A survey of the genera *Sarcodictyon* Forbes, 1847, and *Rolandia* Lacaze-Duthiers, 1900, (Anthozoa: Octocorallia) in the North-eastern Atlantic and the Mediterranean

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Key words: *Stolonifera; Sarcodictyon; Rolandia;* North-eastern Atlantic; Mediterranean.
Sarcodictyon catenatum Forbes, 1847, is a common species in the Atlantic and the Mediterranean. However, often it has been mistaken for *Rolandia coralloides* Lacaze-Duthiers, 1900. On the basis of British and Mediterranean material we studied the main characters for distinguishing *S. catenatum*. We consider *Rolandia coralloides* Lacaze-Duthiers, 1900, to be a valid species and we assign to it all the material named *Rolandia rosea* by S. Weinberg (1978). Furthermore, a histological study confirmed that *R. coralloides* typically forms groups of polyps embedded in a common coenenchyme. Therefore, the possibility of transferring *R. coralloides* from Stolonifera to Alcyonacea is discussed. *Evagorgia rosea* Philippi, 1842, is here considered to be a nomen dubium.

Introduction

The genus *Sarcodictyon* Forbes (in Johnston), 1847, is based on British material of *Sarcodictyon catenatum*, described in the same paper. Forbes & Goodsir (1851) described a second species, *Sarcodictyon agglomerata*, very similar to the type species. They distinguished the species by external characters only "... a ochraceous yellow colour and in the grouping of polyps in threes and fives ...". Subsequently, Sars (1856) described *Rhizoxenia filiformis*, which probably represents another species of *Sarcodictyon* (see discussion of *S. catenatum*). Gosse (1858) collected and studied several colonies from the south coast of England and identified them as *S. catenatum*. These British papers culminated in the synthetic work of Herdman (1885), outstanding for its methodology used for the study of this genus. Ten years later, Herdman (1895) synonymized *S. agglomerata* with *S. catenatum*.

Meanwhile Philippi (1842) described *Evagora rosea* from the Mediterranean. This species probably belongs to *Sarcodictyon* or *Rolandia*, but this remains uncertain, due to the inadequate description given by this author; it is even possible that it belongs to *Scleranthelia* Studer, 1878 (see Carpine, 1964). After Philippi, species with some resemblance to *E. rosea* were generally referred to this species. However, the situation became more complicated when Lacaze-Duthiers (1900) described another similar species from the Mediterranean, *Rolandia coralloides*. Thomson (1927) recorded *S. catenatum* from Monaco, without describing the sclerites. Later on, Berenguier (1954)

cited *S. catenatum* for the Mediterranean and claimed that *S. catenatum* and *R. coralloides* were the same species. Pax & Müller (1962) distinguished two Adriatic species *Zoantha rosea*, Philippi, 1842, (possibly *S. catenatum*) and *Zoantha corii* Broch, 1935, (= *R. coralloides*), using sclerite characters. Weinberg (1978a) considered *E. rosea* and *R. coralloides* to be the same species, *Rolandia rosea*. In that paper Weinberg assumed that the sclerites in the genus *Sarcodictyon* are inseparably fused. This error was created by Hickson's (1921: 367) misinterpretation of Herdman's description, repeated by Deichmann (1936), Gohar (1940) and Bayer (1956). Bayer (1981) put an end to this confusion and illustrated some sclerites of a specimen of *S. catenatum* from British waters (Isle of Man). In the same paper he referred Weinberg's *Rolandia rosea* to *Sarcodictyon*. Finally, Manuel (1981) synonymized *S. catenatum* and *R. rosea* as *Sarcodictyon roseum*.

We studied material from the Atlantic as well as the Mediterranean and recognize two species: *Sarcodictyon catenatum* Forbes, 1847, and *Rolandia coralloides* Lacaze-Duthiers, 1900. They are described and depicted below.

Based on the sclerites and the anatomy we suggest to maintain *R. coralloides* in a genus different from *Sarcodictyon*. For a comparison of taxonomic characters of *Sarcodictyon* and *Rolandia* we refer to table 1.

Material and Methods

The colonies studied in the present work were collected by SCUBA diving during different sampling trips organized by the National Museum of Natural Sciences of Madrid along the southern Iberian Peninsula: "Fauna-I" in the Alboran Sea, "Fauna-II" in the Cantabric Sea, "Fauna-III" in the Balearic waters, and "Fauna-IV" in Balearic and Columbretes waters. Material of *Rolandia coralloides* from the Zoological Museum of Amsterdam (ZMA), previously studied by Weinberg, was also at our disposal.

Colonies were anaesthetized with menthol crystals and preserved in 70% alcohol; specimens used for histological study were fixed in 8% formaldehyde. The general morphology and anatomy were studied by means of a stereo dissecting microscope. Anatomical and histological details were studied following the Cajal method for topographic staining (see Gabe, 1968). Sclerites were obtained by dissolving the soft tissues in concentrated sodium hypochlorite. They were examined with a light microscope and SEM. For terminology we used Bayer et al. (1983). The colonies are deposited in the Nationaal Natuurhistorisch Museum, Leiden, The Netherlands (RMNH), Museo Nacional de Ciencias Naturales de Madrid (MNCN), and Laboratorio de Biología Marina de la Universidad de Sevilla, Spain (LBM).

Key of North-eastern Atlantic and Mediterranean species of *Sarcodictyon* and *Rolandia*

1. Polyps embedded in a common coenenchyme; sometimes stolons are present. Sclerites mainly "fused quadruplets" but crosses and shuttles are also common .... *Rolandia coralloides*
- Polyps growing from narrow ribbon-like stolons, which are sometimes fused to form membranous expansions. Sclerites without "fused quadruplets" 2
2. Sclerites include stellate plates ..... *Sarcodictyon catenatum*

No stellate plates present but six-radiates, branched spindles, crosses & rods .... *Sarcodictyon canariensis*

Family Clavulariidae Hickson, 1894
Genus *Sarcodictyon* Forbes (in Johnston), 1847

Diagnosis.— Polyps growing from narrow ribbon-like stolons, which are sometimes fused to form membranous expansions. Mesogloea of polyp wall with many lacunae or reticular. Retractor muscle restricted or diffuse. Stolons with 2 to 5 canals, sometimes more. Sclerite types: six-radiates, stellate plates, crosses, branched spindles and shuttles. Anthocodiae with minute sclerites or none at all.

Remarks.— Bayer (1981: 899) established the subfamily Sarcodictyinae, including diverse taxa such as *Cyathopodium* Verrill, 1868, and *Tesseranthelia*, Bayer, 1981, with fused plates and operculum, and *Sarcodictyon* and *Scleranthelia*, with a completely different morphology. The characters used to distinguish the subfamily are based on external morphology "Polyps short, retracting almost flush into stolons, or producing low, conical or cylindrical calices". Some species with large polyps, viz., *Sarcodictyon canariensis* (Ocaña et al., 1992) and *Scleranthelia thomsoni* (Williams, 1987) cannot be fitted in Sarcodictyinae. Therefore, we decided not to consider this subfamily in our present paper.

The genus *Scleranthelia* Studer, 1878, is very similar to *Sarcodictyon*. It only differs by the presence of stellate plates, disposed as a tiled floor on stolon and calyx.

Sarcodictyon catenatum Forbes, 1847
(figs 1-2)

Sarcodictyon catenata Forbes (in Johnston), 1847: 179-180, pl. 33, figs 4-7, description external morphology and habitus, deep water, England (Loch Fine, Youghal, west coast of Scotland); Gosse, 1858: 276-280, pl. 9, description external morphology, some data of sclerites and many aquarian observations, England (Ilsam), at intertidal caverns; Herdman, 1885: 31-49, pls 1-3, description external morphology, anatomy, histology and sclerites, England (Tarbet, Loch Fyne, Sound of Sky, Aros bay, Sound of Mull, Crouling Island, Hebrides), circalitoral and occasionally in shallow waters; Herdman, 1895: 163-168, pl. 8, descripton of the yellow variety, merging *Sarcodictyon agglomerata* with *Sarcodictyon catenatum*.

Sarcodictyon catenatum; Thomson, 1927: 8-9, pl. 2 fig. 17, pro parte, Dogger Bank North Atlantic; Madsen, 1944: 11, only recorded, 55 m deep; Bergen, Norway; Tixier-Durivault & d'Hondt, 1974: 1366, record and distribution, Azores (Flores).

Clavularia catenata; Hickson, 1894: 332, put in a different genus as a result of a misinterpretation of Herdman's paper.

Sympodium catenatum; Molander, 1915: 43, diagnosis and remarks; Norway, England, Scotland and Ireland.

Sarcodictyon roseum; Manuel, 1981: 36-38, fig. 8, description external morphology, sclerites, circalittoral, British coasts, South-west Europe and the Mediterranean, perhaps northward to Scandinavia? (misidentification).

?Rhizoxenia filiformis Sars, 1856: 65-67, Pl. X, figs. 13-17, description external morphology, some habitat data, circalittoral, colour of the colony greyish-white, possibly a different species, could be a different genus.

? *Evagora rosea* Philippi, 1842: 36, fig. 2, brief description, Naples.

Not *Rolandia rosea*; Weinberg, 1978: 167-173 (= *Rolandia coralloides*).

Material.— **Spain:** (MNCN 2.04/722), Alborán Island, 15.vii.89, 35°55.95'N 3°01.56'W, two colonies, 34-44 m, circalittoral, Fauna-I cruise (sta. 33); (LBM/PI 99) Crinavis, 36°10.10'N 5°23.70' W, vii.1990, three colonies, infralittoral, 20-25 m, P.J. López leg.; (RMNH Coel. 23984), Cádiz, La Atunara, 36°10.54'N 5°20.00'W, iii.1988, one colony, circalittoral 40 m, P.J. López leg.; (MNCN 2.04/723) Cantabric Sea, Northern Iberian Peninsula, 43°28.62'N 2°53.77'W, 21.vi.91, one colony, 88 m, circalittoral, Fauna-II cruise (stn. 145-A); (MNCN 2.04/724) Hormigas Islands, 37°39.52'N 0°38.92'W, 21.vii.96, one colony, 25 m, infralittoral, Fauna-IV cruise (sta. 299B5); **Great Britain:** (MNCN 2.04/712), Portland Harbour, Dorset, ii.1977, one colony on limestone, R.L. Manuel leg.; (RMNH Coel. 24087), Millport, Island of Cumbrae, Scotland, xi.1979, one colony on shell, R.L. Manuel leg.; (RMNH Coel. 24088) Isle of Man (1 mile north of the Calf of Man), ii.1980, one colony, 30 m, attached on shell, R.L. Manuel leg.

Diagnosis (for a detailed description, see Herdman, 1885; 1895).— Colonies with 2 to more than 20 polyps, joined by ribbon-like stolons, sometimes fused to form membranous expansions. Calyx length 3 to 6 mm. Anthocodiae white, anthosteles and stolons reddish to pale-yellow. Generally the anthocodiae have small sclerites: crosses, shuttles and six-radiates, 24-52 µm long and 15-32 µm wide. Stolons with six-radiates, shuttles and crosses, 70-116 µm long and 30-110 µm wide. The stellate plates are most abundant in the anthosteles; they are 56-114 µm long and 32-120 µm wide.

A distinct periderm is present on the anthosteles and stolons. Mesogloea of the polyp walls with many lacunae, totally or partially covered with granular endodermal material. Endoderm of the polyps poorly developed. Ectoderm of the tentacles well developed. The sclerites are located between the ectoderm and the mesogloea. Mesenteries with a strong, restricted retractor muscle in the middle. Pharynx with a reduced mesogloea without lacunae; endoderm well developed, ciliated and glandular. Stolons with 2-4 internal canals.

Ecology.—The colonies studied were collected from intertidal to circalittoral bottoms between 0 and 100 metres, on stones and shells, occasionally close to *Alcyonium palmatum* Pallas, 1766, or associated with ascidians. According to Manuel (1981) competition for space may determine the growth form of this species.

Distribution.— Atlantic and North Sea: England, Scotland, Wales, Dogger bank; Mediterranean: Algeciras Bay, Alborán Island and Hormigas Islands (Alicante).

Discussion.— *Sarcodictyon catenatum* is a well known species since Herdman's description (1885, 1895). The main characters to distinguish this species are the presence of minute sclerites in the anthocodiae (especially in the aboral face of the tentacles) and the restricted retractor of the mesenteries (Herdman, 1885: pl. 2 fig 10; pl. 3 figs 1, 3). However, in the tentacles of some colonies from the western Mediterranean sclerites are scarce or absent altogether. Moreover, although these colonies also have mesenteries with strong retractors these are less restricted. As these differences are gradual, we consider them infraspecific variation. However, future studies might reveal the Mediterranean population to represent a different subspecies.

Sarcodictyon catenatum differs from *S. canariensis* in having stellate plates in the coenenchyme and small sclerites in the polyps. Also the mesogloea of the polyp wall and the retractor muscles are clearly different (see Ocaña et al., 1992).

Rhizoxenia filiformis (Sars, 1856) from the North Sea has some resemblance with *Sarcodictyon*. Sars distinguished this species from *S. catenatum* by differences in colour and shape: "Notre espèce Norvégienne se distingue de l'espèce Britannique par la

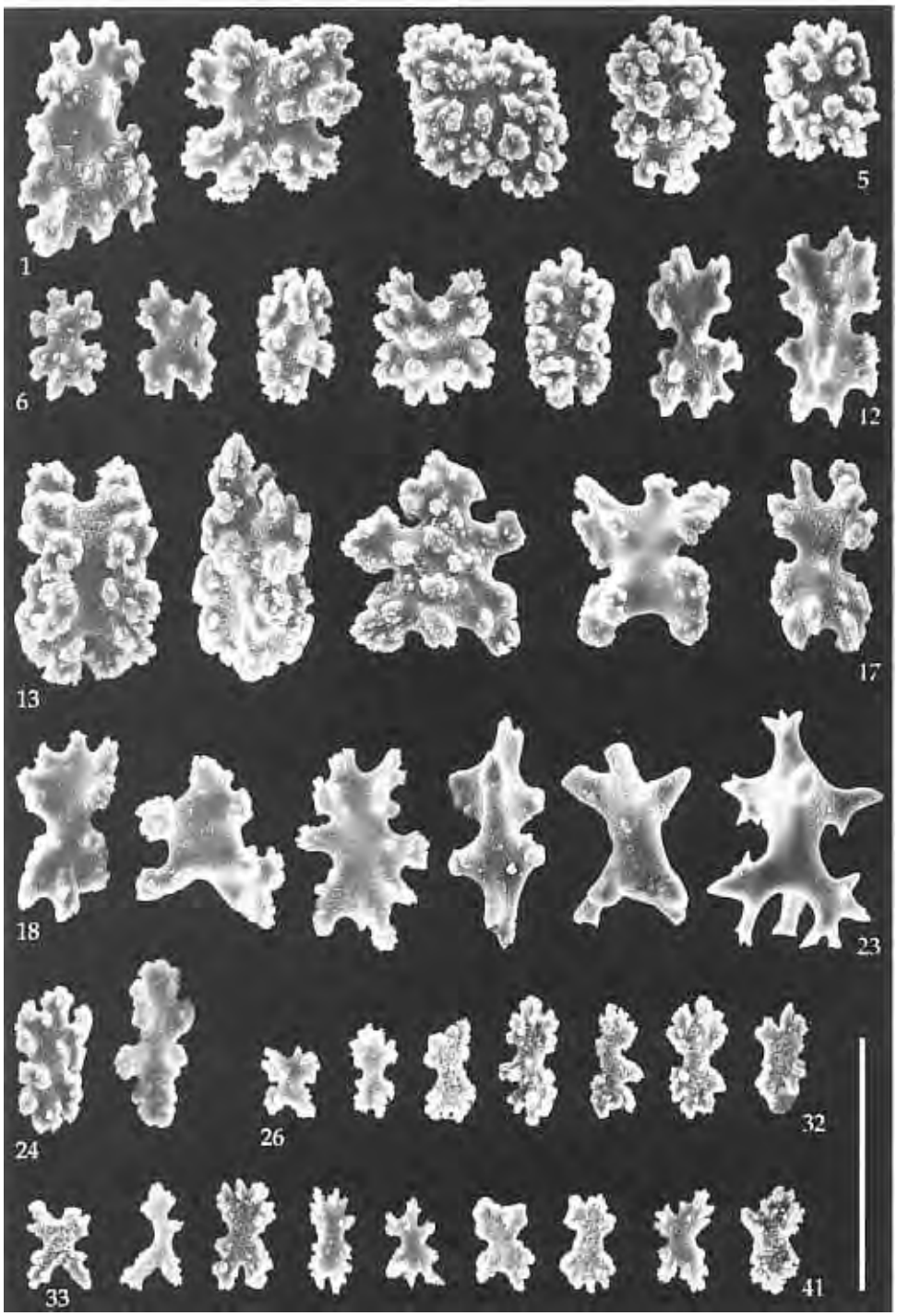

Fig. 1. Sclerites of *Sarcodictyon catenatum*. 1-12 anthostele; 13-25 stolon; 26-41 tentacles. Scale bar: 150 µm.

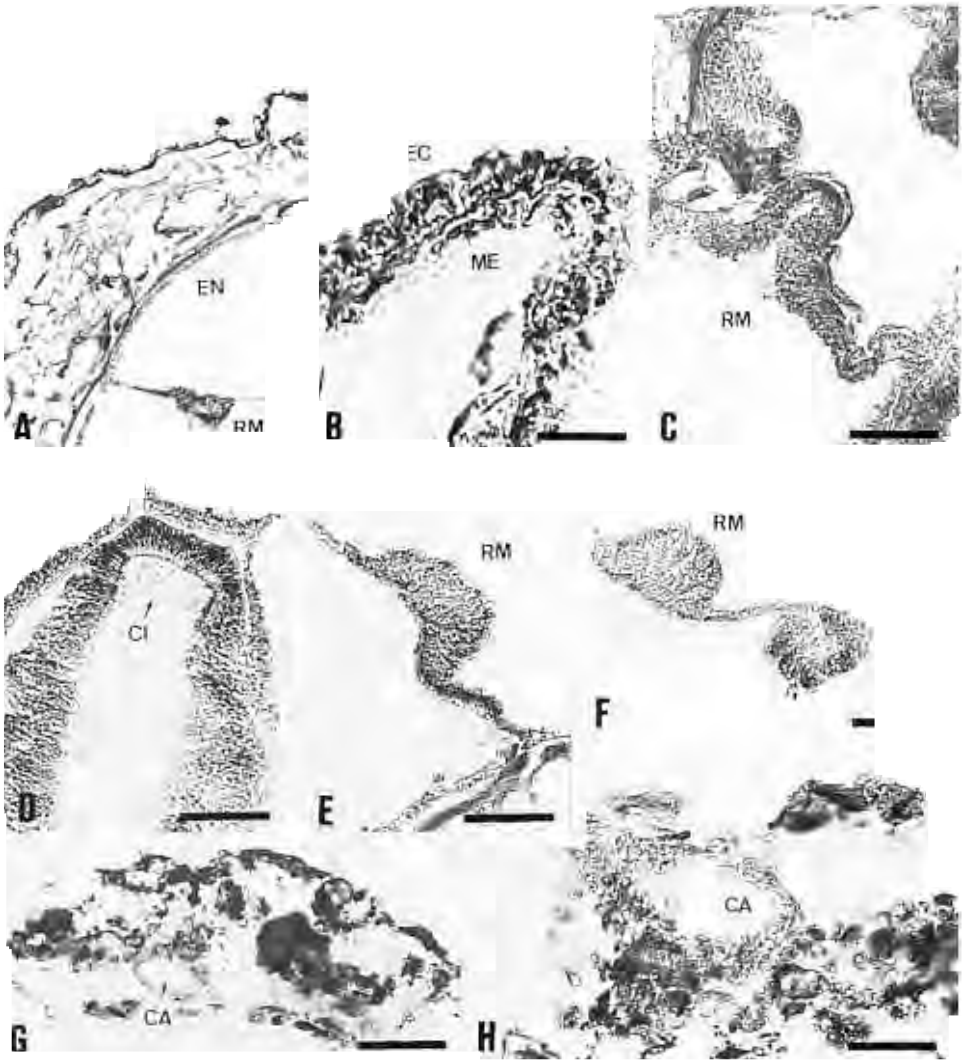

Fig. 2. Histology of *Sarcodictyon catenatum*. A, polyp wall. B, cross-section of a tentacle. C, E & F, cross-sections of mesenteries, retractor muscles and filament. D, detail of the pharynx and siphonoglyph. G, cross-section of stolon, H, detailsof the canals in the stolon. Scale bars: A = 75 µm; B = 13 µm ; C = 42 µm ; D = 30 µm; E = 28 µm; F = 28 µm; G = 67 µm; H = 39 µm.

couleur..., par les stolons, qui sont beaucoup plus étroits, n'ayant pas la moitié de la largeur des cellules polypiféres; et par la plus grande longeur des stolons entre les cellules, ...". This taxon could be another *Sarcodictyon* species, but could just as well belong to *Scleranthelia* or even *Clavularia*, as some species of the latter genus can have a striking external resemblance to *Sarcodictyon*. This is, for instance, the case with *Sarcodictyon densum* and *Sarcodictyon charcoti*, described from the Azores by Tixier-Durivault & d'Hondt (1974: 1367-1372; figs 3-8). These last-named species should be

placed in *Clavularia* (see Ocaña et al., 1992: 423-424). Grieg (1887) described *Rhizoxenia alba* from the North Sea, which also clearly belongs to *Clavularia* (see Grieg, 1887: 15, pl. 1; Molander, 1918: 15-19, figs 5-6).

As the type material of *Evagora rosea* Philippi, 1842, is almost certainly lost and because of the inadequate description we consider *E. rosea* as a nomen dubium.

Genus *Rolandia* Lacaze-Duthiers, 1900

Diagnosis.— Polyps embedded in a common coenenchyme. Sometimes ribbon-like stolons are present, which can fuse into membranous expansions. The mesogloea of the polyp wall is thin and without lacunae, whereas it is thick and with many lacunae in the calyx. Retractor muscles well developed and restricted. Stolons with 9-12 canals. Sclerites scattered over the surface of the calyx. Sclerite types: crosses and "fused quadruplets", shuttles and six-radiates. Polyps without sclerites.

Rolandia coralloides Lacaze-Duthiers, 1900 (figs 3-4)

Rolandia coralloides Lacaze-Duthiers, 1900: 424-449, pls 15-16, description external morphology, sclerites and histology, near Algeria coast; Molander, 1929: 41-42, only remarks; Rossi, 1965: 163 & 174, record and ecology in coralligenous community, Punta di Mesco (Italy).

Rolandia rosea; Weinberg, 1978a: 167-173, pls 16-18, description of external morphology, sclerites, discussion and synonymy, eggs observed from May to September, Banyuls-sur-Mer, Adriatic sea, Gulf of Naples, Gulf of Marseille, and near Algeria. Although the author included Thomson's record in his synonymy apparently he does not admit that *R. rosea* could be present in the Atlantic Ocean; Weinberg, 1978b: 39, foto 4, record and just some ecological data; Gili, 1982: 114 & 116, figs 57a-c, 58d, brief description and ecology, Banyuls de la Marenda, Illes Medes.

Rhizoxenia rosea; Marion, 1882: 985, record, on *Poseidonia* sp. rhizomes, 15 m, Gulf of Marseille; Thomson, 1927: Pl. 3, figs 2-4, 6, 12; brief description but sufficient for recognizing the "fused quadruplets", 845 m, Azores.

Evagora corii Broch, 1935: 5-8, fig. 2, description external morphology, sclerites show clearly the "fused-quadruplets", 15-20 m, Adriatic Sea (Split).

Zoantha corii; Pax & Müller, 1962: 263-264, fig. 140, brief description and some data of sclerites which are larger than those in *Zoantha rosea*, Adriatico (Split), 15-20 m.

Sarcodictyon catenatum; Bérenguier, 1954: 62-65, pls 5-7I; description, two ecological growth forms, *R. coralloides* and *S. catenatum* synonymous, Gulf of Marseille.

? *Evagora rosea* Philippi, 1842: 36, fig. 2, brief description, Naples.

Not *Zoantha thalassanthos* Lesson, 1826, referred to *Clavularia*, see Weinberg, 1978a.

Not *Rhizoxenia thalassanthos*; Ehrenberg, 1834: 55, only record and new combination.

Not *Rhizoxenia rosea*; von Koch, 1891: 661-663, fig. 13, confusion with an *Alcyonium* species, Naples.

Material.— **Spain:** (LNM/PI 101) Crinavis, 36°10.10'N 5°23.70'W, vii.1990, three colonies, infralittoral 20-25 m, P.J. López leg.; (RMNH Coel. 23985) La Atunara, 36°10.54'N 5°20.00'W, iii.1988, two colonies, circalittoral 40 m, P.J. López leg.; (RMNH Coel. 23986) Gibraltar harbour, 36°08.90'N 5°21.60'W, v.1992, two colonies, circalittoral 28 m, P.J. López leg.; (MNCN 2.04/726) Columbretes Islands (Western Mediterranean), 39°53.56'N 0°40.20'E, 16.vii.96, one colony, 25 m, infralittoral, Fauna-IV cruise (stn. 278B8); (MNCN 2.04/727) Columbretes Islands (Western Mediterranean), 39°51.27'N 0°40.55'E, 18.vii.96, two colonies, 30 m, infralittoral, Fauna-IV cruise (stn. 285B22); (MNCN 2.04/728) Columbretes Islands (Western Mediterranean), 30°49.77'N 0°32.10'E, 20.vii.96, one colony, 10 m, infralittoral, Fauna-IV cruise (stn. 296B7); (MNCN 2.04/731) Hormigas Islands, 37°39.52'N 0°38.92'W, 21.vii.96,

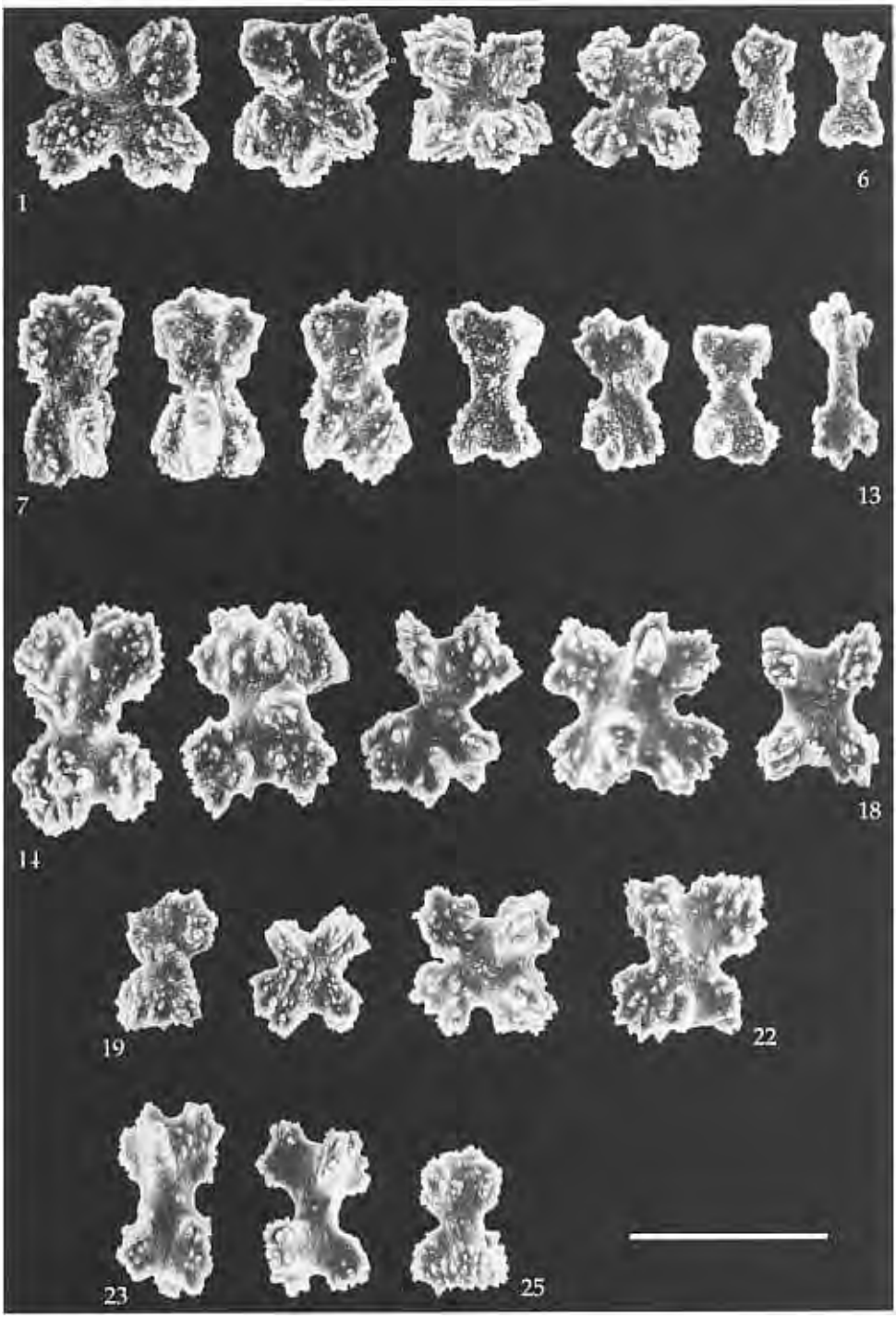

Fig. 3. Sclerites of *Rolandia coralloides*. 1-13 anthostele; 14-25 stolon. Scale bar: 75 µm.

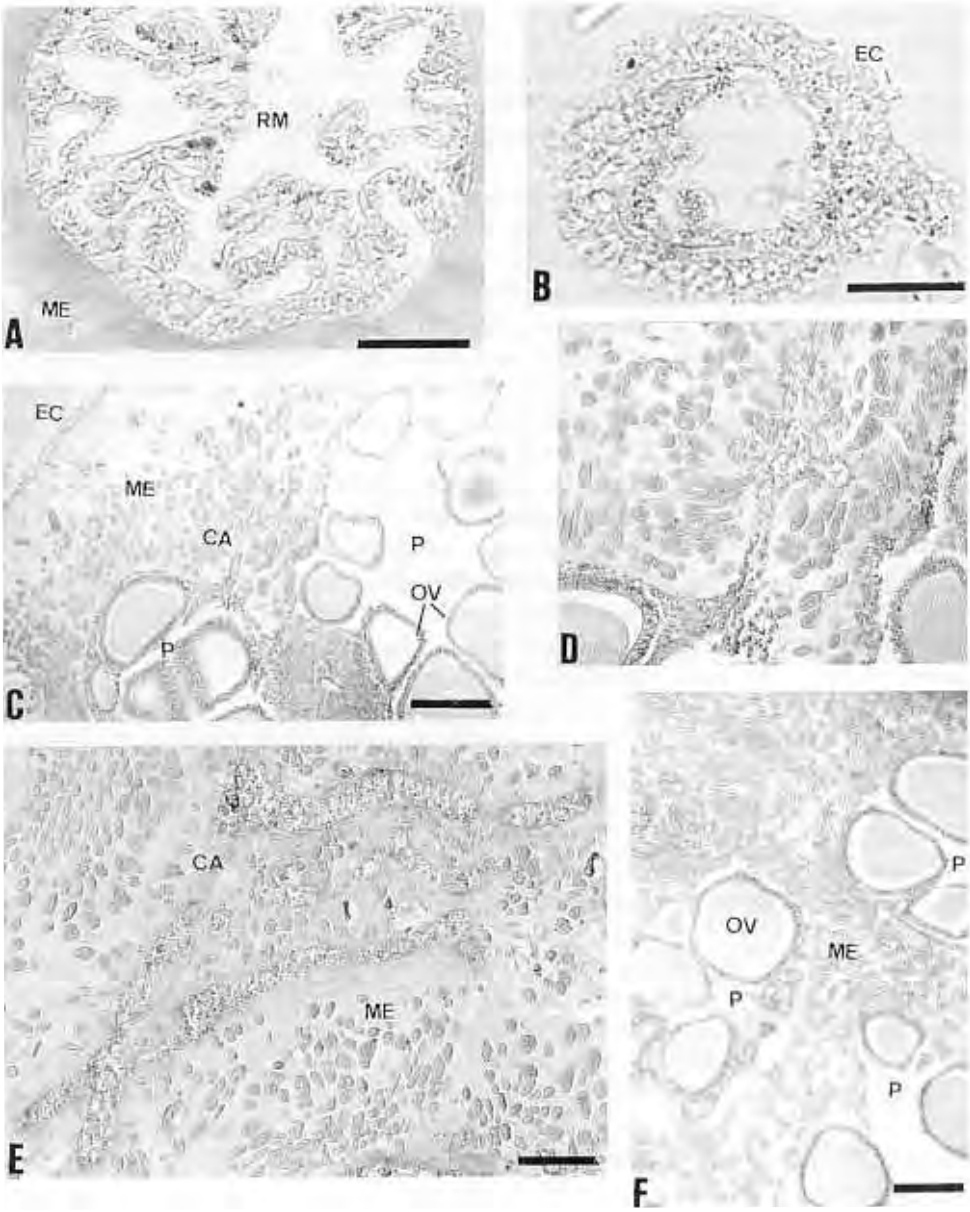

Fig. 4. Histology of *Rolandia coralloides*. A, cross-section of filaments and retractor muscles. B, cross-section of a tentacle. C, two polyps embedded with a connecting (solenial) canal. D, detail of the canal. E, solenium isolated in the mesogloea, F, three polyps embedded in the mesogloea. Scale bars: A, B & E = 50 µm; C & F = 200 µm.

three colonies, 14 m, infralittoral, Fauna-IV cruise (stn. 299B1); (MNCN 2.04/729) Hormigas Islands, 37°39.52'N 0°38.92'W, 21.vii.96, one colony, 25 m, infralittoral, Fauna-IV cruise (stn. 299B5); (MNCN 2.04/730) Hormigas Islands (Western Mediterranean), 37°39.52'N 0°38.92'W, 21.vii.96, one colony, 9 m, infralittoral, Fauna-IV cruise (stn. 299B6); **France**: (ZMA Coel. 8350) Cap L'Abeille (Banyuls-sur-Mer), 22.ii.75, 25 m, infralittoral, Steven Weinberg leg..

Diagnosis (for a detailed description see Lacaze-Duthiers, 1900).— Colonies with numerous polyps (10 to more than 50), typically embedded in a common coenenchyme, sometimes joined by ribbon-like stolons, circular in cross-section. Calyx 1-4 mm long. Anthocodiae and tentacles pale yellow or creamy, anthosteles and stolons orange to light red. The sclerites occur scattered over the surface of the calyx, but in the lower part of the calyx and in the anthosteles they are more abundant. Crosses and "fused quadruplets" are common in the polyps. Shuttles are more common in the calyces and six-radiates in the stolons. The sclerites of the anthosteles are 45.5-80.3 μm long; in the stolon the length range is 48-93.7 μm.

A distinct periderm is present on the anthosteles and stolons. The mesogloea of the polyp walls has many small lacunae, totally filled with granular endodermal material. The anthocodial mesogloea is thin and without lacunae. Endoderm poorly developed, uniform over the whole polyp. Retractor muscle diffuse and well developed. Stolons with 9-12 internal canals. Typically the anthosteles are embedded in a common coenenchyme with numerous oval lacunae around each polyp. On several levels the polyps are connected by gastrodermal canals

Ecology.— The species has been recorded from shallow water (Gili, 1982) to bottoms up to 800 meters depth (Thomson, 1927). Generally it was found in circalittoral coralligenous communities, 25-50 meters deep. It occurs on different substrates: stones, shells, barnacles and coral skeletons, rhizomes of *Poseidonia*, some species of the ascidian genus *Microcosmus*, and many gorgonians (Weinberg, 1978a; Gili, 1982).

Rolandia coralloides seems to be one of the more common stoloniferans in Mediterranean benthic communities (Pérès & Picard, 1964; Rossi, 1965; Teissier, 1965; Gili, 1982.).

Distribution.— Atlantic: Azores; Mediterranean: Algeria coast, Gulf of Genova (Punta di Mesco), Gulf of Naples, Gulf of Marseille, Adriatic Sea (Split), Banyuls-sur-Mer, Illes Medes, Algeciras Bay, Gibraltar harbour, and Ceuta.

Discussion.— *Rolandia coralloides* has been synonymized with *Evagora rosea* and even with *Sarcodictyon catenatum* (see synonymy). According to Bérenguier (1954) *R. coralloides* is just a growth form of the *S. catenatum*. However, the sclerites he depicted (Bérenguier, 1954, pls 6-7), although not very accurately, show he was studying two growth forms of *R. coralloides*.

Rolandia coralloides has several growth forms, a situation similar to that in *Alcyonium coralloides* (Pallas, 1766) (see Weinberg, 1977a; de Groot & Weinberg, 1982). The growth form with polyps embedded in a common coenenchyme resembles that of several *Alcyonium* species. Moreover, *R. coralloides* has been identified sometimes as being an *Alcyonium* species (Weinberg, 1977a: 144). This raises the question whether *R. coralloides* must be considered belonging to the suborder Alcyoniina instead of the suborder Stolonifera. As the "fused quadruplets" seem to be an unique type of sclerite we await further research before making such a change.

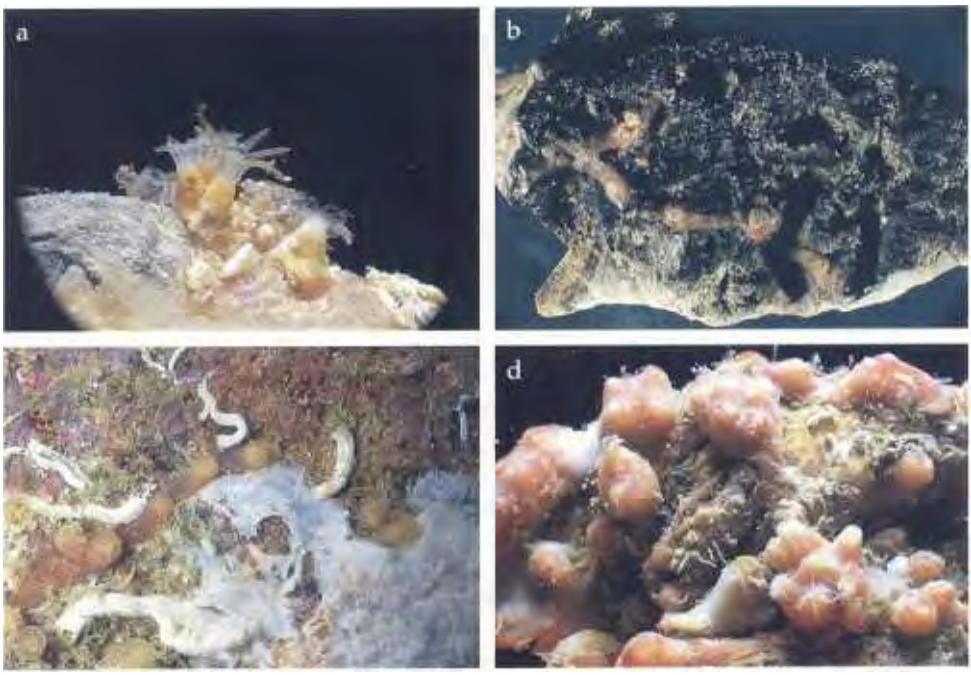

Fig. 5. a-b, *Sarcodictyon catenatum*; a, MNCN 2.04/712, Portland Harbour, Dorset, ii.1977, 1 colony on limestone, R.L. Manuel leg.; b, specimen from Northern Iberian Peninsula; c-d, *Rolandia coralloides*; c, LNM/PI 101, Crinavis, 36°10.10'N 5°23.70'W, vii.1990, three colonies, infralittoral 20-25 m, P.J. López leg.; d, ZMA Coel-8350, Cap L'Abeille (Banyuls-sur-Mer), 22.ii.75, 25 m, infralittoral, Steve Weinberg leg.

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Table 1. Comparison of taxonomic characters of *Sarcodictyon canariensis*, *Sarcodictyon catenatum* and *Rolandia coralloides*.

Characters	*Sarcodictyon canariensis*	*Sarcodictyon catenatum*	*Rolandia coralloides*
Sclerite types, abundance and distribution	Crosses (vc) and shuttles (rc) everywhere; branched spindles (c) especially in the top of anthostele, densely arranged over the whole polyp	Crosses, everywhere (vc), stellate plates in anthostele (vc), six radiates (c) and shuttles (rc) in stolons; miniatures (vc) exclusively in tentacles, densely arranged over the whole polyp	Crosses and fused quadruplets (vc) everywhere; six radiates (rc) in stolon; shuttles (rc) in calyx, scattered
Dimensions of sclerites	L: 0.07-0.17 mm W: 0.02-0.04 mm	L: 0.03-0.07 mm W: 0.01-0.04 mm	L: 0.04-0.15 mm W: 0.015-0.07 mm
Antocodial sclerites	Absent	Present	Absent
Calyx length	5-8 mm	3-6 mm	1-4 mm
Morphology	Membranous and ribbon-like stolons	Membranous and ribbon-like stolons	Massive and ribbon-like stolons
Colour	Light red	Reddish and dirty yellow	Deep orange to light red.
Retractors of mesenteries	Weak and diffuse	Strong and restricted	Strong and diffuse
Mesogloea of polyp wall	Little developed, reticular, embedded in endoderm, no lacunae	Well developed, many lacunae	Well developed, many lacunae
Stolon structure	3-5 canals	2-4 canals	9-12 canals
Distribution	Central Macaronesian Atlantic Ocean	North Atlantic & Western Mediterranean	Mediterranean (& Azores?)

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