl.

REMARKS

Harmelin & d'Hondt (1992) reported *Setosella vulnerata* from 11 stations in the Gulf of Cádiz. This genus, according to Bock (2000), only includes other four recent species: the Caribbean *Setosella antilleana* Weisbord, 1967 and the European *Setosella folini* Jullien, 1882, *Setosella spiralis* Silén, 1942 and *Setosella cavernicola*. *Setosella vulnerata*, the type species of the genus, is purposely widely distributed and well-known, being reported from Norway and Shetland to Madeira and the Mediterranean, from shallow-waters to 3700 m depth. However, its type material has not been redescribed yet; moreover, the study of several material labelled as *S. vulnerata*, coming from different Atlantic and Mediterranean localities, reveals certain morphological variability which may correspond to different species. For instance, several colonies collected in a seamount near Madeira (Lion Seamount, 35°15,4'N, 15°34,6'W, 630 m depth), previously identified as *S. vulnerata*, fit well the description of *S. spiralis*, a species that doesn't seem to have been recorded since its original description. To sum up, it will be necessary to redescribe *S. vulnerata* using SEM, establishing its diagnostic characters, its geographic and/or ecological variations, and describing new species, if it is justified.

We have revised two of the colonies originally reported as *S. vulnerata* by Harmelin & d'Hondt (1992). This material shows several differences with *S. vulnerata* as defined, for instance, by Prenant & Bobin (1966), Zabala & Maluquer (1988) or Hayward & Ryland (1998), so we have named it as *Setosella* sp. This species has larger autozooids, but with a smaller opesia which also exhibits a distinct lunula; on the contrary, the vibracularia are smaller and the ovicells are shorter. The autozooids of *S. vulnerata* are shorter and wider while in *Setosella* sp. they tend to be more elongated, with oval or subrhomboid outline. The opesiules in *Setosella* sp. are asymmetric and are very elongated. Moreover, the ancestrula of this species has a trifoliated opesia, while in *S. vulnerata* it is semi-elliptic.

The zooids of *S. spiralis* resemble those in *S. vulnerata*, but show larger opesiules. However, the main difference with this species as well as with *Setosella* sp. is the astogenesis as their zooids form an only whorl around the ancestrula instead of two whorls.

The autozooids of *Setosella* sp. are similar to those in *S. folini*, recently re-described by Souto *et al.* (2011a) as being proximally asymmetrical, exhibiting opesiules frequently asymmetrical. However, it differs from these species by exhibiting encrusting laminar growth, while the colonies of *S. folini* are uniserial and free.

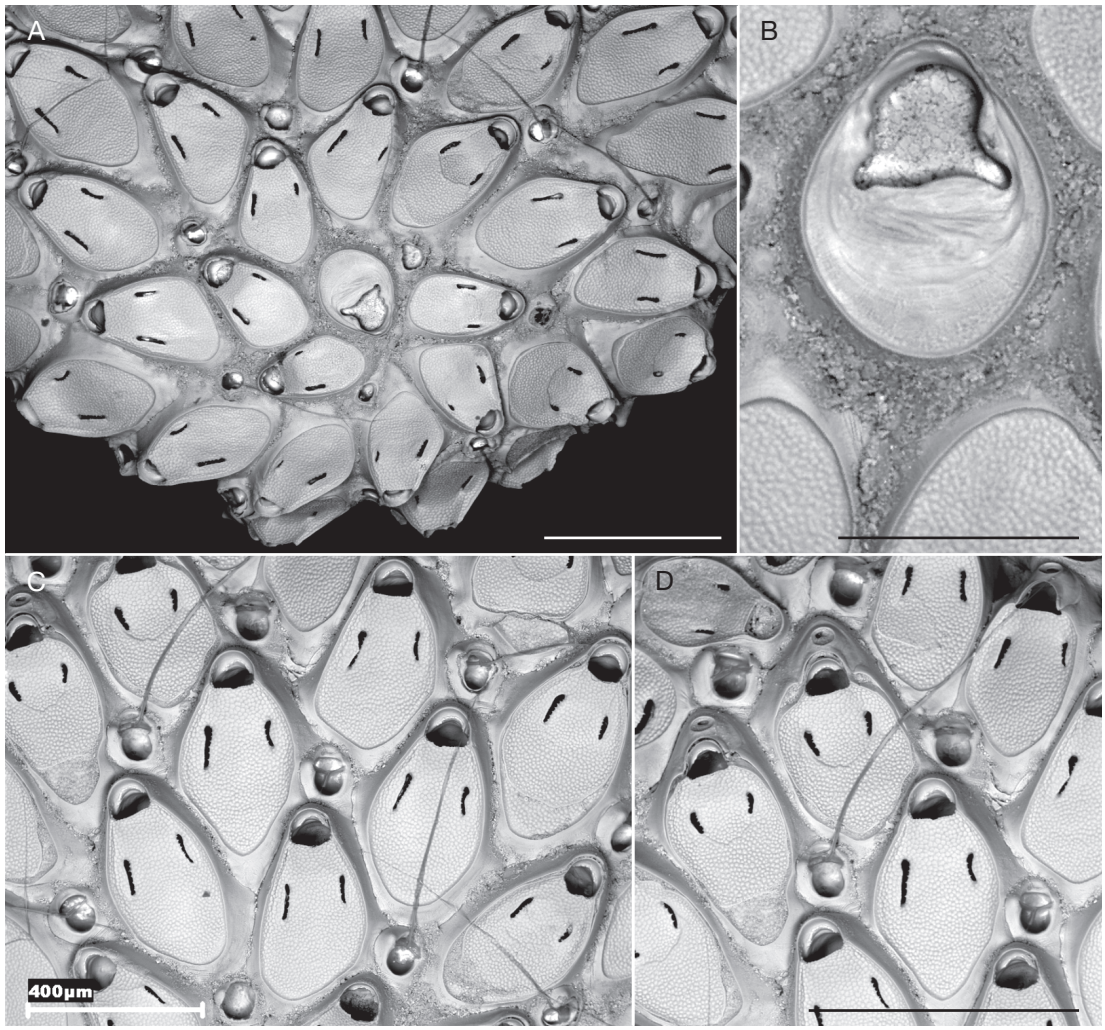

FIG. 4. — *Setosella* sp. (MNHN 15487): **A**, view of the periancestrular area; **B**, detail of the ancestrula; **C**, autozooids; **D**, ovicellate zooids. Scale bars: A, D, 500 µm; B, 200 µm.

Finally, *S. cavernicola* differs from all the other species of the genus by basically exhibiting much smaller size, by the rounded opesiules, often more than two, and by the ovicell shape.

As we have just revised samples from two stations out of the 11 where Harmelin & d'Hondt (1992) reported *S. vulnerata*, we are not certain if all of them refer to *Setosella* sp. or if at least part of the material actually corresponds to *S. vulnerata*.

Setosella aff. ***cavernicola*** Harmelin, 1977
(Fig. 5; Table 5)

?*Setosella cavernicola* Harmelin, 1977: 1064, figs 16, 17. — Zabala 1986: 299, fig. 82. — Zabala & Maluquer 1988: 93, fig. 134.

MATERIAL EXAMINED. — Ría de Vigo: 42°14'20"N, 8°47'47"W, 16 m, 16/IX/86. One colony on *Phymatolithon calcareum* (Pallas) W. H. Adey & D. L. McKibbin.

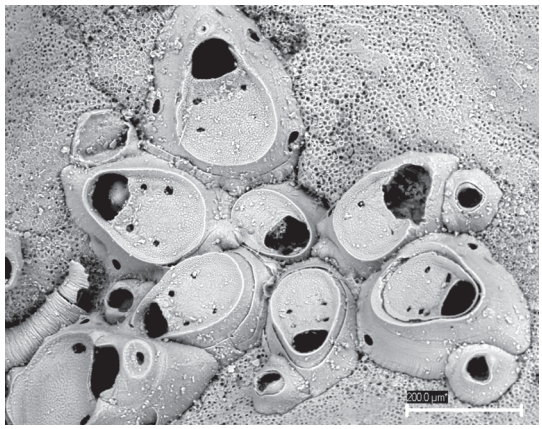

FIG. 5. — *Setosella* aff. *cavernicola* Harmelin, 1977 (Ría de Vigo), view of the colony; left down, ovicellate zooid of *Setosella vulnerata* (Bust, 1860).

TABLE 5. — Measurements in mm of *Setosella* aff. *cavernicola* Harmelin, 1977 (Ría de Vigo).

Measurements	Mean ± sd	Range	N
Zooidal length	0.367 ± 0.0419	0.310-0.444	14
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Ancestrular opesia length	0.113 ± 0.0042	0.110-0.116	2
Ancestrular opesia width	0.123 ± 0.0035	0.120-0.125	2

DESCRIPTION

Colony encrusting, unilaminar, forming a small whitish crust. Autozooids piriform. Lateral walls sloping; basal surface much larger than the frontal membranous surface, bordered by a thin frontal rim. Almost the whole frontal surface covered by a depressed cryptocyst, finely granular, occupying ⅔ of the area; distally raised forming the proximal border of the opesia, slightly concave. Opesia D-shaped. Two pairs of lateral opesiules, small and circular. One or two large uniporous septulae in each lateral wall. Interzooidal vibracularia, oval, inconstant, each one placed in the right distolateral extreme of an autozooid. Avicularia and spines absent. Ovicell hyperstomial, subimmersed, oval, about 0.10 mm diameter; with a small, circular depressed area with a central, circular pore. Ancestrula oval, smaller than an autozooid; cryptocyst occupying a half of the frontal area, extending laterally but not reaching the distal edge of the opesia.

REMARKS

Setosella cavernicola was originally described by Harmelin (1977) from a Mediterranean cave, near Cassis (France) (see Fig. 6) and is also known from a cave of the Medes Islands (Catalonia, Spain), 14 m depth (Zabala 1986). This species seems to inhabit exclusively in the dark areas of submarine caves. *Setosella cavernicola* was also reported from the north of the Canary Islands (WWF 2006), but this report might be due to confusion, as the description of the Mediterranean material was published in an article on the Bryozoa from Banco de la Concepción (N Canaries).

The only colony we have observed was collected in the Ría de Vigo, 16 m depth on maerl. This colony shows minor differences with the description of *S. cavernicola*. While the size is similar, the autozooids from the material from Vigo tend to be piriform and not oval as in the material from France; thus, the ratio length/width is not the same. However, Zabala (1986) describes the autozooids of his material from Catalonia as piriform. The lateral walls of the autozooids from our material are much angled to the inner side, in such way that the basal surface of the zooid is much larger than the frontal surface. Finally, the cryptocyst spreads gradually on its edge to the frontal ring, while in the material from Tremies the limits between cryptocyst and frontal rim are very distinct.

To these morphologic differences we should also add the habitat, very different to the dark caves where the species had previously been collected, as well as the geographic distance. Therefore, it would not be impossible that these minor morphological differences were due to geographic and/or ecological variations. However, the scarce material studied does not let us know up to what point these differences match in the range of variation of the species or if they have any taxonomic significance. The current

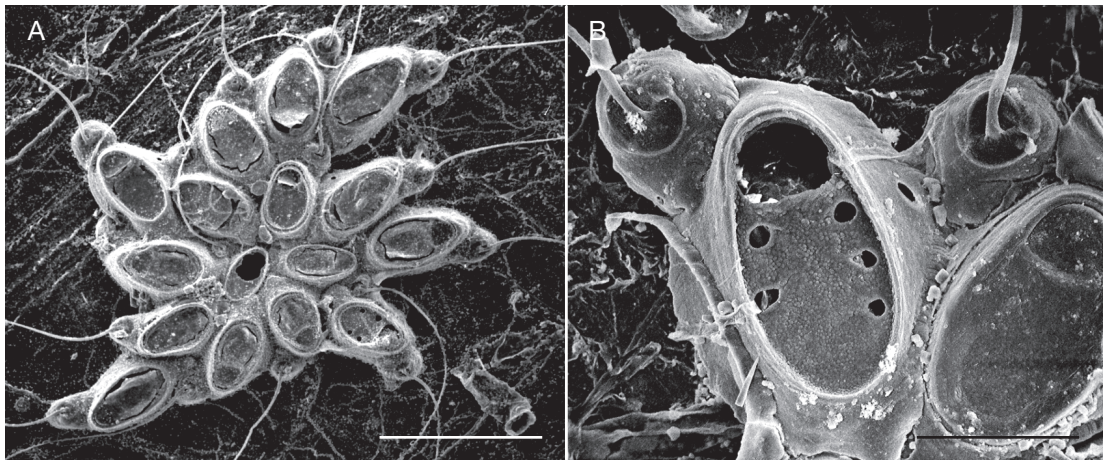

FIG. 6. — *Setosella* aff. *cavernicola* Harmelin, 1977 (cave of Trémies): **A**, view of a colony; **B**, autozooid and vibracularia (scale aprox.). Photos sent by J.-G. Harmelin. Scale bars: A, 500 µm; B, 100 µm.

observation would, therefore, be the first Atlantic of *S. cavernicola*, furthermore coming from a very different environment from the originally described for the species.

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