Leptolida (Cnidaria: Hydrozoa) collected during the CANCAP and Mauritania-II expeditions of the National Museum of Natural History, Leiden, The Netherlands [Anthoathecata, various families of Leptothecata and addenda]

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W. Vervoort

Vervoort, W. Leptolida (Cnidaria: Hydrozoa) collected during the CANCAP and Mauritania-II expeditions of the National Museum of Natural History, Leiden, The Netherlands [Anthoathecata, various families of Leptothecata and addenda].
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Key words: Cnidaria, Hydrozoa, Leptolida, Anthoathecata, Leptothecata, Bougainvilliidae, Pennariidae, Zancleidae, Hydractiniidae, Oceanidae, Eudendriidae, Phialellidae, Mitrocomidae, Lovenellidae, Campanulinidae, Lafoeidae; north-eastern Atlantic, geographical distribution.
Forty leptolid species are described from the north-eastern Atlantic (Macaronesian area and the coasts of Mauritania and Morocco) and additional data are given for 44 leptolids described in previous reports. Two new species of *Hydractinia* and one new species of *Zygophylax* are described. *Zygophylax echinata* Calder & Vervoort, 1998 has been synonymized with *Zygophylax sagamiensis* Hirohito, 1983. The geographical boundaries of several species have been extended amongst which some (*Hydractinia multitentaculata* Millard, 1975; *Hydractinia marsupialia* Millard, 1975, *Hydrocorella africana* Stechow, 1921) that were hitherto considered to be endemic to South African oceanic waters. *Halecium sessile* Norman, 1867, turned up in the CANCAP collections after the publication of the report on Haleciidae from CANCAP (Medel & Vervoort, 2000) and is described here. All material described in the present report is preserved in the collections of the National Museum of Natural History Naturalis, Leiden, the Netherlands; the collection numbers of the samples and those of the microslide preparations are given in the text.

Contents

Introduction

The present paper deals with the anthoathecate leptolid families Bougainvillidae, Pennariidae, Zancleidae, Hydractiniidae, Oceanidae and Eudendriidae, and the leptothecate leptolid families Phialellidae, Mitrocomidae, Tiarannidae, Lovenellidae, Campanulinidae and Lafoeidae, all collected during the CANCAP and Mauritania-II expeditions to the Macaronesian area and the Atlantic coasts of Mauritania and Morocco. It continues, supplements and concludes previous reports on leptolids by Medel & Vervoort (1998, 2000) and Ansín Agís, Ramil & Vervoort (2001). For details concerning those expeditions I refer to Van der Land (1987) and Ansín Agís et al. (2001).

Though the leptolid material collected during the CANCAP and Mauritania-II is generally well preserved no special precautions were taken when preserving the Anthoathecata, with the result that in many samples the hydranths are strongly contracted. It proved to be particularly difficult to make squash preparations for the study of nematocysts; the majority was undischarged and their conservation occasionally was unsatisfactory. It was impossible, therefore, to present detailed descriptions of the microbasic euryteles.

List of the stations

1.072: E of Madeira, 32°41'N 16°35'W, 80 m, Van Veen Grab, shells and sand, 14 March 1976.
Eudendrium rameum (Pallas, 1766), – *Aglaophenia kirchenpaueri* (Heller, 1868), – *Sertularella ellisii* (Deshayes & Milne Edwards, 1836), – *Campanularia hincksii* Alder, 1856.

1.092: S of Madeira, 32°39'N 16°50'W, 80-84 m, triangular dredge, corals (mainly dead) and shells, 16 March 1976.
Sertularella polyzonias (Linnaeus, 1758).

1.093: S of Madeira, 32°38'N 16°50'W, 98-105 m, triangular dredge, 16 March 1976.
Lafoea dumosa (Fleming, 1820), – *Halecium beanii* (Johnston, 1838).

1.094: S of Madeira, 32°39'N 16°49'W, 125-150 m, triangular dredge, mainly shells and shell agglomerates, 16 March 1976.
Acryptolaria conferta (Allman, 1877).

1.096: S of Madeira, 32°38'N 16°50'W, 116-135 m, rectangular dredge, epifauna only, 16 March 1976.
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1.098: S of Madeira, 32°38'N 16°49'W, 200-226 m, rectangular dredge, sand and shells, 16 March 1976.
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1.102: S of Madeira, 32°38'N 16°49'W, 300 m, triangular and rectangular dredge, 16 March 1976.
Acryptolaria conferta var. *minor* Ramil & Vervoort, 1992, – *Bedotella armata* (Pictet & Bedot, 1900), – *Zygophylax biarmata* Billard, 1905.

1.D109: SE coast of Madeira, near Agua de Pena, 32°41'N 16°46'W, 0-25 m, scuba diving, 17 March 1976.
Eudendrium spec.

1.114: S of Madeira, 32°38'N 16°48'W, 280-320 m, rectangular dredge, 17 March 1976.
Bedotella armata (Pictet & Bedot, 1900), – *Lytocarpia myriophyllum* (Linnaeus, 1758), – *Sertularella gayi gayi* (Lamouroux, 1821).

l.D117: S coast of Madeira, W of Funchal Harbour, 32°38'N 16°56'W; 4 dives to 20 m; scuba diving; 19, 20 March 1976.
Pennaria disticha Goldfuss, 1820.

1.118: Morocco, off Cape Dra, 28°22'N 11°47'W, 48 m, 5 m beam-trawl, 23 March 1976.
Eudendrium capillare Alder, 1856

1.129: Morocco, off Cap Blanc du Nord, 33°15'N 09°11'W, 320 m, Agassiz trawl, 26 March 1976.
Modeeria rotunda (Quoy & Gaimard, 1827), – *Acryptolaria conferta* var. *minor* Ramil & Vervoort, 1992, – *Lafoea dumosa* (Fleming, 1820).

1.145: Morocco, off Cap Blanc du Nord, 33°14'N 08°49'W, 100 m, triangular dredge, 28 March 1976.
Eudendrium rameum (Pallas, 1766), – *Filellum* spec., – *Lafoea dumosa* (Fleming, 1820), – *Zygophylax biarmata* Billard, 1905, – *Halecium sibogae marocanum* Billard, 1934, – *Antennella siliquosa* (Hincks, 1877).

1.154: Morocco, off Cape de Mazagan, 33°40'N 08°45'W, 570 m, Agassiz trawl, 28 March 1976.
Eudendrium cf. *ramosum* (Linnaeus, 1758).

1.155: Morocco, off Cape de Mazagan, 33°42'N 08°44'W, 650 m, Agassiz trawl, 28 March 1976.
Eudendrium spec.

2.004: Canary Islands, S of Fuerteventura, Punta de Jandia, 28°03'N 14°29'W, 180-330 m, rectangular dredge, epifauna of mixed bottom, 23 August 1977.
Acryptolaria conferta var. *minor* Ramil & Vervoort, 1992, – *Nemertesia ventriculiformis* (Marktanner-Turneretscher, 1890).

2.014: Canary Islands, S of Fuerteventura, Punta de Jandia, 28°03'N 14°29'W, 200 m, rectangular dredge, many sponges and other epizoa, 24 August 1977.
Acryptolaria conferta (Allman, 1877), – *Acryptolaria conferta* var. *minor* Ramil & Vervoort, 1992.

2.058: Morocco, W of Cape Yubi, 27°58′N 13°24′W, 500 m, 5 m bean trawl, muddy bottom, 28 August 1977.
Acryptolaria conferta var. *minor* Ramil & Vervoort, 1992, – *Zygophylax brownei* Billard, 1924, – *Halecium sessile* Norman, 1867.

2.092: Canary Islands, S of Hierro, off Punta de la Restinga, 27°37′N 17°59′W, 176 m, Van Veen grab, 3 September 1977.
Acryptolaria conferta var. *minor* Ramil & Vervoort, 1992.

2.099: Canary Islands, S of Hierro, off Punta de la Restinga, 27º37′N 18º00′W, 160 m, Van Veen grab, 3 September 1977.
Acryptolaria conferta var. *minor* Ramil & Vervoort, 1992.

2.106: Canary Islands, S of Hierro, off Punta de la Restinga, 27º35′N 17°59′W, 600-1000 m, rectangular dredge 3 ×, dead corals and shells, 3 September 1977.
Acryptolaria conferta (Allman, 1877), – *Cryptolaria pectinata* (Allman, 1888), – *Zygophylax sibogae* Billard, 1918, – *Aglaophenia lophocarpa* Allman, 1888, – *Sertularella gayi robusta* Allman, 1873.

2.118: Canary Islands, SW of Hierro, off Punta de Orchilla, 27°42′N 18°09′W, 200-1000 m, rectangular dredge 12 ×, rocky bottom, 5 September 1977.
Acryptolaria conferta var. *minor* Ramil & Vervoort, 1992.

2.119: Canary Islands, SW of Hierro, off Punta de Orchilla, 27°42′N 18°09′W, 350 m, rectangular dredge, old fish-trap and lines, 5 September 1977.
Modeeria rotunda (Quoy & Gaimard, 1827), – *Cryptolaria pectinata* (Allman, 1888), – *Zygophylax biarmata* Billard, 1905, – *Aglaophenia lophocarpa* Allman, 1877, – *Sertularella gayi gayi* (Lamouroux, 1821).

2.120: Canary Islands, SW of Hierro, off Punta de Orchilla, 27°42′N 18°08′W, depth 350-400 m, rectangular dredge, rocky bottom with sponges, 5 September 1977.
Cryptolaria pectinata (Allman, 1888), – *Sertularella gayi gayi* (Lamouroux, 1821).

2.130: Canary Islands, SW of Hiero, off Punta de Orchilla, 27°40′N 18°10′W, 1500-1800 m, 1.2 m Agassiz trawl, 9 September 1977.
Cryptolaria pectinata (Allman, 1888).

2.141: Canary Islands, SW of Hierro, off Punta de Orchilla, 27°41′N 18°09′W, depth 480-540 m, rectangular dredge 2 ×, volcanic rocks and gravel, 9 September 1977.
Acryptolaria conferta var. *minor* Ramil & Vervoort, 1992, – *Zygophylax biarmata* Billard, 1905.

2.142: Canary Islands, S of Hierro, W of Punta de la Restinga, 27°40′N 18°03′W, on floating piece of rope, 9 September 1977.
Obelia dichotoma (Linnaeus, 1758).

2.D08: Canary Islands, SW coast of Hierro, off Faro de Orchilla, 27°42′N 18°08′W, 5-25 m, scuba diving, rocky bottom with some sand, 5/9 September 1977.
Antennella ansini Peña Cantero & García Carrascosa, 2000, – *Monotheca margaretta* (Nutting, 1900), – *Aglaophenia pluma* (Linneaus, 1758).

3.054: SE of Madeira, 32°43′N 16°44′W, 300-320 m, rectangular dredge, 20 October 1978.
Bedotella armata (Pictet & Bedot, 1900).

3.083: Selvagens Archipelago, S of Selvagem Pequena, 30°01′N 16°01′W, 192 m, Van Veen grab, fine white sand and shell gravel, 22 October 1978.
Filellum spec., – *Obelia dichotoma* (Linnaeus, 1758).

3.085: Selvagens Archipelago, S of Selvagem Pequena, 30°01′N 16°01′W, 140-160 m, rectangular dredge, 22 October 1978.
Aglaophenia lophocarpa Allman, 1877, – *Sertularella gayi gayi* (Lamouroux, 1821).

3.086: Selvagens Archipelago, S of Selvagem Pequena, 30°01′N 16°00′W, 140-170 m, rectangular dredge, 22 October 1978.
Antennella secundaria (Gmelin, 1791), – *Aglaophenia lophocarpa* Allman, 1877.

3.107: off Western Sahara, 24°17′N 16°49′W, 1000-1100 m, 1.2 m Agassiz trawl, mud with worm tubes and sponge spicules, 26 October l978.
Lytocarpia myriophyllum (Linnaeus, 1758).

3.119: off Mauritania, 20°22′N 17°54′W, 1000 m, 5 m beam trawl, 28 October 1978.
Stegolaria geniculata (Allman, 1888), – *Egmundella modesta* Millard & Bouillon, 1975.

3.129: off Mauritania, 18°56′N 16°27′W, 32 m, 1.2 m Agassiz trawl, muddy sand with shells, 29 October 1978.
Bougainvillia muscus (Allman, 1863).

3.151: off Mauritania, 19°20′N 16°54′W, 280-320 m, Van Veen grab, sand with some clay, calcareous stones, 31 October 1978.
Aglaophenia lophocarpa Allman, 1877.

3.158: off Mauritania, 19°22′N 16°51′W, 85 m, 2.4 m Agassiz trawl, hard bottom with sponges and brown algae, 31 October 1978.
Lytocarpia myriophyllum (Linnaeus, 1758)

3.182: off Mauritania, 20°21′N 17°02′W, 12 m, 1.2 m Agassiz trawl, coarse sand with many shells, 1 November 1978.
Dynamena disticha (Bosc, 1802).

3.D05: SE coast of Madeira, Caniçal, 32°44′N 16°44′W, rocky (sub)littoral with rock-pools, depth to 20 m, scuba diving, 19, 20 October 1978.
Pennaria disticha Goldfuss, 1820, – *Aglaophenia pluma* (Linnaeus, 1758).

3.D07: Selvagens Archipelago, E coast of Selvagem Pequena, 30°02′N 16°01′W, rocky littoral with pools in bay, depth to 20 m, scuba diving, 22 October 1978.
Anthohebella parasitica (Ciamician, 1880), – *Aglaophenia pluma* (Linnaeus, 1758).

AZO.07: Azores, Santa Maria, E coast, Baia de São Lourenço, 37°00′N 25°03′W, rocky flat with many holes and tide pools, surrounded by sandy beach, shore collecting, 16 September 1979.
Anthohebella parasitica (Ciamician, 1880), – *Aglaophenia octodonta* (Heller, 1868).

AZO.032: Azores, Faial, E coast, Horta, sea front, inside harbour, 38°32′N 28°38′W, 0-6 m, shore collecting and snorkeling, sandy bottom with rocks and stones, 10, 11 April 1979.
Pennaria disticha Goldfuss, 1820.

4.007: Canary Islands, S of Lanzarote, 28°50′N 13°50′W, 25-36 m, triangular dredge, 14 May 1980.
Aglaophenia kirchenpaueri (Heller, 1868).

4.019: Canary Islands, S of Lanzarote, 28°48′N 13°50′W, 37-40 m, triangular dredge 2 ×, 15 May 1980.
Acryptolaria conferta (Allman, 1877), – *Dynamena disticha* (Bosc, 1802).

4.047: Canary Islands, S of Lanzarote, 28°48′N 13°37″W, 0-800 m (bottom at 1080 m), ring-trawl, 17 May 1980.
Salacia desmoides (Torrey, 1902).

4.054: Canary Islands, SE of Lanzarote, 28°45'N 13°19'W, 1134-1315 m, 3.5 m Agassiz trawl, fine yellow clay, 18 May 1980.
Garveia arborea (Browne, 1907), – *Stegolaria geniculata* (Allman, 1888), – *Stegopoma bathyale* Vervoort, 1966.

4.074: Canary Islands, SE of Lanzarote, 28º55''N 13º33'W, 85-110 m, 1.2 m Agassiz trawl, sand, 20 May 1980.
Eudendrium rameum (Pallas, 1766), – *Nemertesia ramosa* (Lamarck, 1816), – *Diphasia margarita* (Hassall, 1848), – *Sertularella gayi gayi* (Lamouroux, 1821).

4.108: Selvagens Archipelago, 29°58'N 15°55'W, 2600-2700 m, 2.4 m Agassiz trawl, 27 May 1980.
Cryptolaria pectinata (Allman, 1888), – *Antennella secundaria* (Gmelin, 1791), – *Aglaophenia lophocarpa* Allman, 1877, – *Sertularella gayi gayi* (Lamouroux, 1821).

4.137: Canary Islands, SW of Palma, 28°39'N, 17°58'W, 50 m, Van Veen grab, fine sand, 2 June 1980.
Clytia paulenisis (Vanhöffen, 1910).

4.143: Canary Islands, SW of Palma, 28°38'N 17°58'W, 110-86 m, rectangular dredge, muddy bottom with oysters, 2 June 1980.
Bimeria vestita Wright, 1859, – *Antennella secundaria* (Gmelin, 1791), – *Aglaophenia tubulifera* (Hincks, 1861).

4.144: Canary Islands, SW of Palma, 28°38'N 17°59'W, 200-140 m, rectangular dredge, 2 June 1980.
Filellum cf. *serratum* (Clarke, 1879).

4.151: Canary Islands, SW of Palma, 28°39'W 17°58'W, 150-50 m, 1.2 m Agassiz trawl, 3 June 1980.
Bougainvillia muscus (Allman, 1863).

4.152: Canary Islands, SW of Palma, 28°38'N 17°59'W, 180-120 m, 1.2 m Agassiz trawl, old fish trap with lines, 3 June 1980.
Bougainvillia muscus (Allman, 1863), – *Eudendrium ramosum* (Linnaeus, 1758).

4.153: Canary Islands, SW of Palma, 28°38'N 17°59'W, 200 m, 1.2 m Agassiz trawl, 3 June 1980.
Bimeria vestita Wright, 1859, – *Eudendrium* spec., – *Acryptolaria conferta* (Allman, 1877), – *Lafoea dumosa* (Fleming, 1820), – *Zygophylax biarmata* Billard, 1905, – *Halecium tenellum* Hincks, 1861, – *Aglaophenia lophocarpa* Allman, 1877, – *Sertularella gayi gayi* (Lamouroux, 1821), – *Campanularia hincksii* Alder, 1856, – *Clytia paulensis* (Vanhöffen, 1910).

4.157: Canary Islands, SW of Palma, 28°39'N 17°59'W, 250-200 m, rectangular dredge, black mud and shell gravel, 4 June 1980.
Acryptolaria conferta (Allman, 1877).

4.158: Canary Islands, SW of Palma, 28°39'N 17°59'W, 350-250 m, rectangular dredge, black mud and sand, 4 June 1980.
Eudendrium capillare Alder, 1856, – *Modeeria rotunda* (Quoy & Gaimard, 1827), – *Zygophylax biarmata* Billard, 1905, – *Zygophylax brownei* Billard, 1924, – *Sertularella gayi gayi* (Lamouroux, 1821), – *Obelia dichotoma* (Linnaeus, 1758).

4.163: Canary Islands, SW of Palma, 28°38'N 17°58'W, 450-375 m, rectangular dredge, 5 June 1980.
Cryptolaria pectinata (Allman, 1888).

4.V08: Selvagens Archipelago, S of Selvagem Grande, 30°07'N 15°53'W, 260 m, fish-trap, shrimp-trap, 4 plastic snail-traps, overnight 26/27 May1980.
Cryptolaria pectinata (Allman, 1888), – *Sertularella polyzonias* (Linnaeus, 1758).

4.D01: Canary Islands, S coast of Lanzarote, W of Punta Papagayo, 28°50'N 13°47'W, scuba diving and shore collecting in sheltered bay, 0-15 m, 14/19 May 1980.
Pennaria disticha Goldfuss, 1820.

4.D14: Canary Islands, W coast of La Palma, Tijarafe, 28°42'N 17°58'W, bay in rocky coast, depth to 20 m, scuba diving, 4, 5 June 1980.
Pennaria disticha Goldfuss, 1820.

4.D17: Madeira Archipelago, Porto Santo, SE coast of Baixo, 33°00'N 16°23'W, exposed rocky coast, depth 5 to 20 m, scuba diving, 9, 10 June 1980.
Anthohebella parasitica (Ciamician, 1880), – *Aglaophenia pluma* (Linnaeus, 1758).

4.K12: Canary Islands, SE coast of Lanzarote, Arrecife, 28°57'N 13°33'W, 0-2 m, rocky shore, tide pools, shallow sandy bay, 20, 21 May 1980.
Sertularella ellisii (Deshayes & Milne Edwards, 1836), – *Sertularia distans* Lamouroux, 1816, – *Clytia hemisphaerica* (Linnaeus, 1758).

5.001: Azores, NE of São Miguel, 38°10'N 24°52'W, 2950-3150 m, 2.4 m Agassiz trawl, deep-sea clay, much pumice, 23 May 1981.
Acryptolaria conferta (Allman, 1877).

5.003: Azores, NE of São Miguel, 38°03'N 24°45'W, 2730-2850 m, 3.5 m Agassiz trawl, deep-sea clay, 24 May 1981.
Acryptolaria longitheca (Allman, 1877).

5.004: Azores, NE of São Miguel, 38°06'N 24°49'W, 2400-3100 m, 5 m beam trawl, deep-sea clay with much pumice, 24 May 1981.
Obelia bidentata Clark, 1875.

5.005: Azores, NE of São Miguel, 37°55'N 24°46'W, 1650-2050 m, 2.4 m Agassiz trawl, deep-sea clay with pumice and clinkers, 24 May 1981.
Acryptolaria conferta (Allman, 1877).

5.008: Azores, S of São Miguel, 37°42'N 25°30'W, 75 m, Van Veen grab, fine sand with much shell gravel, 26 May 1981.
Halecium halecinum (Linnaeus, 1758).

5.023: Azores, W of Formigas, 37°17'N 25°07'W, 1370-2000 m, 2.4 m Agassiz trawl, clayey bottom, 27 May 1981.
Stegolaria geniculata (Allman, 1888), – *Acryptolaria longitheca* (Allman, 1877).

5.044: Azores, S of Santa Maria, 36°55'N 25°08'W, 60-150 m, rectangular dredge, calcareous stones, 30 May 1981.
Acryptolaria conferta (Allman, 1877), – *Aglaophenia acacia* Allman, 1883, – *Aglaophenia tubulifera* (Hincks, 1861), – *Campanularia hincksii* Alder, 1856, – *Obelia bidentata* (Clark, 1875).

5.049: Azores, SW of Santa Maria, 36°49'N 25°25'W, 2200-2450 m, 2.4 m Agassiz trawl, 30 May 1981.
Acryptolaria longitheca (Allman, 1877).

5.056: Azores, S of São Miguel, 37°41'N 25°26'W, 180 m, Van Veen grab, fine sand, 31 May 1981.
Acryptolaria conferta (Allman, 1877), – *Filellum* spec.

5.071: Azores, S of São Miguel, 37°49'N 25°25'W, 220 m, Van Veen grab, coarse sand

with shells (mainly fossil), 31 May 1981.
Zanclea cf. *alba* (Meyen, 1834), – *Halecium tenellum* Hincks, 1861.

5.072: Azores, S of São Miguel, 37°41'N 25°24'W, 315 m, Van Veen grab, 31 May 1981.
Lafoeina tenuis G.O. Sars, 1874, – *Bedotella armata* (Bedot & Pictet, 1900), – *Zygophylax biarmata* Billard, 1905.

5.075: Azores, S of São Miguel, 37°41'N 25°24'W, 196 m, Van Veen grab, calcareous stone, 31 May 1981.
Acryptolaria conferta (Allman, 1877), – *Sertularella gayi gayi* (Lamouroux, 1821).

5.077: Azores, E of Faial, 38°31'N 28°36'W, 56-64 m, Van Veen grab, fine calcareous sand with shell gravel, 1 June 1981.
Acryptolaria conferta (Allman, 1877).

5.085: Azores, E of Faial, 38°31'N 28°35'W, 150-170 m, 1.2 m Agassiz trawl, sandy bottom, 1 June 1981.
Acryptolaria conferta (Allman, 1877), – *Cryptolaria pectinata* (Allman, 1888).

5.089: Azores, E of Faial, 38°32'N 28°36'W, 50-70 m, rectangular dredge, shells and algae, 1 June 1981.
Eudendrium cf. *rameum* (Pallas, 1766), – *Aglaophenia acacia* Allman, 1883, – *Sertularella ellisii* (Deshayes & Milne Edwards, 1836).

5.090: Azores, S of Pico, 38°09'N 28°31'W, 1320-1350 m, 1.2 m Agassiz trawl, hard bottom with fossil corals, 2 June 1981.
Stegolaria geniculata (Allman, 1888), – *Acryptolaria conferta* (Allman, 1877).

5.096: Azores, W of Pico, 38°34'N 28°32'W, 52 m, Van Veen grab, shell gravel, 2 June 1981.
Acryptolaria conferta (Allman, 1877), – *Filellum* spec., – *Halecium* spec.

5.111: Azores, E of Faial, 38°32'N 28°35'W, 140 m, Van Veen grab, calcareous sand with shell gravel, 3 June 1981.
Plicatotheca anitae Calder & Vervoort, 1986.

5.112: Azores, W of Pico, 38°32'N 28°34'W, 85 m, Van Veen grab, coarse sand with shell gravel, 3 June 1981.
Hebellopsis scandens (Bale, 1888).

5.130: Azores, E of Faial, 38°35'N 28°38'W, 80-90 m, Van Veen grab, sand with shell gravel, 6 June 1981.
Aglaophenia acacia Allman, 1883.

5.142: Azores, W. of Pico, 38°35'N 28°33'W, 108-118 m, rectangular dredge, *Chama* bed, 7 June 1981.
Antennella secundaria (Gmelin, 1791).

5.153: Azores, E of Flores, 39°26'N 31°06'W, 150-168 m, rectangular dredge, *Chama* bed with fossil shells, 9 June 1981.
Eudendrium spec., – *Acryptolaria conferta* (Allman, 1877), – *Cryptolaria pectinata* (Allman, 1888), – *Filellum* cf. *serratum* (Clarke, 1879), – *Zygophylax biarmata* Billard, 1905, – *Antennella secundaria* (Gmelin, 1791), – *Campanularia hincksii* Alder, 1856.

5.158: Azores, N of Flores, 39°31'N 31°11'W, 46 m, Van Veen grab, coarse sand with shell gravel, 10 June 1981.
Modeeria rotunda (Quoy & Gaimard, 1827), – *Cryptolaria pectinata* (Allman, 1888).

5.166: Azores, NE of Flores, 39°30'N 31°06'W, 150 m, rectangular dredge, shells, 10 June 1981.
Acryptolaria conferta var. *minor* Ramil & Vervoort, 1992.

5.178: Azores, SE of Corvo, 39°41'N 31°03'W, c. 650 m, rectangular dredge, fossil corals and cemented sediment, 11 June 1981.
Cryptolaria pectinata (Allman, 1888).

5.189: Azores, E of Flores, 39°29'N 31°06'W, 200-250 m, rectangular dredge, calcareous stones and shells, 12 June 1981.
Acryptolaria conferta (Allman, 1877).

5.D01: Azores, S coast of São Miquel, 37°43'N 25°30'W, sheltered bay, depth to 20 m, scuba diving, 26 May 1981.
Antennella secundaria (Gmelin, 1791), – *Sertularella ellisii* (Deshayes & Milne Edwards, 1836), – *Campanularia hemisphaerica* (Linnaeus, 1767).

5.D02: Azores, Ilhéus Formigas, 37°16'N 24°47'W, bank in open sea close to some small islands, depth to 15 m, scuba diving, 27 May 1981.
Eudendrium rameum (Pallas, 1766).

5.D05: Azores, S coast of São Miguel, Ilhéu da Villa, 37°42'N 25°27'W, close to small outlying volcano, up to 15 m depth, scuba diving, 21 May 1981.
Aglaophenia pluma (Linnaeus, 1758).

5.D10: Azores, E coast of Flores, S of Santa Cruz, 39°26'N 31°09'W, 0-15 m, scuba diving, sheltered cove in large bay, 9 June 1981.
Pennaria disticha Goldfuss, 1820.

6.004: Cape Verde Islands, S of São Tiago, 14°54'N 23°30'W, 63-58 m, Van Veen grab 3 ×, sand and shell gravel, 5 June 1982.
Campanularia hincksii Alder, 1856.

6.035: Cape Verde Islands, SW of Brava, 14°49'N 24°45'W, 600-675 m, rectangular dredge, hard bottom, 8 June 1982.
Stegolaria geniculata (Allman, 1888), – *Lafoea dumosa* (Fleming, 1820), – *Zygophylax levinseni* (Seamundsson, 1911).

6.049: Cape Verde Islands, SW of Fogo, 14°52'N 24°32'W, 1100-1300 m, 1.2 m Agassiz trawl, basaltic rocks and sandy clay, 10 June 1982.
Zygophylax levinseni (Seamundsson, 1911).

6.050: Cape Verde Islands, SW of Fogo, 14°53'N 24°32'W, 1100-1200 m, 1.2 m Agassiz trawl, rocks and sandy clay, 10 June 1982.
Zygophylax levinseni (Saemundsson, 1911).

6.060: Cape Verde Islands, SE of Boa Vista, 15°57'N 22°45'W, 50-55 m, 1.2 m Agassiz trawl, coarse sand, calcareous algae and shell gravel, 12 June 1982.
Eudendrium spec., – *Clytia paulensis* (Vanhöffen, 1910).

6.062: Cape Verde Islands, SE of Boa Vista, 15°55'N 22°46'W, 82-98 m, 1.2 m Agassiz trawl, shells, calcareous algae and bryozoans, 12 June 1982.
Bimeria vestita Wright, 1859, – *Hydractinia paucispinata* spec. nov., – *Hydrocorella africana* Stechow, 1921, – *Modeeria rotunda* (Quoy & Gaimard, 1827), – *Monostaechas quadridens* (McCrady, 1859), – *Campanularia hincksii* Alder, 1856, – *Obelia bidentata* Clark, 1875.

6.063: Cape Verde Islands, SE of Boa Vista, 15°59'N 22°46'W, 25-30 m, 1.2 m Agassiz trawl, sand and calcareous algae, 12 June 1982.
Hydractinia paucispinata spec. nov.

6.065: Cape Verde Islands, E of Boa Vista, 15°58'N 23°33'W, 950-1040 m, 2.4 m Agassiz trawl, silt and fine gravel, 12/13 June 1982.
Zygophylax biarmata Billard, 1905.

6.067: Cape Verde Islands, SW of Boa Vista, 15°55'N 23°00'W, 58-62 m, 1.2 m Agassiz trawl, calcareous algae, *Vermetes* and sponges, 13 June 1982.
Hydractinia paucispinata spec. nov., – *Monostaechas quadridens* (McCrady, 1859), – *Aglaophenia svobodai* Ansín Agís, Ramil & Vervoort, 2001.

6.069: Cape Verde Islands, SW of Boa Vista, 15°53'N 23°00'W, 76-90 m, 1.2 m Agassiz trawl, calcareous algae, 13 June 1982.
Pennaria disticha Goldfuss, 1820, – *Modeeria rotunda* (Quoy & Gaimard, 1827), – *Filellum* cf. *serratum* (Clarke, 1879), – *Lafoea dumosa* (Fleming, 1820).

6.070: Cape Verde Islands, SW of Boa Vista, 15°56'N 23°05'W, 107 m, Van Veen grab 3 ×, yellow sand with a few shells, 13 June 1982.
(?)*Mitrocomella* spec., – *Diphasia margarita* (Hassall, 1848).

6.074: Cape Verde Islands, SW of Boa Vista, 15°55'N 23°04'W, 91 m, rectangular dredge, sand, 13 June 1982.
Modeeria rotunda (Quoy & Gaimard, 1827).

6.075: Cape Verde Islands, SW of Boa Vista, 15°55'N 23°04'W, 90 m, rectangular dredge, sand, 13 June 1982.
Hydrocorella africana Stechow, 1921.

6.076: Cape Verde Islands, SW of Boa Vista, 15°55'N 23°05'W, 92 m, 1.2 m Agassiz trawl, 13 June 1982.
Lytocarpia myriophyllum (Linnaeus, 1758), – *Sertularella unituba* (Calder, 1991), – *Campanularia hincksii* Alder, 1856, – *Clytia paulensis* (Vanhöffen, 1910), – *Obelia bidentata* Clark, 1875.

6.078: Cape Verde Islands, SW of Boa Vista, 15°55'N 23°06'W, depth 185-190 m, 1.2 m Agassiz trawl, sand and shell gravel, 13 June1982.
Bimeria vestita Wright, 1859, – *Hydractinia calderi* Bouillon, Medel & Peña Cantero, 1997, – *Corydendrium* cf. *parasiticum* (Linnaeus, 1767), – *Modeeria rotunda* (Quoy & Gaimard, 1827), – *Zygophylax biarmata* Billard, 1905, – *Halecium tenellum* Hincks, 1861, – *Aglaophenia* cf. *tubulifera* (Hincks, 1861), – *Lytocarpia myriophyllum* (Linnaeus, 1758), – *Streptocaulus pulcherrimus* Allman, 1888, – *Diphasia margareta* (Hassall, 1841), – *Campanularia hincksii* Alder, 1856, – *Laomedea calceolifera* (Hincks, 1871).

6.080: Cape Verde Islands, SW of Boa Vista, 15°56'N 23°08'W, 220-250 m, 1.2 m Agassiz trawl, sandy bottom, 13 June 1982.
Modeeria rotunda (Quoy & Gaimard, 1827), – *Filellum* cf. *serratum* (Clarke, 1879), – *Lafoea dumosa* (Fleming, 1820), – *Zygophylax biarmata* Billard, 1905, – *Zygophylax brownei* Billard, 1924, – *Zygophylax parabiarmata* sp. nov., *Halecium tenellum* Hincks, 1861, – *Sertularella unituba* Calder, 1991.

6.094: Cape Verde Islands, SW of Razo, 16°36'N 24°37'W, 800-900 m, rectangular dredge, sand and shell gravel, 15 June 1982.
Zygophylax sibogae Billard, 1918.

6.104: Cape Verde Islands, SSW of Santa Luzia, 16°43'N 24°46'W, 110-150 m, rectangular dredge, calcareous algae and epifauna, 16 June 1982.
Modeeeria rotunda (Quoy & Gaimard, 1827), – *Nemertesia ramosa* (Lamarck, 1816).

6.106: Cape Verde Islands, SSW of Santa Lucia, 16°43'N 24°47'W, 150-300 m, rectangular dredge, coarse sand with calcareous algae, 16 June 1982.
Streptocaulus pulcherrimus Allman, 1883, – *Diphasia margareta* (Hassall, 1841).

6.114: Cape Verde Islands, SW of Santo Antão, 16°58'N 25°20'W, 200 m, Van Veen grab, lava sand and brown silt, 17 June 1982.
Filellum cf. *serratum* (Clarke, 1879), – *Filellum* spec., – *Hebellopsis scandens* (Bale, 1888), – *Sertularella gayi gayi* (Lamouroux, 1821).

6.131: Cape Verde Islands, S of São Vicente, 16°47'N 25°02'W, 30-43 m, 1.2 m Agassiz trawl, sand, algae and calcareous nodules, 19 June 1982.
Lafoea dumosa (Fleming, 1820), – *Zygophylax parabiarmata* spec. nov.

6.135: Cape Verde Islands, S of São Vicente, 16°46'N 25°03'W, 110-150 m, rectangular dredge, calcareous algae and epifauna, 19 June 1982.
Lafoea dumosa (Fleming, 1820), – *Zygophylax parabiarmata* sp. nov.

6.137: Cape Verde Islands, S of São Vicente, 16°46'N 25°03'W, 75-90 m, 1.2 m Agassiz trawl, shells and calcareous nodules, 19 June 1982.
Zygophylax parabiarmata spec. nov.

6.138: Cape Verde Islands, S of São Vicente, 16°46'N 25°04'W, c. 150 m, Van Veen grab, yellow sand and calcareous gravel, 19 June 1982.
Monostaechas quadridens (McCrady, 1859).

6.146: Cape Verde Islands, SW of São Vicente, 16°48'N 25°06'W, 75 m, 1.2 m Agassiz trawl, coarse sand and sponges, 20 June 1982.
Eudendrium ramosum (Linnaeus, 1758), – *Sertularella ornata* Broch, 1933.

6.148: Cape Verde Islands, SW of São Vicente, 16°47'N 25°06'W, 100-200 m, 1.2 m Agassiz trawl, sand, calcareous algae and sponges, 20 June 1982.
Zygophylax parabiarmata spec. nov., – *Monostaechas quadridens* (McCrady, 1859).

6.157: Cape Verde Islands, NW of São Vicente, 16°54'N 25°01'W, 24 m, 1.2 m Agassiz trawl, calcareous algae, 21 June 1982.
Hydractinia paucispinata spec. nov.

6.174: Cape Verde Islands, NW of São Vicente, 16°55'N 25°02'W, 75 m, 1.2 m Agassiz trawl, sand with calcareous algae, 22 June 1982.
Zygophylax parabiarmata spec. nov.

6.D02: Cape Verde Islands, W coast of São Tiago, Baia de Santa Clara, 15°01'N 23°44'W, sheltered bay, rocky coast, depth to 20 m, scuba diving, 6, 7 June 1982.
Halecium tenellum Hincks, 1861.

6.D08: Cape Verde Islands, SW coast of Santo Antão, W of Tarrafal, 16°58'N 25°20'W, 0-10 m, scuba diving, rocky and sandy coast, 16 June 1982.
Halopteris carinata Allman, 1877.

6.K06: Cape Verde Islands, São Tiago, Porto Praia, Ilhéu de Santa Maria, 14°55'N 23°30'W, sheltered rocky littoral, muddy bay, 4, 5, 6, 11 June 1982.
Pennaria disticha Goldfuss, 1820.

7.023: Cape Verde Islands, S of São Tiago, Ponta Temerosa, 14°53'N 23°32'W, 525 m, 1.2 m Agassiz trawel, shell gravel with gorgonaria and sponges, 22 August 1986.
Zygophylax leloupi Ramil & Vervoort, 1992.

7.044: Cape Verde Islands, SW of Maio, Ponta Inglez/Ponta Preta, 15°07'N 23°14'W, 45 m, rectangular dredge, calcareous nodules, 25 August 1986.
Eudendrium spec.

7.058: Cape Verde Islands, SW of Maio, Ponta Ingles/Ponta Preta, 15°07'N 23°14'W, 69 m, rectangular dredge, calcareous nodules, 26 August 1986.
Lovenella clausa (Lovén, 1836), – *Filellum* spec., – *Streptocaulus pulcherrimus* Allman, 1883, – *Diphasia delagei* Billard, 1912, – *Sertularia distans* Lamouroux, 1816, – *Campanularia hincksii* Alder, 1856

7.059: Cape Verde Islands, SW of Maio, Ponta Inglez/Ponta Preta, 15°07'N 23°14'W, 61 m, rectangular dredge, calcareous nodules, 26 August 1986.
Zygophylax parabiarmata spec. nov., – *Aglaophenia svobodai* Ansín Agís, Ramil & Vervoort, 2001.

7.078: Cape Verde Islands, W of Boa Vista, W of Ilhéu de Sal Rei, 16°10'N 22°59'W, 45 m, 1.2 m Agassiz trawl, some algae and hydroids, 28 August 1986.
Antennella siliquosa (Hincks,1877), – *Plumularia setacea* (Linnaeus, 1758).

7.126: Cape Verde Islands, S of Razo, 16°36'N 24°36'W, 208-930 m, rectangular dredge, calcareous nodules and sponges, 1 September 1986.
Filellum cf. *serratum* (Clarke, 1879), – *Nemertesia ventriculiformis* (Marktanner-Turneretscher, 1890)

7.132: Cape Verde Islands, SE of São Nicolau, 16°33'N 24°17'W, 395 m, 1.2 m Agassiz trawl, gorgonians and scleractinians with epifauna, 2 September 1986.
Lafoea dumosa (Fleming, 1820), – *Plumularia setacea* (Linnaeus, 1758), – unrecognizable thecate hydroid, probably a species of *Zygophylax.*

7.139: Cape Verde Islands, S of Branco and Razo, 16°35'N 24°35'W, 612-647 m, rectangular dredge, small number of epizoa, 4 September1986.
Modeeria rotunda (Quoy & Gaimard, 1827), – *Stegolaria geniculata* (Allman, 1888), – *Cryptolaria pectinata* (Allman, 1888), – *Lafoea dumosa* (Fleming, 1820).

7.140: Cape Verde Islands, S of Razo, 16°35'N 24°36'W, 1200 m, rectangular dredge, old lobster-pot with about 500 m of nylon rope, covered with numerous epizoa: many hydroids, anemones, alcyonarians, polychaetes and small crustaceans, 4 September 1986.
Bougainvillia muscus (Allman, 1863), – *Hydractinia cytaeiformis* spec. nov., – *Stegolaria geniculata* (Allman, 1888), – A*cryptolaria conferta* (Allman, 1877), – *Cryptolaria pectinata* (Allman, 1888), – *Bedotella armata* (Pictet & Bedot, 1900), – *Zygophylax biarmata* Billard, 1905, – *Zygophylax sagamiensis* Hirohito, 1983, – *Antennella secundaria* (Gmelin, 1791), – *Diphasia margareta* (Hassall, 1841), – *Sertularella gayi gayi* (Lamouroux, 1821), – *Sertularella unituba* Calder, 1991.

7.151: Cape Verde Islands, S of Branco, 16°38'N 24°41'W, 75 m, 1.2 m Agassiz trawl, hard bottom, scraped bryozoans and antipatharians with epizoa, 5 September 1986.
Zygophylax parabiarmata spec. nov., – *Nematophorus clarkei* (Nutting, 1900).

7.169: Cape Verde Islands, NE of São Vicente, Baia da Ribeirinha, 16°48'N 25°08'W, 165 m, rectangular dredge, clinkers with many epizoa, 7 September 1986.
Lytocarpia myriophyllum (Linnaeus, 1758).

Unknown Station:
Plumularia setacea (Linnaeus, 1758), – *Campanularia hincksii* Alder, 1856.

MAU.006: Mauritania, Passe du Levrier, E of Cap Blanc, 20°49'N 17°01'W, 15 m, 1.2 m Agassiz trawl, fine sandy mud, with tubeworms, hermit crabs, bivalves, 7 June 1988.
Aglaophenia parvula Bale, 1882, – *Amphisbetia operculata* (Linnaeus, 1758), – *Clytia hemisphaerica* (Linnaeus, 1767).

MAU.024: off Mauritania, 18°50'N 16°18'W, 14 m, three baited shrimp-traps, overnight, 8/9 June 1988.
Hydractinia multitentaculata (Millard, 1975).

MAU.027: off Mauritania, 18°50'N 16°18'W, 16 m, 1.2 m Agassiz trawl, hard bottom with sand, hydroids and soft corals, 9 June 1988.
Hydractinia multitentaculata (Millard, 1975).

MAU.039: off Mauritania, 18°48'N 16°43'W, 260-280 m, 3.5 m Agassiz trawl, muddy bottom, tubeworms, shrimp, fishes, 10 June 1988.
Aglaophenia lophocarpa Allman, 1877.

MAU.040: off Mauritania, 18°51'N 16°53'W, 500 m, 3.5 m Agassiz trawl (touched bottom briefly on top of ridge), fossil coral debris (Pleistocene *Lophelia*-reef?), pelagic shrimp, macrourids, 10 June 1988.
Stegopoma bathyale Vervoort, 1966, – *Acryptolaria conferta* var. *minor* Ramil & Vervoort, 1992, – *Filellum* spec., – *Lytocarpia myriophyllum* (Linnaeus, 1758), – *Nemertesia* cf. *antennina* (Linnaeus, 1758).

MAU.041: off Mauritania, 18°51'N, 16°56'W, 800-840 m, 3.5 m Agassiz trawl, mudy bottom, tubeworms, asteroids, red shrimp, 10 June 1988.
Modeeria rotunda (Quoy & Gaimard, 1827), – *Stegopoma bathyale* Vervoort, 1966, – *Acryptolaria conferta* (Allman, 1877).

MAU.049: off Mauritania, 19°05'N 16°25'W, 12-18 m, rectangular dredge, sand and sandstone, red algae, gorgonians, molluscs, hydroids, 11 Juni 1988.
Hydractinia multitentaculata (Millard, 1975).

MAU.100: Mauritania, off Banc d'Arguin, 19°26'N 16°50'W, 45 m, 2.4 m Agassiz trawl, muddy sand with macroforaminifera, gastropods, spidercrabs, fishes and hermid-crabs, 16 June 1988.
Hydractinia marsupialia Millard, 1975.

Taxonomic survey

ANTHOATHECATA

Family Bougainvilliidae Lütken, 1850

Genus ***Bimeria*** Wright, 1859

Bimeria vestita Wright, 1859 (fig. 5 no. 2)

Bimeria vestita Wright, 1859: 109, pl. 8 fig. 4; Ramil & Vervoort, 1992: 14-15; Boero & Bouillon, 1993: 258; Calder, 1993: 66 et seq.; Altuna Prados, 1994: 54-55; Blanco, 1994a: 152; 1994b: 184; Genzano, 1994: 5; Altuna Prados, 1995: 54; Avian et al., 1995: 9; Bouillon et al., 1995: 5; Park, 1995: 10; Genzano, 1996a: 290 et seq.; Medel & López-González, 1996: 193; Migotto, 1996: 9-10, 121, figs 2a, b; Parapar & Ramil, 1996: 21, 22; Genzano & Zamponi, 1997: 289; Grohmann et al., 1997: 230; Howson & Picton, 1997: 29; Rosso & Marques, 1997: 417; Genzano & Rodríguez, 1998: 22; Hansson, 1998: 3; Kelmo & De Santa-Isabel, 1998: 65-66, fig. 6; Genzano & Zamponi, 1999: 63-74, figs 4, 5; Marques et al., 2000b: 322-324, figs 1-3; Genzano, 2001: 110, 111; Van der Land et al, 2001: 117; Cairns et al., 2002: 12, 50; Genzano, 2002: 89, fig. 10b; Anonymous, 2004: 1-2; Bouillon et al., 2004: 42, fig. 25A-C.

Material inspected: Stn 4.143: Small, several mm high colony on basal part of cormoid of *Aglaophenia tubulifera* (Hincks, 1861). No gonophores. Slide 5183. – Stn 4.153: To 10 mm high colonies mixed with *Halecium tenellum* Hincks, 1861, *Clytia paulensis* (Vanhöffen, 1910) and *Sertularella gayi gayi* (Lamouroux, 1821). RMNH-Coel. 30393, three slides 5172, one of which has a gonophore. – Stn 6.062: A few small, 2-3 mm high stems on shell inhabited by a pagurid and partly covered by sponge; no gonophores. RMNH-Coel. 30396. – Stn 6.078: Slightly branched stems c. 8 mm high but much intertwined, with partly contracted polyps; young gonophores developing along axes. RMNH-Coel. 30452, slide 5205.

Description.— Stems monosiphonic, to 3.5 mm high, first and secondary branching leaving stem under acute angle. Hydranths spindle-shaped, about 300 µm long, with about 16 amphicoronate, filiform tentacles. Periderm thin but thickly covered by silt. Basal parts of stems and branches with wrinkled periderm, occasionally more distinctly ringed and corrugated. Periderm continues on body of hydranths and basal part of tentacles as a distinct sheath particularly visible by adherence of silt or debris particles. Specimens from Stn 6.078 almost without silt particles.

One gonophore observed (fig. 5 no. 2, one of slides 5172), originating on short pedicel from a secondary branch. Shape ovoid, slightly flattened at top, consisting of a globular central mass (probably a mass of spermatocytes) invested by a completely hyaline sheath without any sign of debris.

Remarks.— *Bimeria vestita* has a world-wide distribution, with exception of arctic and antarctic waters. It is here recorded from the Canary Islands, SW and W of Palma (86-200 m), and from the Cape Verde Archipelago, SE and SW of Boa Vista (82-190 m); the occurrence in the Macaronesian area is in accordance with the previously known distribution. The substrate preference of *B. vestita* in the Mar del Plata area (western temporate Atlantic) has been investigated by Genzano & Zamponi (1999), where it shows a distinct preference for hydroid hosts [*Sertularella mediterranea* Hartlaub, 1901 and *Tubularia crocea* (L. Agassiz, 19862)]. The CANCAP specimens occurred on *Aglaophenia tubulifera* (Hincks, 1861) and *Sertularella gayi gayi* (Lamouroux, 1821). Additional specimens were found on a shell inhabited by a pagurid.

Genus ***Bougainvillia*** Lesson, 1830

Bougainvillia muscus (Allman, 1863)

Perigonymus muscus Allman, 1863: 12.

Bougainvillia muscus; Calder, 1988: 24-28, figs 19, 20; Cairns et al., 1991: 18; Piraino, 1992: 256; Boero & Bouillon, 1993: 258; Calder,1993: 68 et seq.; Bouillon, 1995: 235; Bouillon et al., 1995: 6; Peña Cantero, 1995: 69-72, pl. 1 figs a-d; Schuchert, 1996: 31-33, fig. 15a-e; Ramil et al., 1998a: 184; Bouillon, 1999: 409, fig. 3.4; Morri & Bianchi, 1999: 285; Bouillon & Barnett, 1999: 37-38, fig. 16; Bouillon & Boero, 2000: 81; Schuchert, 2001: 23-24; Van der Land et al., 2001: 117; Cairns et al., 2002: 12, 16, 50, 52; Genzano, 2002: 89, fig. 10a; Peña Cantero & García Carrascosa, 2002: 22-25, fig. 3a-c; Segura-Puertas et al., 2003: 3; Bouillon et al., 2004: 44, figs 25J, K, 26A, B.

Bougainvillia ramosa; Hirohito, 1988: 97, fig. 34b-f; Braconnot & Carré, 1989: 4, pl. 1 fig. 1; Gili et al., 1989a: 23; Gili et al., 1989b: 282; Gili et al., 1989c: 70, 71; Chaplygina, 1989: 122; Lin Mao & Zhang Jimbiao, 1989: 431; Altuna & García Carrascosa, 1990: 54 et seq., fig.; Cornelius & Ryland, 1990: 124, fig. 4.8; Goy et al., 1990: 82; Castric-Fey & Chassé, 1991: 523; Dai Yanyu et al., 1991: 47; Gili & Ballesteros, 1991: 247; Gili et al., 1991: 423; Gomez-Aguirre, 1991: 5, pl. 1 fig. 1; Goy et al., 1991: 108, fig. 21; Lin Mao & Zhang Jimbiao, 1991: 304; Morri et al., 1991: 317; Dawson, 1992: 9; Duquet, 1992: 387; Genzano &

Zamponi, 1992: 62-63, fig. 26; Chaplygina, 1993: 29 et seq.; Jones, 1993: 107 et seq.; Navas-Pereira & Vannucci, 1993: 34; Schönborn et al., 1993: 219-220, pl. 4 fig. 1; Altuna Prados, 1994: 55-56; Blanco, 1994a: 153; 1994b: 184; Kopacz, 1994: 336; Watson, 1994a: 66; Altuna Prados, 1995: 54; Avian et al., 1995: 9; Benović & Lučić, 1995: 203; Genzano, 1996: 6-7; Reber-Müller et al., 1996: 64; Ballard & Myers, 1996: 69 et seq.; Benović & Lučić, 1996: 134; Brinckmann-Voss, 1996: 95; Medel & López-González, 1996: 193; Genzano & Zamponi, 1997: 289; Howson & Picton, 1997: 29; Santhakumari, 1997: 55; Goy, 1998: 164; Hansson, 1998: 3; Alvariño, 1999: 45, fig. 139; Mills, 1999: 42, fig. 3.8; Park, 1999: 198-200, fig. 1E-J; Ballard & Myers, 2000: 77 et seq.; Bouillon & Boero, 2000: 91; Evans, 2000: 35; Schaefer, 2000: 44; Cairns et al., 2002: 50; Kubota, 2003a: 29; Anonymous, 2004: 2.

Material inspected: Stn 3.129: Colonies to 20 mm high on calcareous rock, with scarcely recognizable gonophores. Some stems made up in slide 5186. RMNH-Coel. 30408. – Stn 4.151: 50 mm high colony with strongly polysiphonic stem, many polyps and numerous developing medusae. Polyps swollen as the result of narcotization. RMNH-Coel. 30477. – Stn 4.152: One colony c. 50 mm high, in every respect similar to that of Stn 4.151, RMNH-Coel. 30476. – Stn 7.140: Small, several mm high, branched colonies, detached from substratum. No gonophores observed. RMNH-Coel. 30458.

Description.— Stem mono- or polysiphonic, irregularly branched, branches poly- and monosiphonic; polyps terminal and on short pedicels on branches. Polyps cylindrical with rounded base in extended condition, fusiform when contracted. Perisarc moderately thin, wrinkled or indistinctly ringed at base of branches and pedicels, with adhering particles of debris, forming a collar around basal portion of contracted polyps; not continuing on tentacles. Gonophores (medusa buds) numerous on branches and pedicels, occasionally placed at base of polyp but never on polyp body. Medusa buds in various stages of development, but invariably rather young; tentacle development not yet visible. Shape ovoid, narrowing basally into a short pedicel, covered by thin perisarc without debris particles.

Remarks.— The nomenclatorial history of this species is outlined by Calder (1988), who reaches the conclusion that the nomenclatorially correct name of this species is *Bougainvillia muscus* (Allman, 1863) which conclusion is endorsed here.

Distribution.— *Bougainvillia muscus* is widely distributed in the eastern and western Atlantic and has also been found in the Indian Ocean and the western Pacific (Calder, 1988). I have been unable to find concrete records of the polyp phase of this species from the Macaronesian area other than Cornelius's (1992: 81, 98) record of *Bougainvillia* sp. from the Cape Verde area. The medusa, however, commonly occurs in the neritic plankton of the tropical, subtropical and temperate Eastern Atlantic, though again there is no positive evidence of its presence in the coastal plankton of the Macaronesian islands. The CANCAP records listed above are from the Canary Islands, SW of Palma (50-180 m) and from the Cape Verde Archipelago, S of Razo (1200 m); Stn 3.129 is off Mauritania, 18°56'N 16°27'W, 32 m.

Genus ***Garveia*** Wright, 1859

Garveia arborea (Browne, 1907)

Bimeria arborea Browne, 1907: 15, 16, 18, 20, pl. 1 figs 1-3, pl. 2; Le Danois, 1948: 174, 236.
Garveia arborea; Vervoort, 1985: 273-277, pl. 2; Ramil & Vervoort, 1992: 15.
?*Bimeria arborea*; Hirohito, 1988: 92, 94, pl. 30 a-c; Anonymous, 2004: 1.

Material inspected: Stn 4.054: Two colonies, biggest 60 mm high, spread c. 80 mm, roughly fan-shaped, second colony much smaller. Only remnants of polyps preserved. RMNH-Coel. 30399; slide 5275.

Description.— Irregularly branched colony with polysiphonic axis and branches. Branching mostly in one plane, though irregularly so. Axis and branches composed of a thin central tube and additional secondary tubes; remnants of hydranths borne by the primary tube. Basal portion of stem with a flattened disk composed of fairly thick stolonal fibers. No gonophores have been observed.

Remarks.— This rare species has been fully redescribed by Vervoort (1985) after deep water material from the Bay of Biscay, the type locality; moreover, this material was compared with the lectotype and slides from the type series in The Natural History Museum, London. I have compared the CANCAP specimens with slides of the BIOGAS material from the Bay of Biscay; the structure of stem and branches is identical. Unfortunately the hydranths in the present material are badly preserved and the number of tentacles could not be ascertained. I feel convinced, nevertheless, that it belongs to *Garveia arborea* (Browne, 1907). Hirohito's specimens referred to this species differ from the Atlantic material in the greater number of tentacles (14-22; 12 in the Atlantic specimens) and may represent a different species.

Distribution.— *Garveia arborea* has so far been recorded from the Bay of Biscay and the northern entrance to the Bay (Vervoort, 1895; Ramil & Vervoort, 1992); the distribution is here extended to deep water off the Canary Islands (SE of Lanzarote, 28°45″N 13°19′W, 1134-1315 m). Hirohito's *Bimeria arborea* is from deep water (420 m) of Sagami Bay, Japan, a record here considered doubtful.

Family Pennariidae Hincks, 1868

Genus ***Pennaria*** Goldfuss, 1820

Pennaria disticha Goldfuss, 1820

Pennaria disticha Goldfuss, 1820: 89; Gibbons & Ryland, 1989: 381-388, fig. 5; Cornelius, 1992a: 257; 1992b: 81; Dawson, 1992: 12; Vervoort, 1993b: 542-543; Bouillon et al., 1995: 26; Medel & López-González, 1996: 196; Migotto, 1996: 25-26; Schuchert, 1996: 142-143, fig. 85a-c; Calder & Maÿal, 1998: 73; Bouillon & Barnett, 1999: 71-72, fig. 62; Watson, 1999: 16-18, fig. 10A-I; Coleman, 2000: 43, fig.; Van der Land et al., 2001: 113; Cairns et al., 2002: 15, 18, 53; Calder et al., 2003: 1198-1200, 1206; Grohmann et al., 2003: 13; Schuchert, 2003: 148; Segura-Puertas et al., 2003: 5; Bouillon et al., 2004: 103, fig. 55A-C.

Halocordyle disticha; Calder, 1988: 56-60, figs 43-45; Hirohito, 1988: 28-30, figs 9a-d, pl. 1 fig. C; Martin, 1988a: 321-329; 1988b: 65-78; Altuna & García Carrascosa, 1990: 73; Calder, 1990: 446, 448; Petersen, 1990: 216, fig. 46; Piraino et al., 1990: 387, 389; Wang Wenqiao & Xu Zhenzu, 1990: 161-162, figs; Bavestrello & Piraino, 1991: 204, fig. 4B; Cairns et al., 1991: 16, 19; Da Silveira & Migotto, 1991: 437-442, fig. 1; Östman et al., 1991: 607-613, figs 1-18; De Oliveira Pires et al., 1992: 4; Kem & Östman, 1992: 193-202; Noda et al., 1992: 1190; Reyes & Campos, 1992: 108 et seq.; Boero & Bouillon, 1993: 261; Calder, 1993: 66 et seq.; Allen & Steene, 1994: 51, fig.; Bianchi & Morri, 1994: 186; Avian et al., 1995: 14; Kubota, 1995: 22; Migotto, 1996: 123; Watson, 1996: 78; Edgar, 1997: 121, fig.; Grohmann et al., 1997: 230; Kubota, 1997: 149; Rosso & Marques, 1997: 417; Kelmo & De Santa-Isabel, 1998: 68-69, fig. 9; Namikawa, 1998: 102; Genzano & Kubota, 2003: 221-226; Kubota, 2003a: 28; 2003b: 31; Anonymous, 2004: 16.

Material inspected: Stn 1.D117: Monosiphonic colonies to 70 mm high on various objects. No gonophores observed. RMNH-Coel. 30335. – Stn 3.D05: Well preserved colonies with black main stem; hydranths well preserved, with young gonophores. RMNH-Coel. 30522. – Stn AZO.032: Fragmentary colonies and fragments with badly preserved hydranths. No gonophores observed. RMNH-Coel 30480. – Stn 4.D01: Five colonies c. 50 mm high and some fragments. Polyps well preserved, with developing gonophores. RMNH-Coel. 30472. – Stn 4.D14: Large number of colonies up to 80 mm high, heavily overgrown and with few polyps left. RMNH-Coel. 30518. – Stn 5.D10: Dead colonies, up to 50 mm high, much fragmented and overgrown. RMNH-Coel. 30359. – Stn 6.069: Dead, fragmentary colony without polyps and heavily overgrown. Sample not preserved. In addition several colonies to 110 mm high on a dead shell, polyps badly preserved. RMNH-Coel. 30538. – Stn 6.K06: Fragmentary colonies c. 50 mm high with expanded polyps with small gonophores. RMNH-Coel 30450.

Remarks.— This well-known species chiefly occurs in shallow water samples from the Azores, Madeira, Canary Islands and Cape Verde Islands regions (0-20 m depth); there is one record from slightly deeper waters (Stn 6.069, 76-90 m). It is widely distributed in temporate, subtropical and tropical parts of the Atlantic and Pacific Oceans where it chiefly occurs in the littoral zone. The cnidome has been studied and described by Calder (1988), Östman et al. (1991) and Kem & Östman (1992).

Family Zancleidae Russell, 1953

Genus ***Zanclea*** Gegenbaur, 1856

Zanclea cf. ***alba*** (Meyen, 1834) (figs 1a, b; 2 nos 1-3)

Acrochordium album Meyen, 1834: 165, pl. 28 fig. 8.
Zanclea alba; Calder, 1988: 69-72, figs 51, 52; 1991a: 2068 et seq.; 1991b: 223; 1993: 67 et seq.; 1995: 543 et seq.; Boero et al., 2000: 95, fig. 1; Bouillon & Boero, 2000: 158.

Material inspected: Stn 5.071: Three sterile polyps on unidentifiable object (probably bryozoan!); no gonophores. Additional three polyps in association with bryozoans. RMNH-Coel. 30440.

Description.— Body vermiform (fig. 2 no. 1), length 2000-2500 µm, diameter of body 190-195 µm, rising from a stolon attached to a foreign body, probably a bryozoan; proximal fourth of body narrowing into a perisarc covered pedicel attaching body to stolon, diameter at place of attachment to stolon 90 µm. Perisarc smooth, slightly wrinkled near attachment to stolon. Hydranth body almost completely covered with short, capitate tentacles, only a small proximal zone free from tentacles; total number of tentacles 30-40 (counts of 6 polyps), irregularly distributed over hydranth with exception of four to six distal tentacles that appear to form a verticil around a little prominent proboscis (fig. 2 no. 2). Length of tentacles 90 mm, diameter of knob of nematocysts (fig. 2 no. 3) at distal end 38-45 µm.

Nematocysts.— Only unexploded capsules have been observed. Two sizes classes of stenoteles are closely packed in the tentacle bulbi: large stenoteles 5.4 × 8.1 µm and a smaller type, 4.5 × 5.4 µm. The large stenoteles (figs 1a; 2 no. 3) are almost circular in outline, slightly narrowing towards the apex. Strong stylets are distinctly visible in the unexploded capsule, as well as the thread, tightly coiled transversely to the long axis of the capsule. The small stenoteles are almost globular; no internal details could be

observed. Macrobasic euryteles occur in the column, they are elongated oval (fig. 1b), with almost parallel sides and have the thread coiled parallel to the length axis of the capsule; size 7.2 × 17.1 µm.

Table I. Measurements of the nematocysts of *Zanclea* cf. *alba* in µm:

	Zanclea alba Bermuda (Calder, 1988)	*Zanclea* cf. *alba*, CANCAP Stn 5.071
Large stenoteles	9.6 - 10.4 × 8.3 - 8.6	8.4 × 8.1
Small stenoteles	6.7 - 7.0 × 4.9 - 5.3	5.4 × 4.5
Macrobasic euryteles		17.1 × 7.2

Remarks.— Though the identification of sterile, preserved specimens of *Zanclea* is a tricky affair I have tentatively identified the present specimens as *Zanclea alba* (Meyen, 1834) because of full agreement with Calder's (1988) description of western Atlantic representatives of this species. For the complicated synonymy of this and other species of *Zanclea* I refer to Calder (1988), Gravili, Boero & Bouillon (1996) and Boero, Bouillon & Gravili (2000).

The type locality of Meyen's *Acrorhachium album* is off the Azores, where it was found on algae ("*Fucus natans* L." in Meyen's description). Indubitable additional specimens were described by Calder (1988) from floating and stranded *Sargassum* from the Bermuda area. The present specimens were also taken at the Azores (Stn 5.071, S of São Miguel), collected by grab from a depth of 220 m.

Family Hydractiniidae L. Agassiz, 1862

The nematocysts, of great taxonomic importance when identifying anthoathecate leptolids and playing a crucial role in such families as Hydractiniidae, could only be studied in preserved material, kept in ethanol for a considerable time, which makes the distinction of nematocyst types hazardous. The results presented here should therefore be taken with some reserve.

Genus ***Hydractinia*** Van Beneden, 1844

This genus has been accepted as defined by Bouillon, Medel & Peña Cantero, 1997.

Hydractinia calderi Bouillon, Medel & Peña Cantero, 1997

Clavactinia sp. Peña Cantero, 1995: 125, pl. 11 figs a-c.
Stylactaria sp. Medel Soteras, 1996: 46-48, fig. 11.
Hydractinia calderi Bouillon et al., 1997: 477-478, figs 1, 2, 3A, B; Peña Cantero & García Carrascosa, 2002: 39-40. Bouillon et al., 2004: 64, fig. 38A, B.

Material inspected: Stn 6.078: Reduced number of polyps on cardiid shell. Polyps big, with several rows of tentacles; total number of tentacles considerable. Stolonal network not distinctly observable but with blunt, smooth perisarc spines. Only a single polyp appears to be fertile (gonozooid), bearing a large gonophore; number of tentacles on such polyps much reduced. RMNH-Coel. 30512.

Description.— Colony consisting of a reticulate network of stolonal tubes largely but not exclusively following the longitudinal furrows on the exterior of the cardiid shell. Polyps, gastrozooids and gonozooid arising from that stolonal network which forms a shallow but distinctly perceptible cup at the proximal end of each polyp. There is also a reduced number of chitinous spines, one-third to half the length of the (retracted) gastrozooids, also originating from the stolonal network; there is no coenosarc covering the exterior of that network. Gastrozooid contracted, with the exception of some at the margin of the shell, in contracted condition to 2.5 mm long (3.5 mm at the rim of the shell), fusiform to elongated, with 25-40 filiform tentacles on distal part of gastrozooid and surrounding a dome-shaped proboscis; tentacles arranged in several indistinct whorls.

A single gonozooid has been observed, carrying a well developed male eumedusoid on one side and a much smaller and younger eumedusoid on the opposite side, both inserting in the mid-body region. Gonozooid smaller than gastrozooids, length about 1.5 mm; number or tentacles reduced, 8 being present and arranged in one whorl around a dome-shaped proboscis. Four radial canals are indistinctly visible in the eumedusoid and the margin of the exumbrella has four bulbs; the smaller bulbs described by Bouillon et al. (1997) being invisible and apparently not yet developed.

Nematocysts of the tentacles have been studied; these appear to be concentrated in the distal half without forming distinct rings or patches. Microbasic euryteles, that could only be studied in unexploded capsules, are numerous on the tentacle tips; they are elongated oval to slightly banana-shaped, the thread being coiled in the length axis of the capsule. Desmonemes are much less abundant, swollen pear-shaped to almost globular; a few coils of a thick thread, orientated in the length axis of the capsule, could be discerned.

Table II. Measurements of nematocysts of *Hydractinia calderi* in µm:

	Mediterranean (Boullion, Medel & Peña Cantero, 1997 (nematocysts from body of polyp)	CANCAP Stn 6.078, Cape Verde (nematocysts from tentacles)
Microbasic euryteles	8.7 - 11 × 3.2	7.2 - 8.1 × 4.0 - 4.5
Desmonemes	6.3 - 7.5 × 3.2 - 3.6	4.5 - 6.3 × 3.2 - 3.6

Remarks.— Previous records of this species are from the Mediterranean: Crinavis, Bay of Algeciras, 36°10.10'N, 05°23.70'E, 5-35 m, on gastropod shell (Medel Soteras, 1996); Congreso Island, Chafarinas Islands, on *Astraea rugosa* (Peña Cantero, 1995; Peña Cantero & García Carrascosa, 2002). The CANCAP specimens originate from the Cape Verde region (Stn 6.078, SW of Boa Vista, 15°55'N 23°06'W, 185-190 m) and were found on an empty lamellibrach shell (fam. Cardiidae).

Hydractinia cytaeiformis spec. nov. (figs 1c, d; 6 no. 2; 7 no. 1)

Material inspected: Stn 7.140. Clumps of polyps detached from soft substratum (soft worm tube), basally invested by stolonal tissue. No spines observed and few gonophores developed. RMNH-Coel. 30459 (holotype); 5 slides 5365 (part of the type series).

Description.— The material consists of a c. 3 mm thick mat of densely tangled, fine stolonal fibers forming a coating of a soft annelid tube, colour yellowish brown. Hy-

drorhizal tubes of 120 µm diameter, curvy, intertwined and occasionally anastomosing, densely packed, in texture comparable to sponge tissue. Hydranths polymorphic, small, rising direct from stolonal tubes. Gastrozooids small, columnar, in preserved condition 500-900 µm high, with an apical whorl of 10-12 amphicoronate tentacles, diameter 200-250 µm just below the closely packed whorl of tentacles (figs 6 no. 2; 7 no. 1). Tentacles strongly contracted in majority of specimens, in some partly extended and in that condition showing transverse rings of nematocysts. Some gastrozooids slightly swollen medially probably as the result of intake of food. No perisarc sheath or plate covers the exterior of the mat and there are no spines.

Gonozooid (fig. 1c) smaller than gastrozooid, reduced in number, 220 - 235 µm high, columnar, atentaculate, with one of two gonophores at about halfway its length, diameter at base 90-110 µm, narrowing above insertion of gonophores to 60 µm. Only female gonophores observed, these globular, attached to gonozooids by a thin strand of tissue, eumedusoid, with four radial canals and a narrow circular canal; four shallow tentacular bulbs at the margin. Diameter 115-160 µm, number of eggs about 8.

Dactylozooids small, numerous, distributed between polyps over entire colony, composed of short columnar base springing from stolonal network, and a capitulum densely packed with nematocysts (fig. 1d); total height of tentaculozooid c. 90 µm, diameter of capitulum 35-50 µm.

Nematocysts distributed over body of hydranths, arranged in rings along length of tentacles of gastrozooids and densely and fairly regularly packed in capitulum of dactylozooids. Two types have been obserbed: microbasic euryteles form the majority while a smaller number of desmonemes in two size classes is also present. The euryteles are elongated oval to banana-shaped, fairly varied in length; the shaft is distinctly visible in the unexploded capsule while the thread, folded in the length axis of the capsule, is vaguely visible. The desmones are broadly ovoid and much less abundant than the euryteles; a few coils of the thread, orientated in the length axis of the capsule, could be observed.

Table III. Measurements of nematocysts of *Hydractinia cytaeiformis* spec. nov. in µm:

	CANCAP Stn 7.140
Microbasic euryteles	6.3-8.0 × 3.2-3.6
Large desmonemes	4.9 × 4.5
Small desmonemes	3.2-3.6 × 2.7-3.2

Remarks.— This species resembles *Cytaeis nuda* Rees, 1962, particularly in the structure of the stolonal network, though it is not embedded in sponge tissue as in that species. However, it is a distinct *Hydractinia* as now defined by Bouillon, Medel & Peña Cantero (1997). Amongst the various species now brought to this genus the presence of a basal plate of chitinous material is varied while the presence of small, capitate tentaculozooid has been found in some species only [e.g. *Hydractinia spinipapillaris* (Hirohito, 1988)]. With the latter *Hydractinia cytaeiformis* has in common the shape of the gastrozooids, shape and structure of the gonozooids, and the presence of small, finger-shaped dactylozooids with a capitulum of nematocysts. However, there is no perisarc cover of the thick layers of stolonal tubes and there are no spines. *Hydractinia spinipapillaris*, originally described as *Stylactis spinipapillaris*, so far has only

been observed on the living gastropod *Simplicifusus graciliformis* (Sowerby) in Sagami Bay, Japan at depths of 100-300 m. The gonozooids in *H. cytaeiformis* were few in number, the majority being quite young. Only a few well developed, almost mature (female) gonophores were observed; these detached quite easily. In *H. spinipapillaris* free eumedusoids were seen to liberate in the aquarium.

Distribution.— Cape Verde Island, S of Razo, 1200 m depth (only record).

Hydractinia marsupialia Millard, 1975 (figs 4 no. 1; 6 nos 1, 4; 7 no. 2)

Podocoryne carnea; Ritchie, 1907: 523; Millard, 1966: 461.
?Hydractinia parvispina; Vanhöffen, 1910: 291.
Hydractinia carnea; Millard, 1957: 1957: 181.
Hydractinia marsupialia Millard, 1975: 113, fig. 38; 1978: 194 et seq.; 1979: 136.

Material inspected: Stn MAU.100: *Natica*-like empty shell with polyps mainly around mouth of shell; at that place spines best developed; gonophores visible around mouth opening of shell, three to four in various stages of development on slightly reduced gonozooids with short tentacles around proboscis. RMNH-Coel. 30453, slide 5277.

Description.— Colony consists of a stolonal network, many gastrozooids, a reduced number of gonozooids, mainly visible around the mouth of the shell, and spines. Stolonal network covered by an almost continuous sheath of perisarc, supporting regularly spaced, smooth and acute spines, 400-500 µm long, coloured brown and slightly surpassing the gastrozooids. Gonozooids and gastrozooids arising from a thin layer of coenosarc covering the perisarc sheath; gastrozooids 1.3-1.5 mm long, cylindrical or slightly swollen medially; diameter in middle 275-300 µm, just under tentacles 200-225 µm, apically with a whorl of 10-16 tentacles, surrounding a dome-shaped proboscis; some gastrozooids strongly contracted, globular, with almost fully retracted tentacles.

Gonozooids slightly smaller that gastrozooids, being 325-820 µm long and 150-200 µm in diameter, initially with a well developed whorl of short tentacles and three or four developing gonophores slightly below insertion of tentacles. Gonozooids becoming more reduced in the course of gonophore development, accompanied by the loss of tentacles and of size; usually one of gonophores much more advanced in development than remaining. Only male gonophores observed, initially globular and without much differentiation (fig. 6 nos 1, 4). Gradually four developing gonads are visible, separated by four radial canals and grouped around a central spadix, as well as four or five (number uncertain) short marginal tentacles in a marsupial cavity formed by the ectodermal layer of the gonophore (fig. 7 no 2). Some gonophores have the spermatozoids released into the manubrial cavity; other have apparently spend all spermatozoa, the spadix is distinctly discernible and the tentacles are free and have a well developed basal bulbus (fig. 4 no. 1). Mature gonophore attached to gonozooid by means of a thin strand of hyaline tissue, diameter ca 200 µm, length 250 µm, including retracted tentacles. No female gonophores have been observed; they seem to develop on separate colonies, the species being dioecious.

Table IV. Measurements of nematocysts of *Hydractinia marsupialia* in µm:

	South African waters (Millard, 1975)	CANCAP Stn MAU.100, off Banc d'Arguin, Atlantic coast of Mauritania
Microbasic euryteles (long-oval capsules of Millard, 1975)	7.2 × 2.7 - 10.2 × 3.5	6.8 × 4.1 - 9.0 × 4.5
Desmonemes (short-oval capsules of Millard, 1975)	5.4 × 3.0	4.1 × 3.2 - 4.5 × 4.1

Remarks.— Spines more acute and of a darker colour than those of *Hydractinia paucispinata* spec. nov. A striking character of this species is the regular arrangement of those spines.

Distribution.— Described by Millard (1975) from a number of South African localities ranging from Table Bay to Algoa Bay, depth 4-82 m; regarded endemic to the Cape region. The species was initially described from the gastropod *Nassa speciosa* Adams. Its presence has now been established much farther north along the African Atlantic coast at Mauritania, off Banc d'Arguin, 19°26'N 16°50'W, 45 m depth, found on an empty naticoid shell from which the pagurid host may have been removed previously.

Hydractinia multitentaculata (Millard, 1975) (figs 3 nos 1-4; 4 nos 3, 4, fig. 5 no. 4)

Hydractinia sp. Millard, 1968: 255.
Clavactinia multitentaculata Millard, 1975: 106, fig. 35C-G; 1978: 190; 1979: 135; Bouillon et al., 1997: 473, 481.
Hydractinia multitentaculata; Bouillon, Medel & Peña Cantero, 1997: 477.

Material inspected: Stn MAU.024: Gastropod (living) covered with hydractiniid with a few smooth, acute spines. No gonophores observed. May belong to this species but colony too young for proper identifications. RMNH-Coel. 30914. – MAU.027: Oliviid shell, inhabited by pagurid, densely packed with polyps and blastostyles; spines only visible near mouth of shell; these of same conical and fairly smooth structure as those of specimens from MAU.049. Gonophores borne on moderately reduced gonozooids, smaller than gastrozooids and with less and shorter tentacles. RMNH-Coel. 30449 (fig. 4 nos 3, 4). – MAU.049: Empty, *Natica*-like shell with big polyps and many blastostyles with 4 to 5 gonophores each, these distinctly with four compartments. No spines have been observed, though low spines may have been present. In addition four big gastropods inhabited by pagurids entirely covered by this species. Many gonophore-bearing male and female gonozooids are present on different hosts. These specimens have dispersed, long, smooth spines. RMNH-Coel. 30454.

Description.— Stolonal network fused to a more or less coalescent perisarc covered plate, itself covered by a thin layer of coenosarc from which the polyps arise. Basal plate in majority of specimens with dispersed, smooth or slightly corrugated, hollow spines, apparently not covered by coenosarc, up to 600 µm long, open at the tip (fig. 3 no. 1). Gastrozooids numerous and closely packed (fig. 3 nos 2-4), cylindrical to fusiform, with a large number of moderately long tentacles in several irregular rows around a greatly protruding, conical to bulbous proboscis (fig. 3 no. 4; fig. 5 no. 4). Number of tentacles c. 40. Height of gastrozooids to 4 mm in preserved condition, though some colonies have a few much bigger, swollen gastrozooids with distinctly discernible longitudinal striation, such gastrozooids may have been feeding prior to preservation. Male and female gonozooids on separate colonies.

Male gonozooids slender (fig. 3 no. 4; fig. 4 nos 3, 4), smaller than gastrozooids, with a reduced number of shorter tentacles. Each gonozooid with three to four spherical gonophores at about two-thirds of its length, one much more advanced in development than the others. Mature gonophore with four radial canals, a circular canal and a centrally placed spadix. Mass of spermatocytes located in four compartments, distinctly discernable in the intact gonophore; diameter of mature male gonophore c. 450 µm.

Female gonozooids as the male though with reduced number (6-8) of shorter tentacles (fig. 3 no. 2). Two (usually) or three (rarely) spherical female gonophores at about two-thirds the length of the gonozooid of which one much advanced in development. Diameter of female gonophores inferior to that of male, c. 350 µm, although in specimens inspected they may not have been fully mature There are four radial canals and a circular canal; four minute swelling are visible at the margin. A large number of developing eggs is arranged around the central spadix, the number could not be ascertained although certainly more than 20.

Spirally contracted dactylozooids occur in small number at isolated spots near the mouth opening of the shell.

Nematocyst armature composed of microbasic euryteles in two size classes and of desmonemes. Small euryteles are abundant on the tentacles of gastrozooids and gonozooids, the euryteles being particularly concentrated at the tip of the tentacles. The larger size class of euryteles chiefly occurs on the column of both gastrozooids and gonozooids; small euryteles and desmonemes also occur on the column but in much smaller numbers.

The nematocyst inspection of the dactylozooids failed because of the small number being present.

Table V. Measurements of the nematocysts of *Hydractinia multitentaculata* in µm:

	Clavactinia multitentaculata Millard, 1975 False Bay and Natal	Mauritania-II, Stn 027
Small euryteles	9.0 - 13.8 × 2.4 - 4.2	6.8 × 3.2 - 3.6
Desmonemes	5.4 - 7.2 × 3.0 - 3.6	7.2 × 4.1 - 5.0

Remarks.— Bouillon, Medel & Peña Cantero (1997) have been followed in referring this species to *Hydractinia* Van Beneden, 1841, rather than to *Clavactinia* Thornely, 1904, type *Clavactinia gallensis* Thornely, 1904. In *C. gallensis* the tentacles are dispersed over the distal part of the gastrozooids while dactylozooids appear to be lacking. Bouillon et al. (1997) when discussing the taxonomic position of *Clavactinia gallensis*, refer to the much reduced condition of the gonozooids in that species in contradistinction to *Clavactinia multitentaculata*, where the gonozooids are much less reduced, this being one of the three reasons to remove *C. multitentaculata* from *Clavactinia* and to include it in their concept of the genus *Hydractinia*. However, some of the species the authors included in *Hydractinia* have strongly reduced gonophores [*H. ingolfi* (Kramp, 1932), *H. spinipapillaris* (Hirohito, 1988)]. *Hydractinia multitentaculata* (Millard, 1975) is not listed in the lists of *Hydractinia* species on pp. 474, 475 and 481, though it seems clear from the discussion on pp. 481-482 that it is considered by Bouillon et al. as a species of that genus, a decision that has been accepted here.

The presence of some much bigger, swollen gastrozooids in all of the colonies studied may be related to their feeding condition at the time of capture. Such big individuals usually have distinct, longitudinal stripes.

Distribution.— Described from the coasts of South Africa (False Bay, coast of Natal), but here shown to be extending as far north as 19°N along the west coast of Africa: off Mauritania, 18°50'N 16°18'W, 14 and 16 m, and 19°05'N 16°256'W, 12-18 m. A wider distribution was already suspected by Millard (1975: 108). The species was so far exclusively found on gastropod shells inhabited by pagurids.

Hydractinia paucispinata spec. nov. (fig. 1e)

Material inspected: Stn 6.062: *Fusus*-like gastropod (empty) with young hydractiniid colony, rather poorly developed. RMNH-Coel. 30525. No spines visible on examination; gastrozooids with 10-15 tentacles, apparently in one whorl. Gonozooids much reduced in size, with fewer tentacles, up to three gonophores, in this specimen male; three or four developing gonads being seen. Stolon poorly visible but apparently without cover of perisarc. – Stn 6.063: Species of *Murex* with hydractiniid, mainly developed around the mouth of the shell, inhabited by pagurid. Smooth, blunt, horny-coloured spines, widely spaced; blastostyles (gonozooids) almost reduced, gonophores three or four to each blastostyle, big, globular. RMNH-Coel. 30451, holotype. – Stn 6.067: Hydractiniid on a small *Nassarius*-like shell, agrees with material from Stn 6.063, with dispersed, smooth, yellowish spines. Gonophores present in small numbers. RMNH-Coel. 30456, paratype. Although this specimen has the same spines as 30451 the gonozooids are much less reduced and have a whorl of short tentacles. Number of gonophores usually three of which one big, the remaining two much smaller. – Stn 6.157: Buccinid shell entirely covered by hydractiniid; polyps and gonophores best visible on ultimate whorl. Gonophores developed on slightly smaller polyps with tentacles. There are c. 1 mm long, completely smooth, widely spaced spines of a light horny colour, prominent near edge of colony where can be seen that the basal plate also bears small, conical spines. RMNH-Coel. 30447, paratype. Blastostyles distinctly female, with fairly large number of orange-yellow eggs on almost fully reduced gonozooids. Additionally a buccinid shell entirely covered, well visible on ultimate whorl. No spines observed, female gonophores with large number of eggs developing on slightly smaller gonozoids. Considerable difference in size amongst the gastrozooids. The stolon closely follows the spirally structure of the grooves on exterior of shell. RMNH-Coel. 30448.

Description.— Stolonal tubes fused to form a thin but solid plate covering exterior of shell, surface with small, almost granular spines and covered by thin sheath of coenosarc from which the polyps arise. In addition to small spines there is a limited number of dispersed, bigger spines, these spines smooth or slightly corrugated, to 1.5 mm long, hollow and frequently open at the tip. Gastrozooids and gonozooids densely packed, particularly near mouth opening of shell. Gastrozooids cylindrical, fairly small, 1.2-1.6 mm long in preserved condition, with 14-16 filiform tentacles arranged in two closely approximated rows around globular proboscis.

Female gonozooids (fig. 1e) smaller than gastrozooids, with reduced number of tentacles and two or three globular gonophores at two-thirds their length (initially). In fully developed female gonophores the gonozooid is almost completely reduced to a short column supporting the big, globular gonophores. Female gonophore cryptomedusoid, with four radial canals and a narrow circular canal; surface of the globular structure smooth, no tentacular bulbs being visible. Number of developing eggs fairly large, of an orange-yellow colour in the preserved specimens. Diameter of mature female gonophore 500 µm. Male gonophores almost as the females, with three or four gonads packed with developing spermatocytes, colour white in the preserved specimens.

Table VII. Characteristics of the species of *Hydractinia* described in this report

Species	Basal plate	Spines	Gastrozooids, length/ diameter	Gastrozooids, number of tentacles	Gonozooids, length/ diameter
Hydractinia calderi Bouillon, Medel & Peña Cantero, 1997	Reticulate network of stolonal tubes, perisarc forming cup at base of polyps.	Smooth, half to one-third length of retracted gastrozooids.	Fusiform to elongated, 2.5-3.5 × 1.0-1.5 mm.	25-40 filiform tentacles in several distinct whorls.	Much smaller than gastrozooids, 1.5 × 0.6 mm.
Hydractinia cytaeiformis spec. nov.	Absent, mat of stolonal tubes bearing polyps.	Absent.	Small, columnar, 500-900 × 200-250 µm.	One whorl of 10-12 amphicoronate tentacles around conical proboscis.	Small, reduced in number, 220-235 × 90-110 µm, narrowing above insertion of gonophores.
Hydractinia marsupialia (Millard, 1975)	Stolonal network covered by almost continuous sheath of perisarc, covered by thin layer of coenosarc.	Regularly spaced, smooth, acute spines, 400-500 µm long, brownish.	Cylindrical to slightly swollen medially, 1.3-1.5 mm × 200-225 µm (just under tentacles, medially 275-300 µm.	One whorl of 10-16 tentacles around dome-shaped proboscis, occasionally strongly contracted.	Smaller than gastrozooids, 325-820 × 150-200 µm.
Hydractinia multitentaculata Millard, 1975	Stolonal tubes fused to form almost continuous perisarc sheath covered by thin layer of coenosarc.	Dispersed smooth to slightly corrugated, hollow spines, not covered by coenosarc and open at tip, c. 600 µm long.	Numerous, closely packed, cylindrical to fusiform, to 4 mm long. Some gastrozooids strongly swollen and with longitudinal striation.	C. 40 long tentacles, in several irregular whorls around conical to bulbous proboscis.	Male and female gonozooids on separate colonies, recuded in size, number and length of tentacles.
Hydractinia paucispinata spec. nov.	Stolonal tubes fused to thin solid plate covered by thin sheath of coenosarc.	Small, almost granular, on entire surface of basal plate, dispersed bigger spines to 1.5 mm, smooth or corrugated, open at tip.	Densely packed, particularly near mouth opening of shell, cylindrical, 1.2-1.6 mm long.	14-16 tentacles in 2 whorls around globular proboscis.	Male and female gonozooids smaller than gastrozooids, much reduced in size when gonophores are mature.

Gonozooids, number of tentacles	Gonophores, number and character	Dactylozooids, length/ diameter	Dactylozooids, number of tentacles	Nematocysts, type and size	Distribution
8 tentacles around dome-shaped proboscis.	One mature male gonophore observed, eumedusoid, one immature gonophore on opposite site of top of gonozooids. Mature eumedusoid with 4 radial canals, margin with 4 tentacular bulbs.	Not observed.		Microbasic euryteles 7.2-8.1 × 4.0-4.5 µm; desmonemes, much less frequent, 4.5-6.3 × 3.2-3.6 µm.	Mediterranean and Cape Verde Islands, on shell.
Absent.	Only few female gonophores observed, one per gonozooid, globular, eumedusoid. 4 radial canals and narrow circular one.	Small and numerous, columnar. All over colony, c. 90 × 35-50 µm.	Absent, capitulum of nematocysts.	Microbasic euryteles 6.3-8.0 × 3.2-36 µm; large desmonemes 4.9 × 4.5 µm, small ones 3.2-3.6 × 2.7-3.2 µm	Cape Verde Islands, on worm tube.
Initially 3 or 4 tentacles, becoming reduced in course of gonophore development as does also rest of gonozooid.	Only male gonophores observed; 4 gonads develop and 4 radial canals plus small circular canal become visible, as well as 4 or 5 tentacular bulbs. Gonads shed spermatozoids into manubrial cavity and tentacles fully develop.	Not observed.		Microbasic euryteles 6.8-9.0 × 4.1-4.5 µm; desmonemes 4.1-4.5 × 3.2-4.1 µm.	Coasts of South Africa; coast of Mauritania, on shell.
6 to 8 tentacles of reduced length.	Females with 2-3 gonophores at $^2/_3$ length, one much advanced, with four radial canal, circular canal and 4 minute swelling at margin. Males with 3-4 spherical gonophores at $^2/_3$ length, 4 radial canals, circular canal and central spadix.	Not observed.		Small euryteles 6.8 × 3.2-3.6 µm; desmones 7.2 × 4.1-5.0 µm.	Coasts of South Africa; coast of Mauritania, on shells.
Number of tentacles reduced; 10 or less.	2-3 gonophores at $^2/_3$ length, mature gonophores big, globular. Females cryptomedusoid, with fairly large number of orange eggs, with four radial canals and narrow circular canal, surface smooth. Males similar with 3-4 white gonads packed with spermatocytes.	Not obverved.		Large microbasic euryteles 7.0-7.5 × 1.8-2.3 µm; small euryteles 5.0-5.4 × 2.7-3.2 µm; desmonemes 3.6-4.1 – 2.3-2.7 µm.	Cape Verde Islands, on shells.

The cnidome is composed of two size classes of microbasic euryteles and desmonemes. The euryteles are elongated ellipsoid and slightly curved (banana-shaped), the thread is only vaguely visible and coiled in the length axis of the capsule. The desmonemes are ovoid; a few coils of a thick thread fill the interior of the capsule.

Table VI. Measurements of nematocysts of *Hydractinia paucispinata* spec. nov. in µm:

	CANCAP Stn 6.063, Cape Verde Region
Large microbasic euryteles	7.0 × 1.8 - 7.5 × 2.3
Small microbasic euryteles	5.0 × 2.7 - 5.4 × 3.2
Desmonemes	3.6 × 2.3 - 4.1 - 2.7

Remarks.— This species has a certain resemblance with *Hydractinia arctica* (Jäderholm, 1902), particularly in the arrangement of the tentacles in the gastrozooids and the reduction of the gonozooids. It differs in the development of the stolonal plate, the presence of spines and the structure of the proboscis in the gastrozooids. The holotype (Stn 6.063) has gonophores in all stages of development; the paratype from Stn 6.067 has mostly young gonophores; in the paratype from Stn 6.157 there are a few ripe gonophores with a large number of orange-yellow eggs on gonozooids near the mouth of the shell. The basal plate has distinct, small, conical spines.

Distribution.— So far only found in the Cape Verde region SE of Boa Vista, 25-98 m; SW of Boa Vista, 58-62 m, and NW of São Vicente, 24 m.

Genus ***Hydrocorella*** Stechow, 1921

Hydrocorella africana Stechow, 1921 (fig. 5 nos 1, 3)

Hydrocorella africana Stechow, 1921c: 30; 1923a: 98; 1925: 409-411; Kühn, 1939: A26; Millard, 1957: 183; Stechow, 1962: 416, 418, figs 1, 2; Grindley & Kensley, 1966: 6; Millard, 1966: 458, fig. 7; 1968: 253, 255; Day et al., 1970: 11; Millard, 1975: 116, frontispiece, fig. 39; 1978: 194 et seq.; 1980: 130; Bouillon et al., 1995: 13; Cairns, 1999: 41.

Material inspected: Stn 6.062: Gastropod shell entirely covered by calcareous skeleton of *Hydrocorella africana* producing eight long projections. Surface with conical spines, between which strongly contracted gastrozooids and gonozooids with a whorl of globular gonophores. RMNH-Coel. 30913. – Stn 6.075: Additional specimen on a gastropod inhabited by a pagurid crab; one long 'spine' near orifice of shell. RMNH-Coel. 30912.

Description.— Hydroid colonies on the exterior of two shells inhabited by pagurids, forming a compact crust of calcareous material, on the surface produced into regularly but densely arranged short, conical spines, length c. 750 µm and one or eight much longer processes, length 8-20 mm, of which surface has same structure as calcareous layer covering exterior of shells. Calcareous sheath covered by thin layer of coenosarc from which polyps arise in between the calcareous spines. Polyps of three types: gastrozooids, gonozooids and dactylozooids. Gastrozooids present in great numbers in various stages of contraction and feeding condition; normal, extended gastrozooids 750-1,000 µm long, diameter 325-375 µm, with 6-10 filiform tentacles of varied length, placed almost at the tip of the polyp and surrounding a low, dome-shaped proboscis.

Gonozooids mainly observed around mouth opening of host-shell, slightly inferior in length compared to gastrozooids and with tentacles reduced to small rounded knobs at the distal end; presence of mouth obscure. Only male gonophores observed, these placed in whorl of 5-10 at about half length of gonozooids, in various stages of development. Mature male gonophore globular, diameter 325-375 µm, composed of a mass of spermatozoids surrounding a vaguely visible, club-shaped spadix.

In the cnidome, studied in squash preparations, the desmonemes outnumber the euryteles; they are egg-shaped, in perfect lateral view drawn out into an oblique, blunt point; a coarse thread is visble to be irregularly coiled in the interior of the capsule. The microbasic euryteles differ considerably in size, though the presence of two size groups is not apparent. Their shape is elongated ovoid, occasionally slightly banana-shaped with the thread coiled in the length axis of the capsule.

Table VIII. Measurements of the nematocysts of *Hydrocorella africana* in µm:

	South African seas (Millard, 1975)	CANCAP Stn 6.062, Cape Verde region.
Microbasic euryteles	7.2 × 2.7 - 11.4 × 4.8	7.2 × 4.1 - 11.7 × 6.8
Desmonemes	4.5 × 2.4 - 6.6 × 3.0	5.4 × 4.1 - 5.9 × 4.9

Remarks.— Of the eight 'spines' present in the specimen from Stn 6.062 three are in the plane of the mouth of the shell, the remaining spiniform projections are directed backwards. This species is easily recognized by the distinctive calcareous and spinuous mass secreted by the stolon and surrounding the exterior of the shell; the gastrozoids are tubular and have unequal tentacles placed at the extremity of the polyp, surrounding the low, dome-shaped mouth. The male gonozooids, the only sex observed, usually have a large number of developing gonophores; the polyp is reduced to a short column on all sides surrounded by the gonophores; no mouth has been observed. The developing spermatocytes surround a centrally placed spadix that has only been observed in the stained material.

Distribution.— Originally described from South Africa, without distinct locality record, by Stechow (1921c); localities later specified by Stechow (1925: Cape Agulhas, Plettenberg Bay, Francis Bay, Agulhas banc south of Plettenberg Bay and Simons Bay, all localities between 35°10.5'-34°07.3'S and 18°36'-24°59.3'E, depth 70-100 m. The species was subsequently redescribed from South African waters by Millard (1975: Orange River mouth to Durban, common in dredgings round the south-west Cape). The present records are from the Cape Verde Region (SE and SW of Boa Vista, ca 16°N, 23°W, depth 82-98 m), extending the distribution of this species considerably in northern direction.

Family Oceanidae Eschscholtz, 1829

Subfamily Corydendriinae Calder, 1988

Genus ***Corydendrium*** Van Beneden, 1844

Corydendrium cf. ***parasiticum*** (Linnaeus, 1767)

Sertularia parasitica Linnaeus, 1767: 1315.

Corydendrium parasiticum; Ramil & Vervoort, 1992: 16-17, fig. 1a; Sommer, 1992: 210; Boero & Bouillon, 1993: 259; Calder, 1993: 66 et seq.; Park, 1994: 202, table 1; Avian et al., 1995: 10; Bouillon et al., 1995: 9; Migotto, 1996: 11, 121, fig. 2e; Calder & Maÿal, 1998: 73; Watson, 1999: 2-5, fig. 2A-E; Van der Land et al., 2001: 117; Cairns et al., 2002: 11; Calder et al., 2003: 1176-1178, fig. 2; Puce et al., 2003: 249; Anonymous, 2004: 6; Bouillon et al., 2004: 52, fig. 31A-C; Schuchert, 2004: 336-338, fig. 6.

Material inspected: Stn 6.078: Small, fragmentary colonies without gonophores and with a few polyps only may belong here. RMNH-Coel. 30460.

Remarks.— Poor specimen with a single polyp in expanded condition. Identification uncertain.

Distribution.— Well distributed in tropical, subtropical and temporate parts of the Atlantic, Pacific and Indian Oceans. In the Atlantic the distribution extends to the Mediterranean. The present records concern the Cape Verde Archipelago, SW of Boa Vista, 185-190 m and fits into the general picture of the distribution of this species.

Genus ***Turritopsis*** McGrady, 1857

Turritopsis cf. ***nutricula*** McCrady, 1857 (fig. 7 no. 3)

Oceania (Turritopsis) nutricula McCrady, 1857: 56, pl. 4 figs 1-10, 12-15, 28a, pl. 5 figs 11, 16-18, 26b.
Turritopsis nutricula; Bavestrello et al., 1992: 137-140, fig. 1; Calder, Stephens & Sanders, 1992: 287-288; Dawson, 1992: 10; Park, 1992: 285; Ramil & Vervoort, 1992: 17-18; Sommer, 1992: 210; Boero & Bouillon, 1993: 259; Calder, 1993: 66 et seq.; Navas-Pereira & Vannucci, 1993: 33; Park, 1993: 264; 1994: 202, table 1; Avian et al., 1995: 10; Bouillon, 1995: 224, 235; Bouillon et al., 1995: 10; Kubota, 1995: 22; Peña Cantero, 1995: 79-80, pl. 2 fig. A; Benović & Lučić, 1996: 134; Medel & López-González, 1996: 194; Migotto, 1996: 11-13, 125, fig. 3a-c; Park, 1996: 68-69, fig. 1A-F; Piraino et al., 1996: 302-312, figs 1-17; Reber-Müller et al., 1996: 64; Schuchert, 1996: 16-19, fig. 5a-e; Watson, 1996: 78; Boero et al., 1997b: 53 et seq.; Edgar, 1997: 122, fig.; Grohmann et al., 1997: 230; Howson & Picton, 1997: 31; Rosso & Marques, 1997: 417; Calder & Maÿal, 1998: 73; Kelmo & De Santa-Isabel, 1998: 63-64, fig. 3; Bouillon, 1999: 410, fig. 3.10; Bouillon & Barnett, 1999: 40-41, fig. 21, cover photo; Bouillon & Boero, 2000: 86; Buecher & Gibbons, 2000: 127; Calder, 2000: 1134; Miglietta et al., 2000: 65; Migotto et al., 2001: 289 et seq.; Cairns et al., 2002: 11, 15, 49, 52; Peña Cantero & García Carrascosa, 2002: 26, fig. 3e; Van der Land et al., 2001: 117; Calder et al., 2003: 1194, 1203; Chikuchishin & Kubota, 2003: 36, fig. 1; Kubota, 2003a: 29; 2003b: 31; Anonymous, 2004: 7; Bouillon et al., 2004: 54, fig. 32A-C, E; Schuchert, 2004: 326, 327, figs 2A, B, 3D, E.
Turritopsis cf. *nutricula*; Schuchert, 2003: 143-144, fig. 4.
Turritopsis nutricola; Alvariño, 1999: 7, 46, fig. 7 (incorrect subsequent spelling).
Corydendrium nutricula; Kramp, 1935: 11; 1947: 7; Hansson, 1998: 3.
Dendroclava dohrni Weismann, 1883: 26, pl. 12 figs 6-9.

Material inspected: Stn 1.098: five c. 20 mm high, polysiphonic colonies on stem of *Lytocarpia myriophyllum* (Linnaeus, 1758). Young (female?) gonophores present. RMNH-Coel. 30347, 2 slides 5147.

Description.— Material composed of 17-20 mm high, monosiphonic stems, arising from a stolon attached to stems of *L. myriophyllum* (L., 1758). Stems with side-branches running parallel to main stem for some distance before becoming free and leaving the original tube at an angle of c. 60°. Primary branches may have secondary tubes, primaries and secondaries ending in a fairly large polyp with spindle-shaped body, 450-575 µm long, 150-205 µm diameter, and 15-20 filiform tentacles dispersed over hydranth body;

proboscis dome-shaped. Perisarc of stem and main branches composed of two sheaths; external sheath strongest, smooth; internal sheath thin and distinctly wrinkled, ending some distance under hydranth. Gonophores present as developing medusae on the polyp pedicels, some distance below base of hydranth; sex indeterminate (fig. 7 no. 3).

Basal parts of stems with some curved secondary tubules, usually terminating in a juvenile or developing hydranth, probably indicating settlement of planulae.

Remarks.— Calder, Stephens and Sanders (1992) have been followed in dating McCrady's description of this species. I have not accepted Hirohito's (1988: 71-72) conception of this species and have not included *Dendroclava dohrni* Weismann, 1883 into the synonymy of *Turritopsis nutricula* McCrady, 1857, following Schuchert, 2004, in this respect.

Distribution.— Well distributed in the tropical, subtropical and temporate parts of the Atlantic, Pacific and Indian Oceans; the free medusae having a much wider distribution than the polyp-phase, that is mainly restricted to the littoral zone. The present record is from the Atlantic South of Madeira, a locality fitting the generally accepted pattern of distribution.

Family Eudendriidae L. Agassiz, 1862

Genus ***Eudendrium*** Ehrenberg, 1834

Eudendrium capillare Alder, 1856

Eudendrium capillare Alder, 1856: 355, pl. 12 figs 9-12; Marinopoulos, 1992: 60, fig. 1.3; Park, 1992: 285; Ramil & Vervoort, 1992: 18-19, fig. 1b, c; Schmid et al., 1992: 132 et seq.; Boero & Bouillon, 1993: 259; Calder, 1993: 66 et seq.; Park, 1993: 264; Altuna Prados, 1994: 67-69; 1995: 54; Avian et al., 1995: 10; Bouillon et al., 1995: 11; Park, 1995: 10; Peña Cantero, 1995: 82-84, pl. 3 figs a-d; Medel & López-González, 1996: 194; Migotto, 1996: 122; Parapar & Ramil, 1996: 22; Howson & Picton, 1997: 29; Orlov, 1997: 19 et seq.; Brunel et al., 1998: 66; Hansson, 1998: 4; Kelmo & De Santa-Isabel, 1998: 66-67, fig. 7; Marques & Migotto, 1998: 150; Gravier-Bonnet, 1999: 83; Gulliksen et al., 1999: 48, 83; Morri & Bianchi, 1999: 285; Watson & McInnes, 1999: 111; Evans, 2000: 33; Marques et al., 2000a: 88-90, figs 28-34; Marques et al., 2000c: 198, 201-202; Marques, 2001: 346-350, figs 8-13, tabs 1-3; Schuchert, 2001: 27-29, fig. 16A-F; Sirenko, 2001: 32; Van der Land et al., 2001: 117; Cairns et al., 2002: 13, 50; Peña Cantero & García Carrascosa, 2002: 27-29, fig. 4a, b, Puce et al., 2002: 367; Calder et al., 2003: 1205; Anonymous, 2004: 10-11; Bouillon et al., 2004: 58, fig. 34B-D.

Material inspected: Stn 1.118: 10-15 mm high monosiphonic colonies and some fragments. Polyps expanded but all sterile. Way of branching and appearance of colony as in *E. capillare.* RMNH-Coel. 30475. – Stn 4.158: Monosiphonic colonies up to 15 mm high on various objects; many mature male gonophores are present. RNNH-Coel. 30334.

Description.— Colony composed of thin, repeatedly branched, monosiphonic stems arising from a hydrorhiza creeping on old hydroid stems, mollusks, etc. Branching irregular to subalternate, primary and/or secondary branches bearing a small, urn-shaped polyp with 15-20 tentacles surrounding a fairly big, flared hypostome. Perisarc well developed in basal parts of stems, colour yellowish-brown, gradually thinning out along pedicels and there almost transparent, ending abruptly at base of polyp. Male gonophores present in a whorl around completely atrophied polyps, each gonophore

composed of two or three globular chambers of which apical best developed; some of the terminal male gonophores have a minute apical tubercle.

Remarks.— *Eudendrium capillare* Alder, 1856 belongs to a group of small species of *Eudendrium* (*E. capillare* group, cf. Watson, 1985; Marques et al., 2000a) that can only be distinguished by characters of the gonosome in combination with those of the cnidome. This group comprises, besides *E. capillare*, the following species: *E. album* Nutting, 1896; *E. antarcticum* Stechow, 1921d; *E. fragile* Motz-Kossowska, 1905; *E. generale* Von Lendenfeld, 1885; *E. motzkossowskae* Picard, 1952; *E. nambuccense* Watson, 1985; *E. tottoni* Stechow, 1932, and *E. vervoorti* Marques & Migotto, 1998. The exclusive presence of small microbasic euryteles in the cnidome of the present material as well as the structure of the male gonophores, along with the Atlantic locality, identify the present material as *Eudendrium capillare* Alder, 1856. This species appears to be well distributed in the subtropical and temperate Eastern Atlantic, including the Mediterranean (Ramil & Vervoort, 1992), though the number of identifications based on cnidome inspection is limited. The present record is from SW of Palma, Canary islands, from fairly deep waters (350-250 m) and from the Atlantic off Cape Dra, Morocco, depth 48 m.

Eudendrium rameum (Pallas, 1766)

Tubularia ramea Pallas, 1766: 83.

Eudendrium rameum; Bavestrello & Piraino, 1991: 197; Cairns et al., 1991: 15; Gili & Ballesteros, 1991: 247; Marinopoulos, 1992: 58, fig. 1.6; Boero & Bouillon, 1993: 259; Branch & Williams, 1993: 8, fig.; Schönborn et al., 1993: 223; Blanco, 1994a: 152; 1994b: 183-184; Stepan'yants, 1994: 119 et seq.; Avian et al., 1995: 11; Bouillon et al., 1995: 11; Klitgaard, 1995: 17 et seq.; Peña Cantero, 1995: 109-111, pl. 10 figs a, b; Medel & López-González, 1996: 194; Stepan'yants et al., 1996: 14, 18-19; Howson & Picton, 1997: 29; Stepanjants et al., 1997: 458; Genzano & Zamponi, 1997: 289; Orlov, 1997: 19 et seq.; Brunel et al., 1998: 66; Hansson, 1998: 4; Gulliksen et al., 1999: 49, 83; Evans, 2000: 33; Marques et al., 2000a: 102-104, figs 71-74; Marques, 2000c: 198, 204-205; Schuchert, 2000: 413; 2001: 31-32, fig. 19A-D; Sirenko, 2001: 32; Van der Land et al., 2001: 117; Cairns et al., 2002: 13; Peña Cantero & García Carrascosa, 2002: 35-37, fig. 7d, e. Puce et al., 2002: 367; Anonymous, 2004: 13-14; Bouillon et al., 2004: 60, fig. 36E-G.

Material inspected: Stn 1.072: Two stems 60-70 mm high, both polysiphonic at base. Polyps well preserved; male blastostyles in various stages of reduction are present. RMNH-Coel. 30421. – Stn 1.096: Monosiphonic colonies up to several cm height on volcanic stones. Many expanded polyps and a single male blastostyle. One of the larger colonies completely invested by *Filellum* spec. RMNH-Coel. 30409. – Stn 1.145: Various polysiphonic colonies up to 50 mm high, with female gonophores in various stages of development at much reduced hydranths and also well developed sterile polyps. RMNH-Coel. 30478. – Stn 4.074: A few stems c. 50 mm high with preserved hydranths and male blastostyles. RMNH-Coel. 30554. Colony heavily stained by presence of gorgonids in sample. – Stn 5.089: Large colony, 70 × 50 mm, with thick, almost black main stem and branches; only few polyps left. Some female blastostyles with much reduced polyp present. RMNH-Coel. 30524. – Stn 5.D02: Circa 10 colonies 40-50 mm high, strongly ramified and with polysiphonic main stems. Ultimate branches fine. Male gonophores on partly reduced polyps. RMNH-Coel. 30516. Colonies densely overgrown by algae and bryozoans.

Description.— Colonies, with exception of that from Stn 5.089, with erect, branched stem; primary and secondary ramifications fine and monosiphonic, stems polysiphonic at the base only. Perisarc strong and yellowish on stems, thinning out and becoming transparent along ramifications; rings present in basal parts of these ramifications. Hydranths urn-shaped, occasionally swollen medially, c. 600 µm long and 220 µm in

diameter under whorl of 15-20 filiform tentacles; body with fairly thick coating of large nematocysts, extending on proboscis. Female blastostyles become much reduced during development, being almost completely atrophied in full maturity. Male blastostyles composed of a complete though smaller polyp, with hypostome and thin tentacles, and a whorl of two-chambered, male gonophores; terminal chamber globular; no apical tubercle has been observed.

The colony from Stn 5.089 is robust, with thick, irregularly branched stem and much less finely ramified than the previous colonies. Perisarc of ultimate branchlets still fairly strong, yellowish. Only few polyps are present as well as some fully mature female blastostyles. The dark colour of the colony may be largely due to the presence of iron in the substrate.

Remarks.— Reliable records of *E. rameum* come from the Indian Ocean, the temperate Atlantic and the Mediterranean; in the northern Atlantic it co-occurs with *Eudendrium arbuscula* Wright, 1859 with which it can easily be confused (Marques et al., 2000a; Peña Cantero & García Carrascosa, 2002). The present records are from the Azores (E of Faijal, 50-70 m), S and E of Madeira (80-135 m), the Canary Islands (SE of Lanzarote, 85-110 m) and the Atlantic Moroccan coast off Cape Blanc du Nord (100 m).

Eudendrium ramosum (Linnaeus, 1758) (fig. 4 no. 2)

Tubularia ramosa Linnaeus, 1758: 804.

Eudendrium ramosum; Marinopoulos, 1992: 59, fig. 1.5; Ramil & Vervoort, 1992: 20-21; Schmid et al., 1992: 132 et seq.; Bianchi et al., 1993: 299; Boero & Bouillon, 1993: 259; Schönborn et al., 1993: 223; Stepan'yants, 1994: 119 et seq.; Avian et al., 1995: 11; Bouillon et al., 1995: 11; Marques & Migotto, 1995: 150; Peña Cantero, 1995: 111-114, pl. 8 figs a-f; Caltagirone et al., 1996: 155; Genzano, 1996: 7; Medel & López-González, 1996: 194; Migotto, 1996: 122; Reber-Müller et al., 1996: 64; Genzano & Zamponi, 1997: 289; Grohmann et al., 1997: 230; Howson & Picton, 1997: 29; Rosso & Marques, 1997: 417; Brunel et al., 1998: 66; Hansson, 1998: 4; Luke, 1998: 2; Ramil et al., 1998a: 185; Zamponi et al., 1998: 12; Gulliksen, 1999: 49, 83; Morri & Bianchi, 1999: 285; Evans, 2000: 33; Marques et al., 2000a: 104, figs 75-78; Marques et al., 2000c: 198, 204; Schuchert, 2000: 413; Marques, 2001: 375-379, figs 2, 6, 7, 38-43, tabs 15-17; Schuchert, 2001: 32-33, fig. 20; Sirenko, 2001: 32; Van der Land et al., 2001: 117; Cairns et al., 2002: 13; Genzano et al., 2002: 162; Peña Cantero & García Carrascosa, 2002: 37-38, fig. 7a-c; Puce et al., 2002: 367; Calder et al., 2003: 1204; Anonymous, 2004: 14; Bouillon et al., 2004: 60-61, fig. 36H-L.

Eudendrium cf. *ramosum*; Álvarez-Claudio & Anadón, 1995: 238.

Material inspected: Stn 1.154: Monosiphonic, 35 mm high colony with preserved hydranths, but none of which fertile. May belong here as it has the colony structure typical of this species. RMNH-Coel. 30473. – Stn 4.152: Largely monosiphonic, finely ramified *Eudendrium* with intact polyps; mainly male colonies with developing blastostyles (RMNH-Coel. 30515). In addition spurious material with female and male blastostyles, colonies developing on nylon rope. RMNH-Coel. 30515 bis. Second bottle with identical material under same number. Some polyps with pseudo-cnidophore. – Stn 6.146: Monosiphonic colony 35 mm high, with expanded but sterile polyps, one of which has a distinct, large pseudo-cnidophore as a club-shaped structure originating from the base of the hydranth and surpassing the tentacles in length. RMNH-Coel. 30455.

Description. — Erect, much branched, monosiphonic stems, height up to 70 mm. Polyps borne by primary and secondary branches, small, vase-shaped, with a whorl of 15-20 filiform tentacles. Perisarc fairly strong on stems, yellowish brown, thinning out

along ramifications and almost hyaline on ultimate branches; pedicels ringed basally. Female and male blastostyles in all stages of development present. Female blastostyles start with development of a whorl of gonophores on normally developed polyps; gonophore with undivided spadix fully encircling the developing egg. In the coarse of development spadix becomes reduced and polyps continue growth; mature eggs are found along pedicels of blastostyle bearing developing gonophores. Mature eggs are big, globular structures enveloped in hyaline membrane. Male gonophores develop in a whorl on normal polyps, two-chambered, apical chamber globular. The pseudo-cnidophore visible in some colonies consists of a tongue-shaped strap of tissue inserting at the base of the hydranth and usually projecting some distance beyond the trumpet-shaped hypostome. The presence of a pseudo-cnidophore in this species has previously been observed in colonies from Queensland, Australia and is mentioned by Watson (1985: 194).

Remarks.— Undisputed records of this species are from the temperate and boreal eastern Atlantic and the Mediterranean. The present records are from off the Atlantic coast of Morocco, 570 m depth; from SW of Palma, Canary Islands, 180-120 m depth, and from SW of São Vicente, Cape Verde Islands, 75 m depth. Previous records from off the Moroccan Atlantic coast are provided by Ramil & Vervoort (1992) and from the Cape Verde region by Ritchie (1907).

Eudendrium spec.

Material inspected: Stn 1.D109: Two strongly polysiphonic colonies c. 30 mm high, heavily overgrown by diatoms and algae; distal parts in process of regeneration with developing polyps. No full-grown hydranths or blastostyles observed. RMNH-Coel. 30474. Probably *Eudendrium rameum* (Pallas, 1766). – Stn 1.155: Polysiphonic stem 55 mm high with few sterile hydranths preserved. RMNH-Coel. 30479. Probably *Eudendrium rameum* (Pallas, 1766). – Stn 4.153: Tangled, partly polysiphonic stems attached to other hydroids, height varying between several mm and 40 mm. Badly preserved, rather dirty material, heavily overgrown. RMNH-Coel. 30381. Second sample composed of up to 50 mm high stems on axis of antipatharian. Hydranths rather well preserved, no blastostyles. As RMNH-Coel. 30381 bis. Probably all *Eudendrium ramosum* (Linnaeus, 1758). – Stn 5.153: Monosiphonic, finely branched colonies up to 10 mm high on *Zygophylax biarmata* Billard, 1905 and *Cryptolaria pectinata* (Allman, 1888). In addition up to 40 mm high, finely branched but heavily overgrown colonies with well preserved polyps, none of which fertile. RMNH-Coel. 30511. Probably *Eudendrium ramosum* (Linnaeus, 1758). – Stn 6.060: Monosiphonic, up to 15 mm high colonies on old gastropod shell, with *Clytia paulensis* (Vanhöffen, 1910). Some of the hydranths seem to bear gonophores, but if present these are quite small and juvenile. RMNH-Coel. 30535, slide 5216. Probably *Eudendrium ramosum* (Linnaeus, 1758). – Stn 7.044: 15 mm long fragment with a few expanded polyps, none of which is fertile. Basal periderm brown and with rings in proximal parts of branches. Nematocysts visible on body of hydranth. RMNH-Coel. 30514. Probably regenerating colony of *Eudendrium rameum* (Pallas, 1766).

Remarks.— The condition of this material does not permit accurate specific identification.

LEPTOTHECATA

Family Phialellidae Russell, 1953

Genus *Plicatotheca* Calder & Vervoort, 1986

Plicatotheca anitae Calder & Vervoort, 1986 (figs 1f-i, 2 no. 4)

?*Opercularella* sp. No. 2 Vervoort, 1966: 108, figs 8, 12b.
Opercularella sp. Millard, 1975: 138, fig. 45C, D.
Plicatotheca anitae Calder & Vervoort, 1986: 2022-2023, figs 1-4; Gili et al., 1989c: 77, fig. 6B; Vervoort & Watson, 2003: 29, fig. 1H-J.

Material inspected: Stn 5.111: Numerous colonies 10-15 mm high on dead mollusc shell, slightly polysiphonic; no gonothecae. RMNH-Coel. 30353, 2 slides 5153.

Description.— Delicately built, weakly polysiphonic, sympodial, erect and irregularly branched colonies, arising from stolonal tubes attached to a dead mollusc shell. Stem (fig. 1f) weakly geniculate, perisarc moderately thick, thinning out along hydrothecal wall. Hydrothecae (figs 1g-i) pedicellate, pedicel with a few indistinct rings or wrinkles basally, gradually widening into hydrotheca, demarcation indicated by extremely thin diaphragm; hydranth attached to inside hydrothecal wall some distance above diaphragm; no desmocytes present. Distal part of hydrotheca very thin and collapsible, produced into 8 to 10 roughly triangular flaps with rounded apex, not connected by a membrane. Opercular structure best visible in opened position, some of flaps apically more or less truncate. Closed operculum forming a triangular roof obscuring the shape of the opercular flaps; hydrotheca at base of operculum occasionally slightly widened.

There is one expanded polyp in one of the slides with c. 20 amphicoronate tentacles without any visible sign of a connecting hymen at the tentacle base. No gonothecae.

Table IX. Measurements of *Plicatotheca anitae* in µm:

	Indian Ocean off Durban (Galathea Expedition, Vervoort, 1966)	Indian Ocean off Durban (Millard, 1975)	Atlantic off Bermuda (Calder & Vervoort, 1986)	CANCAP Stn 5.111
Diameter of internodes		104-138	77-96	95-112
Length hydrothecae, diaphragm-base operculum	335-365		261-289	252-280
Diameter at diaphragm	120-135		93-110	84-95
Diameter at margin			163-177	112-168
Number of opercular plates			10-12	10-12

Distribution.— Originally described from the Indian Ocean off Durban, 29°55'S 31°20'E, 430 m depth (Vervoort, 1966a, as *Opercularella* spec. no. 2, record quoted by Millard, 1975). Further records are from the Atlantic 2 km southeast of Castle Roads, Bermuda, 60-90 m depth (Calder & Vervoort, 1986), from the eastern Atlantic off Guinea Bissau, 197-439 m depth (Gili, Vervoort & Pagès, 1989), from the Pacific south of Norfolk Island, from the southern end of the New Caledonia Trough and from the Chatham

Islands region, southern Pacific, depth 370-1480 m (Vervoort & Watson, 2003). The present record is from moderately deep water (1400 m) E of Faial, Azores.

Family Mitrocomidae Haeckel, 1879

Genus ***Mitrocomella*** Haeckel, 1879

(?)***Mitrocomella*** spec.

Material inspected: Stn 6.070: Hydrothecae developing from scarcely visible stolon on unidentifiable hydroid stem [*Eudendrium* (?) spec.] Hydrothecae without polyp, in poor condition. Not made up in slide. RMNH-Coel. 30419.

Description.— Colony composed of reticulate stolonal tubes with fairly thick, yellowish-brown perisarc covering unidentifiable leptolid stem and tubiform hydrothecae, either arising direct from stolonal tube or with curved basal part pressed against stolon or support and directed upwards distally. Hydrothecae cylindrical, of uniform diameter throughout but with exception of slightly narrowing basal part. Perisarc of hydrotheca thin and transparent, of uniform thickness, distally with thickened triangular strips united by hyaline perisarc sheath, folding over top of hydrotheca to form rather irregularly structured, triangular roof formed by 10-12 opercular plates. Opercular base indicated by almost imperceptible widening in some hydrothecae. No polyps or gonothecae.

Table X. Measurements of *Mitrocomella* in µm:

	Mitrocomella polydiademata (Romanes) Eastern Atlantic, off Cape Spartel (Ramil & Vervoort, 1992)	*Mitrocomella* sp. CANCAP 6.070, SW of Boa Vista, Cape Verde Islands
Diameter of stolon	30 - 50	50 - 60
Hydrotheca, length (incl. operculum)	590 - 665	625 - 750
Diameter at base	65 - 75	110 - 120
Diameter at rim	80 - 90	135 - 135
Length operculum		115 - 125
Gonotheca, length	815 - 890	
Maximum diameter	110 - 125	

Remarks.— This material has been compared with the polyp phase of *Mitrocomella polydiademata* (Romanes, 1876) as described by Ramil & Vervoort (1992: 38-40, fig. 6a-i) with which it is in almost complete agreement. There are slight differences in size while the CANCAP specimen appears to be sterile. The presence of this material on a thick leptolid axis makes observation under high magnification impossible, while none of the hydrothecae is in a position that allows observation of the operculum from above. The principal reasons for recording this material without a species name are the well-known difficulties met with when trying to identify *Cuspidella*-like leptolids and the fact that the medusa phase of *Mitrocomella polydiademata* has a decidedly northerly distribution (Russell, 1953: 258). As far as I have been able to check it has never been recorded from

around the Cape Verde Archipelago, the polyp phase recorded above originating from that area.

Distribution.— SW of Boa Vista, Cape Verde Islands, 15°53'N 23°05'W, 107 m depth.

Family Tiarannidae Russell, 1953

Genus ***Modeeria*** Forbes, 1848

Modeeria rotunda (Quoy & Gaimard, 1827) (fig. 18 no. 3)

Dianaea rotunda Quoy & Gaimard, 1827: 181, pl. 6A figs 1, 2 (medusa).

Modeeria rotunda; Ramil & Vervoort, 1992: 29-32, fig. 4a, b; Boero & Bouillon, 1993: 262; Branch & Williams, 1993: 8, fig.; Altuna Prados, 1994: 128-130; 1995: 54; Avian et al., 1995: 17; Bouillon et al., 1995: 77; Cornelius, 1995a: 109-112, fig. 24; Hirohito, 1995: 88-90, fig. 25a-c; Peña Cantero, 1995: 167-169, pl. 16 figs b-d; Medel & López-González, 1996: 197; Mills et al., 1996: 150; Stepan'yants et al., 1996: 15; Calder, 1997: 87; Howson & Picton, 1997: 31; Kubota, 1997: 150; Stepanjants et al., 1997: 458; Brinckmann-Voss & Arai, 1998: 61-63, fig. 12; Gili et al., 1998: 116; Hansson, 1998: 6; Wrobel & Mills, 1998: 34, fig. 28; Bouillon, 1999: 429, fig. 3.122; Bouillon & Barnett, 1999: 95-96, fig. 97; Gulliksen et al., 1999: 49, 83; Pagès & Orejas, 1999: 53 et seq.; Bouillon & Boero, 2000: 203; Bouillon et al., 2000: 93; Gili et al., 2000: 1518; Schuchert, 2000: 413, 421; 2001: 51, fig. 36; Sirenko, 2001: 34; Van der Land et al., 2001: 116; Cairns et al., 2002: 19, 27, 54, 60; Peña Cantero & García Carrascosa, 2002: 52-53, fig. 10g, h; Kubota, 2003a: 30; Segura-Puertas et al., 2003: 7: Vervoort & Watson, 2003: 31-32; Anonymous, 2004: 47; Bouillon et al., 2004: 189, fig. 105D-K. (Medusa and/or polyp).

Modeezia rotunda; Álvarez-Claudio & Anadón, 1995: 238 (polyp, incorrect subsequent spelling).

Campanularia fastigiata Alder, 1860: 73-74, pl. 5 fig. 1 (polyp).

Material inspected: Stn 1.129: Isolated hydrothecae on *Lafoea dumosa* (Fleming, 1820). Some hydrothecae with well preserved hydranths with stretched tentacles. RMNH-Coel. 30493. – Stn 2.119: Isolated hydrothecae with very long pedicels on *Sertularella gayi gayi* (Lamouroux, 1821). RMNH-Coel. 30385, slide 5164. – Stn 4.158: Numerous hydrothecae on *Sertularella gayi gayi* (Lamouroux, 1821). RMNH-Coel. 30389, slide 5169. – Stn 5.158: Many hydrothecae on stem of *Cryptolaria pectinata* (Allman, 1888). RMNH-Coel. 30497. – Stn 6.062: Isolated hydrothecae on stem of unidentifiable hydroid and on *Monostaechas quadridens* (McCrady, 1859) growing on dead shell. Slide 5177. Also a few hydrothecae on stem of *Obelia bidentata* Clark, 1875 growing on shell inhabited by pagurid and partly covered by sponge. RMNH-Coel. 30396. – Stn 6.069: Dispersed hydrothecae arising from stolon on fragment of unidentifiable leptolid. RMNH-Coel. 30481. – Stn 6.074: Numerous hydrothecae on stems of unrecognizable hydroid. Nearly all hydrothecae have polyps (contracted); no gonothecae. RMNH-Coel. 30487. Additional specimen with many hydrothecae arising from stolonal tubes running along length of stem of unrecognizable hydroid. As RMNH-Coel. 30487 bis. – Stn 6.078: Isolated hydrothecae attached to unidentified object, found between colonies and fragments of *Zygophylax biarmata* Billard, 1905. RMNH-Coel. 30333, slide 5128, see also RMNH-Coel. 30333 bis. Also some isolated hydrothecae between spines of *Hydractinia* sp. on a gastropod shell (RMNH-Coel. 30485). – Stn 6.080: A few hydrothecae on *Obelia* spec. and *Sertularella unituba* Calder, 1991, with *Filellum* cf. *serratum* (Clarke, 1879). RMNH-Coel. 30429. Additional specimens on unidentifiable leptolid fragment; some hydrothecae with well preserved polyps. As RMNH-Coel. 30429 bis. – Stn 6.104: Numerous hydrothecae on stem of *Nemertesia ramosa* (Lamarck, 1816). Life colonies with preserved hydranths. RMNH-Coel. 30482. – Stn 7.139: Isolated hydrothecae on stems of *Eudendrium* spec. No gonothecae. RMNH-Coel. 30337. Additional material from same substrate; RMNH-Coel. 30398, three slides 5180, some gonothecae present. – Stn MAU.041: several hydrothecae developing on branches of *Acryptolaria conferta* (Allman, 1877); no gonothecae (RMNH-Coel. 50509).

Table XI. Measurements of *Modeeria rotunda* in µm:

	Stn 2.119, slide 5164	Stn 4.158, slide 5169	Stn 6.062, slide 5177	Stn 7.139, slide 5180
Hydrotheca, length 'diaphragm' – rim	1625 - 2875	1625 - 1750	1325 - 1375	1450 - 1550
Maximum diameter	425 - 625	425 - 500	300 - 325	300 - 350
Pedicel, length	1500 - 6000	1250 - 1500	875 - 950	375 - 450
Diameter	125 - 155	75 - 100	63 - 75	75 - 90
Gonotheca, length			1.625 - 1.750	
Diameter			290 - 310	
Stolon, diameter				88 - 99
Polyp, number of tentacles		16		

Remarks.— The material recorded above confirms to the present concept of the polyp phase of this species, as described for instance by Ramil & Vervoort (1992: 29-32, fig. 4a, b). The material from Stn 2.119 is remarkable because of the size of some of the hydrothecae, that may be twice as large as those obtained at other stations (fig. 18 no. 3). They are found on a stolon from which also arise hydrothecae of customary dimensions. These large hydrothecae still are much smaller than those observed in *Stegopoma giganteum* Vervoort & Ramil, 1992, where the hydrotheca are c. 4 mm long and the pedicels reach a length of 15-26 mm. The gonothecae in *M. rotunda* are almost sessile, while those in *S. giganteum* have a short but distinct pedicel. As indicated by Ramil & Vervoort (1992: 32) the distinction between the various species brought to *Stegopoma* Levinsen, 1893, is far from clear.

Distribution.— Polyps and medusae of *Modeeria rotunda* have been recorded worldwide in boreal, temperate, subtropical and tropical parts of Atlantic, Pacific and Indian Oceans, the polyp phase penetrating into Arctic and Antarctic regions. The present records are from off the Atlantic coast of Mauritania (off Cap Blanc du Nord and circa 19°N 17°W), the Canary Islands (SW of Hierro, SW of Palma), and from the Cape Verde Archipelago (SE and SW of Boa Vista, SSW of Santa Lucia, S of Branco and Razo); all records are from moderately deep to deep waters (76-840 m).

Genus ***Stegolaria*** Stechow, 1913a

Stegolaria geniculata (Allman, 1888)

Cryptolaria geniculata Allman, 1888: 41-42, pl. 20 figs 1, 1a, b; Stechow, 1913b: 29.
Stegolaria geniculata; Ramil & Vervoort, 1992: 32-34, fig. 4c-e; Álvarez-Claudio & Anadón, 1995: 238; Medel & López-González, 1996: 197; Calder & Vervoort, 1998: 13-15, fig. 4a, b; Van der Land et al., 2001: 116; Watson & Vervoort, 2001: 154-156, fig 1; Vervoort & Watson, 2003: 32.

Material inspected: Stn 3.119: Colony composed of several polysiphonic stems developing on shell fragment, height c. 70 mm, and a number of fragments. No gonothecae. Preservation reasonable; many hydrothecae with contracted polyps. RMNH-Coel. 30415; slide 5192. – Stn 4.054: Small colony 30 mm high, spread 17 mm, of more or less pinnate structure; no gonothecae. Dead specimen, heavily overgrown, hydranths without polyps. RMNH-Coel. 30486. – Stn 5.023: 55 mm high, branched colony detached from sponge. No gonothecae. Material in bad shape. RMNH-Coel. 30404. – Stn 5.090: C. 10 colonies, up to 60 mm high, roughly pinnate, attached to stones, gorgonids and detached. Colonies covered by detritus and sand; hydrothecae empty. RMNH-Coel. 30528. – Stn 6.035: C. 10 colonies 10-15 mm high on

sandy tube; no gonothecae. RMNH-Coel. 30400; slide 5181. – Stn 7.139: Many colonies to 120 mm high and fragments. Dead material with much damaged hydrothecae. RMNH-Coel. 30536. – Stn 7.140: Fragments of one or more large colonies mixed with many colonies of *Zygophylax biarmata* Billard, 1905. RMNH-Coel. 30520. Additional sample of large number of colonies and fragments, to 150 mm high. No gonothecae. RMNH-Coel. 30520 bis; slide 5215. Specimen infested by Acarida.

Remarks.— This material agrees with previously described colonies from deep water in the northeastern Atlantic (Vervoort, 1985; Ramil & Vervoort, 1992); it consists largely of dead, overgrown specimens. No gonothecae have been observed. The synonymy of this species with ?*Cryptolaria operculata* Nutting, 1905 [= *Stegolaria operculata* (Nutting, 1905)] is still open to dispute.

Distribution.— *Stegolaria geniculata* is a fairly common deep water species in the Atlantic and if its synonymy with *S. operculata* is assumed, also in the Pacific and Indian Oceans. It has previously been recorded from nearby deep-water localities (Bay of Biscay; off Casablanca, Morocco) by Vervoort (1985), Vervoort & Ramil (1992) and Álvarez-Claudio & Anadón (1995). The present records are from the Azores (W of Formigas, 1134-1315 m and S of Pico, 1320-1350 m), from the Canary Islands (SE of Lanzarote, 1134-1315 m), from the Cape Verde Islands region (SW of Bravo, 600-675 m; S of Branco and Razo, 612-647 m; S of Razo, 1200 m) and from off the coast of Mauritania (1000 m).

Genus ***Stegopoma*** Levinsen, 1893

Stegopoma bathyale Vervoort, 1966 (fig. 9a, b)

Stegopoma bathyale Vervoort, 1966: 114, fig. 14; Edwards, 1973: 593; Ramil & Vervoort: 34-36, fig. 5a-d; Álvarez-Claudio, 1996b: 198; Álvarez-Claudio & Anadón, 1995: 238; Medel & López-González, 1996: 197; Van der Land et al., 2001: 117; Bouillon et al., 2004: 189, fig. 106A-C.

Material inspected: Stn 4.054: Colony with polysiphonic stem and branches, height 65 mm, spread 35 mm. No gonothecae. This is a complete colony detached from solid substratum. RMNH-Coel. 30488, slide 5342. – Stn MAU.040: Two colonies, strongly polysiphonic, 50 × 50 and 30 × 40 mm; the latter strongly overgrown by algae. No gonothecae. RMNH-Coel. 30339, two slides 5131. – Stn MAU.041: Fragmentary and irregularly built colonies to 50 mm high, heavily overgrown by algae and bryozoans. RMNH-Coel. 30508, 2 slides 5211.

Description.— Irregularly built, erect colony with polysiphonic main stem, branching and rebranching more or less in one plane, structure of colony much finer than in *Stegolaria geniculata* or *Stegopoma plicatile* (G.O. Sars, 1874). Ultimate branches monosiphonic, showing the original sympodial structure of the colony (fig. 9a); geniculation between the various internodes weak and almost absent, nodes not visible. Secondary tubes rapidly cover the monosiphonic branches, primarily on front and back of the colony, fully investing the monosiphonic shoots in older parts of the colony. Hydrothecae (fig. 9a, b) all free from branches; those on monosiphonic parts of colony on a short, wrinkled pedicel laterally of the original internodes; diameter of pedicel inferior to that of internode from which it springs. Hydrothecae remain free in polysiphonic parts, standing off from axis perpendicularly, pedicel short.

Hydrotheca tubiform, gradually narrowing proximally into pedicel, slightly curved; curving downwards on monosiphonic shoots. Proximal part of hydrotheca with quite

thin diaphragm, best visible in hydrothecae with (remnants of) polyps, that are basally attached to it. Distal part of hydrotheca produced into a triangular point on each side (front and back), separated by deep semicircular embayments, pleated opercular plates suspended between lateral points in each embayment, all together forming the characteristic gabled roof. Perisarc well developed in older parts of colony, though not very thick, thinning out along hydrothecal walls that are rather fragile and collapsible. No gonothecae.

Table XII. Measurements of *Stegopoma bathyale* in µm:

	Off Mauritania, Stn MAU.040 (slide 5131)	Off Casablanca, Morocco, BALGIM Stn CP91 (Ramil & Vervoort, 1992)	Bay of Bengal, Galathea Expediton, Stn 301 (Vervoort, 1966)
Hydrotheca, total length (including basal chamber)	443 - 508	465 - 520	375 - 450
Maximum diameter	131 - 164	155 - 170	110 - 150
Pedicel, length	98 - 164	135 - 170	65 - 200
Diameter	82 - 98	75 - 90	80 - 100
Gonotheca, approximate length		3055 - 3470	
Maximum diameter		540 - 605	

Remarks.— The material from MAU.040 has well preserved polyps; the material from Stn 4.054 is a dead colony overgrown by algae.

Distribution.— Originally described from deep water (1180 m) of the Bay of Bengal (Vervoort, 1966) and subsequently found in deep water of the temperate northeastern Atlantic (off Cape São Vicente, off Cádiz, and off Casablanca, Morocco), depth 394-1592 m. The present records are from SE of Lanzarote, Canary Is (CANCAP Stn 4.054, depth 1134-1315 m) and from off Mauritania, 18°51'N, 16°53'-16°56'W (MAU.041, depth 500-840 m).

Family Lovenellidae Russell, 1935

Genus ***Lovenella*** Hincks, 1868

Lovenella clausa (Lovén, 1835) (fig. 9c)

Campanularia clausa Lovén, 1835: 262, note.

Lovenella clausa: Fraser, 1912a: 45; 1912b: 364, fig. 26; Hartlaub, 1917: fig. on page 418; Broch, 1928: 67; Kramp, 1935: 140, fig. 57d; Perrier, 1936: 25; Rees, 1939: 442; Da Cunha, 1940: 108, 116; 1944: 8, 44, fig. 22; 1950: 125; Hardy, 1956: colour plate 3 fig. 6; Hamond, 1957: 295, 310; Marine Biological Association, 1957: 44, 56; Picard, 1958: 190; Kramp, 1959: 153, fig. 202; 1961: 178; Kühl, 1962: 227; Hamond, 1963: 666; Russell, 1963: 3, figs 5, 5a; Teissier, 1965: 18, 36; Kühl & Mann, 1967: 12; Patriti, 1970: 32, fig. 38; Boyd et al., 1973: 395; Laverack & Blacker, 1974: 21; Skinner, 1975: 193; García Corrales et al., 1979: 30, fig. 16; Van der Baan, 1980: 5, 19; Bouillon, 1984: 102; Skinner, 1984: 444; Chapman, 1985: 618 et seq.; Gili & Castelló, 1985: 14, fig. 3D; Gili (i Sardà), 1986: 131, fig. 4.13F, G; Cornelius & Ryland, 1990: 134, fig. 4.12; 1992: 254; Boero & Bouillon, 1993: 262; Álvarez-Claudio & Anadón, 1995: 238; Bouillon et al., 1995: 57; Cornelius, 1995: 162-165, fig. 36; Peña Cantero, 1995: 163-165, pl. 16 fig. A; Medel & López-González, 1996: 198; Howson & Picton, 1997:

31; Hansson, 1998: 6; Ramil, 1998a: 191-192, fig. 3b; Bouillon & Boero, 2000: 190; Van der Land et al., 2001: 115; Peña Cantero & García Carrascosa, 2002: 49-52, fig. 10f; Vervoort & Watson, 2003: 39; Bouillon et al., 2004: 166-167, figs 88J, K, 89A-D.

Lovenella (Campanularia) clausa; Vervoort, 1966: 109.

Lovenella (= Eucheilota) clausa; Davis, 1971: 18.

Eucheilota clausa; Russell, 1936b: 131-133, figs 1-3; 1938a: 412, 413, 414, 416, 418, 432; 1938b: 157, figs 66-74; Rees, 1939: 442.

Eucheilota hartlaubi Russell, 1936a: 589-594, figs 1-6.

Eucheilota hartlaubi; Kramp, 1937: 106.

Material inspected: Stn 7.058: Small colony detached from substratum, composed of three 7-9 mm long sympodial stems. Hydrothecae slightly deformed, but all with a complete hydranth. No gonothecae observed. Slide 5194.

Description.— Material consists of three erect shoots arising from a stolonal tube attached to sand grains, varying in height between seven and nine mm and consisting of a monosiphonic, sympodial stem with two or three hydrothecae, each at the end of an internode. Stem with three or four basal rings and three to five rings under each hydrotheca (or on hydrothecal pedicel); remainder of stem smooth. Hydrothecae elongated, cylindrical, gradually narrowing distally; distal half of hydrothecal wall undulated, with distinct basal chamber set off by thin but distinct diaphragm. Hydrothecal rim with 10-12 crenulations, each fitting a triangular opercular plate, in undamaged hydrothecae folding over hydrothecal aperture as a pointed, triangular roof. Hydranths preserved in all hydrothecae, filling proximal half of interior lumen, basally attached to diaphragm (fig. 9c). Body of hydranth cylindrical, proboscis dome shaped, surrounded by c. 12 filiform tentacles placed in one whorl; connecting membrane absent. No gonothecae.

Table XIII. Measurements of *Lovenella clausa* in µm:

	CANCAP Stn 7.058 (slide 5194)	North Atlantic (Cornelius, 1995)	Chafarinas Is, Mediterranean (Peña Cantero & García Carrascosa,2002)
Hydrotheca,			
diameter at diaphragm	213 - 246		
Idem at hydrothecal rim	460 - 475	350 - 600 (given as maximum width)	250
Height of basal chamber	131 - 197		100
Height of hydrotheca from diaphragm to rim	1460 - 1607	1200 - 1700 (given as maximum height)	875

Remarks.— The measurements of the Mediterranean material (Peña Cantero & García Carrascosa, 2002) are considerably below that of Atlantic material (cf. table XIII).

Distribution.— An eastern North Atlantic species (Cornelius, 1995; Peña Cantero & García Carrascosa, 2002), penetrating the western part of the Mediterranean sea (Peña Cantero & García Carrascosa, 2002). The present record is from SW of Maio, Cape Verde Islands, depth 69 m. The species has not previously been recorded from the Macaronesian area, but there is a previous record from Agadir, Morocco (Patriti, 1970).

Family Campanulinidae

Genus *Egmundella* Stechow, 1921

Egmundella modesta Millard & Bouillon, 1975 (figs 7 no. 3; 8 no. 3; 9d-h)

Lovenella (?) Millard & Bouillon, 1973: 42, fig. 5E, F.
Egmundella modesta Millard & Bouillon, 1975: 2, 5, fig. 1E-H.

Material inspected: Stn 3.119: Hydrothecae arising from a stolon attached to unrecognizable hydroid fragment. No gonothecae. Slide 5343. Material in bad condition and almost certainly not from recorded depth of haul (1000 m).

Description.— Stolonal colony composed of hydrothecae and nematothecae arsing from anastomosing tubes tightly investing old hydroid stem. Hydrothecae dispersed, on all sides of stem of host species, pedicellate; pedicel of varied height but inferior in length to hydrotheca, basally wrinkled or with one or two spiral twists, distally widening into hydrothecal base. Hydrotheca vase-shaped, walls almost parallel, proximally gradually narrowing into pedicel, internally with fine, straight diaphragm (figs 7 no. 3; 9d-f). Hydrothecal rim well marked, sometimes slightly everted, with 8-10 shallow embayments fitting the 8 to 10 elongated-triangular opercular plates. Elements of operculum rounded at apex and apparently not connected by a membrane as in many hydrothecae some plates are folded internally whereas the remaining plates are folded externally.

Nematothecae dispersed along stolon between hydrothecae, globular or broadly ovoid, very shortly stalked or directly attached to stolon, terminally with oval aperture, Many nematothecae are empty (figs 8 no. 3; 9g); some still possess a nematocyst battery composed of c. five banana-shaped nematocysts (fig. 9h).

Perisarc firm on stolon and hydrothecal pedicel but thinning out rapidly along hydrothecal walls; hydrothecae fragile and easily collapsible. Perisarc on nematothecae rather firm, only few are collapsed.

No gonothecae.

Table XIV. Measurements of *Egmundella* spp. in µm:

	Egmundella modesta CANCAP Stn 3.119	*Egmundella modesta* Anse la Mouche, Mahé, Seychelles (Millard & Bouillon, 1975	*Egmundella grimaldii* 47°10′-47°12′N 05°47′45″-05°51′45″W (Leloup, 1940)
Pedicel, length	184 - 252	140 - 710	300
Diameter at base	73 - 78	30 - 50	100
Hydrotheca, depth	364 - 409	200 - 330	600 - 950
Diameter at margin	185 - 224	80 - 110	300 - 400
Nematotheca, depth	44 - 48	40 - 50	110 - 130*
Maximum diameter	31 - 33	20 - 40	30 - 40

*Combined length of pedicel and nematothecae

Remarks.— The CANCAP material resembles two *Egmundella* species: *E. grimaldii* Leloup, 1940 and *E. modesta* Millard & Bouillon, 1975. *E. grimaldii* was described from an Atlantic locality (northern part of the Bay of Biscay); *E. modesta* originates from the

Seychelles area in the Indian Ocean. Comparison of our material with both descriptions and with the measurements shows that it best fits with *E. modesta*, although being slightly larger. It has the distinct hydrothecal pedicel also found in *E. modesta* allthough this pedicel never reaches the maximum height given for Millard & Bouillon's material (710 µm). It also shares the globular nematothecae with *E. modesta. E. grimaldii* has bigger hydrothecae and nematothecae and the hydrothecal pedicel, if present at all, is quite short.

Distribution.— Originally described from several localities around the islands Mahé and Praslin, Seychelles (Millard & Bouillon, 1973, as *Lovenella* sp.); the holotype is from Anse la Mouche, Mahé, Seychelles. No depth records are given, but the specimens were probably all collected in the littoral zone. *Egmundella grimaldii* was described from one locality (47°10'- 47°12'N 05°47'45"- 05°51'45"W) in deep water (1262-748 m) of the northern part of the Bay of Biscay (Leloup, 1940).

Genus ***Lafoeina*** G.O. Sars, 1874

Lafoeina tenuis G.O. Sars, 1874 (figs 7 no. 4; 8 no. 1; 10d-i)

Lafoeina tenuis G.O. Sars, 1874: 95, 119-121, pl. 5 figs 1-5; Gourret, 1906: 107, pl. 11 fig. 2; Linko, 1912: 70-71; Jäderholm, 1916: 11; Broch, 1928: 65, fig. 56; Kramp, 1932: 68, tab. 1; 1935: 135, fig. 57c; 1938: 67; 1943: 44; 1947: 10; Berezina, 1948: 57; Picard, 1950: 278; 1951b: 261; Deevey, 1954: 270; Picard, 1958: 191; Naumov, 1960: 314, fig. 204; Rossi, 1961: 76; Brotskaya et al., 1963: 174; Vervoort, 1968: 99; Bellan-Santini, 1970: 340, 356; Jägerskiöld, 1971: 63; Christiansen, 1972: 292; Belousov, 1975: 655, fig. 1 no. 7; Montanari & Morri, 1977: 295 et seq.; Morri, 1979: 306; Relini et al., 1979: 232; Morri, 1980: 7; Boero, 1981a: 182; 1981b: 108; 1981c: 197; Morri, 1981a: 194; 1981b: 83, fig. 28; Morri & Martini, 1981: 308; Ardizzone et al., 1982: 56, tab.; Boero et al., 1985: 29; Boero & Fresi, 1986: 142; Gili (i Sardà), 1986: 129-130, fig. 4.14B; Morri & Boero, 1986: 45, fig. 24; Stepan'yants, 1989: 412 et seq.; Antsulevich, 1991: 38, 41; Cornelius, 1992a: 254, 257 et seq.; 1992b: 77; Boero & Bouillon, 1993: 262; Álvarez-Claudio & Anadón, 1995: 238; Avian et al., 1995: 16; Cornelius, 1995: 197-199, fig. 45; Medel & López-González, 1996: 197; Howson & Picton, 1997: 32; Hansson, 1998: 6; Gulliksen et al., 1999: 49, 83; Ramil et al., 1998a: 190, fig. 2d; Schuchert, 2001: 60; Sirenko, 2001: 33; Van der Land et al., 2001: 114; Bouillon et al., 2004: 131, fig. 69E-G.

Lafoeina grupo *tenuis* - Altuna Prados, 1994: 118-122, pl. 13; 1995: 54.

Material inspected: Stn 5.072: Dispersed hydrothecae on various hydroids [*Bedotella armata* (Bedot & Pictet, 1900; *Zygophylax biarmata* Billard, 1905]. No gonothecae. Nematophores distinct (RMNH-Coel. 30531, slide 5214).

Description.— Stolonal colonies composed of hydrothecae and nematothecae arising from a branched and occasionally anastomosing hydrorhiza, firmly attached to stems and branches of host. Hydrothecae (figs 8 no. 1; 10d, e) dispersed, cylindrical, narrowing fairly suddenly proximally and there attached directly to stolon; there is no distinct pedicel. Distal part of hydrotheca with fine crease-line between wall of theca and operculum; opercular plates shaped as slender, triangular plates, numbering 12-14 and folding together to form a pointed roof (figs 7 no. 4; 10f). Folding of the plates and inspection of hydrothecae with partly open or partly inversed operculum suggests that the triangular plates are thickened portions of the thin, upper hydrothecal wall and are connected by a hyaline membrane. Many hydrothecae have well preserved, retracted hydranths with 10-12 tentacles.

Nematothecae placed on stolon between hydrothecae (fig. 8 no. 1), about as long as hydrothecae, although longer and shorter nematothecae do occur. Nematotheca tubiform, straight or wrinkled, perisarc equidistant, thin. Distal part of nematotheca slightly swollen, ovoid, with a small, circular aperture, slightly tilted downwards, giving a match-shaped appearance to nematotheca (fig. 10g-i). Swollen terminal portion with three to five large, banana-shaped nematocysts. No gonothecae.

Table XV. Measurements of *Lafoeina tenuis* in µm:

	CANCAP Stn 5.072 Azores	North-eastern Atlantic (Cornelius, 1995)
Hydrotheca, height	200 - 280	180 - 555
Diameter near rim	95 - 123	70 - 180
Nematothecae, height	150 - 310	40 - 190 mm
Diameter of pedicel	14 - 17	10 - 20
Diameter at apex	20 - 22	

Remarks.— *Lafoeina vilaevelebiti* Hadži, 1917, has been kept separate from *L. tenuis* because of differences in the number of opercular plates, the shape of the nematothecae and uncertainty about the reproduction in both species, both producing a medusa of which the adult phase is unknown. For this reason records of *Lafoeina tenuis* from the Mediterranean should be considered with some consideration. Cornelius (1995: 198) describes the nematothecae of British specimens of *L. tenuis* as having a lateral opening. This is certainly not so in the CANCAP specimens that have a small though distinct circular opening at the top.

Distribution.— Widely distributed in the Northeastern Atlantic, from the Azores and Madeira in the south to the Barents Sea in the north (Cornelius, 1995); this may or may not include the Mediterranean (see under remarks above). The present record is from the Azores, S of São Miguel, 37°41'N 25°24'W, 315 m.

Family Lafoeidae A. Agassiz, 1865
Subfamily Lafoeinae A. Agassiz, 1865

Genus ***Acryptolaria*** Norman, 1875

Acryptolaria conferta (Allman, 1877)

Cryptolaria conferta Allman, 1877: 17-19, pl. 12 figs 6-10.

Acryptolaria conferta; Calder, 1993: 67 et seq.; Altuna Prados, 1994: 131-134, pl. 16 figs A, B; 1995: 54; Blanco, 1994a: 162; 1994b: 188; Blanco et al., 1994: 8-9, figs 4, 5; Avian et al., 1995: 18; Bouillon et al., 1995: 51; Álvarez-Claudio & Anadón, 1995: 238; El Beshbeeshy, 1995: 326-327, fig. 1C; Hirohito, 1995: 104; Medel & López-González, 1996: 198; Stepan'yants et al., 1996: 15, 19; Calder, 1997: 87; Genzano & Zamponi, 1997: 290; Stepanjants et al., 1997: 458; Schuchert, 2000: 413, 423; 2001: 61-62, fig. 48A, B; Van der Land et al., 2001: 115; Cairns et al., 2002: 22; Schuchert, 2003: 156-157, fig. 15; Watson, 2003: 161-162, fig. 11A-D; Anonymous, 2004: 60-61; Bouillon et al., 2004: 155, fig. 83H-L.

Acryptolaria conferta conferta; Ramil & Vervoort, 1992: 41-43, fig. 7a, b.

Material inspected: Stn 1.094: Single well developed colony with thick, polysiphonic stem, c. 75 mm high; no coppiniae. RMNH-Coel. 30505. – Stn 2.014: Single flabellate colony with polysiphonic stem and branches, c. 80 mm high, no coppiniae, and some fragments. RMNH-Coel. 30371, slide 5156. – Stn 2.106:

Single stem with a few side branches, 50 mm high, no coppiniae, probably detached from coral fragments in same sample. RMNH-Coel. 30553. – Stn 4.153: Small, 30 mm high dead colony from *Malleus* spec. RMNH-Coel. 30526. – Stn 4.157: Strongly polysiphonic, bushy colonies up to 150 mm high, detached from solid substrate, basally invested by sponge. The stems and principal branches have a pinnate structure. No coppiniae. RMNH-Coel. 30445; slide 5204. – Stn 5.001: Colony 65 mm high, spread 35 mm; no coppiniae. Much covered by fish slime and detritus; only very few hydrothecae in good shape. RMNH-Coel. 30489 (identification doubtful). – Stn 5.005: Numerous colonies up to 50 mm high on various objects (small stones, twigs, sponges, etc.). No coppiniae. RMNH-Coel. 30523. – Stn 5.044: Tangled fragments of larger colonies; some of the stems with coppiniae; hydrothecae with contracted polyps. RMNH-Coel. 30499. Additional fragment 50 × 30 mm, as RMNH-Coel. 30499 bis. All colonies heavily overgrown. – Stn 5.056: Fragments of a larger colony. RMNH-Coel. 30382, one fragment as slide 5163. – Stn 5.075: A large number of tangled, bushy colonies attached to small stones, many with coppiniae on the main stem. Maximum height c. 80 mm. RMNH-Coel. 30443, slides 5201. Additional fragments as 30443 bis. – Stn 5.077: Colony 65 mm high, spread 40 mm, branching mainly in one plane. No coppiniae. RMNH-Coel. 30461. – Stn 5.085: C. 60 mm high, bushy colony with indistinct, polysiphonic stem and irregular branching. Rather dirty. No coppiniae. RMNH-Coel. 30468. – Stn 5.090: Pinnately branched, polysiphonic colony 50 × 60 mm, a smaller colony and some fragments. No coppiniae. RMNH-Coel. 30345, slide 5141. Largest colony apparently dead, colour of perisarc dark brown. – Stn 5.096: Much tangled colony and many fragments on shell concretion. No coppiniae observed. RMNH-Coel. 30551. – Stn 5.153: Colony fragment 25 mm high with retracted polyps. On stem some hydrocladia of *Antennella secundaria* (Gmelin, 1791). RMNH-Coel. 30469, slide 5345. – Stn 5.189: Two fan-shaped colonies 80 × 80 mm and some fragments; no coppiniae. RMNH-Coel. 30539. – Stn 7.140: Bushy colony c. 50 mm high, with many Foraminifera attached; no coppiniae. Some hydrothecae and short rhizocaulomic colonies of *Bedotella armata* (Pictet & Bedot, 1900) attached to stems and branches. RMNH-Coel. 30330, two slides 5123. Additional bushy colony, 80 mm high, spread 60 mm; slide 5135. – MAU.041: Irregularly built, bushy colony 50 mm high, spread c. 60 mm, overgrown by algae, some bryozoans and *Modeeria rotunda* (Quoy & Gaimard, 1827); some coppiniae. Some of the hydrothecae are quite long but the material, by the size of those hydrothecae, seems to belong here. RMNH-Coel. 50509.

Remarks.— The material listed above agrees with the description given by Ramil & Vervoort (1992: 41-43, fig. 7a, b).

Table XVI. Measurements of *Acryptolaria conferta* in µm:

	BALGIM Stn DW 132	CANCAP Stn 5.090, slide 5141*	CANCAP Stn 7.140, slide 5135
Axial and hydrocladial hydrothecae, total depth	1085 - 1195	1375 - 1500	1000 - 1075
Length adnate part adcauline wall	695 - 715	750 - 800	750 - 800
Length free part adcauline wall, including renovations	540 - 715	1125 - 1250	400 - 600
Length free part adcauline wall, excluding renovations	475 - 500	450 - 625	380 - 400
Diameter at base	150 - 175	192 - 218	150 - 155
Diameter at rim	215 - 240	295 - 320	217 - 230

* specimen with few renovations

Distribution.— *Acryptolaria conferta* has a circumglobal distribution in moderately deep to deep ocean strata. The present records are from various localities near the Azores; from south of Madeira, ± 32.5°S 17°N; from off Fuerteventura, S of Hierro and SW of Palma, Canary Islands; from off Razo, Cape Verde Islands, from off Mauritania, ± 19°N 17°W. The depths at these localities varied between 52 and 2050 m.

Acryptolaria conferta var. *minor* Ramil & Vervoort, 1992 (fig. 11a-d)

Acryptolaria conferta minor; Ramil & Vervoort, 1992: 43-48, figs 8a-c, 9a-c; Vervoort & Watson, 2003: 41, 44, fig. 4D, E.

Material inspected: Stn 1.102: Two colonies with polysiphonic main stem 30 and 50 mm high, and a fragment. No coppiniae. RMNH-Coel. 30500, slide 5344. – Stn 1.129: Colony composed of two stems, 30 mm high and same spread; no coppiniae. RMNH-Coel. 30494. – Stn 2.004: C. 10 large, fan-shaped colonies with strongly polysiphonic stems and main branches, up to 80 mm high, attached to old antipatharian stem along with sponges and ascidians. Many fusions and coppiniae. Colour dark brown probably resulting from stain released by sponge or ascidian. RMNH-Coel. 30529. – Stn 2.014: Three flabellate colonies of irregular structure, stem and principal branches polysiphonic; maximal height c. 100 mm, spread up to 80 mm. Some stems and branches with coppiniae. RMNH-Coel. 30372, three slides 5157, of which one with coppinia. – Stn 2.058: Fragments of a larger colony, 30-40 mm high, stems slightly polysiphonic, one of branches with a coppinia. RMNH-Coel. 30545, slide 5223, with *Halecium sessile* Norman, 1867. – Stn 2.092: three colonies up to 30 mm high, spread 25 mm and a fragment attached to small piece of rock. No coppiniae. RMNH-Coel. 30348, slide 5148. – Stn 2.099: Small, 15-20 mm high, slightly polysiphonic colonies on basal parts of gorgonians; no coppiniae. RMNH-Coel. 30547, 2 slides 5224. – Stn 2.118: Several slightly polysiphonic colonies on soft corals; height up to 25 mm; no coppiniae. RMNH-Coel. 30352, 2 slides 5152. – Stn 2.141: Six small colonies and fragments, maximum height 25 mm. Hydrothecae well preserved, with retracted hydranths. No coppiniae. RMNH-Coel. 30491, slide 5347. – Stn 5.166: Up to 55 mm high fragments of a larger colony; no coppiniae. RMNH-Coel. 30503.– MAU.040: Single colony, height 40 mm, spread 50 mm; no coppiniae. RMNH-Coel. 30550.

Remarks.— For a description of this variety see Ramil & Vervoort (1992: 43-48, figs 8a-c, 9a-c), it was originally introduced as a subspecies (*Acryptolaria conferta minor*; Ramil & Vervoort, 1992). As it is sympatric with *Acryptolaria conferta* (Allman, 1877) it is here reduced to the level of a variety. The CANCAP specimens are in accordance with that description. The material from CANCAP Stn 2.014 is remarkable because of the short free adcauline hydrothecal wall and the absence of renovations.

Table XVII. Measurements of *Acryptolaria conferta* var. *minor* in µm:

	BALGIM Stn DR 130/153	CANCAP Stn 2.092, slide 5148	CANCAP Stn 2.099, slide 5224
Axial and hydrocladial hydrothecae, total depth	705 - 850	750 - 800	650 - 725
Length adnate part adcauline wall	445 - 540	625 - 675	490 - 500
Length free part adcauline wall, including renovations	345 - 665	300 - 500	450 - 550
Length free part adcauline wall excluding renovations	245 - 420	200 - 325	300 - 350
Diameter at base	65 - 105	105 - 154	90 - 103
Diameter at rim	160 - 205	192 - 218	140 - 154

Distribution.— This subspecies has been described from a restricted area in the temperate northeastern Atlantic (off Cape São Vicente, off Cádiz, off Cape Spartel, entrance to the Strait of Gibraltar and the Alboran Sea), depth 135-1523 m. The present records are from NE of Flores, Azores; from south of Madeira, ± 32.5°N 17°W; from S of Fuerteventura and S and SW of Hierro, Canary Islands; from off Mauritania, ± 19°N 17°W, and from off Cape Blanc du Nord and west of Cape Yubi, Morocco. The depth records are from 150 to 1000 m.

Acryptolaria longitheca (Allman, 1877) (figs 11e, 12a)

Cryptolaria longitheca Allman, 1877: 19, pl. 13 figs 4, 5; Stechow, 1913b: 30.
Oswaldaria longitheca; Stechow, 1923b: 147.
Acryptolaria longitheca; Fraser, 1943: 78, 90, pl. 16 fig. 5, pl. 17 fig. 5; 1944: 212, pl. 41 fig. 192; Deevey, 1954: 270; Vervoort, 1968: 99; 1972: 45, fig. 12b, c; Cairns et al., 1991: 24; Calder, 1996: 1723, fig. 2d-f; 1997: 87; Calder & Vervoort, 1998: 22-25, figs 9-11; Van der Land et al., 2001: 115; Cairns et al., 2002: 22; Vervoort & Watson, 2003: 41.
Acryptolaria cf. *longitheca*; Vervoort & Watson, 2003: 47, fig. 4F, G.
Cryptolaria crassicaulis Allman, 1888: 41, pl. 19 figs 3, 3a; Ritchie, 1911: 833, pl. 87 fig. 4; Stechow, 1913a: 144; 1913b: 11, 113, figs 86, 87; Jäderholm, 1916-1917: 7, pl. 1 fig. 4; 1919: 8, pl. 2 fig. 2; Leloup, 1932: 146, fig. 16, pl. 16 fig. 3.
Acryptolaria crassicaulis; Yamada, 1959: 49; Rees & White, 1966: 273; Millard, 1967: 172, fig. 2A; Leloup, 1974: 8; Millard, 1978: 188 et seq.; Gravier-Bonnet, 1979: 18, fig. 34B, C; Vervoort, 1985: 283-285, fig. 1; Ramil & Vervoort, 1992: 48-49, fig. 9d; Altuna Prados, 1994: 134-136, pl. 17 figs A-E; 1995: 54; Blanco et al., 1994: 9-10, fig. 6; Blanco, 1994a: 162; 1994b: 188; Bouillon et al., 1995: 51; Medel & López-González, 1996: 198; Genzano & Zamponi, 1997: 290; Van der Land et al., 2001: 115; Vervoort & Watson, 2003: 41, 44-46, fig. 5A-C.
Oswaldaria crassicaulis; Stechow, 1921e: 256; 1923b: 147; Leloup, 1940: 15.

Material inspected: Stn 5.003: Fragments of a larger colony, to 50 mm long, spread to c. 20 mm; no coppiniae. Some of the hydrothecae with much withdrawn polyps; hydrothecae in perfect state; free part quite long. RMNH-Coel. 30490, 2 slides 5348. – Stn 5.023: Branched colony c. 35 mm high, attached to sponge and a fragment; no coppiniae. Material in bad condition. RMNH-Coel. 30405 (identification doubtful). – Stn 5.049: single 30 mm high colony attached to volcanic stone; base of stem weakly polysiphonic. Dead material; no coppiniae. RMNH-Coel. 30373; slide 5158.

Remarks.— The identification of the CANCAP specimens is based on the description of Mid-Atlantic Ridge material fully described and illustrated by Calder & Vervoort (1998); the monosiphonic parts of the colonies (figs 11e, 12a) greatly resembling their figure 9a. It resembles *Acryptolaria conferta* in the general structure of the colony but differs by the greater size of the hydrothecae that narrow perceptibly proximally; in the youngest parts of the colonies the arrangement of the hydrothecae is distinctly geniculate. After studying the type material of *Cryptolaria longitheca* Allman, 1877 and *Cryptolaria crassicaulis* Allman, 1888, Calder & Vervoort (1998: 25) reached the conclusion that both species are synonymous and should be merged. The drawing (fig. 11) they present of Allman's type of *Cryptolaria crassicaulis* shows a hydrotheca that differs from that of specimens from the Kermadec Ridge brought to that species by Vervoort & Watson (2003: 44-46, fig. 5A-C); a re-inspection of that material seems to be indicated.

Table XVIII. Measurements of *Acryptolaria longitheca* (Allman, 1877) in µm:

	Mid-Atlantic Ridge (Calder & Vervoort, 1998)	CANCAP Stn 5.003
Hydrotheca, total depth, including renovations	1660 - 1968	1500 - 1750
Length adnate adcauline wall		1050 - 1075
Length free adcauline wall, excluding renovations		725 - 800
Length free adcauline wall, including renovations		950 - 1075
Diameter at base		128 - 166
Diameter at rim	272 - 340	320 - 345

Distribution.— The species is distributed over deep water habitats in the western and eastern Atlantic (Calder & Vervoort, 1998); it may also occur in deep water of the Pacific (Vervoort & Watson, 2003). It was also found in deep water over the Mid-Atlantic Ridge, ± 15.5°N 46.5°W, 3285-3902 m depth and ± 23°N 45°W, 2500 m depth (Calder & Vervoort,1998). The present records are all from deep water in the Azores region, ± 37°-38°N 25°-25.5°W, depth 1370-2850 m.

Genus ***Cryptolaria*** Busk, 1857

Cryptolaria pectinata (Allman, 1888)

Perisiphonia pectinata Allman, 1888: 45-46, pl. 21 figs 2, 2a, b.
Acryptolaria pectinata; Stechow, 1921d: 229; 1923b: 146; Leloup, 1940: 9.
Cryptolaria pectinata; Ramil & Vervoort, 1992: 52-54, fig. 10d; Álvarez-Claudio & Anadón, 1995: 238; Bouillon et al., 1995: 51; Hirohito, 1995 (English text): 109-110, fig. 30d, e, pl. 7 fig. A; Medel & López-González, 1996: 198; Van der Land et al., 2001: 115; Cairns et al., 2002: 22; Calder et al., 2003: 1209; Vervoort & Watson, 2003: 53, 54-55; Anonymous, 2004: 61; Bouillon et al., 2004: 155, fig. 84A-D.

Material inspected: Stn 2.106: Four colonies 12-25 mm high, no coppiniae, RMNH-Coel. 30394, two made up in slide 5175. In addition c. 10 small colonies up to 30 mm high, no coppiniae; under same number. Also two small stems (8 mm high) attached to stem fragment of *Sertularella gayi robusta* Allman, 1873. RMNH-Coel. 30492. Additional sample contains numerous small colonies up to 50 mm high, partly attached to coral fragments and some with coppiniae. As RMNH-Coel. 30394 bis. – Stn 2.119: Five colonies varying in height between 20 and 40 mm; no coppiniae. RMNH-Coel. 30387, slide 5166. In addition three quite young colonies between 10 and 15 mm high. An additional sample contains rope with numerous colonies varying in height between 10 and 100 mm; the older have coppiniae on the stems. RMNH-Coel. 30387 bis. – Stn 2.120: Five colonies attached to small stones, to 20 mm high, no coppiniae. RMNH-Coel. 30506. – Stn 2.130: Four colonies, 15-35 mm high, highest polysiphonic; one of colonies with a small coppinia. RMNH-Coel. 30341; 2 slides 5134. – Stn 4.108: Young colony c. 10 mm high, no coppinia. Slide 5162. – Stn 4.163: Three colonies in height between 25 and 35 mm, one with split main stem; no coppiniae. RMNH-Coel. 30484. – Stn 4.V08: Pinnate colonies 40-100 mm high, densely interwoven with *Sertularella polyzonias* (L., 1758); no coppiniae. RMNH-Coel. 30331, two slides 5124. – Stn 5.085: Pinnate, 55 mm high colony on calcareous rock fragment. No coppiniae. RMNH-Coel. 30354, slide 5154. – Stn 5.153: C. 10 colonies, maximal height 100 mm, some polysiphonic and with coppiniae on stem. RMNH-Coel. 30342, slide 5138. With *Zygophylax biarmata* Billard, 1905 and interwoven with *Eudendrium* spec. – Stn 5.158: Five colonies varying in height between 20 and 50 mm; with *Modeeria rotunda* (Quoy & Gaimard, 1827); no coppiniae. RMNH-Coel. 30497. – Stn 5.178: Two colonies 30 and 50 mm high, no coppiniae. Nematothecae and nematophores well developed. RMNH-Coel. 30495. – Stn 7.139: Two colonies 70 and 90 mm high; no coppiniae. Nematothecae and nematophores well developed; hydrothecae protruding rather far. RMNH-Coel. 30548. – Stn 7.140: One colony 50 × 50 mm and a fragmentary colony with old coppinia. RMNH-Coel. 30521. Additional sample with several colonies to 70 mm high, as RMNH-Coel. 30521bis, slide 5351. Third sample with several huge colonies, height c. 150 mm, spread c. 200 mm; no coppiniae observed. As RMNH-Coel. 30521bis. Additional sample with *Sertularella g. gayi* (Lamouroux, 1824) and *Antennella secundaria* (Gmelin, 1791).

Remarks.— The coppiniae in the CANCAP material agree with the description presented by Ralph (1958) of the coppinia in New Zealand specimens. The gonothecae are densely aggregated into small globular or ovoid masses surrounding stem or branches; they are polygonal on cross section and terminate in a pointed structure

with a lateral opening. Many nematophorous tubules project in all directions from between the gonothecae, each carrying a few small nematothecae.

Distribution.— *Cryptolaria pectinata* occurs in deeper waters of tropical and temperate parts of all oceans; a survey of its distribution is presented by Vervoort & Watson (2003). The present records are from the Azores, from the Canary Islands and from the Selvagens Archipelago at ± 30°N 16°W and from the Cape Verde region (S of Branco and S of Razo); the depth records vary between 150 and 2700 m. The species has previously been recorded from the region of the Azores by Pictet & Bedot (1900), Rees & White (1966) and Cornelius (1992). The CANCAP regions extend the distribution of this species in the western Atlantic in southerly direction until ± 16.5°N.

Genus ***Filellum*** Hincks, 1868

The species of this genus can only be recognized with a sufficient degree of certainly if coppiniae are present, though many species have been described from sterile material. None of the CANCAP specimens of *Filellum* has been taken in fertile condition which makes the identification of this material very risky. Those colonies that have distinct transverse ribs on the proximal part of the hydrothecae have tentatively been identified as *Filellum* cf. *serratum* (Clarke, 1879); all other material is recorded as *Filellum* spec. though it shows much variability in the length and development of the free part of the hydrotheca. All species live epibiotic on a wide range of leptolids; some have also been recorded from other solid substrata.

Filellum cf. ***serratum*** (Clarke, 1879)

Filellum serratum Clarke, 1879: 242, pl. 4 fig. 25; Park, 1990: 78; Cairns et al., 1991: 24; El Beshbeeshy, 1991: 78-80, fig. 18; Park, 1991: 545; Antsulevich, 1992: 215; Cornelius, 1992a: 257; 1992b: 98; Dawson, 1992: 15; Park, 1992: 287; Boero & Bouillon, 1993: 263; Branch & Williams, 1993: 9, fig.; Calder, 1993: 67 et seq.; Park, 1993: 266; Altuna Prados, 1994: 140-141; Blanco, 1994a: 161; 1994b: 189; Blanco et al., 1994: 15-16, figs 13, 14; Altuna Prados, 1995: 54; Álvarez-Claudio & Anadón, 1995: 238; Avian et al., 1995: 18; Bouillon et al., 1995: 52; Hirohito, 1995 (English text): 110-112, fig. 31a-c; Park, 1995: 11; Peña Cantero, 1995: 171-176, pl. 18 figs f, g, pl. 19 fig. a; Medel & López-González, 1996: 198; Grohmann et al., 1997: 230; Genzano & Zamponi, 1997: 290; Kubota, 1997: 150; Nogueira et al., 1997: 368; Peña Cantero et al., 1998: 304-308, figs 1-2; Tang Zhican, 1998: 43-44, 46; Calder, 2000: 1133; Park & Song, 2000: 59; Schuchert, 2001: 63-64, fig. 50; Van der Land et al., 2001: 115; Cairns et al., 2002: 22; Genzano et al., 2002: 162; Peña Cantero & García Carrascoa, 2002: 53; Vervoort & Watson, 2003: 57, 59, 60; Calder et al., 2003: 1209; Grohmann et al., 2003: 13; Anonymous, 2004: 62; Bouillon et al., 2004: 156, fig. 84I, J.

Filellum cf. *serratum* - Ramil & Vervoort, 1992: 54-55.

Material inspected: Stn 4.144: Hydrothecae packed on unidentifiable hydroid stem, characterized by a striated basal portion and a long distal part standing off from support; no coppiniae. RMNH-Coel. 30513. – Stn 5.153: Some hydrothecae on bryozoan developing on worm tube. Brought tentatively to this species because of presence of prominent striae on basal part of hydrotheca; no coppiniae. RMNH-Coel. 30420. – Stn 6.069: Numerous hydrothecae on old stem of *Sertularella* spec.; no coppiniae. Identified as probably belonging to this species on account of the striation on basal portion of hydrothecae; no coppiniae. RMNH-Coel. 30510. – Stn 6.080: Many hydrothecae on fragment of *Sertularella unituba* Calder, 1991 and a few on small colony of *Obelia* spec. With *Modeeria rotunda* (Quoy & Gaimard, 1827). RMNH-Coel. 30429. May belong here because of heavy serration on basal part of hydrotheca; no coppiniae. – Stn 6.114: Numerous hydrothecae arising from stolon completely covering small colony of

Sertularella gayi gayi (Lamouroux, 1821). Basal portion of hydrothecae with distinct serrations; no coppiniae. Basal part of stem of host with another type of *Filellum*, of which the free part is repeatedly renovated; hydrothecae placed very closely. Classified as *Filellum* spec. RMNH-Coel. 30466. – Stn 7.126: Hydrothecae on stem fragments of unrecognizable hydroid. Brought to this species because of strong serration on basal part of hydrotheca. Many hydrothecae are renovated; no coppiniae. RMNH-Coel. 30463.

Distribution.— *Filellum serratum* (Clarke, 1879) is generally conceived as a cosmopolitan species. However, since most of the records are based on the inspection of sterile material its actual distribution is unknown. The present, tentatively identified material originates from the Azores, E of Flores, 150-168 m depth; from the Canary Islands, SW of Palma, 200-140 m depth and from various localities around the Cape Verde Archipelago, viz. SW of Boa Vista, 76-90 m and 220-250 m depth, SE of Santo Antão, 200 m depth, and S of Razo, 208-930 m depth.

Filellum spec.

Material inspected: Stn 1.096: numerous hydrothecae from stolon creeping on *Eudendrium rameum* (Pallas, 1766). No coppiniae. RMNH-Coel. 30409. – Stn 1.145: Many hydrothecae from a stolon creeping on *Lafoea dumosa* (Fleming, 1820) and hydroids associated with that species; no coppiniae. RMNH-Coel. 30346, slide 5146. In addition many hydrothecae on *Halecium sibogae marocanum* Billard, 1934, slide 5144. – Stn 3.083: A few hydrothecae on stem of *Obelia dichotoma* (Linnaeus); no coppiniae. RMNH-Coel. 30427. – Stn 5.056: Numerous hydrothecae attached to worm tube; no coppiniae; no slide. RMNH-Coel. 30383. – Stn 5.096: Several isolated hydrothecae on worm tubes. No coppiniae. With *Halecium* spec. – Stn 6.114: Numerous hydrothecae densely packed on basal part of stem of *Sertularella gayi gayi* (Lamouroux, 1821). Basal part of hydrotheca cannot be observed, but the free part is long and twisted, repeatedly renovated; no coppiniae. RMNH-Coel. 30466. – Stn 7.058: Numerous hydrothecae on stem of *Streptocaulus pulcherrimus* Allman, 1883. No coppiniae. RMNH-Coel. 30367. – Stn MAU.040: Isolated hydrothecae on stem fragment of *Stegopoma bathyale* Vervoort, 1966; no coppiniae.

Remarks.— All this material is sterile, could not be identified to species level and is certainly composed of various species of *Filellum*. All occurred epibiotic on various leptolid species.

Distribution.— The material recorded as *Filellum* spec. was collected off the Azores, S of São Miguel, 180 m and W of Pico, 52 m; S of Madeira, 116-135 m; Selvagens Archipelago, S of Selvagens Pequena, 192 m; Cape Verde Archipelago, SW of Santo Antão, 200 m and SW of Maio, Ponta Inglez/Ponta Preta, 69 m; off Mauritania, 500 m, and near Morocco, off Cap Blanc du Nord, 100 m.

Genus ***Lafoea*** Lamouroux, 1821

Lafoea dumosa (Fleming, 1820)

Sertularia dumosa Fleming, 1820: 83.

Lafoea dumosa; Ramil & Vervoort, 1992: 55-56; Branch & Williams, 1993: 10, fig.; Harms, 1993: 15; Schönborn et al., 1993: 244, pl. 14 fig. 2; Altuna Prados, 1994: 141-143; Stepan'yants, 1994: 123 et seq.; Altuna Prados, 1995: 54; Álvarez-Claudio & Anadón, 1995: 239; Avian et al., 1995: 18; Bouillon et al., 1995: 53-54; Cornelius, 1995a 261-263, fig. 60; Hirohito, 1995 (English text): 126-128, fig. 36a-c, pl. 8 fig. A; Medel & López-González, 1996: 198; Peña Cantero & García Carrascosa, 1996:

23-25, fig. 4A-D; Stepan'yants, 1996: 7; Howson & Picton, 1997: 32; Kubota, 1997: 150; Orlov, 1997: 19 et seq.; Sheĭko & Stepanjants, 1997: 439; Brunel et al., 1998: 67; Göransson & Karlsson, 1998: 20; Hansson, 1998: 7; Gulliksen et al., 1999: 49, 83; Luke, 1998: 3; Peña Cantero & García Carrasocosa, 1999: 212 et seq.; Mills & Miller, 1999: 53, fig. 3.55; Evans, 2000: 44; Schuchert, 2000: 413; Henry, 2001: 163; Schuchert, 2001: 67-70, figs 54A-D, 55, 56; Sirenko, 2001: 33; Zühlke et al., 2001: 272; Van der Land et al., 2001: 115; Cairns et al., 2002: 22, 56; Panteleeva, 2002: 1; Grohmann et al., 2003: 13, figs 2D; Schuchert, 2003: 157-158, fig. 16; Vervoort & Watson, 2003: 62, 63, fig. 8E-H; Watson, 2003: 157-158, fig. 7A-E; Bouillon et al., 2004: 157, figs 84K, 85A-D; Anonymous, 2004: 65-67; Peña Cantero et al., 2004: 2291-2293, fig. 6F.

Material inspected: Stn 1.093: Tangled, bushy colonies up to 70 mm high and fragments. Coppiniae present. RMNH-Coel. 30504; slide 5210. – Stn 1.129: Irregularly built colony some 40 mm high and some fragments. Hydrothecae with hydranths; no coppiniae. On this colony dispersed hydrothecae of *Modeeria rotunda* (Quoy & Gaimard, 1827). RMNH-Coel. 30493. – Stn 1.145: Tangled colonies and fragments, maximal height c. 40 mm, no coppiniae. Attached to part of antipatharian stem. Mixed with *Filellum* sp., *Zygophylax biarmata* Billard, 1905, *Halecium sibogae marocanum* Billard, 1934 and *Antennella siliquosa* (Hincks, 1877). RMNH-Coel. 30346; slide 5142. – Stn 4.153: Detached fragment c. 10 mm high mixed with other hydroids. Slide 5173. – Stn 6.035: 25 mm high colony detached from its substratum (strongly calcified bryozoan colony) to which some quite young colonies are still attached. No coppiniae. RMNH-Coel. 30471. – Stn 6.069: Roughly pinnate colonies to 70 mm high, highest polysiphonic, attached to calcareous algae. No coppiniae. RMNH-Coel. 30344, slide 5140. – Stn 6.080: Young colony developing on shell fragment; height c. 20 mm; no coppiniae. RMNH-Coel. 30467. – Stn 6.131: Colony 25 × 25 mm, branching mostly in one plane, no coppiniae. RMNH-Coel. 30462. – Stn 6.135: Two colonies to 55 mm high attached to empty worm tube. Structure of colony pinnate; no coppiniae. RMNH-Coel. 30541; slide 5220. – Stn 7.132: Small 10 mm high, polysiphonic colony on worm tube, also a fragment; no coppiniae. Slide 5161. – Stn 7.139: Several colonies, biggest 70 mm high with spread of 80 mm. No coppiniae. RMNH-Coel. 30338, slide 5130.

Remarks.— Fertile colonies were only observed at Stn 1.093 (S of Madeira, 32°38'N 16°50'W, 98-105 m depth). The gonothecae are aggregated in a very compact coppinia surrounding the lower parts of stem and some branches. Each gonotheca is bottle-shaped, narrowing strongly at the apex and there with a short and narrow tube; their outline, by the strong compression, is polygonal (quadrate to hexagonal). Curved tubes and some hydrothecae protrude from the mass of gonothecae; the tubes, in the present material without coenosarc, may be nematophorous. Male as well as female gonothecae are present in the coppiniae, many of the female gonothecae have a small, globular acrocyst, in the preserved material opaque and white.

The considerable variation in colony shape and morphology of the hydrothecae is well illustrated by the CANCAP specimens that all are slightly different, particularly in development of the hydrothecal pedicel.

Distribution.— *Lafoea dumosa*, in its present concept (see Cornelius, 1975: 385-390) is widely distributed over all seas of the world, including the Macaronesian area, with the exception probably of high Arctic and Antarctic regions where it is replaced by other species of *Lafoea*. The bathymetrical distribution too is quite impressive, having been found from shallow waters down to a depth of at least 1250 m. The present records are from S of Madeira, from Morocco off Cape Blanc du Nord, from SW of Palma, Canary Islands, and from a number of localities in the Cape Verde Archipelago (SW of Brava, SW of Boa Vista, S of São Vicente, SE of São Nicolau and S of Branco and Razo); the depth distribution varies between 30 and 675 m.

Family Lafoeidae A. Agassiz, 1865
Subfamily Hebellinae Fraser, 1912

Genus ***Anthohebella*** Boero, Bouillon & Kubota, 1997

Anthohebella parasitica (Ciamician, 1880)

Lafoea parasitica Ciamician, 1880: 673, fig. 39.
Hebella parasitica; Boero, 1980: 133-136, figs 1-7.
Anthohebella parasitica; Medel & López González, 1996: 198; Boero, 1997a: 24-25, fig. 13; Bouillon & Boero, 2000: 180.; Faucci & Boero, 2000: 258; Watson: 8, fig. 4A, B; Van der Land et al., 2001: 115; Peña Cantero & García Carrascosa, 2002: 57-58, fig. 11a, b; Kubota, 2003a: 30; Bouillon et al., 2004: 150, fig. 80F-H.

Material inspected: Stn 3.D07: Hydrothecae from a stolon on axis of cormoid of *Aglaophenia pluma* (Linnaeus, 1758); no gonothecae. RMNH-Coel. 30428. – AZO.07: Hydrothecae and gonothecae from a stolon along the axes of cormoids of *Aglaophenia octodonta* (Heller, 1868). RMNH-Coel. 30442. – Stn 4.D17: Hydrothecae from a stolon developing along axes of three cormoids of *Aglaophenia pluma* (Linnaeus, 1758), hydranths with polyps; no gonothecae. RMNH-Coel. 30418.

Remarks.— Nothing can be added to the existing descriptions of this species; for more information I refer to Boero,1980, and Boero, Bouillon & Kubota, 1997. The species occurred exclusively on species of the genus *Aglaophenia* Linnaeus, 1758; that from AZO.07 had gonothecae with developing gonophores.

Distribution.— This epibiotic species has been recorded from the temperate, subtropical and tropical parts of Atlantic, Pacific and Indian Oceans, including the Mediterranean, from where it was originally described. It occurs preferentially on species of *Aglaophenia* Linnaeus, 1758, but it has also been observed on species of *Sertularella* Gray, 1848 and *Eudendrium* Ehrenberg, 1834. It prefers the littoral zone, reaching a depth of c. 25 m (Peña Cantero & García Carrascosa, 2002).

The CANCAP specimens come from the Azores, E coast of Santa Maria, Baia de São Lourenço, littoral zone, and from Madeira, south coast, W of Funchal harbour, up to c. 20 m depth and Porto Santo, SE coast of Baixo, 5-20 m depth.

Genus ***Bedotella*** Stechow, 1913

Bedotella armata (Pictet & Bedot, 1900)

Campanularia armata Pictet & Bedot, 1900: 9-10, pl. 1 figs 3-6; Billard, 1906: 171; Stechow, 1913b: 27; Marinopoulos, 1981: 176; Aguirrezabalago et al., 1984: 89, 91, fig. 4.
Bedotella armata; Stechow, 1913a: 137; 1913b: 27; Leloup, 1940: 9; Rees & White, 1966: 273; Aguirrezabalago et al., 1986: 138; Altuna & García Carrascosa, 1990: 54 et seq., fig.; Ramil & Vervoort, 1992: 50-52, figs 7c, d, 10a-c; Altuna Prados, 1994: 143-147, pl. 18, pl. 19 figs A-E; 1995: 54, fig. 2A; Álvarez-Claudio, 1995: 265-267, figs 1, 2; Álvarez-Claudio & Anadón, 1995: 238; Bouillon et al., 1995: 51; Medel & López-González, 1996: 198; Boero et al., 1997c: 363; Van der Land et al., 2001: 115; Bouillon et al., 2004: 150, fig. 80I-K.

Material inspected: Stn 1.102: small 10 mm high colony on unrecognizable hydroid. No gonothecae. RMNH-Coel. 30501. – Stn 1.114: Small 8 mm high colony on stem of *Lytocarpia myriophyllum* (Linnaeus,

1758); no gonothecae. RMNH-Coel. 30388, slide 5167. – Stn 3.054: Small colonies up to 8 mm high arising from stolon detached from substratum; no gonothecae. RMNH-Coel. 30425. – Stn 5.072: Fragments of a larger colony or colonies; no gonothecae. Mixed with *Zygophylax biarmata* Billard, 1095, and covered by *Lafoeina tenuis* G.O. Sars, 1874. RMNH-Coel. 30532. – Stn. 7.140: Separate hydrothecae and short, rhizocaulomic colonies on *Cryptolaria pectinata* (Allman, 1877); no gonothecae. RMNH-Coel. 30330, two slides 5123; one with very distinct nematophores. In addition c. 10 colonies varying in height between 20 and 35 mm, with strongly polysiphonic stem. Two colonies with large gonothecae. As RMNH-Coel. 30330 bis, slide 5212. Some additional colony fragments found between many colonies of *Zygophylax biarmata* Billard, 1905, as RMNH-Coel. 30330 bis.

Remarks.— For a description of this species and its nematophores I refer to Ramil & Vervoort (1992: 50-52, fig. 10a-c); the characteristic gonotheca was described by Álvarez-Claudio (1995: 265-267, figs 1-2).

Distribution.— The main area of distribution of this species is deep water of the Bay of Biscay (Ramil & Vervoort, 1992; Altuna Prados, 1994; Álvarez-Claudio, 1995) , but further records are from the Azores (Leloup, 1940), Atlantic off the Strait of Gibraltar (Ramil & Vervoort, 1992), various localities in the Mediterranean (Marinopoulos, 1981: off the French Mediterranean coast; Ramil & Vervoort, 1992: Alboran Sea), all from comparatively deep water.

The CANCAP material originates from the Atlantic south of Madeira, 280-320 m depth; from SE of Madeira, 300-320 m depth; from the Azores, S of São Miguel, 315 m depth and from the Cape Verde Islands, S of Razo, 1200 m depth; this material is copious and has many gonothecae.

Genus ***Hebellopsis*** Hadži, 1913

Hebellopsis scandens (Bale, 1888) (fig. 12b-d)

Lafoea scandens Bale, 1888: 758, pl. 13 figs 16-19.

Hebella scandens; Altuna & García Carrascosa, 1990: 54 et seq., fig.; Gili & Ballesteros, 1991: 247; Llobet et al., 1991: 153 et seq.; Genzano, 1992: 144-145, figs 7, 8; Genzano & Zamponi, 1992: 60-61, fig. 25; Boero & Bouillon, 1993: 262; Vervoort, 1993b: 544-545; Altuna Prados, 1994: 152-159, pl. 21 figs A-D, pl. 22 figs A-E; 1995: 54; Blanco et al., 1994: 23-24, figs 23, 24; Watson, 1994: 66; Avian et al., 1995: 18; Peña Cantero, 1995: 182-184, pl. 17 figs e-g; Migotto, 1996: 26-27, 123, fig. 6a, b; Altuna Prados, 1996: 53-60, figs 1-3; Watson, 1996: 78; Boero et al., 1997a: 8-11, fig. 2; De Andrade & Migotto, 1997: 35-36; Genzano & Zamponi, 1997: 290; Grohmann et al., 1997: 230; Nogueira et al., 1997: 368; Rosso & Marques, 1997: 417; Bouillon & Boero, 2000: 181; Van der Land et al., 2001: 115 (excluding synonyms!); Peña Cantero & García Carrascoa, 2002: 58-59, fig. 11c, d; Bouillon et al., 2004: 151, fig. 81A-E.

Hebellopsis scandens; Hadzi, 1925: 246; Vervoort, 1941: 197; Calder, 1986: 136, pl. 38; Cairns et al., 1991: 24; Calder, 1991c: 43-45, fig. 27; 1993: 67 et seq.; Bouillon et al., 1995: 53; Medel & López-González, 1996: 198; Watson, 2000: 6-7, fig. 3B, C; 2002: 338-340, fig. 1A; Cairns et al., 2002: 22; Grohmann et al., 2003: 13; Vervoort & Watson, 2003: 65, 66-68, figs 6G, H, 9A-I.

Hebella scadens; Blanco, 1994a: 161; 1994b: 190 (incorrect subsequent spelling).

Material inspected: Stn 5.112: Many hydrothecae with contracted polyps on a leptolid fragment. This material is remarkable because of the elongated, tubiform shape of the hydrothecae. No gonothecae observed. RMNH-Coel. 30483, slide 5364. – Stn 6.114: Many hydrothecae with symmetrical, smooth walls on a colony of *Sertularella gayi gayi* (Lamouroux, 1821). The hydrothecae usually occur at the tip of the (living) hydrothecae of the host, which is furthermore covered with hydrothecae of *Filellum* cf. *serratum* (Clarke, 1879) and basally completely invested by hydrothecae of *Filellum* spec. RMNH-Coel. 30466.

Remarks.— The material from CANCAP Stn 5.112 is characterized by the tubiform, long hydrothecae that in many instances are renovated (fig. 12b-d). Total length of the non-renovated hydrotheca 460-605 µm, diameter 165-195 µm; the renovated hydrotheca may reach a length of 985 µm. For the life history of this species I refer to Altuna Prados, 1994. The species is extremely variable in the shape of the hydrotheca; it lives epibiotic on many species of leptolids, bryozoans, etc.

Distribution.— Temperate, subtropical and tropical parts of the Atlantic, Pacific and Indian Oceans, including the Mediterranean. The present records are from the Azores, W of Pico, 85 m depth and from the Cape Verde Islands, SW of Santa Antão, 200 m depth. The species was previously recorded from the Azores, São Miguel, Capellas Bay at 27 m depth (Leloup, 1940; Rees & White, 1966).

Family Lafoeidae A. Agassiz, 1865
Subfamily Zygophylacinae Quelch, 1885

Genus ***Zygophylax*** Quelch, 1885

Zygophylax biarmata Billard, 1905 (figs 13a, b; 18 no. 2)

Zygophylax biarmata Billard, 1905: 97-98, fig. 2; Park, 1990: 78; 1991: 545; 1992: 287; Ramil & Vervoort, 1992: 59-65, figs 11e-h, 12a-i, 13e, f; Bianchi et al., 1993: 299; Park, 1993: 266; Altuna Prados & Álvarez-Claudio, 1995: 2-6, figs 1, 2; Bouillon et al., 1995: 55; Medel & López-González, 1996: 199; Kubota, 1997: 150; Hansson, 1998: 7; Van der Land et al., 2001: 115; Vervoort & Watson, 2003: 69; Anonymous, 2004: 70; Bouillon et al., 2004: 157, fig. 85E-J.

Not *Zygophylax biarmata* Hirohito, 1995 (English text): 138-140, fig. 41a-c, pl. 8 fig. C.

Material inspected: Stn 1.098: Polysiphonic colonies up to 30 mm high on lamellibranch; no coppiniae. Nematothecae scarce and when present short and tumbler-shaped. RMNH-Coel. 30351; slide 5151. – Stn 1.102: Tangled 10-15 mm high stems on *Acryptolaria conferta* (Allman, 1888); no coppiniae. RMNH-Coel. 30502. – Stn 1.145: A few small stems, c. 10 mm high on *Lafoea dumosa* (Fleming, 1820); no coppiniae. RMNH-Coel. 30346, slide 5145. – Stn 2.119: Small, young colonies on various hydroids; one bigger colony, c. 15 mm high, in slide. RMNH-Coel. 30386, slide 5165. – Stn 2.141: Several up to 15 mm high colonies on a piece of basaltic rock; no coppiniae. RMNH-Coel. 30534. – Stn 4.153: Fragmentary colony c. 25 mm high from *Malleus* spec. RMNH-Coel. 30527. – Stn 4.158: Small, 8 mm high colony, detached from substratum. Made up in slide 5199. – Stn 5.072: Fragmentary colonies mixed with fragments of *Bedotella armata* (Bedot & Pictet, 1900); no coppiniae. With some hydrothecae of *Lafoeina tenuis* G.O. Sars, 1874. RMNH-Coel. 30533. – Stn 5.153: Tangled colonies to 20 mm high, some slightly polysiphonic; one with small coppinia (in slide). With *Cryptolaria pectinata* (Allman, 1888). Interwoven with *Eudendrium* spec. RMNH-Coel. 30343, 4 slides 5139. In addition irregularly structured colonies up to 55 mm high, with polysiphonic, indistinctly visible stems; no coppiniae. Under same number. – Stn 6.065: Two fragmentary colonies 20 and 25 mm high may belong here. Poor material with scarcely any nematotheca left. RMNH-Coel. 30470. – Stn 6.078: Small, scarcely branched monosiphonic colonies up to 10 mm high on octocorals and shell fragments; no coppiniae. RMNH-Coel. 30333, 5 slides 5127. Additional sample with *Laomedea calceolifera* (Hincks, 1871) growing on gastropod shells (RMNH-Coel. 28845). Third sample consisting of 10 mm high colonies and some fragments, heavily overgrown by bryozoans, some colonies with slightly polysiphonic stem; under RMNH-Coel. 30333, slide 5196. Fourth additional sample consists of many colonies up to 40 mm high growing on shells of gastropods and are mixed with *Modeeria rotunda* (Quoy & Gaimard, 1827). RMNH-Coel. 30333 bis. – Stn 6.080: Small, fragmentary colonies and some branches, maximum length 15 mm; no coppiniae. RMNH-Coel. 30433. In addition two 20 mm high colonies, one on shell fragment, no coppiniae (RMNH-Coel. 30433 bis). Under same number three fragments 15-25 mm long; no coppiniae. – Stn 7.140: 12 mm high fragment of colony, no coppinia. Made up in slide 5206. In addition sample with numerous

pinnate colonies with polysiphonic stems, to 80 mm high, taken from rope. RMNH-Coel. 30519, slides 5352-5354. Some of those colonies heavily overgrown by algae; no coppiniae.

Description.— Full-grown colonies up to 50 mm high, with erect, occasionally forked, stem without division into internodes, largely polysiphonic, with biserially arranged, sub-opposite hydrocladia with a maximum length of 10 mm, originating from shallow apophyses on central tube, also supporting an axillar hydrotheca and one or two nematothecae. Secondary tubes run parallel to main tube and also cover basal hydrocladia that are thus converted into side branches. Two free stem hydrothecae between each pair of side branches or hydrocladia; secondary tubes provided with nematothecae.

Hydrocladia weakly geniculate, not divided into internodes, with biserially arranged hydrothecae placed on conspicuous apophyses bearing one or two nematothecae that if paired point in opposite directions (fig. 13a). Hydrotheca (fig. 13b) fairly small, elongated beaker-shaped, narrowing basally into a short pedicel, asymmetrical, abcauline wall distinctly convex, adcauline wall almost straight or slightly uneven. Diaphragm distinct, oblique, with large circular hydropore, occasionally with upturned rim. Rim of hydrotheca perpendicular to hydrothecal length axis, smooth, slightly everted. Renovations of hydrothecae frequent, sometimes greatly increasing length of hydrotheca of which aperture may become slightly tilted upwards or downwards. Duplications of diaphragm also frequently occur.

Nematothecae tubular, basally rounded, inserting by means of short, more or less globular pedicel, frequently renovated and greatly lengthened. One or two occur on the hydrothecal apophyses; that of the axillary hydrotheca being placed on the base of the hydrocladium (fig. 13a).

A single coppinia occurs in a colony from Stn 5.153, consisting of a number of adnate, more of less globular gonothecae surrounding the stem and the base of a side-branch; the borders between the individual gonothecae are obscure (fig. 18 no. 2). The gonothecal mass has a number of short funnels with strongly everted rims, each funnel leading towards the interior of a gonotheca by means of a wide, circular aperture. Short nematophorous tubules project from between the gonothecae, slightly surpassing the gonothecal funnels in length.

Table XIX. Measurements of *Zygophylax biarmata* Billard, 1905 in µm:

	BALGIM Stn DR42 (Ramil & Vervoort, 1992)	CANCAP Stn 5.153 (slide 5139)	CANCAP Stn 7.140 (slide 5352)
Axis, distance between two consecutive hydrotheca	300 - 440		377 - 426
Diameter of axis at that point			230 - 279
Hydrothecal pedicel, length of adcauline wall	40 - 60	56 - 62	
Hydrotheca, length of adcauline wall from diaphragm onwards, no renovations	210 - 270	238 - 245	213 - 246
Length adcauline wall from diaphragm onwards, with renovation	290 - 370	280 - 297	
Diameter at rim	120 - 140	140 - 151	107 - 115
Nematotheca, length without renovations	80 - 110		80 - 85
Length with renovations	110 - 175	78 - 84	110 - 115
Diameter at rim	35 - 45	48 - 52	

Remarks.— This species frequently occurs epizootic on other hydroids; such colonies tend to be much smaller and are irregularly built though recognizable by the shape of the hydrothecae and nematothecae. The coppinia agrees with that described for *Zygophylax biarmata* by Ramil & Vervoort (1992: 60, fig. 12d-f). *Zygophylax biarmata* as described and figured by Hirohito (1995: 138-140, fig. 41a-c, pl. 8 fig. C) is not this species, it has an entirely different gonosome. Hirohito's records are based on material from Sagami Bay, previously mentioned in Hirohito's 1983 paper; the identity of that material was questioned by Ramil & Vervoort (1992: 59, 64). For the complicated synonymy of this and allied species see Ramil & Vervoort (1992: 59-65).

Distribution.— *Zygophylax biarmata* has been recorded from a number of localities in the temperate and subtropical north-eastern Atlantic, from the east coast of South Africa, from Madagascar and from the Zanzibar area (Ramil & Vervoort, 1992). The present records show the wide distribution of this species in the temperate and subtropical eastern Atlantic: Azores, Madeira, Canary Islands, Cape Verde Islands and the Atlantic coast of Morocco. The depth records are from 100 to 1200 m. Well developed colonies originate from the Azores and from deeper water of the Cape Verde region.

Zygophylax brownei Billard, 1924 (figs 13c, 14)

Lafoea pinnata; Browne, 1907: 16, 18, 25-28, 29 (not *Lafoea pinnata* G.O. Sars, 1874: 116, 133, 139, pl 4 figs 25-28).

Zygophylax brownei Billard, 1924: 64; 1927: 331-332; Ramil & Vervoort, 1992: 65-70, figs 13a-d, 14a-c; Medel & López-González, 1996: 199; Boero et al., 1997c: 363; Schuchert, 2000: 413, 423-425, fig. 7A-D; 2001: 70-71, fig. 57A-C; Van der Land et al., 2001: 115; Vervoort & Watson, 2003: 69; Bouillon et al., 2004: 157-158, fig. 85K-M.

Material inspected: Stn 2.058: irregularly built colony with forked, polysiphonic main stem, height c. 50 mm. No coppiniae. RMNH-Coel. 30543, slide 5222. – Stn 4.158: Pinnate colony composed of two stems, c. 50 mm high; no gonothecae. RMNH-Coel. 30496; slide 5208. In addition a small colony c. 20 mm high, with badly preserved hydrothecae. Made up in slide 5209. Probably a young colony of *Zygophylax brownei* Billard, 1924. – Stn 6.080: Several quite young colonies, 10-15 mm high, developing on *Sertularella* spec. Living material with well preserved, contracted hydranths; no coppiniae. RMNH-Coel. 30434, slide 5363.

Description.— Colonies erect, composed of unforked, polysiphonic main stem, attached to fixed substratum by means of flattened disk composed of stolonal tubes. Hydrocladia 8-15 mm long, pinnately dispersed along main stem (fig. 14a); basal hydrocladia transformed into short, polysiphonic side branches. Top part of stem monosiphonic, not divided into internodes though occasional constrictions of the perisarc are visible. Hydrocladia also without division into internodes (fig. 13c).

Hydrothecae of stem and hydrocladia rather strictly in one plane, placed on a conspicuous apophysis; hydrocladia insert on apophysis directly under (axillary) hydrotheca, leaving the stem almost perpendicularly, base of hydrocladium slightly bulging (fig. 14a). Hydrotheca elongated tumbler-shaped, nearly symmetrical, slightly swollen in basal third, swelling occasionally better developed on one side (fig. 14b, c). Pedicel separated from hydrotheca proper by a slightly oblique ring-shaped diaphragm, pedicel of varied length (fig. 14a-c), usually wrinkled or bulging on one side, that of axillary hydrothecae usually longer, with irregularly wrinkled perisarc. Plane of aperture usually perpendicular to hydrothecal length axis, in some hydrothecae

slightly tilted towards axis of stem or hydrocladium. Rim of hydrotheca distinctly widening but scarcely everted. Renovations of hydrothecae rare, restricted to one or two.

Nematothecae not abundant, present on front or back of apophysis, tubular, frequently renovated, base rounded (figs 13c, 14a).

Table XX. Measurements of *Zygophylax brownei* in µm:

	CANCAP Slide 5208 Stn 4.158	Between Iceland and Faroes (Schuchert, 2001)	Bay of Biscay (Ramil & Vervoort, 1992)
Monosiphonic part of axis, distance between two consecutive hydrothecae	623 - 688		
Diameter at that point	165 - 197		
Hydrothecal pedicel, length	165 - 377	150 - 250	155 - 220
Hydrotheca, depth	448 - 560	c. 500	335 - 525
Diameter at diaphragm	117 - 129		
Diameter at rim	224 - 235	250 - 300	185 - 230
Nematotheca, length without renovations	80 - 85		
Nematotheca, length with renovations	165 - 175		105
Diameter at rim	45 - 51		62

Remarks.— Schuchert (2000: 425) has not been followed in synonymizing this species with *Lafoea halecioides* Allman, 1874 (: 472, pl. 66 figs 1, 1a) because I believe the presence or absence of nematothecae is too meager evidence for such an act which would involve a change of the name. It seems better to await the discovery of additional, fertile material.

Distribution.— Known with certainty from several localities in the Bay of Biscay, 134-753 m depth (Ramil & Vervoort, 1992), from Canyon de la Cassidaigne, off Marseilles, Mediterranean, depth unknown (Ramil & Vervoort, 1992), and from the North Atlantic between Iceland and the Faroe Islands, 405 m depth (Schuchert, 2000, 2001). The present records are from W of Cape Yubi, Morocco, 27°58'N 13°24'W, 500 m depth, SW of Palma, Canary Islands, 28°39'N 17°59'W, 350-250 m depth and from SW of Boa Vista, Cape Verde Islands, 220-250 m.

Zygophylax leloupi Ramil & Vervoort, 1992 (fig. 15)

Zygophylax leloupi Ramil & Vervoort, 1992: 74-78, figs 16a-c, 17a-d; Bouillon et al., 1995: 55; Calder & Vervoort, 1998: 33-35, fig. 16a-c; Van der Land et al., 2001: 115; Vervoort & Watson, 2003: 69.

Material inspected: Stn 7.023: Many colonies up to 100 mm high with polysiphonic main stems and branches on old gorgonid axis. No coppiniae observed. RMNH-Coel. 30542, 2 slides 5221.

Description.— Erect, pinnate colonies up to 100 mm high; stem polysiphonic, thick, basally 1.5 mm in diameter, occasionally forked, attached to firm substratum by means of flattened hydrorhizal plate. Only distal parts of stem monosiphonic, with occasional perisarc constrictions, no regular division into internodes visible (fig. 15a). Hydrocladia long, 15-20 mm, subopposite, all in one plane, inserting on stem apophyses, leaving stem at an angle of c. 80° or less, transformed into side branches when covered by secondary tubes, occasionally branched.

Hydrothecae of stem and hydrocladia placed on conspicuous apophyses (fig. 15a, c),

arranged in two alternate series in planes placed at an acute angle with length axis of stem or hydrocladium and consequently frontally exposed. Hydrotheca deeply campanulate; part below diaphragm (pedicel) conspicuous, of varied length, wrinkled, kinked or provided with one or two nodes (fig. 15b, c). Hydrotheca proper almost symmetrical, slightly bulging in lower half (fig. 15c). Rim circular, even, slightly everted, renovations common, restricted to one or two. Diaphragm thin, attached to hydrothecal wall by means of circular perisarc ring, with large central opening, occasionally renovated.

Nematothecae present in fair numbers, attached next to hydrothecal pedicel on apophyses, beaker-shaped, rounded proximally, rim circular, scarcely everted, renovations common (fig. 15d).

Perisarc firm though rather thin, yellowish, thinning out along hydrothecal walls; only few hydrothecae collapsed.

No coppiniae.

Table XXI. Measurements of *Zygophylax leloupi* in µm:

	CANCAP Stn 7.023 Slide 5221	BALGIM Stn CP 90 (Ramil & Vervoort, 1992)	Mid-Atlantic Ridge (Calder & Vervoort, 1998)
Stem, distance between two consecutive hydrothecae	705 - 790	700 - 1000	
Hydrothecal pedicel, length	213 - 492	270 - 350	344 - 492
Hydrotheca, length adcauline wall from diaphragm onwards, no renovations	525 - 575	500 - 640	
Hydrotheca, length adcauline wall from diaphragm onwards, with renovations (total depth)	590 - 640	570 - 690	574 - 648
Diameter at rim	262 - 328	280 - 340	292 - 325
Nematotheca, length, including renovations	128 - 135	100 - 130	130
Diameter at rim	78 - 85	35 - 45	60

Remarks.— *Zygophylax leloupi* Ramil & Vervoort, 1992 resembles *Zygophylax brownei* Billard, 1924, in many details but its hydrothecae are larger, frontally exposed and have a long, kinked, wrinkled or articulated pedicel. The only coppinia so far known was described by Ramil & Vervoort (1992); it has no nematophorous branches.

Distribution.— Azores (Leloup, 1940, as *Zygophylax geniculata*), between 845 and 1095 m depth; off Rabat, Morocco, 890-1378 m depth (Ramil & Vervoort, 1992), and the Mid-Atlantic Ridge at 38°20.50'N 30°40.30'W, 919 m depth (Calder & Vervoort 1998). The present record is from S of São Tiago, Ponta Temerosa, Cape Verde Islands, 525 m depth.

Zygophylax levinseni (Saemundsson, 1911) (fig. 16)

Lictorella levinseni Saemundsson, 1911: 86-88, fig. 2; Gravier-Bonnet, 1979: 29.

Zygophylax levinseni; Rees & Vervoort, 1987: 72; Ramil & Vervoort, 1992: 78-82, figs 18a-d, 19a-f; Altuna Prados, 1995: 54; Altuna Prados & Álvarez Claudio, 1995: 6-10, figs 3, 4; Medel & López-González, 1996: 199; Calder & Vervoort, 1998: 35-37, fig. 17a-c; Schuchert, 2001: 71-72; Van der Land et al., 2001: 115; Vervoort & Watson, 2003: 69.

Zygophylax cf. *Levinseni*; Álvarez-Claudio & Anadón, 1995: 239.

Zygophylax elegantula Leloup, 1940: 11, pl. 1 fig. 8; Rees & White, 1966: 274; Rees & Vervoort, 1987: 78; Altuna & García Carrascosa, 1990: 54 et seq., fig.; Altuna Prados, 1994: 163-166, pl. 24 figs A-F, pl. 25 figs A-F; Bouillon et al., 1995: 55; Medel & López-González, 1996: 199.

Material inspected: Stn 6.035: Colony c. 50 mm high, spread 30 mm, attached to fragment of a gorgonian. Specimen covered with small mites; a few amphipods are also attached. A few hydrothecae in good condition and with retracted polyp. No gonosome present. Remarkable by presence of large numbers mites (Acarida) and of (partly consumed) nematophores. RMNH-Coel. 30546, slide 5349. – Stn 6.049: Pinnate, dirty colony c. 60 mm high and a fragment. No coppiniae. RMNH-Coel. 30465. – Stn 6.050: Four pinnate stems 35-45 mm high, spread c. 40 mm; no coppiniae. RMNH-Coel. 30340, 2 slides 5133.

Description.— Colonies erect, pinnate, weakly polysiphonic in their proximal parts, stems not forked, side branches originate from hydrocladia covered by secondary tubes, occasionally with secondary ramification. Side branches and hydrocladia subopposite, in one plane; monosiphonic parts of colonies divided into internodes with one or two apophyses; nodes straight (fig. 16a). Apophyses of stem and hydrocladia big, directed obliquely laterally and upwards, hydrothecae inserting on apophyses consequently directed laterally and obliquely frontally. Hydrocladia 10-20 mm long, inserted on apophyses below insertion of hydrotheca, leaving stem at an angle of c. 80° or slightly less, slender, with irregular division into internodes, bearing 6-20 alternately arranged apophyses and hydrothecae, one or two per internode.

Hydrothecae long and slender, elongated tumbler-shaped, very gradually widening from base onwards; pedicel (part below diaphragm) fairly long, c. half the length of the hydrotheca (without renovations), slightly curved proximally. Hydrotheca with slight but distinct curvature in upper half; visibility of curve depending upon angle of vision; adcauline wall concave in upper third; adcauline wall convex (fig. 16b, c). Hydrothecal aperture perpendicular to length axis, rim even, slightly everted; renovations common and rather frequent, up to five have been observed.

Nematothecae tubiform and quite long (fig. 16a, d), deciduous on apophyses, when shed a distinct, circular scar is visible (fig. 16c); two nematothecae usually have been present, one on each side of the apophysis. Renovations are quite common; proximal part of nematotheca rounded, attachment by means of short, globular pedicel. Nematothecae occur in great number on the secondary tubes; most of these nematothecae are repeatedly renovated and almost threadlike.

No coppiniae.

Table XXII. Measurements of *Zygophylax levinseni* in µm:

	CANCAP Stn 6.050, Cape Verde Is, slide 5133	BALGIN Stn CP 91, off Rabat, Morocco	Mid-Atlantic Ridge, c. 15°N, 45°-46° W
Stem, distance between two consecutive hydrothecae	742 - 1105	400 - 800	
Diameter at node	75 - 107	85 - 120	124 - 146
Hydrothecal pedicel, length	99 - 264	180 - 290	228 - 488
Hydrotheca, length adcauline wall from diaphragm onwards, no renovations	495 - 577	340 - 440	361 - 390
Hydrotheca, length adcauline wall from diaphragm onwards, with renovations	693 - 990	380 - 460	445 - 514
Diameter at rim	181 - 215	155 - 175	166 - 179
Nematotheca, length, including renovations	50 - 213	105 - 230	94 - 237
Diameter at rim	20 - 28	35 - 50	36 - 55

Remarks.— The CANCAP material from the Cape Verde region differs from previously recorded material by the greater size of the hydrothecae and their slight curvature; in the latter it approaches the Bay of Biscay material recorded by Altuna Prados & Alvarez-Claudio (1995). It agrees in the spurious development of the tubular nematothecae on the accessory tubes, a characteristic of the present species. The material from CANCAP Stn 6.035 is remarkable by the presence of numerous mites (and some small amphipods) on the colonies, resulting in almost complete destruction of the hydrothecae, while the tubular nematothecae are much reduced in length, probably as a result of 'grazing'. The presence of a few more or less undamaged hydrothecae makes it possibly to identify this material.

Distribution.— Originally recorded from the Atlantic S of Iceland, 510 m depth (Saemundsson, 1911). Further records are from the Bay of Biscay off the Basque coast, 183-978 m depth (Altuna Prados & Álvarez-Claudi o, 1995), the Mid Atlantic Ridge c. 15°N 45°-46° W, 2565-3000 m depth (Calder & Vervoort, 1998), the Azores region (Leloup, 1940, as *Zygophylax elegantula*), and off Rabat, Morocco, 948 m depth (Ramil & Vervoort, 1992). Additional deep water specimens were recorded from the Bay of Biscay and the Atlantic S of the Cape Verde Archipelago by Ramil & Vervoort (1992, 1646-3647 m depth). The present material originates from SW of Brava, Cape Verde Islands, 600-675 m depth, and from SW of Fogo, Cape Verde Islands, 1100-1300 m depth.

Zygophylax parabiarmata spec. nov. (figs 17; 18 nos 1, 4; 19a)

Material inspected: Stn 6.080: Single 8 mm long branch detached from larger colony; no coppiniae. RMNH-Coel. 30435. – Stn 6.131: Pinnate colony detached from solid substratum, 45 mm high, composed of various branched stems; branching in one plane. No coppiniae. RMNH-Coel. 30464, slide 5207. – Stn 6.135: Pinnate colonies to 90 mm high, detached. Some of the branches with coppiniae. RMNH-Coel. 30540, slide 5219; holotype is a 100 mm high colony, spread 80 mm with a small coppinia on the main stem. – Stn 6.137: Pinnate colonies and fragments, up to 70 mm high, attached to shells and shell fragments. Stems and main branches polysiphonic; on stems and some branches aggregates of gonothecae forming compact coppiniae of low gonothecae with a single funnel, everted at its rim. RMNH-Coel. 30332, three slides 5126. Two additional colonies c. 50 mm high, spread 25 mm, stem strongly polysiphonic, no coppiniae. As RMNH-Coel. 30332 bis. Under same number a large number of fragments with thick, dark brown main stem and heavily overgrown by foraminiferans and bryozoans. – Stn 6.148: Three large colonies, up to 100 mm high, spread 80 mm, detached from substratum. As material from Stn 6.137. RMNH-Coel. 30349, slide 5149. – Stn 6.174: Several small, c. 15 mm high colonies. largely monosiphonic, on calcareous algae. RMNH-Coel. 30350, slide 5150. – Stn 7.059: Large, 75 mm high colony, spread 35 mm, with heavy, thick, polysiphonic stem; no coppiniae. Heavily overgrown by foraminiferans and bryozoans, so much so that structure of colony is obscured. RMNH-Coel. 30507. – Stn 7.151: Many colonies to 35 mm high on stem and larger branches of *Nematophorus clarkei* (Nutting, 1900); no coppiniae. RMNH-Coel. 30537, slide 5218.

Description.— Colonies more or less pinnate, with a distinct, polysiphonic, occasionally forked main stem, composed of the original primary axis surrounded by many secondary tubes originating from the stolonal matting of fibers attaching colony to fixed or solid substratum. Primary, secondary and subsidiary branching mainly in one plane; branches largely polysiphonic and originating from stem hydrocladia covered by secondary tubes. Monosiphonic parts of stem and branches as well as hydrocladia without distinct septa (fig. 17a), though occasionally with constrictions directly under apophyses; this, however, is not a conspicuous feature. Apophyses supporting hydrothecae fairly big (fig. 17b), pointing in all directions without definite

order, closely packed, four or five to each mm of stem, branch or hydrocladium.

Hydrothecae pointing obliquely upwards and laterally, tumbler-shaped, narrowing gradually from aperture to base; a distinct circular diaphragm shaped as a thin ring separates hydrotheca proper from pedicel, occasionally with a distinct narrowing of the hydrothecal wall (fig. 17b). Adcauline wall of hydrotheca smoothly convex in basal third; abcauline wall almost straight to weakly concave. Hydrothecal rim slightly but distinctly everted; plane of aperture perpendicular to hydrothecal length axis or slightly tilted downwards. Renovations of hydrothecae common, one to four being usually visible.

Hydrocladia spring from hydrothecal apophyses under insertion of axillar hydrotheca (fig. 19a), up to 10 mm long, originally monosiphonic but in lower regions of stem rapidly covered by secondary tubes and converting to side branches. Hydrotheca on hydrocladia have the same arrangement as those on primary stem; they point in all directions without apparent regular arrangement.

Nematothecae largely deciduous on the apophyses but found in numbers on secondary tubes, cup-shaped, with rounded base; rim slightly everted (fig. 17c), renovations occasional. Shed nematothecae leave a circular scar on hydrothecal apophyses. Number of nematothecae usually one for each apophysis; very rarely two nematothecae (one on each side) have been observed.

Coppiniae form a characteristic feature of this species because of the high degree of fusion of the gonothecae, that are fused to from a rather solid strip of coppinial mass rather lying on top of than surrounding a polysiphonic part of stem or branch (figs 17d, 18 no. 1). The secondary fibers from which this coppinial mass originates can be seen on the surface of the coppinia as a reticulate structure between which project the coppinial funnels (fig. 18 no. 4). That part of the coppinia from which the funnel projects is cone-shaped; the rim is circular and strongly everted because of conspicuous constriction of the funnel just under the rim (fig. 17e). No nematophorous branches have been observed though some of the original hydrocladia of that part of the stem are still present, the coppinial mass lying on top.

Perisarc thin but quite firm; only few collapsed hydrothecae have been observed. In spite of the wealth of material no properly preserved hydranths have been found; the number of tentacles and the characters of the cnidome cannot be given. All colonies fairly dirty by accumulation of debris and development of algae.

Table XXIII. Measurements of *Zygophylax parabiarmata* spec. nov. in µm:

	CANCAP Stn 6.148 Slide 5149
Monosiphonic part of axis, distance between two consecutive hydrothecae	230 - 360
Diameter at that point	115 - 148
Hydrothecal pedicel, length	35 - 51
Hydrotheca, length of adcauline wall (from diaphragm onwards, measured in straight line, without renovations)	335 - 355
Hydrotheca, length of abcauline wall (from diaphragm onwards, without renovations)	270 - 308
Diameter at diaphragm	56 - 89
Diameter at rim	145 - 168
Nematotheca, length without renovations	73 - 84
Diameter at rim	45 - 56
Height of coppinial funnel from surface of coppinial mass	328 - 410
Diameter at constriction just under rim	145 - 150
Diameter of aperture	213 - 246

Table XXIV. Characteristics and measurements (in µm) of *Zygophylax* spp.:

	Zygophylax profunda Quelch, 1885	*Zygophylax armata* (Ritchie, 1907)	*Zygophylax biarmata* Billard, 1905	*Zygophylax parabiarmata* spec. nov.
Appearance of colony	Unknown.	Erect, branched colony with stiff stem and branches, branches and hydrocladia in one plane.	Tendency towards pinnate colony though with irregularities, flexuous, fine.	Irregularly pinnate, colony fairly robust.
Presence of internodes	Internodes not developed	Internodes not developed	Internodes not developed	Internodes not developed
Arrangement of hydrothecae	Biserially, alternate.	Biserially, alternate, rather closely packed.	Biserial, alternate, widely separated.	Pointing in all directions, crowded.
Shape of hydrotheca	Abcauline wall convex; adcauline wall almost straight, rather short and curved.	Abcauline wall convex; adcauline wall almost straight.	Abcauline wall convex; adcauline wall almost straight.	Abcauline wall convex; adcauline wall almost straight.
Number and place of nematothecae	One or two nematothecae per apophysis, tube-shaped, fairly long; a conspicuous feature in the holotype.	Nematothecae tubular, fairly long, usually a pair for each apophysis (one on each side).	Elongated cup-shaped, usually a pair on each apophysis, one on each side though three nematothecae have also been observed.	Cup-shaped, deciduous, one per apophysis.
Shape of coppinia	Unknown.	Coppinia composed of strongly adnate, hexagonal gonothecae.	Gonothecae adnate, but individually recognizable, surrounding stem or branch. No nematophorous branches.	Gonothecae fused to from a flattened coppinial mass attached to stem or branch. No nematophorous branches.
Shape of individual; gonotheca	Unknown.	Body of gonotheca hexagonal in outline.	Globular.	Not individually recognizable.
Aperture of gonotheca	Unknown.	Aperture 'hooded', 'hood' one-, two or even three pointed, each with lateral circular opening.	At end a short neck, rim strongly everted.	At end of a short funnel, rim strongly everted.

Remarks.— Three species occur in the Cape Verde area with which the present new species shows similarity, viz. *Zygophylax profunda* Quelch, 1885; *Zygophylax armata* (Ritchie, 1907) and *Zygophylax biarmata* Billard, 1905. The four species show great similarity in the shape and size of the hydrothecae but differ in structure of the colony and the coppinia. The principal differences are given in table XXIV; for the rather complicated synonymy I refer to Ramil & Vervoort, 1992: 59-65.

Of these four species *Zygophylax profunda* Quelch, 1885 is the least known; it is only know from the holotype, a sterile colony collected in deep water of the Cape Verdian area. All material subsequently referred to *Z. profunda* proved to belong to other species (cf. Ramil & Vervoort, 1992: 63-65). The holotype has been inspected and figured by Millard (1977: 119, fig. 6A) and Rees & Vervoort (1987: 60-61, fig. 10C). The fact that no coppinia has been described and the poor condition of the holotype (dried material as well as the slides) make recognition hazardous. However, the fairly big, tubular nematothecae are a conspicuous feature even in spite of the poor condition of the material. This and the fact that in the fragments of the holotype preserved in the slides the hydrothecal apophyses are fairly widely spaced (c. 225-400 mμ) induced me to describe the copious CANCAP material as a new species.

Distribution.— Recorded only from the Cape Verde area at depths varying between 30 and 250 m.

Zygophylax sagamiensis Hirohito 1983 (fig. 20)

Zygophylax sagamiensis Hirohito, 1983: 6, 30-31, fig. 11; Rees & Vervoort, 1987: 85-86; Hirohito, 1995 (English text): 144, fig. 44a-e, pl. 9 fig. C; Anonymous, 2002: 18, fig.; Vervoort & Watson, 2003: 69; Watson, 2003: 160-161, fig. 10A-F; Anonymous, 2004: 71.
Zygophylax echinata Calder & Vervoort, 1998: 28-33, figs 14a-h, 15.
Zygophylax echinatum; Vervoort & Watson, 2003: 69.

Material inspected: Stn 7.140: Single irregularly ramified 45 mm high colony with coppinia on side branch. Three slides 5352-5354.

Description.— Colony consists of several polysiphonic stems resulting from forking of 45 mm high original stem; all stems provided with subalternate side branches and hydrocladia, all polysiphonic, only ultimate parts of hydrocladia monosiphonic. All stems and branches in one plane. In monosiphonic parts of colony two hydrothecae between each pair of sub-alternate hydrocladia; hydrocladia up to 3 mm long with 8-12 hydrothecae; they soon become covered by secondary tubes and develop into side branches. Monosiphonic hydrocladia with big, alternately disposed apophyses, directed laterally and slightly frontally, wall of hydrocladium above apophysis constricted and occasionally forming a distinct node (fig. 20a). Hydrotheca tubular, in lateral view weakly curved, adcauline wall convex; abcauline wall weakly concave to almost straight, gradually widening from base onwards; original aperture perpendicular to hydrothecal length axis, rim circular, slightly but distinctly everted (fig. 20a-c). Nearly all hydrothecae with renovations, usually numbering 2 or 3. In hydrothecal base a distinct, usually straight diaphragm with big circular hydropore, Basal portion of hydrotheca above diaphragm may be slightly contracted. Hydrothecal pedicel of varied development, frequently one-segmented and slightly swollen. Some hydrothecae, particularly but not

Table XXV. Measurements of *Zygophylax* spp. in µm:

	Zygophylax echinatus Calder & Vervoort, 1998 Mid-Atlantic Ridge (holotype)	*Zygophylax sagamiensis* Hirohito, 1983 CANCAP Stn 7.140 Slide 5354	*Zygophylax sagamiensis* Hirohito, 1983 Sagami Bay, Japan (Hirohito, 1983)	*Zygophylax sagamiensis* Hirohito, 1983 Off Macquarie Island (Watson, 2003)
Hydrocladia, length	Up to 3000	2460 - 3115		
Hydrotheca, length adcauline wall, without renovations	267 - 397	252 - 308	340 - 460	392 - 600
Length abcauline wall, without renovations	254 - 364	225 - 285		
Diameter at diaphragm	46 - 68	39 - 56		56 - 64
Diameter at rim	94 - 117	62 - 95	120 - 130	116 - 148
Hydrothecal pedicel, length at adcauline side	29 - 111	95 - 112		108 - 120
Length at abcauline side	26 - 117	62 - 90		
Nematotheca, length without renovations	42 - 68	45 - 56		
Length with renovations		60 - 84		76 - 108
Diameter at rim	24 - 31	28		36 - 40
Length of pedicel	13 - 18	8 - 12		

exclusively those on the secondary tubes, may have a pedicel of considerable length composed of several elements or rings. Nematothecae beaker-shaped with rounded bottom, pedicel very short, almost invisible; many nematothecae renovated (fig. 20d). One and occasionally two nematothecae occur on hydrocladial apophyses; many are present on the secondary tubes.

Perisarc yellowish, fairly strong on stem and hydrocladia, thinning out rapidly along walls of hydrothecae; distal part of hydrothecae quite thin and collaped in many instances. Remnants of hydranths are visible inside hydrothecae.

One coppinia has been observed, surrounding basal part of a stem and a side branch, length 3.5 mm, diameter c. 1.5 mm. It consists of a mass of closely packed, apparently adnate, flask-shaped gonothecae, that viewed from above have a polygonal outline. Each gonotheca apically running into a characteristic, slightly curved, hollow point with a big, circular, lateral aperture (fig. 20e). A small number of short nematophorous tubules penetrates the mass of gonothecae, each bearing two or three nematothecae. Sex of gonosome could not be ascertained.

Remarks.— On comparison of the CANCAP specimen with the descriptions of *Zygophylax sagamiensis* by Hirohito (1983, 1995) and of *Z. echinatus* by Calder & Vervoort (1998) it appears that the present specimen bridges the small differences that seemed to separate the two species. The shape of the hydrothecae in particular is even more varied than appears from the description of *Z. echinatus*, particularly the presence of a constriction in the distal part of the hydrothecae, that gives them a vase-shaped appearance (cf. Calder &

Vervoort, 1998, fig. 15a, b). In lateral view the hydrotheca in this species is slightly but distinctly curved, but that curvature remains almost unnoticed if the hydrotheca is viewed from a different position. The development of the hydrothecal pedicel is much varied in the CANCAP specimen, varying from an almost complete absence, in which case the hydrotheca seems to insert directly on the apophysis, through a pedicel composed of a single element, to a condition where a pedicel of considerable length is present, the pedicel being either wrinkled or composed of a number of distinct rings. However, a pedicel length equaling or surpassing that of the hydrotheca, as described and figured by Hirohito for hydrothecae on the secondary tubes, has never been seen in the CANCAP material. Nematothecae occur abundantly on the secondary tubes. In the CANCAP specimen there is usually a single nematotheca on the apophysis supporting the hydrotheca on the hydrocladium; quite a few apophyses have two nematothecae (one on each side). There is complete conformity of the gonosome between the CANCAP material and that of *Z. sagamiensis* and *Z. echinatus*.

Distribution.— The species is know from deeper water of Sagami Bay, Japan (250-300 m; Hirohito, 1983, 1995), from deep water off Macquarie Island (Watson, 2003) and from the Mid-Atlantic Ridge at 37°50.90'N 31°32'W, depth 832 m. The CANCAP specimen was found on a rope dredged from 500 m depth S of Razo, Cape Verde Islands, amidst colonies of *Zygophylax biarmata* Billard, 1905.

Zygophylax sibogae Billard, 1918 (fig. 19b, c)

Zygophylax sibogae Billard, 1918: 21, fig. 1; Totton, 1930: 167, fig. 21; Ralph, 1958: 311, fig. 2e-i; Millard, 1964: 21, fig. 5G, H; 1973: 32; 1975: 198, fig. 65A-C; Van Soest, 1976: 81; Millard, 1977: 106; 1978: 200; Hirohito, 1983: 6, 32, fig. 12; Millard, 1980: 131; Rees & Vervoort, 1987: 72-73; Vervoort, 1987: 91, fig. 10.8; Dawson, 1992: 16; Altuna Prados & Álvarez-Claudio, 1995: 10-15, figs 5, 6; Álvarez-Claudio & Anadón, 1995: 239; Hirohito, 1995 (English text): 144-147, fig. 45a-d, pl. 9 fig. D; Medel & López-González, 1996: 199; Watson & Vervoort, 2001: 159-161, fig. 5a-d; Schuchert, 2003: 160, fig. 19; Vervoort & Watson, 2003: 69, 80-82, figs 13G-K, 14A, B; Anonymous, 2004: 72.

Material inspected: Stn 2.106: Several to 8 mm high monosiphonic stems on axis of gorgonid, with *Cryptolaria pectinata* (Allman, 1888); no coppiniae. RMNH-Coel. 31303, slide 5410. Stn 6.094: Four monosiphonic, pinnate colonies on stem of Antipatharia, height 10-15 mm; no coppiniae. Slide 5137.

Remarks.— The CANCAP material consists of four dead colonies attached to an antipatharian stem. The species is easily recognized by the strongly curved hydrotheca placed on a long pedicel (fig. 19b, c); the hydrothecae are arranged in two longitudinal series directed frontally and meeting under a sharp angle. The curvature at the adcauline hydrothecal wall is not extreme; there is no 'kink' and no ridge projecting into the hydrothecal cavity as in the New Zealand material described by Vervoort & Watson (2003: 69). The nematothecae in the CANCAP material are renovated and long; they occur exclusively on the apophyses.

Distribution.— This species has originally been described from Indonesian waters but has since been found at a number of widely separated localities: New Zealand waters (Vervoort & Watson, 2003); Tasmanian Seamounts (Watson & Vervoort, 2001); Agulhas Bank off South Africa (Millard, 1964, 1975); Sagami Bay, Japan (Hirohito, 1995), and the Bay of Biscay, off the Basque coast (Altuna Prados & Álvarez-Claudia, 1995; Álvarez-

Table XXVI. Characteristics of the species of *Zygophylax* described in this report; length measurements of hydrothecae are with-

Species	Character of colony	Character of stem	Characters of hydrocladia	Character of hydrothecae
Zygophylax biarmata Billard, 1905	To 50 mm high, pinnate, developing from initially reptant stolon on other hydroids or solid substrate.	Erect, largely polysiphonic, no division into internodes, occasionally forked.	Biserially and sub-opposite, to 10 mm long, weakly geniculate; 2 free hydrothecae between each pair.	Small, elongated beaker-shaped, slightly asymmetrical; rim circular, smooth. Length from diaphragm onwards 210-370 µm, diameter at rim 120-140 µm. Renovations frequent.
Zygophylax brownei Billard, 1924	To 50 mm high, attached to firm substrate by means of flattened disk formed by stolonal tubes.	Erect, polysiphonic, unforked, not divided into internodes but with occasional nodes.	Pinnately dispersed along stem, 8-15 mm long, not divided into internodes, slightly geniculate.	Elongated tumbler-shaped, nearly symmetrical, slightly swollen in basal third; pedicel wrinkled. Length from diaphragm onwards 448-560 µm, diameter at rim 224-235 µm. Renovations rare.
Zygophylax leloupi Ramil & Vervoort, 1992	Pinnate colonies to 10 cm high, attached to solid substrate by disk formed by stolonal tubes.	Erect, polysiphonic, forked, basally thick; no division into internodes visible.	Sub-opposite, all in one plane, 15-20 mm long, leaving stem almost perpendicularly, no division into internodes, straight.	Deeply campanulate, almost symmetrical, swollen in lower half, below diaphragm with distinct wrinkled or kinked pedicel that may have some nodes. Length from diaphragm omwards 525-690 µm, diameter at rim 262-325 µm.
Zygophylax levinseni (Saemundsson, 1911)	Pinnate colonies to 90 mm high attached to solid substrate by stolonal tubes.	Erect, polysiphonic, usually repeatedly forked.	Sub-opposite and in one plane, 10-20 mm long, divided into internodes with one or two apophyses.	Long and slender, elongated tumbler-shaped, slowly widening from base onwards, slightly curved, pedicel long, smooth. Rim circular, renovations common. Length from diaphragm onwards 340-577 µm, diameter at rim 155-215 µm.

out renovations

Arrangement of hydrothecae	Character of nematothecae	Arrangement of nematothecae	Coppinia	Gonothecae	Distribution
Biserially arranged on conspicuous apophyses, pointing laterally and upwards.	Abundant, tubular, basally rounded; pedicel short, more or less globular.	Usually a pair on apophyses, one on each side; occasionally single nematotheca.	On stem or branches, with nematophorous tubules between gonothecae.	More or less globular, densely aggregated, individual borders indistinct, with short tubular neck with wide aperture; rim strongly everted.	North-eastern tropical, subtropical and temperate Atlantic. Probably also in Indian Ocean. Depth 100-1200 m.
Biserially and strictly in one plane, placed on conspicuous, swollen apophyses, pointing laterally and upwards.	Not abundant, small, beaker-shaped, almost without pedicel.	One per apophysis, on front or back, frequently renovated.	Not observed.	Not observed.	North-eastern temporate to subtropical Atlantic, including the North Atlantic between Iceland and the Faroes, the Bay of Biscay, the Western Mediterranean, coastal waters off Morocco, Canary Is and Cape Verde Is. Depth 134-753 m.
Biserially but frontally exposed, hence both rows not in one plane, on distinct apophyses, directed upwards.	Small, beaker-shaped, inserted by means of globular pedicel.	Placed singly on apophyses, on front or back.	[Composed of aggregation of gonothecae without nematophorous ramuli, surrounding basal part of stem. After Ramil & Vervoort, 1992].	[Ovoid, aggragated though not adnate, distal extremity with two or three short, tubular processes, pointing obliquely upwards, each with one terminal aperture. After Ramil & Vervoort, 1992]	Azores, off Atlantic coast of Morocco; Mid-Atlantic ridge. Depth 525-1378 m.
Biserially but frontally exposed, both rows not in one plane; placed on short but distinct apophyses.	Fairly long, elongated beaker-shaped, frequently renovated, often deciduous.	Placed singly on apophyses, on front or back.	[Borne on axis or ramifications, composed of dense aggregation of gonothecae. After Ramil & Vervoort, 1992].	Gonothecae non-adnate, each ovoid, slightly laterally compressed, distally produced into pair of laterally curved tubes; openings directed basally. With dispersed nematothecae. After Ramil & Vervoort, 1992].	Temporate Atlantic south of Iceland, subtropical Atlantic, 183-3657 m depth

Table XXVI. continued

Species	Character of colony	Character of stem	Characters of hydrocladia	Character of hydrothecae
Zygophylax parabiarmata spec. nov.	Loosely pinnate, attached to solid substrate by means of stolonal tubes.	Erect, polysiphonic, repeatedly forked, ramifications mainly in one plane	Sub-opposite and in one plane, to 10 mm long, no division into internodes.	Essentially as those of *Zygophylax biarmata*. Length, from diaphragm onwards, 270-355 µm, diameter at rim 145-168 µm. Perisarc fairly thick.
Zygophylax sagamiense Hirohito, 1983	Loosely pinnate, attached to solid substrate by means of stolonal tubes.	Erect, polysiphonic, forked, branches polysiphonic, roughly in one plane, only ultimate parts monosiphonic.	To 3 mm long, straight to slightly geniculate, alternating in one plane, 2 hydrothecae (and an axillar one) between two successive hydrocladia.	Tubular, slightly swollen in basal half; rim circular, slightly everted, frequently renovated. Pedicel thick, of varied length, inserted on conspicuous apophysis. Length from diaphragm onwards 250-600 µm, diameter at rim 62-148 µm.
Zygophylax sibogae Billard, 1918	Very loosely and irregularly pinnate, usually attached to other hydroids or solid substrate by means of stolonal tubes.	Stems and branches largely mono-siphonic, in various planes.	Several mm long, not divided into inter-nodes, straight to geniculate.	Highly characteristic, cornucopia-shaped hydrotheca on long, smooth pedicel, total length c. 750 µm. Abcauline wall smoothly concave; adcauline wall on opposite side almost folded, occasionally with inward projecting perisarc ridge.

Arrangement of hydrothecae	Character of nematothecae	Arrangement of nematothecae	Coppinia	Gonothecae	Distribution
Without any definite arrangement, pointing in all directions and distinctly crowded.	Cup-shaped with rounded base; rim slightly everted, occasionally renovated.	One or rarely 2 on apophyses but usually deciduous; in fair numbers on secondary tubes.	On basal part of stem and branches, forming more or less solid strip of coppinial mass composed of fused gonothecae.	Original shape of gonothecae lost by almost complete fusion. Secondary tubes, from which gonothecae originate, visible as reticulate structure on surface between which project funnels with everted, circular aperture.	Cape Verde Islands region; 30-250 m depth.
Alternate and directed laterally and upwards, with tendency towards frontal exposure.	Beaker-shaped with rounded bottom, frequently renovated. Pedicel short, almost invisible.	Singly on apophyses and on secondary tubes.	Surrounding basal part of stem or branch, gonothecae closely packed and adnate, polygonal when viewed from above.	Fused part widening from bottom onwards, c. 500 µm deep, greatly contracted above region of fusion and drawn out into sharp, acutely triangular point with big circular, lateral opening. Some nematophorous tubules penetrate mass of gonothecae, bearing 2-3 nematothecae.	Sagami Bay, Japan; off Macquarie Island; Mid-Atlantic Ridge; off Razo, Cape Verde Islands. Depth 250-832 m .
In two rows along hydrocladium on conspicuous apophyses, alternate, strongly frontally exposed., pointing away from internode at almost right angle.	Long, tubular, occasionally renovated and in that condition quite long.	Singly on apophyses.	[Female gonosome borne on stem, composed of many but not so densely aggregated gonothecae and many branched tubes of varied shape; tubes bearing nematothecae, surrounding gonothecae. After Hirohito, 1995].	[Female gonothecae pouch-like, bearing one or two long tubes at the distal end; tubes facing various directions, 0.50-0.60 mm in height, 0.35-0.70 mm in width. After Hirohito, 1995].	Indonesian and New Zealand waters; Tasmanian Seamounts, Agulhas Bank, Sagami Bay, Japan; Basque coast; Cape Verde region.

Claudia & Anodon, 1995), at depths varying between 80 and 1120 m. The present localities are off Punta Restinga, Canary Islands, depth 600-1000 m and SW of Razo, Cape Verde Archipelago, depth 800-900 m and extends the distribution of this species in Atlantic waters.

Zygophylax spec.

Material inspected: Stn 7.132: Skeleton of thecate hydroid, probably species of *Zygophylax*; one damaged hydrotheca observed. RMNH-Coel. 30457.

Family Haleciidae Hincks, 1868
Genus ***Halecium*** Oken, 1815

Halecium beanii (Johnston, 1838)

Thoa Beanii Johnston, 1838: 120-121, pl. 7 figs 1-2.
Halecium beanii; Medel & Vervoort, 2000: 8-12, fig. 1; Evans, 2000: 44; Schuchert, 2000: 413; 2001: 73-74, fig. 59A-D; Sirenko, 2001: 35; Zühlke et al., 2001: 272; Genzano et al., 2002: 162; Calder et al., 2003: 1206; Vervoort & Watson, 2003: 85, 86, 87, fig. 15D-H; Anonymous, 2004: 50-51; Bouillon et al., 2004: 139-140, fig. 73C-E; Schuchert, 2005: 615-618, figs 5, 6.
Halecium beanei; Van der Land et al., 2001: 114 (incorrect subsequent spelling).

Material inspected: Stn 1.093: 25 mm high fragment of larger colony, in rather bad condition. RMNH-Coel. 27942 bis.

Remarks.— Material from this station in the Madeira area is also mentioned by Medel & Vervoort (2000: 9).

Halecium halecinum (Linnaeus, 1758)

Sertularia halecina Linnaeus, 1758: 809.
Halecium halecinum; Medel & Vervoort, 2000: 14-18, fig. 2; Evans, 2000: 44-45; Schuchert, 2000: 413; 2001: 78, fig. 64A, B; Sirenko, 2001: 34; Vervoort & Watson, 2003: 85; Bouillon et al., 2004: 140, fig. 74E-J; Schuchert, 2005: 612-615, figs 3, 4.
Halecium halecium – Van der Land et al., 2001: 114 (incorrect subsequent spelling).

Material inspected: Stn 5.008: One 140 mm high, pinnate, strongly polysiphonic colony without gonothecae. RMNH-Coel. 28809.

Remarks.— Additional material from a locality in the Azores regions also mentioned by Medel & Vervoort (2002: 15).

Halecium sessile Norman, 1867 (fig. 21)

Halecium sessile Norman, 1867: 196; Medel & López-González, 1996: 199; Howson & Picton, 1997: 32; Kubota, 1997: 149; Brunel et al., 1998: 67; Cornelius, 1998: 89-90, fig. 7; Hansson, 1998: 8; Ramil et al., 1998b: 7; Schuchert, 2001: 83-84, fig. 69; Van der Land et al., 2001: 114; Watson, 2002: 340, fig. 1B, C; 2003: 95-98, fig. 18H-M; Anonymous, 2004: 54; Bouillon et al., 2004: 142-143, fig. 76H-L.

Material inspected: Stn 2.058: Two large, forked colonies c. 100 mm high; major ramifications strongly polysiphonic; finer branches monosiphonic. Dispersed female and male gonothecae are present. RMNH-Coel. 30544, slide 5223.

Description.— Colonies much and irregularly branched, roughly in one plane. Stems and branches polysiphonic, only ultimate parts of branches monosiphonic, composed of weakly geniculate, slender internodes separated by slightly oblique nodes and with a laterally directed hydrotheca (fig. 21a) and a short apophysis supporting the next internode. Side-branches insert laterally on the widened part of the internode bearing the hydrotheca; first node of side branch short, ahydrothecate. Primary hydrotheca quite low, a hyaline collar on the widened part of the internode with a row of hyaline desmocytes. Renovations frequent, having the character of flattened cups or plates of almost identical diameter and slightly everted rim (fig. 21b).

Female gonothecae occur in profusion, inserting, as the sidebranches, on the widened part of the internode under and laterally of the hydrotheca, often in pairs, one on each side of hydrotheca. Though roughly reniform they are much swollen apically and narrow proximally; the pedicel is composed of a short internode. A pair of hydrothecae is present at the narrowed part of the 'frontal' border (fig. 21c, d). Nearly all female gonothecae have a string of five or six large, developing eggs (fig. 21d); some gonothecae are empty and have the 'frontal' wall of the bulging part above the hydrothecae ruptured (fig. 21c). No hydranths were observed. The male gonothecae insert as the female ones under the hydrothecae and are almost tubular (fig. 21e); all are empty.

The condition of the material makes it impossible to decide whether or not female and male gonothecae insert on the same colony. The hydranths of the stem hydrothecae are big, with long, filiform tentacles; unfortunately the condition of preservation makes study of the nematocysts impossible

Table XXVII. Measurements of *Halecium sessile* in µm:

	CANCAP Stn 2.058	BALGIM Stn CP 90 (Ramil & Vervoort, 1992)	Bay of Biscay (Cornelius, 1975)
Internodes of monosiphonic stem, length	656 - 870	500 - 900	550 - 700
Diameter at node	98 - 131	100 - 130	90 - 130
Hydrotheca, length diaphragm-rim	8.4 - 11.2	15 - 25	25 - 35
Diameter at rim	152 - 162	130 - 140	130 - 170
Female gonotheca, length	900 - 1115		
Greatest diameter	740 - 870		
Male gonotheca, length	1590		
Greatest diameter	180		

Remarks.— The structure of the CANCAP colonies differs from that of material from British waters described and figured by Cornelius (1995a: 292-294, fig 68A) as the CANCAP specimens are much more strongly branched and do not possess a single polysiphonic main stem with monosiphonic side branches. There is also difference in the shape of the female gonothecae (Cornelius, 1995a, fig. 68E), but their shape also depends on conditions of maturation. Both male and female gonothecae agree with Hirohito's figures of (part of) his material from Sagami Bay, Japan (Hirohito, 1995, fig.

7h, f), though the female gonothecae from CANCAP are more swollen distally. Part of Hirohito's Sagami Bay material has been referred to *Halecium ralphae* Watson & Vervoort, 2001 (Vervoort & Watson, 2003: 94, 95).

Distribution.— *Halecium sessile* is generally considered a near-cosmopolitan species, absent from the polar regions but the synonymy is not yet fully established (cf. Cornelius: 1975, 1995a). However, its wide distribution in eastern Atlantic temporate and subtropical waters is beyond doubt. The present record is from the Atlantic off Cape Yubi, Morocco, at 500 m depth; the species has previously been recorded from these waters by Patriti (1970): Sidi Moussa and Mohammedia.

Halecium sibogae marocanum Billard, 1934

Halecium Sibogae marocanum Billard, 1934: 229, fig. 2; Van Praët, 1979: 880; Ramil & Vervoort, 1992: 86-90, figs 21a-e, 22a, b; Peña Cantero, 1995: 222-224, pl. 23 figs a-g; Medel & López-González, 1996: 199; Medel et al., 1998: 39-41, fig. 5; Ramil et al., 1998b: 7-8, fig. 1; Medel & Vervoort, 2000: 21-23, fig. 5; Peña Cantero & García Carrascoa, 2002: 74-75, fig. 15; Vervoort & Watson, 2003: 86.
Halecium sibogae var. *marocanum*; Patriti, 1970: 25, fig. 13.

Material inspected: Stn 1.145: A few monosiphonic stems c. 15 mm high on *Lafoea dumosa* (Fleming, 1820); one female gonotheca observed (not in slide). RMNH-Coel. 30346; slide 5144.

Remarks.— The locality, from the Atlantic coast of Morocco, is also mentioned by Medel & Vervoort (2000: 21).

Halecium tenellum Hincks, 1861

Halecium tenellum Hincks, 1861: 252, pl. 6 figs 1-4; Stepanjants et al., 1997: 459; Calder & Maÿal, 1998: 73; Brunel et al., 1998: 67; Cornelius, 1998: 90-91, fig. 5; Hansson, 1998: 7; Gulliksen et al., 1999: 49, 83; Medel et al., 1998: 41-42, fig. 6; Ramil et al., 1998b: 8; Calder, 2000: 1133; Evans, 2000: 45; Medel & Vervoort, 2000: 23-25; Schuchert, 2000: 413; Schuchert, 2001: 84-85, fig. 70A-E; Sirenko, 2001: 35; Van der Land et al., 2001: 114; Peña Cantero & García Carrascoa, 2002: 75-77, fig. 12c-e; Calder et al., 2003: 1207; Vervoort & Watson, 2003: 86, 98, fig. 19A, B; Watson, 2003: 165-166, fig. 15A-C; Anonymous, 2004: 55; Bouillon et al., 2004: 143, fig. 77A-E.

Material inspected: Stn 4.153: 15 mm high stems mixed with *Bimeria vestita* Wright, 1859, *Clytia paulensis* (Vanhöffen, 1910) and *Sertularella gayi gayi* (Lamouroux, 1821). RMNH-Coel. 30393; three slides 5172. – Stn 5.071: Fragmentary colony with a few expanded polyps. RMNH-Coel. 30441. – Stn 6.078: A few colonies without gonothecae mixed with *Zygophylax biarmata* Billard, 1905, in one of slides 5127. – Stn 6.080: up to 15 mm high colonies on algae and *Sertularella unituba* Calder, 1991. RMNH-Coel. 30436. Additional specimens on shell fragment, 18 mm high; no gonothecae. As RMNH-Coel. 30436 bis. – Stn 6.D02: One fair colony c. 15 mm high and smaller colonies and fragments, detached from substratum. Heavily overgrown. RMNH-Coel. 30430, slide 5195.

Remarks.— All localities given above are additional to those listed bij Medel & Vervoort (2000: 24): Azores area, Stn 5.071, S of São Miguel, 220 m; Canary Islands, Stn 4.153, SW of Palma, 200 m; Cape Verde Islands, Stn 6.078, SW of Boa Vista, 185-190 and 200-250 m (Stn 6.080); W coast of São Tiago, SE of Porto Praia, c. 15 m (Stn 6. D02).

Halecium spec.

Material inspected: Stn 5.096: monosiphonic colonies 5-20 mm high on worm tubes; no gonothecae. Either *H. halecium* (Linnaeus, 1758) or *H. beanii* (Johnston, 1838). With some hydrothecae of *Filellum* spec. RMNH-Coel. 30336, slide 5129.

Remarks.— Juvenile, sterile colonies that cannot properly be identified to species level.

Family Halopteridídae Millard, 1962

Genus *Antennella* Allman, 1877

Antennella ansini Peña Cantero & García Carrascosa, 2000

?*Halopteris glutinosa*: García Corrales et al., 1978: 40, fig. 17; Izquierdo et al., 1986: 50, fig. 1.
Antennella siliquosa p.p. García Carrascosa, 1981: 255-258, pl. 23 figs a-e, pl. 40 figs a, b.
Antennella campanulaformis; Ansín Agís, 1998: 313-317, figs 44a-g, 45a-d; Ansin Agis et al., 2001: 135-139, figs 61, 62.
Antennella ansini Peña Cantero & García Carrascosa, 2002: 95-100, fig. 18a-d; Bouillon et al., 2004: 145, fig. 77L-O.

Material inspected: Stn 2.D08: c. five stems on fragments of algae, with *Monotheca margaretta* (Nutting, 1900). RMNH-Coel. 30362.

Remarks.— For the description of this species I refer to Peña Cantero & García Carrascosa (2002); the CANCAP material from Stn 2.D08 (Canary Islands, SW coast of Hierro, off Faro de Orchilla, 5-25 m depth) as well as additional material from Porto Santo, Madeira, described as *Antennella campanulaformis* (Mulder & Trebilcock, 1909). was referred to that species by these authors. The CANCAP material recorded here is also from Stn 2.D08; it has no gonothecae.

Distribution.— Chafarinas Islands in the western part of the Mediterranean (Peña Cantero & García Carrascosa. 2002), Mallorca (Schuchert, personal communication), and off the Spanish Mediterranean coast (García Carrascosa. 1981, as *Antennella siliquosa* p. p.). Also Canary Islands and Madeira (Ansín Agís et al., 2001, as *Antennella campanulaformis*).

Antennella secundaria (Gmelin, 1791)

Sertularia secundaria Gmelin, 1790: 3856.
Antennella secundaria; Watson, 2000: 45-46, fig. 34A-D; Ansín Agís et al., 2001: 140-145, fig. 63; Van der Land et al., 2001: 115; Peña Cantero & García Carrascoa, 2002: 100-102, fig.18e-h; Watson, 2002: 346-347, fig. 5E, F; Kubota, 2003b: 32; Schuchert, 2003: 206-209, fig. 57; Vervoort & Watson, 2003: 342, 345, 346, fig. 83J-L; Watson, 2003: 253; Anonymous, 2004: 79-82; Bouillon et al., 2004: 145, figs 77P, 78A-D.

Material inspected: Stn 3.086: Small colony attached to basal part of cormoid of *Aglaophenia lophocarpa* Allman, 1877. RMNH-Coel. 30406, slide 5182. – Stn 4.108: Small bunches of 10 mm high stems attached to *Aglaophenia lophocarpa* Allman, 1877 and *Sertularella gayi gayi* (Lamouroux, 1821). No gonothecae. RMNH-Coel. 30378. – Stn 4.143: Bunch of hydrocladia (stems) on basal part of cormoid of

Aglaophenia tubulifera (Hincks, 1861). RMNH-Coel. 28576. – Stn 5.142: 8-10 mm high colonies on empty worm-tube; no gonothecae. RMNH-Coel. 28698 bis. – Stn 5.153: A few 10-15 mm high stems (hydrocladia) on a small colony of *Acryptolaria conferta* (Allman, 1877). RMNH-Coel. 30469, slide 5345. – Stn 5.D01: A few hydrocladia (stems) on algae, c. 8 mm high; no gonothecae. RMNH-Coel. 30403. – Stn 7.140: Small bunches of stems, c. 8 mm high attached to stems of *Sertularella gayi gayi* (Lamouroux, 1824). RMNH-Coel. 30521 bis.

Distribution.— *Antennella secundaria* has a worldwide distribution in temperate, subtropical and tropical seas, so far being recorded from the littoral zone down to a depth of 1250 m (Ramil & Vervoort, 1992; Ansín Agís, Ramil & Vervoort, 2001). In the CANCAP area is was recorded from the Azores, Madeira, Canary and Selvagens Archipelagoes, the Cape Verde Islands and off the coast of Mauritania. The present records are all from that area and extend the distribution near the Azores (Stn 5.153, E of Flores, 150-168 m and 5.D01, S coast of São Miguel, 0-20 m), in the Selvagens Archipelago (Stn 4.108, c. 30°N 16°W, 2600-2700 m), and the Cape Verde area (Stn 7.140, S of Razo, 1200 m). The occurrence in a deep water haul near the Selvagens Archipelago is rather surprising and considerably extends the bathymetrical distribution of the species.

Antennella siliquosa (Hincks, 1877)

Plumularia siliquosa Hincks, 1877, 148, pl. 12 figs 2-6.
Antennella siliquosa; Ansín Agís et al., 2001: 145-149, fig. 64; Van der Land et al., 2001: 115; Vervoort & Watson, 2003: 342; Bouillon et al., 2004: 145-146, fig. 78E-I.

Material inspected: Stn 1.145: C. 15 stems on *Lafoea dumosa* (Fleming, 1820); no gonothecae. RMNH-Coel. 30346, slide 5143. – Stn 7.078: stems to 10 mm high arising from detached stolonal tubes; no gonothecae. RMNH-Coel. 28937.

Distribution.— This Atlantic and Mediterranean species has previously been found in the CANCAP area at the Cape Verde Archipelago, the Canary Islands and the Atlantic coasts of Morocco and Mauritania, including the stations 1.145 and 7.078. The depth distribution extends from the littoral zone down to a depth of c. 445 m (Ansín Agís, Ramil & Vervoort, 2001).

Genus ***Halopteris*** Allman, 1877

Halopteris carinata Allman, 1877

Halopteris carinata Allman, 1877: 33, pl. 19 figs 3-7; Vervoort, 1968: 54, 107, fig. 26; Wedler, 1975: 333 et seq.; Florez Gonzalez, 1983: 121, figs 34, 35; Bandel & Wedler, 1987: 42; Larson, 1987: 513, fig. 1; Cairns et al., 1991: 27; Calder, 1993: 68 et seq.; 1997a: 34-35, fig. 8; Schuchert, 1997: 123-125, fig. 45; Stepanjants et al., 1997: 459; Calder & Maÿal, 1998: 73; Ansín Agís et al., 2001: 156-159, fig. 67; Cairns et al., 2002: 21; Grohmann et al., 2003: 13; Vervoort & Watson, 2003: 353.

Material inspected: Stn 6.D08: Six pinnate stems in height varying between 80 and 55 mm, smallest made up in slide. No gonothecae. RMNH-Coel. 30416, slide 5193.

Distribution.— *Halopteris carinata* is a characteristic species that has its main distribution in the subtropical and tropical parts of the western Atlantic but has been re-

corded from the Cape Verde region by Ansín Agís, Ramil & Vervoort (2001). It is here recorded from a third Cape Verdian locality, W of Tarrafal, SW coast of Santo Antão, occurring between 0 and 10 m depth. The occurrence of this species in the Cape Verde Archipelago thus seems to be well established.

Genus ***Monostaechas*** Allman, 1877

Monostaechas quadridens (McCrady, 1859)

Plumularia quadridens McCrady, 1859: 199.
Monostaechas quadridens; Calder, 2000: 1135; Ansín Agís et al., 2001: 171-174, fig. 71; Van der Land et al., 2001: 115; Cairns et al., 2002: 21; Genzano et al., 2002: 162; Calder et al., 2003: 1208; Grohmann et al., 2003: 13; Vervoort & Watson, 2003: 364, fig. 88H-J; Anonymous, 2004: 95-96.

Material inspected: Stn 6.062: Fragmentary but recognizable stem on dead shell, with *Modeeria rotunda* (Quoy & Gaimard, 1827). Slide 5177. – Stn 6.067: Two stems c. 15 mm high, with gonothecae. In two slides 5155. – Stn 6.138: Several stems and fragments, partly attached to stolon, mixed with bryozoans; gonothecae present. RMNH-Coel. 30375; slide 5160.

Distribution.— *Monostaechas quadridens* inhabits subtropical and tropical parts of the oceans, with a tendency to penetrate temperate seas; so far not recorded from the Mediterranean. Its presence in the Cape Verde region was established by Ritchie (1907) and Schuchert (1997) and re-established by CANCAP records (Ansín Agís et al., 2001). The present records are partly from the same localities (Stns 6.062 and 6.067), Stn 6.138 is a new record from S of São Vicente at c. 150 m depth. The bathymetrical distribution is from the littoral zone down to 282 m (Ansín Agís et al., 2001).

Family Plumulariidae McCrady, 1859

Genus ***Monotheca*** Allman, 1877

Monotheca margaretta Nutting, 1900

Monotheca margatetta Nutting, 1900: 72, pl. 11 figs 1-3; Calder, 2000: 1133; Ansín Agís et al., 2001: 189-192, fig. 75; Ortiz, 2001: 64, fig. 1G, H; Van der Land et al., 2001: 116; Cairns et al., 2002: 20, 55; Grohmann et al., 2003: 13; Vervoort & Watson, 2000: 369.

Material inspected: Stn 2.D08: A few stems on fragments of algae, mixed with *Antennella ansini* Peña Cantero & García Carrascosa, 2001; no gonothecae. RMNH-Coel. 30362.

Distribution.— The present record is from the Canary Islands, SW coast of Hierro, off Faro de Ochilla, where it presence had previously been established by Ansín Agís et al. (2001). *Monotheca margaretta* has it main distribution in temperate waters of the western Atlantic, but has also been observed in the temperate eastern Atlantic. Its depth distribution is from the littoral zone down to 73 m depth (Ansín Agís et al., 2001).

Genus *Nemertesia* Lamouroux, 1812

Nemertesia cf. *antennina* (Linnaeus, 1758)

Sertularia antennina Linnaeus, 1758: 811.
Nemertesia antennina; Howson & Picton, 1997: 33; Kubota, 1997: 150; Stepanjants et al., 1997: 459; Calder & Vervoort, 1998: 45-47, fig. 22a-d; Ramil et al., 1998b: 35; Gulliksen et al., 1999: 49, 83; Bouillon & Boero, 2000: 199; Evans, 2000: 52; Schuchert, 2000: 413; Ansín Agís et al., 2001: 193-200, figs 76, 77; Schuchert, 2001: 128-129, fig. 108A, B; Sirenko, 2001: 35; Van der Land et al., 2001: 116; Zühlke et al., 2001: 272; Grohmann et al., 2003: 13, fig. 3A; Wirtz & Debelius, 2003: 20, fig.; Anonymous, 2004: 96-97; Bouillon et al., 2004 : 172-173, fig. 92L-S.

Material inspected: Stn MAU.040: Three juvenile stems, highest c. 30 mm, in stolonal mesh of *Lytocarpia myriophyllum* (Linnaeus, 1758); no gonothecae. May belong here. No slides. RMNH-Coel. 30356.

Distribution.— *Nemertesia antennina* occurs chiefly in the northern, temperate and subtropical Atlantic, though some records from the Indian Ocean coast of South Africa and from Japan are also known (Ansín Agís et al., 2001). The present material, being juvenile and sterile, could not be properly identified but almost certainly belongs here; it is from an area (Stn MAU.040, off Mauritania, 18°51'N 16°53'W, 500 m depth) where the occurrence of *N. antennina* has previously been established.

Nemertesia ramosa (Lamarck, 1816)

Antennularia ramosa Lamarck, 1816: 123.
Nemertesia ramosa; Howson & Picton, 1997: 33; Calder & Vervoort, 1998: 47-49, fig. 3a-c; Ramil & Ansín Agis, 1998: 197; Evans, 2000: 52; Schuchert, 2000: 413; Ansín Agís et al., 2001: 215-222, figs 83, 84; Schuchert, 2001: 130-131, fig. 110A, B; Zühlke et al., 2001: 272; Van der Land et al., 2001: 116; Peña Cantero & García Carrascosa, 2002: 115-117, fig. 22d-f; Wirtz & Debelius, 2003: 20, fig.; Bouillon et al., 2004: 174, fig. 94A-F.

Material inspected: Stn 4.074: Two stem fragments to 80 mm long, with many (empty) gonothecae. Hydrocladia homomerously segmented. RMNH-Coel. 30555. On stem a small colony of *Diphasia margareta* (Hassall, 1841). – Stn 6.104: 135 mm long, branched stem; no gonothecae; proximal part with many hydrothecae of *Modeeria rotunda* (Quoy & Gaimard, 1827). RMNH-Coel. 30482.

Distribution.— *Nemertesia ramosa* is widely distributed over the boreal, temperate and subtropical eastern Atlantic and the Mediterranian with a preference for warmer waters. It has also been recorded from the Indian Ocean coasts of South Africa and from Mozambique (Ansín Agís et al., 2001). In the Macaronesian area the species was recorded from many stations in the Azores, Madeira, Canary Islands and Cape Verde Islands regions, as well as from the coasts of Morocco and Mauritania. The species has previously been described from the Canary Islands by Izquierdo et al., 1986; to the localities listed by Ansín Agís et al. Stn 4.074 can be added: Canary Islands, SE of Lanzarote, 28°55'N 13°33'W, 85-110 m depth.

Nemertesia ventriculiformis (Marktanner-Turneretscher, 1890)

Plumularia ventriculiformis Marktanner-Turneretscher, 1890: 256, pl. 6 figs 5, 5a.
Nemertesia ventriculiformis; Medel & López-González, 1996: 203; Howson & Picton, 1997: 33; Ansín Agís et al., 2001: 222-226, fig. 85; Van der Land et al., 2001: 116; Bouillon et al., 2004: 175, fig. 94L-P.

Material inspected: Stn 2.004: C. 60 mm high stem in two parts, lower part with a few gonothecae. RMNH-Coel. 30530. – Stn 7.126: one stem 30 mm high, with (empty) gonothecae. Structure of the colony plumularioid. RMNH-Coel. 30365.

Distribution.— *Plumularia ventriculiformis* is known from a restricted number of localities in the temperate and subtropical eastern Atlantic: Glénan Archipelago, Basque coast, Strait of Gibraltar, Atlantic coast of Morocco, Canary Islands and Cape Verde Archipelago. In the Mediterranean is has been found in the western part, including the Adriatic (Ansín Agís et al., 2001). The present records extend its distribution in the Canary Islands area (Stn 2.004, S of Fuertefentura, Punta de Jandia, 28°03'N 14°29'W, 180-330 m) and in the Cape Verde Archipelago (Stn 7.126, S of Razo, 16°36'N 24°36'W, 208-930 m).

Genus ***Plumularia*** Lamarck, 1816

Plumularia setacea (Linnaeus, 1758)

Sertularia setacea Linnaeus, 1758: 813.

Plumularia setacea; Kühne & Rachor, 1966: 440 et seq.; Genzano, 1996a: 290 et seq.; Gili et al., 1996: 52; Genzano & Zamponi, 1997: 293; Howson & Picton, 1997: 33; Grohmann et al., 1997: 230; Kubota, 1997: 150; Nogueira et al., 1997: 368; Sheĭko & Stepanjants, 1997: 440; Genzano & Rodríguez, 1998: 22; Ramil & Ansín Agis, 1998: 197; Zamponi et al., 1998: 12; Mills & Miller, 1999: 55, figs 3.44, 3.70; Morri & Bianchi, 1999: 287; Calder, 2000: 1133; Coma et al., 2000: 449; Evans, 2000: 52; Faucci & Boero, 2000: 258; Miglietta et al., 2000: 65; Schuchert, 2000: 413; Watson, 2000: 53-54, fig. 41A, B; Ansín Agís et al., 2001: 238-245, fig. 91; Schuchert, 2001: 131, fig. 111A, B; Van der Land et al., 2001: 116; Cairns et al., 2002: 21, 55; Peña Cantero & García Carrascosa, 2002: 117-119, fig. 21c, d; Genzano et al., 2002: 162; Zamponi, 2002: 10; Calder et al., 2003: 1208; Genzano et al., 2003: 54 et seq.; Grohmann et al., 2003: 13; Vervoort & Watson, 2003: 398-402, figs 96G, 97A-G, 98A; Anonymous, 2004: 100-103; Bouillon et al., 2004: 175-176, fig. 95A-E.

Material inspected: Stn 7.078: Fragments of several colonies with well preserved hydranths; no gonothecae. RMNH-Coel. 30368. – Stn 7.132: Bunch of c. 100 high colonies attached to coral fragment, c. 10 stems present, some with a few gonothecae. RMNH-Coel. 30380. – Station unknown. C. 80 mm high stem (in 2 pieces) with many hydrothecae and gonothecae of *Campanularia hincksii* Alder, 1856. RMNH-Coel. 30395.

Distribution.— *Plumularia setacea* occurs in all the oceans of the world, with the exception, possibly, of the purely Arctic and Antarctic regions. Its wide distribution in the area investigated during the CANCAP and Mauritania-II expeditions is substantiated by its presence at numerous stations. The two stations listed above are from localities in the Cape Verde Archipelago from which it has previously been recorded (Ansín Agís et al., 2001).

Family Aglaopheniidae Broch, 1918

Genus ***Aglaophenia*** Linnaeus, 1758

Aglaophenia acacia Allman, 1883

Aglaophenia acacia Allman, 1883: 38, pl. 12 figs 1-4; Hansson, 1998: 10; Ansín Agís et al., 2001: 26-30, figs 18, 19; Van der Land et al., 2001: 113; Cairns et al., 2002: 56; Genzano et al., 2002: 162; Peña Cantero & García Carrascoa, 2002: 83-86, fig. 17a; Zamponi, 2002: 10; Vervoort & Watson, 2003: 260; Bouillon et al., 2004: 120, fig. 62A-D.

Material inspected: Stn 5.044: Two colonies in bad shape, height c. 80 mm; no corbulae. RMNH-Coel. 30357. – Stn 5.089: C. 80 mm high dead colony in two parts, no corbulae. On stem *Sertularella ellisii* (Deshayes & Milne Edwards, 1836). RMNH-Coel. 30364. – Stn 5.130: Five stems arising from stolon attached to shell fragment, maximal height 100 mm; no corbulae. RMNH-Coel. 30360, no slide.

Distribution.— *Aglaophenia acacia* occurs in tropical, subtropical and temperate parts of the Atlantic and in the Mediterranean. This area includes the Azores region, from which *Aglaophenia acacia* was previously recorded by Ansín Agís, Ramil & Vervoort (2001); Stn 5.089, not mentioned there, is quite near Stn 5.130, listed by Ansín Agis et al., being E of Faial, Azores, 50-70 m depth.

Aglaophenia kirchenpaueri (Heller, 1868)

Plumularia kirchenpaueri Heller, 1868: 40, 82, pl. 2 fig. 4.
Aglaophenia kirchenpaueri; Ballesteros, 1998: 42; Hansson, 1998: 10; Ansín Agíset al., 2001: 30-35, fig. 20; Van der Land et al., 2001: 114; Peña Cantero & García Carrascoa, 2002: 87-88, fig. 17c; Vervoort & Watson, 2003: 262; Bouillon et al., 2004: 121, fig. 63A-D.

Material inspected: Stn 1.072: Five juvenile, up to 15 mm high cormoids on algae; no corbulae. RMNH-Coel. 30391, one in slide 5171. – Stn 4.007: 110 mm high stem with a few corbulae. Stem remarkable because at distal end running into a thick stolonal tube attached to calcareous fragment. RMNH-Coel. 30370.

Distribution.— *Aglaophenia kirchenpaueri* is distributed over the temperate and subtropical parts of the Atlantic and also occurs in the Mediterranean (Ansín Agís et al., 2001). From the Atlantic it is now recorded at Stn 1.072, E of Madeira, 32°41'N 16°35'W, 80 m depth. Several localities at the Canary and Selvagens Archipelagoes are mentioned by Ansín Agís et al. (2001); Stn 4.007, which represents an additional locality in that area, is from S of Lanzarote at 25-36 m depth.

Aglaophenia lophocarpa Allman, 1877

Aglaophenia lophocarpa Allman, 1877: 41, pl. 24 figs 1-4; Ramil et al., 1998b: 9-10; Ansín Agís et al., 2001: 40-48, figs 22-25; Van der Land et al., 2001: 114; Peña Cantero & García Carrascoa, 2002: 88-89, fig. 17d; Vervoort & Watson, 2003: 263; Bouillon et al., 2004: 121. fig. 63E-H.

Material inspected: Stn 2.106: single 34 mm high colony with a female corbula. RMNNH-Coel. 30366. – Stn 2.119: Single cormoid 40 mm high with two corbulae between many colonies of *Cryptolaria pectinata* (Allman, 1888). RMNH-Coel. 30552. – Stn 3.085: Numerous cormoids developing from stolon on old stem of antipatharian, up to 50 mm high, with many corbulae. RMNH-Coel. 30413, slide 5190. – Stn 3.086: Four cormoids up to 35 mm high from stolon in sponge; no corbulae. Basal portion of one stem with colony of *Antennella secundaria* (Gmelin, 1791). RMNH-Coel. 30406, slide 5182. – Stn 3.151: Four cormoids up to 35 mm high on algae, one with corbula (RMNH-Coel. 30397, one cormoid in slide 5179). – Stn 4.108: Several stems up to 35 mm high on unidentifiable hydroid stem fragment. No coppiniae. With *Antennella secundaria* (Gmelin, 1791). RMNH-Coel. 39377. – Stn 4.153: Numerous colonies, to 40 mm high, attached to older hydroid stems, some with corbulae. RMNH-Coel. 28574. In addition many colonies up to 40 mm high on *Malleus* spec. These colonies mostly with empty hydrothecae and some corbulae. As RMNH-Coel. 28574 bis. – Stn MAU.039: single 50 mm high stem with one corbula. RMNH-Coel. 30363.

Distribution.— *Aglaophenia lophocarpa* is a species known from the tropical and subtropical Atlantic, the Mediterranean and some scattered localities in the Pacific

(Ansín Agís et al., 2001). Additional records from the CANCAP expeditions are those from Stn 2.106, Canary Is, S of Hierro, off Punta de la Restinga, 600-1000 m; Stn 2.119, Canary Is, SW of Hierro, off Punta de Orchilla, 350 m; Stns 3.085 and 3.086, Selvagens Archipelago, S of Selvagem Pequena, 140-170 m and Stn 4.108, Selvagens Archipelago at 29°58'N 15°55'W, 2600-2700 m. It was also found off the coast of Mauritania (Stn 3.151, 280-320 m depth). The material at Stn 4.108 originates from considerable depth (2600-2700 m).

Aglaophenia octodonta (Heller, 1868)

Plumularia octodonta Heller, 1868: 40, 82, pl. 2 fig. 3.
Aglaophenia octodonta; Morri & Bianchi, 1999: 286-287; Faucci & Boero, 2000: 258; Miglietta et al., 2000: 65; Ansín Agís et al., 2001: 48-53, figs 26-27; Cantone, 2001: 54; Van der Land et al., 2001: 114; Peña Cantero & García Carrascoa, 2002: 89-90, fig. 17e; Vervoort & Watson, 2003: 263; Wirtz & Debelius, 2003: 20, fig.; Bianchi et al., 2004: 113, fig.; Bouillon et al., 2004: 121-122, fig. 63I-L.

Material inspected: AZO.07: Six cormoids completely covered by *Anthohebella parasitica* (Ciamician, 1880), with a few corbulae. RMNH-Coel. 30442.

Distribution.— *Aglaophenia octodonta* occurs all over the Mediterranean and in the temperate eastern Atlantic (Ansín Agís et al., 2001). The material recorded here from the Azores is supplementary to that from the same locality mentioned by Ansín Agis et al. (2001).

Aglaophenia parvula Bale, 1882

Aglaophenia parvula Bale, 1882: 35, pl. 14 fig. 3; Howson & Picton, 1997: 33; Hansson, 1998: 10; Ansín Agís, Ramil & Vervoort, 2001: 53-57, fig. 28; Van der Land et al., 2001: 114; Vervoort & Watson, 2003: 263; Bouillon et al., 2004: 122, fig. 64A-D.

Material inspected: Stn MAU.006: Colony fragments with *Clytia hemisphaerica* (Linnaeus, 1767) developing on stem. RMNH-Coel. 30412.

Distribution.— *Aglaophenia parvula* has been recorded from the Indo-Pacific (East coast of South Africa, coasts of Australia and Tasmania) and from warm and temperate waters in the eastern Atlantic (Ansín Agís et al., 2001). It has been recorded from a number of localities along the Atlantic coast of Africa, amongst which Mauritanian and Moroccan waters. The occurrence at Stn MAU.006 had previously been established by Anín Agís et al., 2001.

Aglaophenia pluma (Linnaeus, 1758)

Sertularia pluma Linnaeus, 1758: 881.
Aglaophenia pluma; Peña Cantero, 1995: 278-283, pl. 31 figs a-e; Álvarez-Claudio, 1996a: 13; Parapar & Ramil, 1996: 22; Howson & Picton, 1997: 33; Hansson, 1998: 10; Morton et al., 1998: 141, fig. 7.3I; Park, 1998: 168-169, fig. 2A-D, Pl. 1 fig. C; Ramil & Ansín Agis, 1998: 196; Evans, 2000: 53; Faucci & Boero, 2000: 258; Ansín Agís et al., 2001: 60-65, fig. 30; Van der Land et al., 2001: 114; Novosel et al., 2002: 402; Peña Cantero & García Carrascosa, 2002: 92-93, fig. 17g; Vervoort & Watson, 2003: 263; Wirtz & Debelius, 2003: 20, fig.; Bouillon et al., 2004: 122-123, fig. 64I-L.

Material inspected: Stn 2.D08: several colonies up to 15 mm high and a number of fragments, corbulae present. RMNH-Coel. 30361. – Stn 3.D05: two cormoids c. 15 mm high at the base of *Pennaria disticha* Goldfuss. Made up in two slides 5213. – Stn 3.D07: Single cormoid with *Anthohebella parasitica* (Ciamician, 1880). RMNH-Coel. 30428. – Stn 4.D17: Three cormoids with *Anthohebella parasitica* (Ciamician, 1880) developing on axis. RMNH-Coel. 30418. – Stn 5.D05: About 10 colonies up to 25 mm high attached to sponge; no corbulae. RMNH-Coel. 30384. No slide.

Distribution.— *Aglaophenia pluma* has repeatedly been confused with allied species which makes it impossible to state its geographical distribution accurately. It does occur in the temperate and subtropical eastern Atlantic, including the whole of the Mediterranean and the Black Sea (Svoboda & Cornelius, 1991; Ansín Agís et al, 2001). The species was previously recorded from the Azores area, Madeira, the Canary Islands and the Selvagens Archipelago. It is here recorded from the Canary Islands (Stn 2.D08 has previously been mentioned by Ansín Agís et al, 2001), from the Azores (S coast of São Miguel, Ilhéu da Vila, 0-15 m) and from Madeira (Caniçal, 0-20 m and Porto Santo, SE coast of Baixo, 5-20 m, this locality also mentioned by Ansín Agís et al., 2001).

Aglaophenia svobodai Ansin Agis, Ramil & Vervoort, 2001

Aglaophenia svobodai Ansín Agís et al., 2001: 73-78, figs 33-35.

Material inspected: Stn 6.067: Two cormoids 20 and 40 mm high, no corbulae. RMNH-Coel. 28605 bis. – Stn 7.059: Basal parts of several cormoids with sponges on old gorgonid axis. No corbulae. RMNH-Coel. 28671 bis.

Remarks and distribution.— *Aglaophenia svobodai* was described from the Cape Verde Islands by Ansín Agís et al., 2001; it is only known from that area. Material of this species from the localities mentioned above is described by these authors.

Aglaophenia tubulifera (Hincks, 1861)

Plumularia tubulifera Hincks, 1861: 256, pl. 7 figs 1-2.
Aglaophenia tubulifera; Álvarez-Claudio, 1996b: 13; Howson & Picton, 1997: 33; Hansson, 1998: 10; Ramil et al., 1998b: 10-14, figs 2-4; Ansín Agís et al., 2001: 68-73, fig. 32; Van der Land et al., 2001: 114; Vervoort & Watson, 2003: 264; Wirtz & Debelius, 2003: 20, fig.; Bouillon et al., 2004: 123, fig. 65F-I.

Material inspected: Stn 4.143: Three cormoids up to 65 mm high with many corbulae. On stem colonies of *Bimeria vestita* Wright (slide 5183) and *Antennella secundaria* (Gmelin, 1791). RMNH-Coel. 28576. – Stn 5.044: Several stems c. 15-35 mm high; no corbulae. No slide. RMNH-Coel. 26883 & 30358. – Stn 6.078: Single cormoid, detached from substratum; no corbula. May belong here. Slide 5176.

Remarks and distribution.— The geographical distribution of *Aglaophenia tubulifera* is discussed at some length by Ansín Agís et al (2001); the main area of distribution is in the temporate and subtropical eastern Atlantic, penetrating south along the African west coast. It also occurs in the western Mediterranean, chiefly the Spanish Mediterranean coasts and the Alborán Sea; records from the Gulf of Valencia and the French Mediterranean coast need confirmation. Material from the stations 4.143 and 5.044 is also mentioned by Ansín Agís et al (2001); these are from the Azores and the Canary Islands; Stn 6.078 is from the Cape Verde Archipelago (SW of Boa Vista, 15°55'N 23°06'W,

185-190 m) and represents an additional record from that area from which is was previously recorded by Svoboda (1979).

Genus ***Lytocarpia*** Kirchenpauer, 1872

Lytocarpia myriophyllum (Linnaeus, 1758)

Sertularia myriophyllum Linnaeus, 1758: 810.
Lytocarpia myriophyllum; Howson & Picton, 1997: 33; Brunel et al., 1998: 68; Hansson, 1998: 10; Ramil et al., 1998: 19-23, figs 9-12; Evans, 2000: 53; Ansín Agís et al., 2001: 88-99, figs 40-45; Schuchert, 2001: 145-146, fig. 125A, B; Van der Land et al., 2001: 114; Cairns et al., 2002: 22; Schuchert, 2003: 242, fig. 80; Vervoort & Watson, 2003, 119: 303; Bouillon et al., 2004: 127, fig. 66P-U.

Material inspected: Stn 1.098: 100 mm high, solitary colony without corbulae. On stem colonies *Turritopsis* cf. *nutricula* (McCrady, 1857). RMNH-Coel. 30347. – Stn 1.114: Single 150 mm high colony without coppiniae. On stem *Bedotella armata* (Pictet & Bedot, 1900) and *Sertularella gayi gayi* (Lamouroux, 1821). RMNH-Coel. 30388. – Stn 3.107: Three colonies up to 40 mm high with basal tuft of stolonal tubules; apical parts missing. No corbulae. Evidently young colonies. RMNH-Coel. 30369. – Stn 3.158: Two colonies, 400 and 300 mm high, with basal tuft of tubules, smaller with one corbula. RMNH-Coel. 39376. – Stn 6.076: Fragment of a larger colony with *Campanularia hincksii* Alder, 1856, *Clytia paulensis* (Vanhöffen, 1910) and *Obelia bidentata* Clark, 1875. RMNH-Coel. 30444. – Stn 6.078: Single 15 mm high, very young colony with basal tubules attached to sand grains. Slide 5185. – Stn 7.169: Two branched colonies to 220 mm high without corbulae, rooting in sand bottom. RMNH-Coel. 30976. – Stn MAU.040: Four stems, 30-145 mm high, three with communal stolonal mesh. No corbulae. No slide. RMNH-Coel. 30355.

Distribution.— *Lytocarpia myriophyllum* is widely distributed in the Atlantic, including boreal waters, and in the Mediterranean. Its wide-spread occurrence in the Macaronesian area has been documented by Ansín Agís et al. (2001). Localities additional to those recorded previously are Stn 3.107, off Western Sahara, 24°17′N 16°49′W, 1000-1100 m, Stn 7.169, NE of São Vicente, Baia da Ribeirinha, 16°48′N 25°08′W, 165 m, and two localities off Mauritania, c. 19°N 17°W (Stns 3.158, 85 m and MAU.040, 500 m).

Genus ***Nematophorus*** Clarke, 1879

Nematophorus clarkei (Nutting, 1900)

Lytocarpus clarkei Nutting, 1900: 124, pl. 32 figs 5-7.
Macrorhynchia clarkei; Vervoort & Watson, 2003: 335.
Nematophorus clarkei; Ansín Agís el al., 2001: 104-108, fig. 47; Wirtz & Debelius, 2003: 20, fig.

Material inspected: Stn 7.151: One large colony c. 200 mm high, no gonosome. On stem many colonies of *Zygophylax parabiarmata* spec. nov. RMNH-Coel. 30537.

Distribution.— *Nematophorus clarkei* is chiefly distributed over the western Atlantic (Bahamas, Havana, Yucatan, Puerto Rico) and the Cape Verde Archipelago (Vervoort, 1959; Ansín Agís et al., 2001). The present locality extends its distribution in the Cape Verde area (Stn 7.151, S of Branco, 16°38′N 24°41′W, 75 m).

Genus ***Streptocaulus*** Allman, 1883

Streptocaulus pulcherrimus Allman, 1883

Streptocaulus pulcherrimus; Ansín Agís et al., 2001: 119-124, figs 53-55; Calder et al., 2003: 1208, 1209.

Material inspected: Stn 6.078. Single 150 mm high spirally coiled stem without phylactocarps. On stem *Diphasia margareta* (Hassall, 1841). RMNH-Coel. 30407. – Stn 6.106: Single 120 mm high pinnate stem with many phylactocarps. On stem colony of *Diphasia margareta* (Hassall, 1841). RMNH-Coel. 26900. – Stn 7.058: Four spirally coiled stems c. 20 mm high without phylactocarps; two with *Filellum* spec., RMNH-Coel. 30367, one with *Diphasia delagei* Billard, 1912, RMNH-Coel. 26861, one with *Sertularia distans* Lamouroux, 1816, RMNH-Coel. 27104.

Distribution.— The geographical distribution of this characteristic species is restricted to the Cape Verde region; so far there are no reliable records from other Atlantic or Pacific localities (cf. Ansín Agís et al., 2001: 122). *Streptocaulus pulcherrimus* was recorded from 23 stations in that area by Ansín Agís et al. (2001); one locality can be added: Stn 6.078, SW of Boa Vista, 15°55′N 23°06′W, 185-190 m depth.

Family Sertulariidae Lamouroux, 1812
Genus ***Amphisbetia*** L. Agassiz, 1862

Amphisbetia operculata (Linnaeus, 1758)

Sertularia operculata Linnaeus, 1758: 808.
Amphisbetia operculata; Medel & López-González, 1996: 203; Parapar & Ramil, 1996: 21, 22; Genzano & Zamponi, 1997: 291; Howson & Picton, 1997: 32; Hansson, 1998: 8; Medel & Vervoort, 1998: 12-13; Ramil & Ansín Agis, 1998: 197-198; Bouillon & Boero, 2000: 200; Evans, 2000: 46; Van der Land et al., 2001: 116; Cairns et al., 2002: 24, 58; Genzano et al., 2002: 162; Zamponi, 2002: 10; Genzano et al., 2003: 54 et seq.; Vervoort & Watson, 2003: 109, fig. 21A-C; Bouillon et al., 2004: 177, fig. 95G-L.

Material inspected: Stn MAU.006: Bunch of stems with characteristic branching and some gonothecae. RMNH-Coel 30411, slide 5188.

Distribution.— *Amphisbetia operculata* is distributed over coastal waters of all the seas of the world, with the exception of purely Arctic and Antarctic waters. It is particularly common along the Atlantic coasts of Africa; during the Mauritania-II expedition large quantities were taken at the stations along the coasts of Mauritania (Medel & Vervoort, 1998). Its occurrence at the present station, MAU.006, Passe du Levrier, E of Cap Blanc, 20°49′N 17°01′W, 15 m, extends the distribution farther north along the coast of Mauritania.

Genus ***Diphasia*** L. Agassiz, 1862

Diphasia delagei Billard, 1912

Diphasia delagei Billard, 1912: 446-447, figs 3, 4; Cornelius, 1995b: 41-43, fig. 7; Medel & López-González, 1996: 203; Boero et al., 1997c: 363; Howson & Picton, 1997: 32; Hansson, 1998: 8; Medel & Vervoort, 1998: 14-15, fig. 2; Van der Land et al., 2001: 116; Bouillon et al., 2004: 178, fig. 96A-C.

Material inspected: Stn 7.058: Numerous to 15 mm high stems on axis of *Streptocaulus pulcherrimus* Allman, 1883, no gonothecae (RMNH-Coel. 26861).

Distribution.— *Diphasia delagei* is now known to occur in the English Channel, Roscoff area and Cape Verde region (Medel & Vervoort, 1998). The present material is additional to that described from the same Cape Verde locality by Medel & Vervoort (1998: 14-15).

Diphasia margareta (Hassall, 1848)

Sertularia Margareta Hassall, 1841: 284, pl. 6 figs 3, 4.
Diphasia margareta; Medel & López-González, 1996: 203; Calder & Vervoort, 1998: 7; Medel & Vervoort, 1998: 15-20, figs 3, 4; Schuchert, 2000: 413; Henry, 2001: 163; Schuchert, 2001: 94-95, fig. 79A-C; Van der Land et al., 2001: 116; Bouillon et al., 2004: 178, fig. 96D-G.
Diphasia pinaster; Cornelius, 1995b: 50-53, fig. 10; Howson & Picton, 1997: 33; Hansson, 1998: 8; Evans, 2000: 47.

Material inspected: Stn 4.074: Small, unbranched colonies on stem of *Nemertesia ramosa* (Lamarck, 1816). RMNH-Coel. 30555. – Stn 6.070. Fragments of very young colonies, without gonothecae. Maximum height 8 mm. RMNH-Coel. 26894. – Stn 6.078: A few up to 15 mm high stems attached to stem of *Streptocaulus pulcherrimus* Allman, 1888. Slide 5184. – Stn 6.106: Pinnate c. 30 mm high colony on stem of *Streptocaulus pulcherrimus* Allman, 1883. RMNH-Coel. 26900. – Stn 7.140: Single stem with pinnately arranged hydrocladia, height 55 mm. RMNH-Coel. 30549.

Distribution.— *Diphasia margareta* is a species of temperate and subtropical waters of the eastern Atlantic, including the Mediterranean (Medel & Vervoort, 1998). The present records are from the Canary Islands (Stn 4.074) where the species has previously been found, and from the Cape Verde region, where it was found to be quite common at midwater stations (Medel & Vervoort, 1998). Two of the stations listed above are additional localities in the Cape Verde Archipelago: Stn 6.078, SW of Boa Vista, 185-190 m and Stn 7.140, S of Razo, 1200 m; the last record being almost at the bathymetric limit of this species which extends to 1318 m.

Genus ***Dynamena*** Lamouroux, 1824

Dynamena disticha (Bosc, 1802)

Sertularia disticha Bosc, 1802: 101, pl. 29 fig.
Dynamena disticha; Peña Cantero, 1995: 355-360, pl. 43 figs a-d; Caltagirone et al., 1996: 155; Medel & López-González, 1996: 203; Migotto, 1996: 122; Grohmann et al., 1997: 230; Nogueira et al., 1997: 368; Rosso & Marques, 1997: 417; Calder, 2000: 1133; Calder & Maÿal, 1998: 73; Medel & Vervoort, 1998: 25-29, fig. 7; Faucci & Boero, 2000: 258; Cantone, 2001: 54; Peña Cantero & García Carrascosa, 2002:121-122, fig. 23c-e; Calder et al., 2003: 1203; Schuchert, 2003: 173, fig. 30; Van der Land et al., 2001: 116; Grohmann et al., 2003: 13; Bouillon et al., 2004: 179, fig. 97E-H.
Dynamena cornicina; Migotto, 1996: 122; Genzano & Zamponi, 1997: 291; Gravier-Bonnet, 1999: 80; Ortiz, 2001: 64, fig. 2E, F.

Material inspected: Stn 3.182: C. 8 mm high, unbranched stems from a stolon on bryozoan. RMNH-Coel. 30426. – Stn 4.019: Three unbranched stems up to 15 mm high on algae. No gonothecae. Slide 5136.

Distribution.— *Dynamena disticha* is widely distributed over shallow waters of subtropical and tropical seas of the world, including the Mediterranean (Medel & Vervoort, 1998). Stn 3.182 is located off Mauritania where the species was previously recorded, while Stn 4.019 is from S of Lanzarote in the Canary Islands region at 37-40 m depth. Several additional stations in the Canary Islands are given by Medel & Vervoort, 1998.

Genus ***Salacia*** Lamouroux, 1816

Salacia desmoides (Torrey, 1902)

Sertularia desmoidis Torrey, 1902: 65-66, pl. 8 figs 70-72 (incorrect original spelling).
Salacia desmoides; Boero & Bouillon, 1993: 264; Antuna Prados, 1994: 280-284, pl. 51 figs A-E; 1995: 54, fig. 4A, B; Avian et al., 1995: 19; Bouillon et al., 1995: 68; Peña Cantero, 1995: 361-366, pl. 44 figs a-c; Medel & López-González, 1996: 203; Parapar & Ramil, 1996: 21, 23; Watson, 1996: 78; 1997: 518-519, fig. 5A, B; Medel & Vervoort, 1998: 30-32; Van der Land et al., 2001: 116; Peña Cantero & García Carrascosa, 2002: 122-124, fig. 23f, g; Watson, 2002: 341, fig. 2A, B; Grohmann et al., 2003: 13, fig. 3B; Vervoort & Watson, 2003: 143, 148-151, fig. 33D-F; Bouillon al., 2004: 180, fig. 98A-E.
Salacia dubia; Boero & Bouillon, 1993: 264; Hirohito, 1995: 180-182, fig. 59a-d; Van der Land et al., 2001: 116.

Material inspected: Stn 4.047: 8-10 mm high stems rising from a detached stolon and several detached fragments. No gonothecae. RMNH-Coel. 30432, slide 5200.

Distribution.— *Salacia desmoides* is distributed over tropical and subtropical parts of Atlantic and Pacific, including the Mediterranean (Medel & Vervoort, 1998); its has previously been recorded from the Canary Islands by Izquierdo et al., 1990 and Medel & Vervoort, 1998. The present record, Stn 4.047, is also from the Canary Islands region, S of Lanzarote, 0-800 m depth. However, the specimens recorded originate from the catch of a ring trawl, which indicates that detached, floating specimens were taken by the net while the depth record remains indistinct.

Genus ***Sertularella*** Gray, 1848

Sertularella ellisii ellisii (Deshayes & Milne Edwards, 1836)

Sertularia Ellisii Deshayes & Milne-Edwards, 1836: 142.
Sertularella ellisii; Medel & López-González, 1996: 204; Parapar & Ramil, 1996: 21; Morri & Bianchi, 1999: 287; Van der Land et al., 2001: 116; Cairns et al., 2002: 25, 59; Bouillon et al., 2004: 181, fig. 99A-E.
Sertularella ellisi ellisi; Medel & Vervoort, 1998: 33-39, figs 8a, b, d-f, 9a-c; Peña Cantero & García Carrascosa, 2002: 124-126, fig. 24a-c.
Sertularella fusiformis; Parapar & Ramil, 1996: 21; Van der Land et al., 2001: 116; Peña Cantero & García Carrascosa, 2002: 128-131, fig. 25a, b; Calder et al., 2003: 1212.

Material inspected: 1.072: Small up to 8 mm high stems on thallus of alga; no gonothecae. RMNH-Coel. 30392. – Stn 4.K12: Small colonies 8-12 mm high attached to fragments of stolon detached from substratum. No gonothecae. RMNH-Coel. 30422. – Stn 5.089: Several stems c. 40 mm high on axis of *Aglaophenia acacia* Allman, 1883; with gonothecae. Dead material. RMNH-Coel. 30364. – Stn 5.D01: Stems c. 15 mm high on algae, with occasional branching. No gonothecae. RMNH-Coel. 30402, no slide.

Distribution.— *Sertularella ellisii ellisii* is well distributed over boreal and subtropical waters of the Atlantic, mainly, but not exclusively, the eastern Atlantic and Mediterranean. The CANCAP expeditions previously established its occurrence in Atlantic waters off the coast of Mauritania, the Madeira area, the Canary and Selvagens Archipelagoes and, in great numbers, in the Cape Verde area. The present records include two previous recorded localities (Stns 4.K12 and 5.089) and additionally one from the Madeira region (Stn 1.072, E of Madeira, 32°41'N 16°35'W, 80 m depth) and one at the Azores (Stn 5.D01, S coast of São Miguel, 37°43'N 25°30'W, 0-20 m). The subspecies prefers littoral habitats and the deeper littoral; its depth limit is at c. 135 m depth (Medel & Vervoort, 1998).

Sertularella gayi gayi (Lamouroux, 1821)

Sertularia Gayi Lamouroux, 1821: 12, pl. 6 figs 8-9.
Sertularella gayi; Cairns et al., 2002: 25; Bouillon et al., 2004: 181, figs 99F-I, 100A.
Sertularella gayi gayi; Medel & Vervoort, 1998: 40-45, figs 10, 11; Ramil et al., 1998a: 198; Vervoort & Watson, 2003: 162-165, fig. 37C-J.

Material inspected: Stn 1.114: Two stems 15 mm high on stem of *Lytocarpia myriophyllum* (Linnaeus, 1758). Slide 5168 (one stem lost). – Stn 2.119: Small several mm high colonies on sponges and larger, branched and basally polysiphonic colonies on unidentifiable hydroid stem. No gonothecae. RMNH-Coel. 30385, slide 5164. On stem *Modeeria rotunda* (Quoy & Gaimard, 1827). Additional small colonies c. 25 mm high without gonothecae labelled RMNH-Coel. 26839 bis. – Stn 2.120: Fragment 20 mm long from larger colony, with strongly ribbed hydrothecae; no gonothecae. RMNH-Coel. 26968 bis. – Stn 3.085: Monosiphonic, up to 35 mm high stems on old antipatharian stem. No gonothecae. RMNH-Coel. 30414, slide 5191. – Stn 4.074: Small monosiphonic fragment 20 mm high; hydrothecae empty, no gonothecae. RMNH-Coel. 27809 bis. – Stn 4.108: Stem fragments, some branched, to 15 mm high, mixed with *Aglaophenia lophocarpa* Allman, 1877 and *Antennella secundaria* (Gmelin, 1791). RMNH-Coel. 30379. – Stn 4.153: 20 mm high fragment of bigger colony overgrown by *Bimeria vestita* Wright, 1859 and *Halecium tenellum* Hincks, 1861. Not given separate collection number. – Stn 4.158: Two small, polysiphonic colonies c. 20 mm high; no gonothecae. RMNH-Coel. 30431, one in slide 5198. Belongs to the type with heavily ringed hydrothecae figured previously (Medel & Vervoort, 1998, fig. 11). – Stn 5.075: 25 mm long fragment of larger colony. RMNH-Coel. 27045 bis. – Stn 6.114: C. 80 mm high polysiphonic stem with several branches. Though a live colony with preserved hydranths, the apical parts of that colony have many hydrothecae of *Hebellopsis scandens* (Bale, 1888) and *Filellum serratum* (Clarke, 1879); basal part completely invested by hydrothecae of *Filellum* spec. RMNH-Coel. 30466. – Stn 7.140: Fragmentary stems and branches in vial with *Cryptolaria pectinata* (Allman, 1888), partly developing on stem of *Acryptolaria conferta* (Allman, 1877); *Antennella secundaria* (Gmelin, 1791) developing on stem of *S. g. gayi.* RMNH-Coel. 30521 bis.

Distribution.— *Sertularella g. gayi* inhabits the boreal, temperate and subtropical parts of the Eastern Atlantic, penetrating south along the African coasts (Medel & Vervoort, 1998). The species was found to be well represented in the Macaronesian area and along the Atlantic coasts of Morocco and Mauritania, occurring between 10 and 1200 m depth. The present records are mostly from stations that were previously recorded, with the exception of Stn 3.085 (Selvagens Archipelago, S of Selvagem Pequena, 30°01'N 16°01'W, 140-160 m), Stn 4.108 (Selvagens Archipelago, 29°58'N 15°55'W, 2600-2700 m), Stn 6.114, Cape Verde Islands, SW of Santa Antão, 16°58'N 25°20'W, 200 m, and Stn 7.140, Cape Verde Islands, S of Razo, 16°35'N 24°36'W, 1200 m. The record from Stn 4.108 greatly extends the vertical distribution of this species.

Sertularella gayi robusta Allman, 1873

Sertularella Gayi var. *robusta* Allman, 1873: 186; 1874: 474, pl. 66 figs 3, 3a.
Sertularella gayi robusta; Medel & Vervoort, 1998: 45-46, fig. 12.

Material inspected: Stn 2.106: Stem fragment with two small colonies of *Cryptolaria pectinata* (Allman, 1888) attached. RMNH-Coel. 30492. One additional colony c. 80 mm high with thick stem unto which are attached small colonies of *Cryptolaria pectinata* (Allman, 1888); in addition a detached top part of larger colony. As RMNH-Coel. 30492 bis.

Distribution.— The geographical distribution of *Sertularella gayi robusta* is discussed by Ramil & Vervoort (1992) and Medel & Vervoort (1998) and includes deep water localities on both sides of the boreal Atlantic, in the eastern part as far south as the Cape Verde region. Material from the present locality, Stn 2.106, in the Canary Islands region, was also mentioned by Medel & Vervoort (1998). The depth distribution extends from 220 m down to 1000 m.

Sertularella ornata Broch, 1933

Sertularella fusiformis forma *ornata* Broch, 1933: 741, fig. 30.
Sertularella ellisii f. *ornata*; Peña Cantero, 1995: 374-376, pl. 45 fig. g.
Sertularella ellisi ornata; Medel & Vervoort, 1998: 39-40, fig. 8c; Peña Cantero & García Carrascosa, 2002: 126-128, fig. 24d.

Material inspected: Stn 6.146: Several branched colonies to 15 mm high, all monosiphonic, on surface of shell. No gonothecae. RMNH-Coel. 30374, slide 5159.

Distribution.— *Sertularella ornata* is chiefly known from the Mediterranean, but its presence in the Cape Verde region had previously been established by its occurrence at two CANCAP stations (Stns 0.076 and 6.137). This is now reconfirmed by a record from Stn 6.146, SW of São Vicente, 16°48'N 25°06'W, at 75 m depth. The total bathymetrical range is from 0 to 120 m (Medel & Vervoort, 1998).

Sertularella polyzonias (Linnaeus, 1758)

Sertularia polyzonias Linnaeus, 1758: 813.
Sertularella polyzonias; Avian et al., 1995: 20; Bouillon et al., 1995: 70; Cornelius, 1995b: 74-76, fig. 17; El Beshbeeshy, 1995: 339-341, fig. 7B; Caltagirone et al., 1996: 155; Medel & López-González, 1996: 204; Parapar & Ramil, 1996: 21; Calder, 1997: 88; Genzano & Zamponi, 1997: 292; Howson & Picton, 1997: 33; Orlov, 1997: 19 et seq.; Brunel et al., 1998: 69; Medel & Vervoort, 1998: 47-51, fig. 13; Morton et al., 1998: 141, fig. 7.3F; Park, 1998: 60-63, fig. 2A-D; Gulliksen et al., 1999: 49, 84; Evans, 2000: 48; Henry, 2001: 163; Schuchert, 2001: 100-101, fig. 84A-F; Van der Land et al., 2001: 116; Cairns et al., 2002: 25; Peña Cantero & García Carrascosa, 2002: 134-135, fig. 25f-h; Grohmann et al., 2003: 13, fig. 3C; Anonymous, 2004: 119; Bouillon et al., 2004: 182, fig. 100E-I.

Material inspected: Stn 1.092: Two small colonies attached to small stones; height c. 20 mm, no gonothecae. RMNH-Coel. 30417. – Stn 1.096: Single colony fragment without gonothecae, made up in slide 5187. – Stn 4.V08: Colonies up to 80 mm high, partly interwoven with or developing upon *Cryptolaria pectinata* (Allman, 1888); no gonothecae. RMNH-Coel. 30331, slide 5125.

Distribution.— *Sertularella polyzonias* has a worldwide distribution in sublittoral and midwater areas of Atlantic, including the Mediterranean, and Indian Oceans; it penetrates far to the north in Atlantic waters. The depth distribution extends to 454 m at least (Medel & Vervoort, 1998). The present records are from south of Madeira (Stns 1.092 and 1.096, c. 32°38'N 16°50'W, 80-135 m) and from the Selvagens Archipelago (S of Selvagem Grande, 260 m). Various additional stations in those areas are listed by Medel & Vervoort (1992).

Sertularella unituba Calder, 1991

Sertularella gayi unituba Calder, 1991c: 103-104, fig. 54; Vervoort, 1993a: 190.
Sertularella unituba; Medel & Vervoort, 1998: 51-62, figs 14-19; Van der Land et al., 2001: 116.

Material inspected: Stn 6.076: Colonies 30-40 mm high attached to heavily encrusted shell fragment; no gonothecae. RMNH-Coel. 27060 bis. – Stn 6.080: 10 mm long fragment with *Filellum* cf. *serratum* (Clarke, 1879) and *Modeeria rotunda* (Quoy & Gaimard, 1827); no gonothecae. RMNH-Coel. 30429. Additional 10-15 mm long fragments as RMNH-Coel. 30437. – Stn 7.140: Two colonies c. 30 mm high with many gonothecae. RMNH-Coel. 27071 bis.

Remarks.— Originally described as a subspecies of *Sertularella gayi* (Lamouroux, 1821) by Calder (1991: 103-104, fig. 54) and raised to specific rank by Medel & Vervoort (1998) who found it to be quite common at moderate to intermediate depths in the Cape Verde region. These authors indicated that this species is most likely identical with *Sertularia laxa* described by Allman (1888: 55) from Challenger material. The type material of that species in The Natural History Museum, London, was inspected but proved to be in rather poor condition. Allman (1888), realizing that his proposed name *Sertularia laxa* had already been used by Lamarck (1816: 116) for a species now recognized as *Thyroscyphus fruticosus* (Esper, 1827) changed the name to *Sertularia exigua*. This name, however, is preoccupied by *Sertularia exigua* Allman, 1877 (: 24-25, pl. 16 figs 7, 8); in the genus *Sertularella* this name had already been used by Thompson for *Sertularella exigua* Thompson, 1879 (: 101, pl. 16 fig. 3). Billard (1909) synonymized Allman's *Sertularia laxa/exigua* with *Sertularia gaudichaudi* Lamouroux, 1824 (: 615, pl. 90 figs 4, 5), a point of view not shared here.

Distribution.— The present localities are all in the Cape Verde region; material of *Sertularella unituba* from those stations is described and discussed by Medel & Vervoort (1998). The species was originally described by Calder from the Bermuda area; Allman's *Sertularia laxa/exigua* is from the Azores region.

Genus ***Sertularia*** Linnaeus, 1758

Sertularia distans (Lamouroux, 1816)

Dynamena distans Lamouroux, 1816: 180, pl. 5 fig. 1a, B.
Sertularia distans; Medel & López-González, 1996: 205; Migotto, 1996: 124; Parapar & Ramil, 1996: 23; Grohmann et al., 1997: 230; Nogueira et al., 1997: 368; Medel & Vervoort, 1998: 63-66, figs 6c, 20a, b; Kubota, 1997: 150; Rosso & Marques, 1997: 417; Gravier-Bonnet, 1999: 80; Morri & Bianchi, 1999: 287; Van der Land et al., 2001: 116; Peña Cantero & García Carrascosa, 2002: 136-137, fig. 26a-c; Grohmann et al., 2003: 13; Vervoort & Watson, 2003: 184, 185, fig. 43A-C; Anonymous, 2004: 122; Bouillon et al., 2004: 183, fig. 101C-G.

Material inspected: Stn 4.K12: Stems up to 5 mm high from a stolon on unidentifiable hydroid. No gonothecae. RMNH-Coel. 30423. – Stn 7.058: To 12 mm high stems from stolon on *Streptocaulus pulcherrimus* Allman, 1884. RMNH-Coel. 27104.

Distribution.— *Sertularia distans* has been recorded from temperate and tropical parts of the Atlantic (including the Mediterranean), the Pacific and the Indian Ocean. It proved to be widely distributed in the Macaronesian area (Medel & Vervoort, 1998); the present records are from a Canary Islands and a Cape Verde locality previously reported upon by Medel & Vervoort (1998).

Family Campanulariidae Johnston, 1836
Genus ***Campanularia*** Lamarck, 1816

Campanularia hincksii Alder, 1856

Campanularia Hincksii Alder, 1856: 360, pl. 13 fig. 9.
Campanularia hincksii; Parapar & Ramil, 1996: 21; Genzano & Zamponi, 1997: 290; Brunel et al., 1998: 64; Howson & Picton, 1997: 33; Hansson, 1998: 10; Zamponi et al., 1998: 12; Gulliksen et al., 1999; 48, 82; Östman, 1999: 17 et seq., fig; Evans, 2000: 53; Medel & Vervoort, 2000: 28-30; Lindner & Migotto, 2001: 826; Schuchert, 2001a: 413; 2001b: 149; Van der Land et al., 2001: 119; Cairns et al., 2002: 23; Peña Cantero & García Carrascosa, 2002: 138-142, fig. 27a, b; Calder et al., 2003: 1210; Grohmann et al., 2003: 13; Kelmo & Attrill, 2003: 124-129, fig. 4a-d; Bouillon et al., 2004: 192, fig. 107G.

Material inspected: Stn 1.072: Isolated hydrothecae between bryozoans on algae. RMNH-Coel. 30390. – Stn 4.153: Separate hydrothecae on unidentifiable hydroid stems, with *Clytia paulenesis* (Vanhöffen, 1910). RMNH-Coel. 30439. – Stn 5.044: A fragment of stolon bearing several hydrothecae; no gonothecae. RMNH-Coel. 27957 bis. – Stn 5.153: Separate hydrothecae arising from a stolon on *Sertularella* spec.; no gonothecae. RMNH-Coel. 30438. – Stn 6.004: Isolated hydrothecae on a calcareous rock. RMNH-Coel. 30410. – Stn 6.062: Isolated hydrothecae on unrecognizable hydroid stem attached to dead shell; no gonothecae. Slide 5178. – Stn 6.076: Spurious colonies on *Lytocarpia myriophyllum* (Linnaeus, 1758) with many gonothecae; with *Clytia paulensis* (Vanhöffen). RMNH-Coel. 30444, slide 5202. – Stn 6.078: Several gonothecae on old stem of *Zygophylax biarmata* Billard, 1905; no hydrothecae preserved. RMNH-Coel. 30517. – Stn 7.058: Isolated hydrothecae on stem of *Streptocaulus pulcherrimus* Allman, 1883. No gonothecae. RMNH-Coel. 30367. – Station unknown. Many hydrothecae and gonothecae attached to stem of *Plumularia setacea* (Linnaeus, 1758). RMNH-Coel. 30395.

Distribution.— The geographical distribution of *Campanularia hincksii* has been summarized by Medel & Vervoort (2000); the species has a worldwide distribution but avoids high Arctic and Antarctic waters. It is recorded from the Patagonian coasts by El Beshbeeshy (1991). In the Macaronesian area is has now been recorded from the Azores, the Atlantic coasts of Morocco and Mauritania, from Madeira and from the Cape Verde Islands. Some of the present stations are additions to those listed by Medel & Vervoort (2000): Stn 1.072 (E of Madeira, 80 m); Stn 4.153 (Canary Islands, SW of Palma, 200 m); Stn 5.135 (Azores, N of Faial, 180 m); Stns 6.004, 6.062. 6.078, 7.058 (Cape Verde Islands, S of São Tiago, 63-58 m; SE of Boa Vista, 82-98 m; SW of Boa Vista, 185-190 m, and SW of Maio, Ponta Inglez/Ponta Preta, 69 m). The depth records (58-200 m) are all within the depth limits recorded previously from that area (17-320 m).

Genus *Clytia* Lamouroux, 1812

Clytia hemisphaerica (Linnaeus, 1767)

Medusa hemisphaerica Linnaeus, 1767: 1098.
Clytia hemisphaerica; Bouillon, 1999: 430, fig. 3.127; Bouillon & Barnett, 1999: 100, fig. 102; Gulliksen et al., 1999: 48, 83; Morri & Bianchi, 1999: 287, 288; Östman, 1999: 17 et seq., figs; Watson & McInnes, 1999: 111; Ballard & Myers, 2000: 77 et seq.; Benović et al., 2000: 201; Buecher & Gibbons, 2000: 127; Evans, 2000: 54-55; Medel & Vervoort, 2000: 34-38; Orejas et al., 2000: 216 et seq.; Bouillon & Boero, 2000: 208; Calder, 2000: 1133; Schuchert, 2000: 413; Lindner & Migotto, 2001: 826; Schuchert, 2001: 152, fig.132; Van der Land et al., 2001: 119; Cairns et al., 2002: 23, 28, 57, 60; Peña Cantero & García Carrascosa, 2002: 147-149, fig. 28c, d; Kelmo & Attrill, 2003: 130-131, fig. 4h-k; Vervoort & Watson, 2003: 419, fig. 103A-C; Segura-Puertas et al., 2003: 7; Watson, 2003: 256-257; Wirtz & Debelius, 2003: 22, fig.; Bouillon et al., 2004: 194, fig. 108H-K.
Clytia ?hemisphaerica; Watson, 1994: 151-153, fig. 2A-E.

Material inspected: Stn 4.K12: Hydrothecae and gonothecae arising from stolon on unidentifiable fragment of hydroid. Both hydrothecae and gonothecae are empty. RMNH-Coel. 30424. – Stn 5.D01: Small colony on algae, composed of some hydrothecae and gonothecae in various stages of development. RMNH-Coel. 30401. No slide. – Stn MAU.006: Hydrothecae developing from stolon on stem of *Aglaophenia parvula* Bale, 1882; no gonothecae. RMNH-Coel. 30412, slide 5189.

Distribution.— The polyp phase of *Clytia hemisphaerica* has a near-cosmopolitan distribution (Cornelius, 1995b); in the Macaronesian area it was recorded from the Azores and the Canary Islands (Medel & Vervoort, 2000). The present records are additional to those recorded previously by these authors: Stn 4.K12 (Canary Islands, SE coast of Lanzarote, Arrecife, 0-2 m); Stn 5.D01 (Azores, S coast of São Miguel, 0-20 m), and Stn MAU.006 (off Mauritania, Passe du Levrier, E of Cap Blanc, 15 m).

Clytia paulensis (Vanhöffen, 1910)

Campanularia paulensis Vanhöffen, 1910: 272, 298, fig. 19a, b.
Clytia paulensis; Cornelius, 1999: 8 et seq.; Bouillon & Boero, 2000: 208; Calder, 2000: 1134; Medel & Vervoort, 2000: 39-41; Van der Land et al., 2001: 119; Cairns et al., 2002: 23, 57; Peña Cantero & García Carrascosa, 2002: 152-154, fig. a-c; Kubota, 2003a: 30; Anonymous, 2004: 42; Bouillon et al., 2004: 196, fig. 110F-J.

Material inspected: Stn 4.137: Hydrothecae rising from stolon on unidentifiable hydroid remains. No gonothecae. Slide 5197. – Stn 4.153: Isolated hydrothecae growing on *Halecium tenellum* Hincks, 1861 and *Bimeria vestita* Wright, 1859. Slide 5172. Additional sample together with *Campanularia hincksii* Alder on unidentifiable hydroid stems, RMNH-Coel. 30439. No gonothecae on either sample. – Stn 6.060: Some isolated hydrothecae and one gonotheca on stem of *Eudendrium* spec. RMNH-Coel 30535, slide 5216. – Stn 6.076: Plentiful hydrothecae developing from a stolon on (mainly) the basal parts of colonies of *Obelia bidentata* Clarke; apparently some gonothecae are present but these are difficult to distinguish from those of *O. bidentata*. RMNH-Coel. 30444, slide 5203.

Distribution.— *Clytia paulensis* is distributed over the tropical and subtropical waters of Atlantic and Indo-Pacific (Cornelius, 1995b); in the CANCAP area it was recorded from Madeira, the Canary Islands and the Cape Verde Region (Medel & Vervoort, 2000).

The present records slightly extend the distribution in the Canary Islands region (Stns 4.137 and 4.153, both SW of Palma, c. 28°39'N 17°59'W, 50-200 m) and the Cape Verde area (Stn 6.060, SE of Boa Vista, 15°57'N 22°45'W, 50-55 m).

Genus ***Laomedea*** Lamouroux, 1812

Laomedea calceolifera (Hincks, 1871)

Campanularia calceolifera Hincks, 1871: 78-79, pl. 6.
Laomedea calceolifera; Howson & Picton, 1997: 34; Cornelius, 1999: 8 et seq.; Medel & Vervoort, 2000: 41-44, figs 9, 10a; Van der Land et al., 2001: 119; Cairns et al., 2002: 23; Bouillon et al., 2004: 198, fig. 112A-F.

Material inspected: Stn 6.078: Small colonies up to 20 mm high on shells, mixed with *Zygophylax biarmata* Billard, 1905; no gonothecae. RMNH-Coel. 28845.

Distribution.— *Laomedea calceolifera* is distributed over the warmer parts of the northern Atlantic, with comparatively few records in the eastern Atlantic. From the CANCAP area it was previously reported from the Azores, the Canary Islands and the Cape Verde Archipelago (Medel & Vervoort, 2000). The present record is from a Cape Verde locality (SW of Boa Vista, 185-190 m) where the presence of the species had previously been established.

Genus ***Obelia*** Péron & Lesueur, 1810

Obelia bidentata Clark, 1875

Obelia bidentata Clark, 1875: 58-59, pl. 9 fig. 2; Stepan'yants, 1998: 180 et seq.; Cornelius, 1999: 6; Östman, 1999: 19 et seq., figs; Stepan'yants et al., 1999a: 31, 32; Kubota, 1999: 67 et seq.; Morri & Bianchi, 1999: 288; Medel & Vervoort, 2000: 46-49, fig. 12; Lindner & Migotto, 2001: 826; Migotto et al., 2001: 289 et seq.; Van der Land et al., 2001: 119; Cairns et al., 2002: 23, 57; Peña Cantero & García Carrascosa, 2002: 159-161, fig. 31a; Kelmo & Attrill, 2003: 137, fig. 6d-f; Schuchert, 2003: 164-165, fig. 24; Vervoort & Watson, 2003: 424, 425, fig. 103F; Bouillon et al., 2004: 200, fig. 113I-M.
Obelia bicuspidata Clark, 1875: 58, pl. 9 fig. 1.

Material inspected: Stn 5.004: 25 mm long top part of larger colony; hydrothecae with hydranths; no gonothecae. RMNH-Coel. 30498. – Stn 6.062: Small 15 mm high stem on shell inhabited by a pagurid and partly covered by sponge. On *O. bidentata* a few hydrothecae of *Modeeria rotunda* (Quoy & Gaimard, 1827); no gonothecae. RMNH-Coel. 30396. – Stn 6.076. Many up to 50 mm high colonies on axis of *Lytocarpia myriophyllum* (Linnaeus, 1758), with plenty gonothecae; covered basally with *Clytia paulensis* (Vanhöffen, 1910). Together with *Clytia hemisphaerica* (Linnaeus, 1767). RMNH-Coel. 30444, slide 5203.

Distribution.— *Obelia bidentata* is found in the temperate, subtropical and tropical parts of the Atlantic and Indo-Pacific. Its area of distribution in the eastern Atlantic includes the Mediterranean, while it also penetrates into the boreal eastern Atlantic. In the Macaronesian area it has been previously recorded from the Azores, the Canary Islands, the Cape Verde Archipelago and off the Atlantic coast of Morocco. Of the present three localities two are new records: Stn 5.004, Azores, NE of São Miguel, 38°06'N 24°49'W, 2400-2600 m and Stn 6.062, SE of Boa Vista, 15°55'N 22°46'W, 82-89 m.

The record from Stn 5.004 is from very deep waters though the species is usually recorded from shallow to intermediate depths. It concerns the top part of a colony that may have been picked up by the net at shallower depths.

Note.— RMNH 28851 for *Obelia bidentata*, CANCAP Stn 3.134, has to be changed to 30911, as the old number had been used for another species (cf. Medel & Vervoort, 2000: 48).

Obelia dichotoma (Linnaeus, 1758)

Sertularia dichotoma Linnaeus, 1758.

Obelia dichotoma; Stepan'yants, 1998: 180 et seq.; Bouillon, 1999: 431; Cornelius, 1999: 6; Gulliksen et al., 1999: 49, 83; Kocak et al.: 6; Stepan'yants et al., 1999a: 31, 32; Stepan'yants et al., 1999b: 34 et seq.; Kubota, 1999: 67 et seq., figs 1-6; Morri & Bianchi, 1999: 288; Bouillon & Boero, 2000: 210; Calder, 2000: 1134; Evans, 2000: 56-57; Faucci & Boero, 2000: 258; Medel & Vervoort, 2000: 49-53, figs 10c, d; Miglietta et al., 2000: 65; Schuchert, 2000: 413; Lindner & Migotto, 2001: 826; Migotto et al., 2001: 289 et seq.; Schuchert, 2001: 155; Van der Land et al., 2001: 119; Peña Cantero & García Carrascosa, 2002: 161-162, fig. 31b, c; Calder et al., 2003: 1202, 1211; Grohmann et al., 2003: 13; Kelmo & Attrill, 2003: 138-139, fig. 6g-i; Kubota, 2003a: 30; 2003b: 32; Vervoort & Watson, 2003: 425-427, fig. 104A-E; Anonymous, 2004: 43-44; Bouillon et al., 2004: 200, fig. 114C-G.

Material inspected: Stn 2.142: small up to 8 mm high, apparently juvenile colonies without gonothecae on fragments of plastic rope. RMNH-Coel. 30446, no slide. – Stn 3.083: Single detached colony c. 20 mm high and some smaller colonies attached to unidentifiable hydroid stem. No gonothecae. Very young material with thin stem; hydrothecae with polyps; all material with many bryozoans and a few hydrothecae of *Filellum* spec. RMNH-Coel. 30427. – Stn 4.158: 15 mm high stem fragment with a few gonothecae. Slide 5170.

Distribution.— *Obelia dichotoma* has a worldwide distribution, occurring in all the oceans of the world under widely varying conditions. Previous records from the Macaronesian area are given by Medel & Vervoort (2000); the species chiefly occurs there in the littoral zone down to a depth of c. 100 m. The present records are all additional and all from deeper water: Stn 2.142, Canary Islands, SW of Hierro, off Punta de Orchilla, 480-540 m; Stn 4.159, SW of Palma, 350-250 m, and Stn 3.083, Selvagens Archipelago, S of Selvagem Pequena, 192 m.

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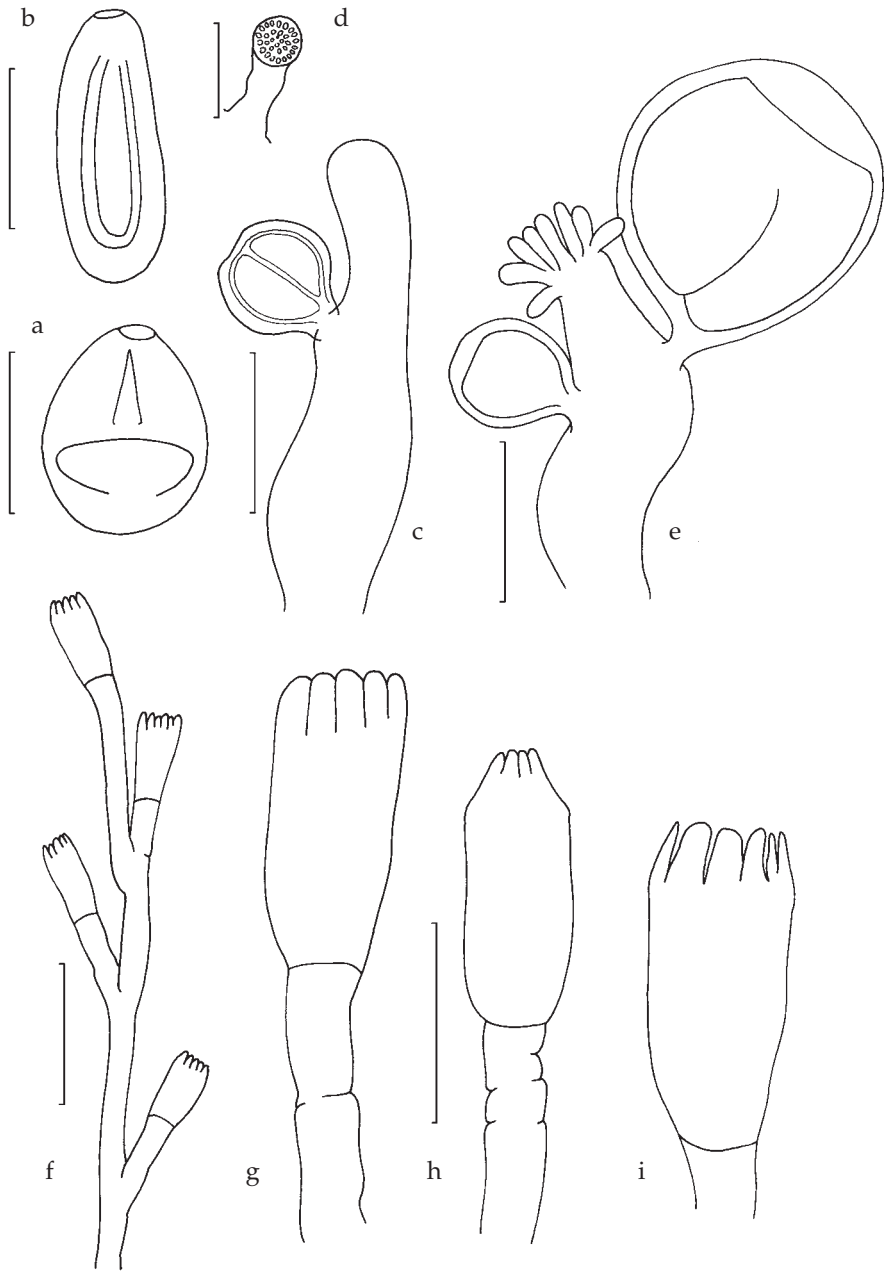

Fig. 1. a, b, *Zanclea* cf. *alba* (Meyen, 1843), Stn 5.071; a, large stenotele; b, macrobasic eurytele. c, d, *Hydractinia cyaeiformis* spec. nov., holotype, Stn 7.140; c, female gonozooid; d, dactylozooid. e, *Hydractinia paucispinata* spec. nov., paratype, Stn 6.157, female gonozooid with one fully developed and one young gonophore. f-i, *Plicatotheca anitae* Calder & Vervoort, 1986, Stn 5.111, slide 5153; f, distal part of stem; g-i, hydrothecae. Scale bar for a = 0.006 mm; for b = 0.01 mm; for c = 0.1 mm; for d = 0.05 mm, for e = 0.3 mm; for f = 0.5 mm, for g-i = 0.25 mm.

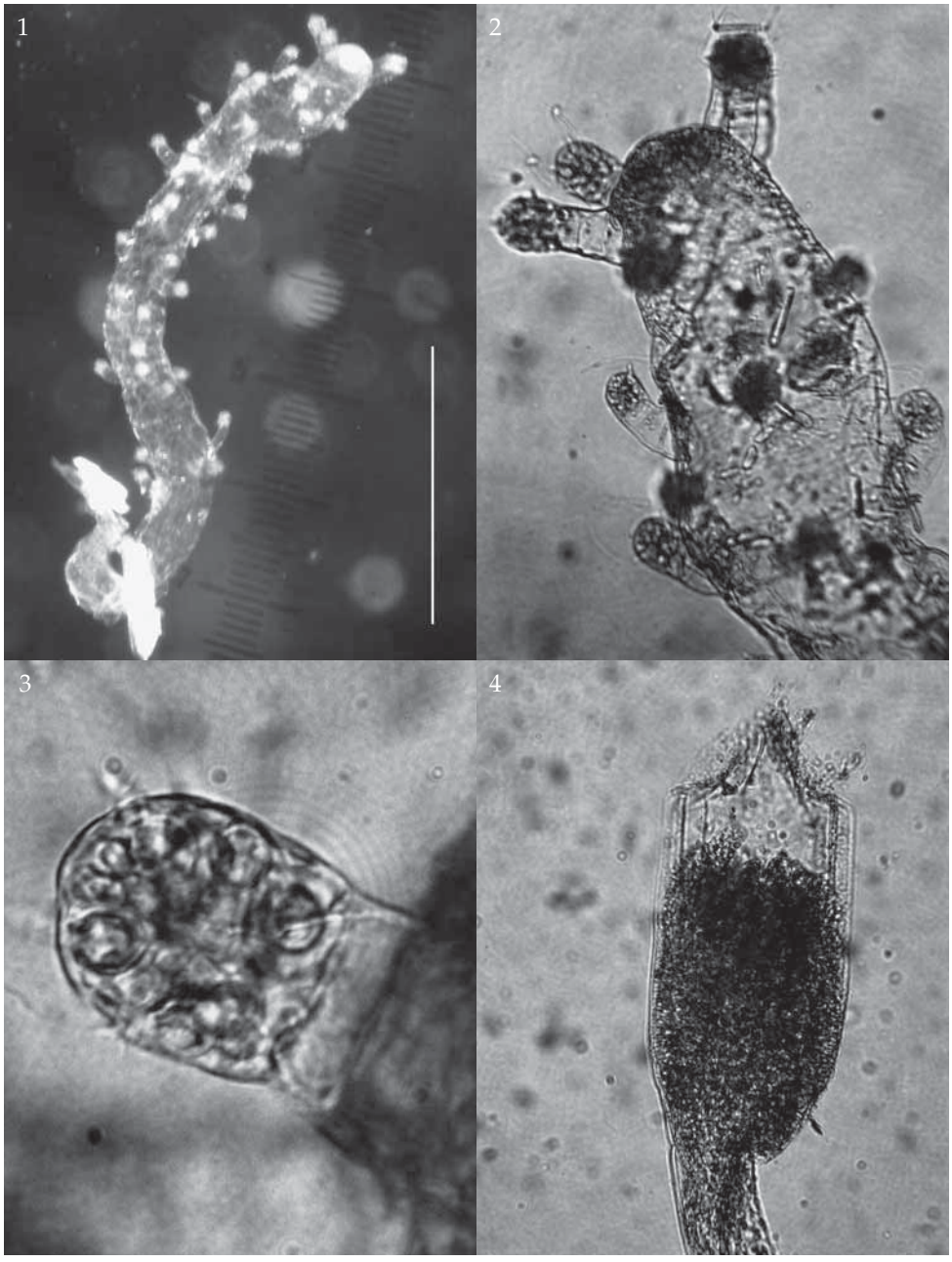

Fig. 2. 1-3, *Zanclea* cf. *alba* (Meyen, 1834). Microphotographs of preserved specimen. 1, detached polyp showing dispersed, capitate tentacles; the four distal tentacles are more or less in a whorl; 2, distal part of same specimen showing arrangement of distal (oral) tentacles approaching a whorl; 3, capitulum of one of tentacles, showing close packing of large stenoteles. 4, *Plicatotheca anitae* Calder & Vervoort, 1986, Stn 5.111, hydrothecae, unstained preparation. Scale bar for 1 = 0.9 mm; for 2 = 180 μm; for 3 = 40 μm; for 4 = 140 μm.

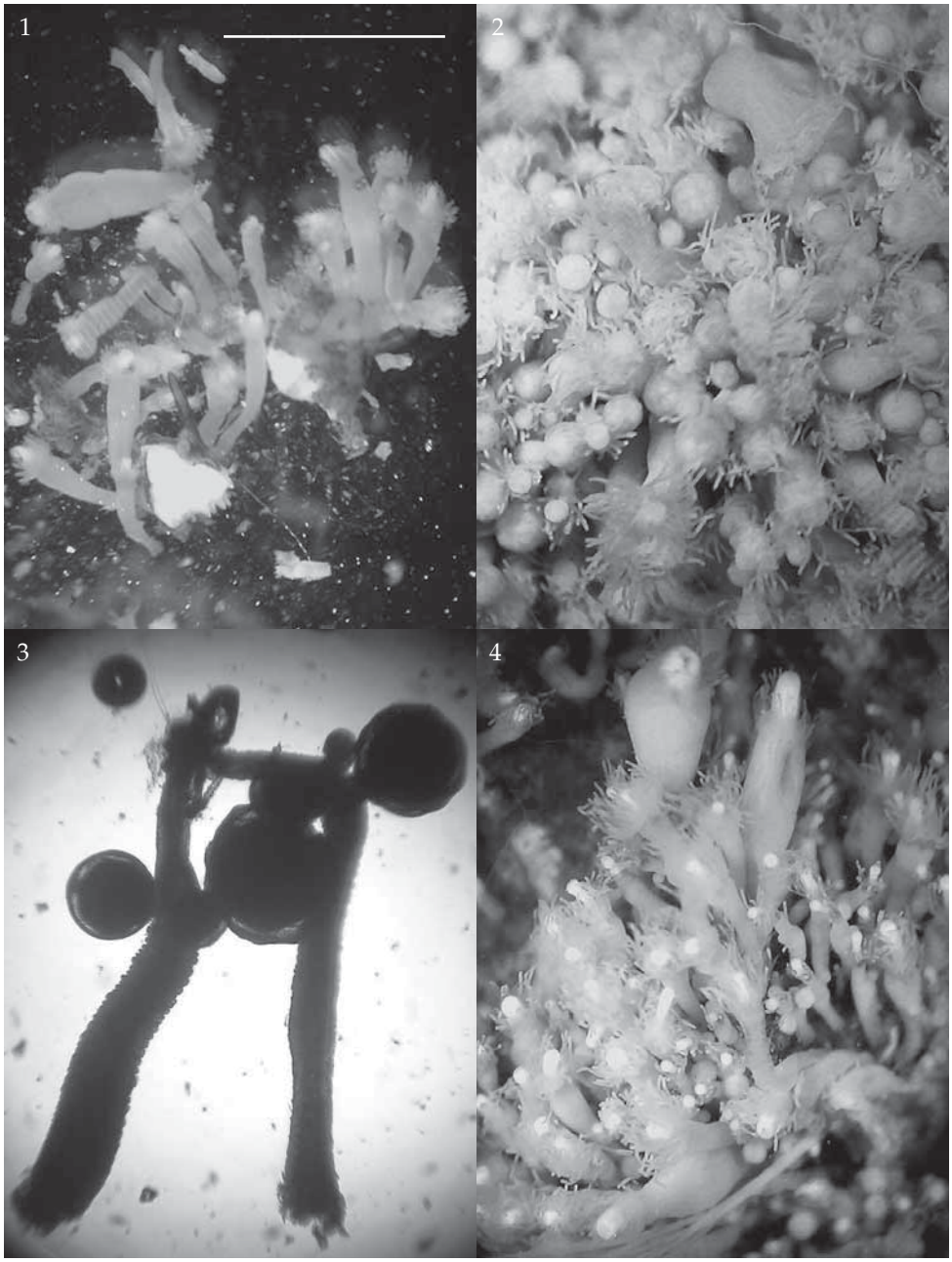

Fig. 3. *Hydractinia multitentaculata* (Millard, 1975). 1, 3, 4, MAU.049; 2, MAU.027. 1, detached polyps and spines; 2. gastrozooids and female gonozooids in dense aggregation, seen from above; 3, female gonozooids in various stages of development; 4, gastrozooids and male gonozooids in oblique view. Scale bar for 1 = 250 µm; for 2 = 1.5 mm; for 3 = 0.5 mm; for 4 = 3.5 mm.

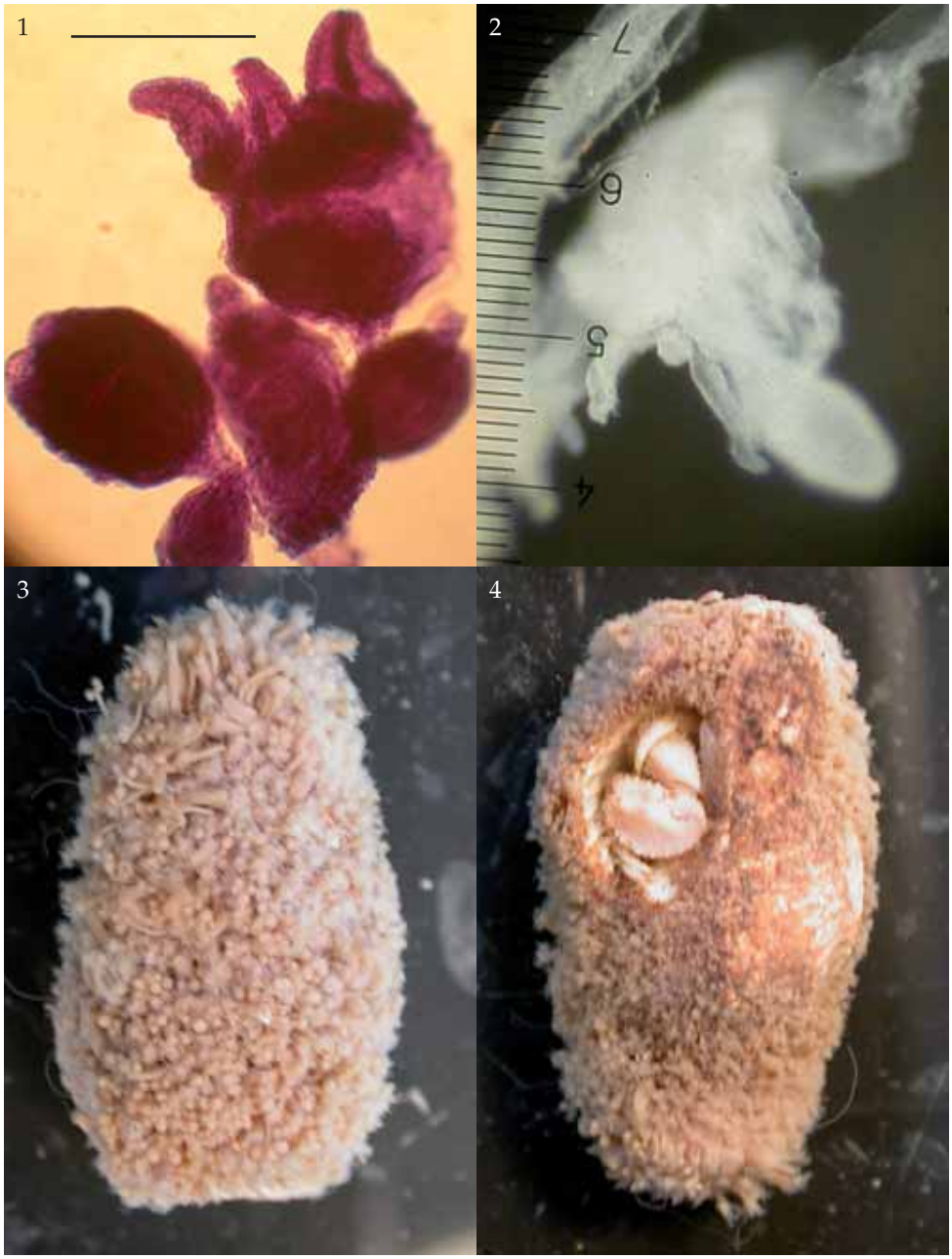

Fig. 4. 1, *Hydractinia marsupialia* Millard, 1975, MAU.100, slide 5277; male gonozooid with several gonophores in various stages of development in haemalum stained microslide. 2, *Eudendrium ramosum* (Linnaeus, 1758), Stn 6.146, pseudo-cnidophore in unstained preparation. 3, 4, *Hydractinia multitentaculata* (Millard, 1975), MAU.027, oliviid shell completely covered with closely packed gastrozooids, gonozooids and dactylozooids, seen from the back (3) and from the aperture (4). Scale bar for 1 = 250 µm, for 2 = 500 µm, for 3 and 4 = 12 mm.

Fig. 5. 1, 3, *Hydrocorella africana* Stechow, 1921, 1, specimen from Stn 6.062, seen from above; 3, specimen from Stn 6.075 on gastropod shell inhabited by pagurid, seen from oral side. 2, *Bimeria vestita* Wright, 1859, Stn 4.153, slide 5172, male (?) gonophore in haemalum stained microslide. 4, *Hydractinia multitentaculata* (Millard, 1975), distal part of gastrozooid showing the irregular whorls of oral tentacles. Scale bars for 1 and 3 = 23.5 mm; for 2 = 0.1 mm; for 4 = 1.25 mm.

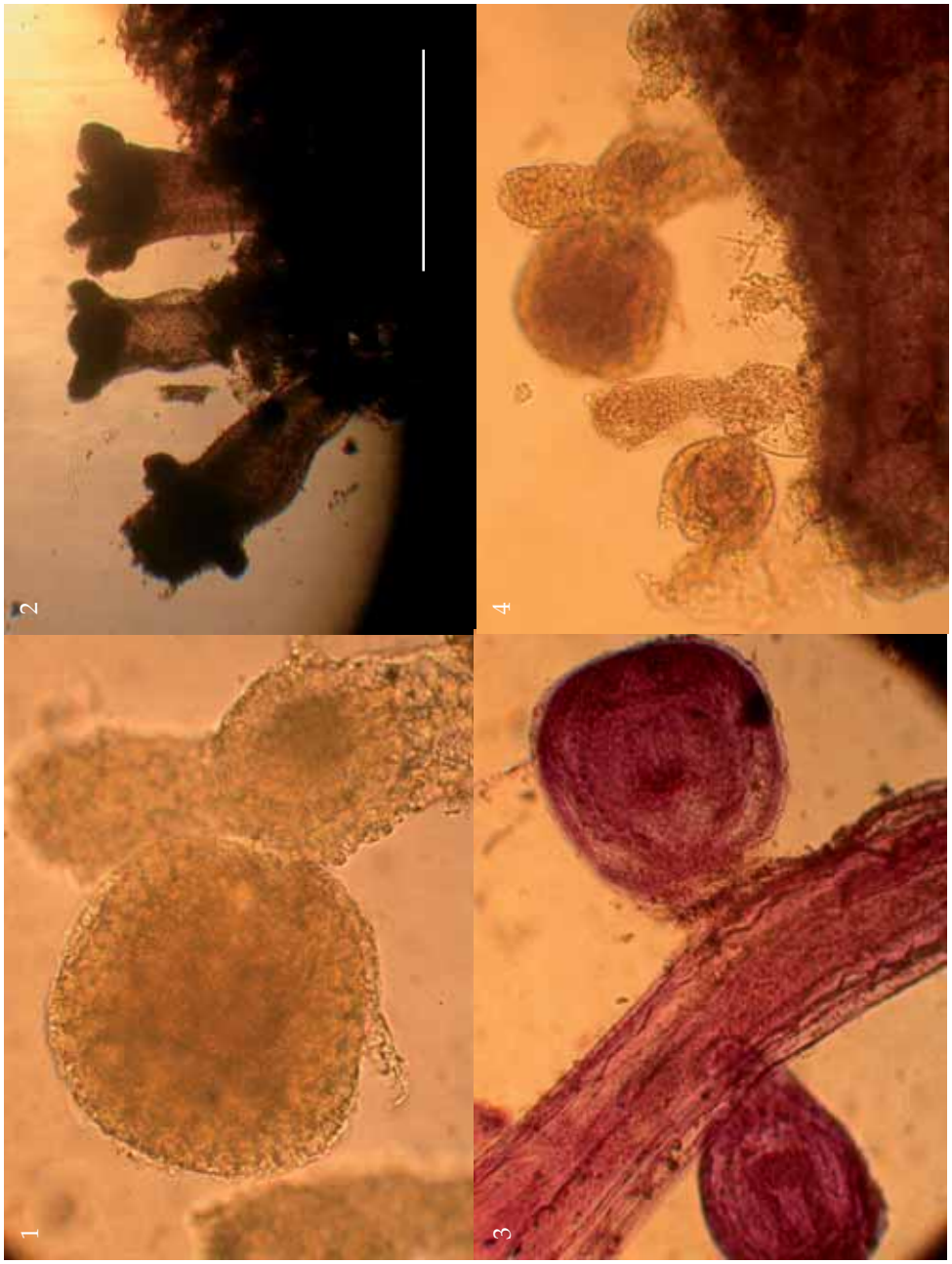

Fig. 6. 1, 4, *Hydractinia marsupialia* Millard, 1975, MAU.100, male gonophores in various stags of development, unstained preparation; 2, *Hydractinia cytaeiformis* spec. nov., Stn 7.140, side view of polyps in unstained preparation; 3, *Turritopsis nutricula* McCrady, 1857, Stn 1.098, slide 5147, developing (female?) gonophores, haemalum stained microslide. Scale bar for 1 = 150 µm; for 2 = 550 µm; for 3 = 290 µm; for 4 = 300 µm.

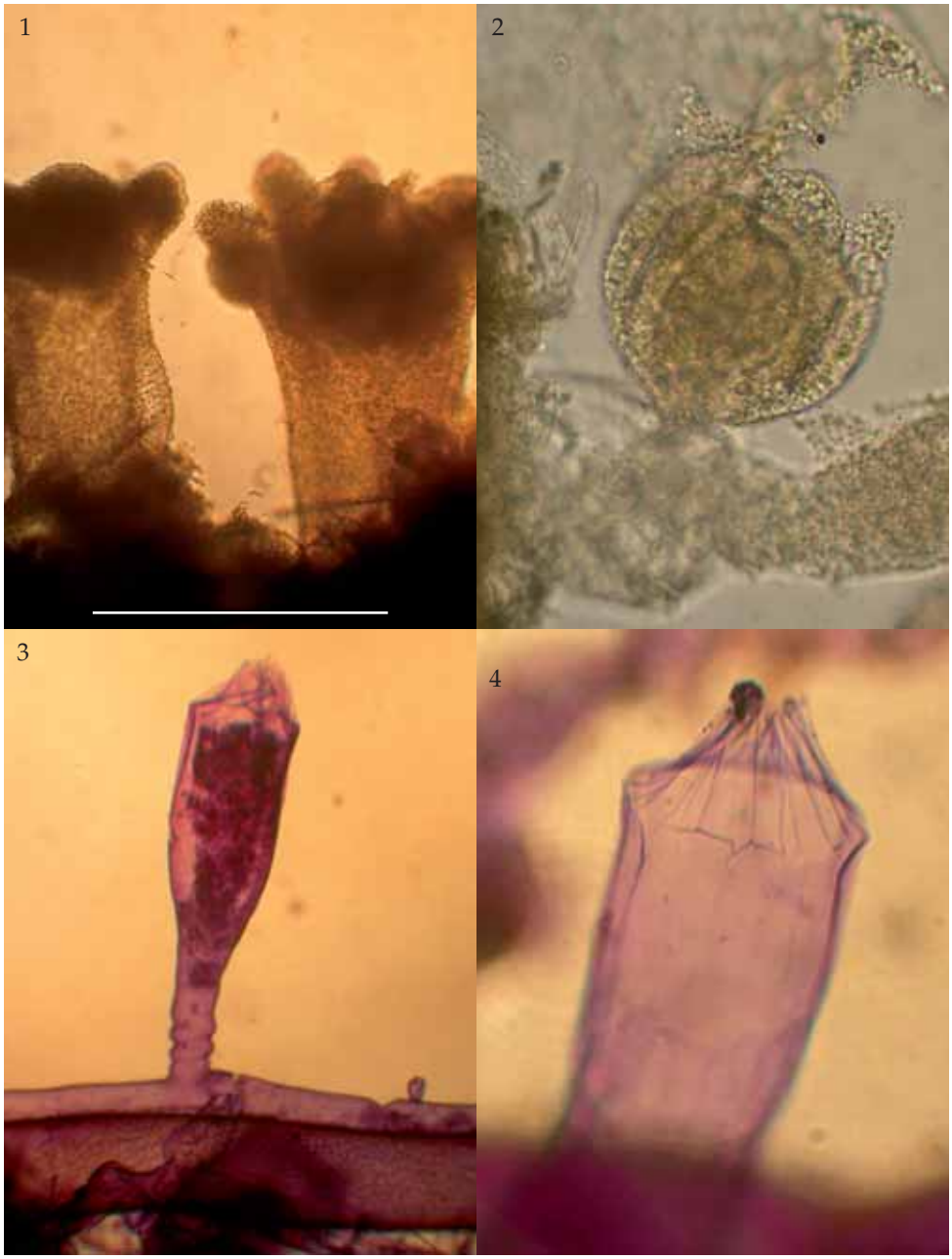

Fig. 7. 1, *Hydractinia cytaeiformis* spec. nov., Stn 7.140, side view of polyps in unstained preparation; 2, *Hydractinia marsupialia* Millard, 1975, MAU.100, young male gonophore, unstained preparation; 3, *Egmundella modesta* Millard & Bouillon, Stn 3.119, slide 5343, hydrotheca and nematotheca, haemalum stained microslide; 4, *Lafoeina tenuis* G.O. Sars, 1874, Stn 5.072, slide 5214, hydrotheca, haemalum stained microslide. Scale bar for 1 = 550 µm; for 2 = 200 µm; for 3 = 850 µm; for 4 = 140 µm.

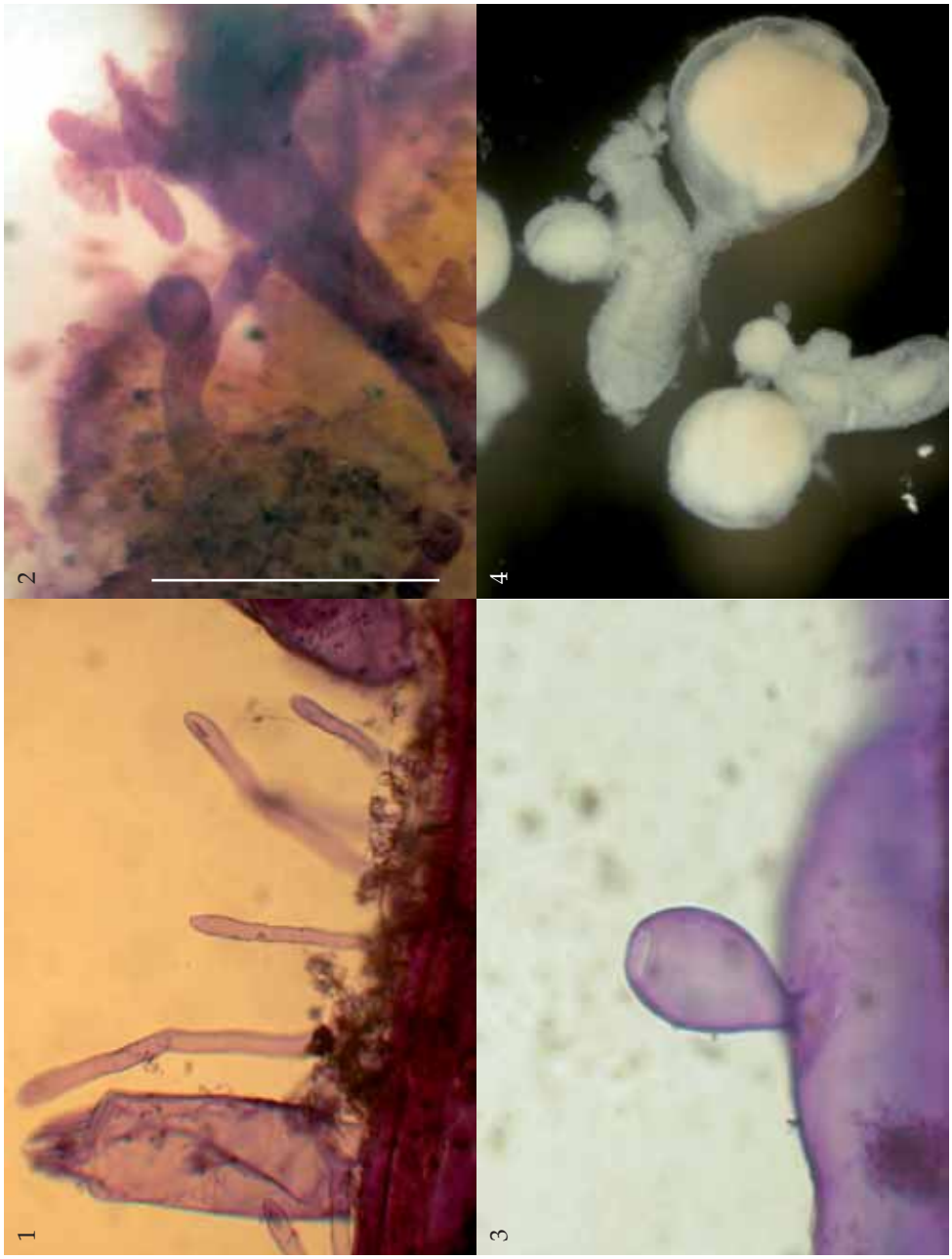

Fig. 8. 1, *Lafoeina tenuis* G.O. Sars, 1874, Stn 5.072, slide 5214, part of colony with hydrotheca and nematothecae, haemalum stained microslide; 2, *Hydractinia cytaeiformis* spec. nov., Stn 7.140, slide 5365, gonozooid with developing female gonophore, haemalum stained microslide; 3, *Egmundella modesta* Millard & Bouillon, 1975, Stn 3.119, slide 5343, empty nematotheca, haemalum stained microslide; 4, *Hydractinia paucispinata* spec. nov., paratype, Stn 6.157, female gonozooids with gonophores in various stages of development. Scale bar for 1 = 400 µm; for 2 = 350 µm; for 3 = 75 µm; for 4 = 550 µm.

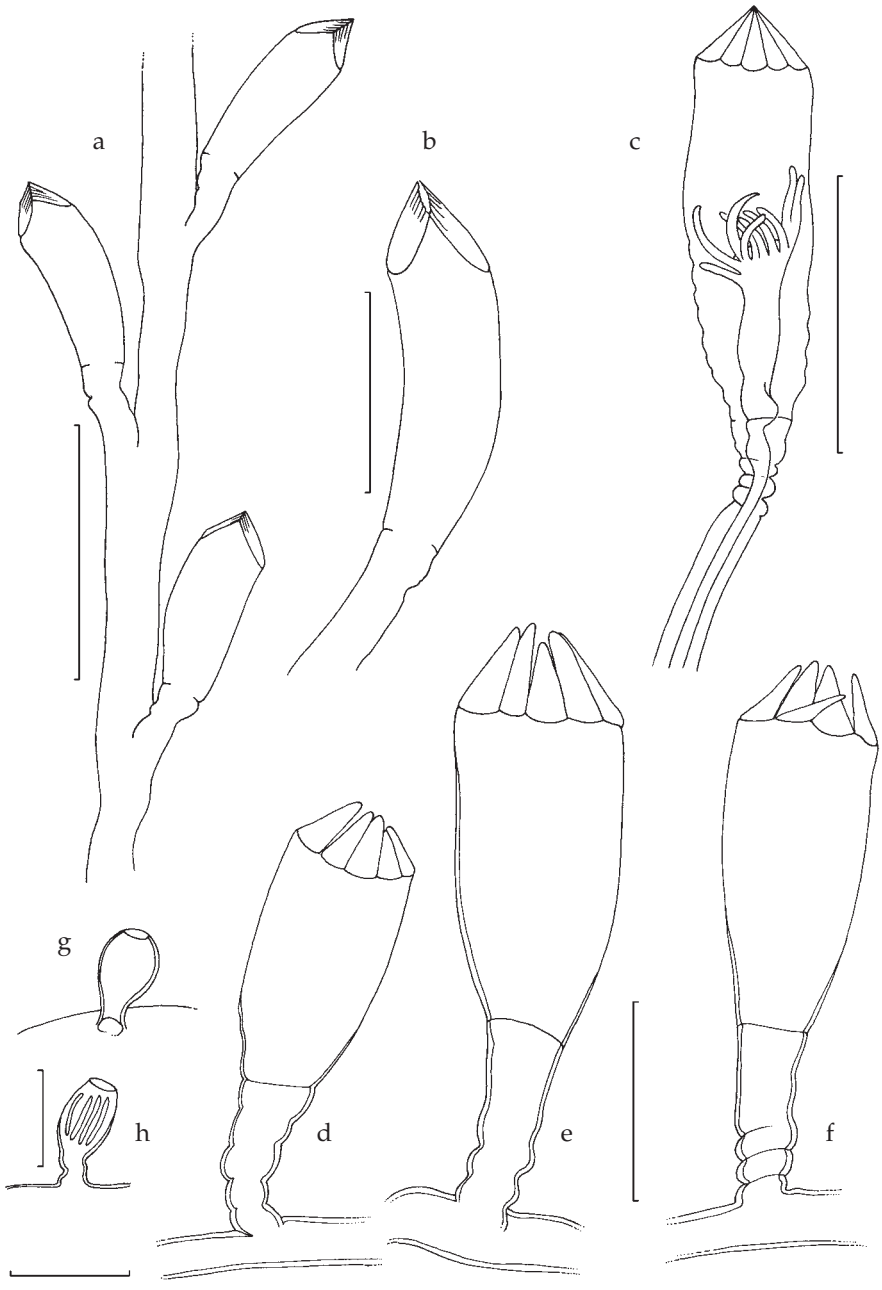

Fig. 9. a, b, *Stegopoma bathyale* Vervoort, 1966, Sta MAU.040, slides 5131; a, distal part of stem; b, hydrotheca. c, *Lovenella clausa* (Lovén, 1835), Stn 7.058, slide 5194, hydrotheca. d-h, *Egmundella modesta* Millard & Bouillon, 1975, Stn 3.119, slide 5343; d-f, hydrothecae; g, empty nematotheca; h, nematothecae filled with nematocysts. Scale bar for a = 0.5 mm; for b = 0.25 mm; for c = 1 mm; for d-f = 0.25 mm; for g, h = 0.05 mm.

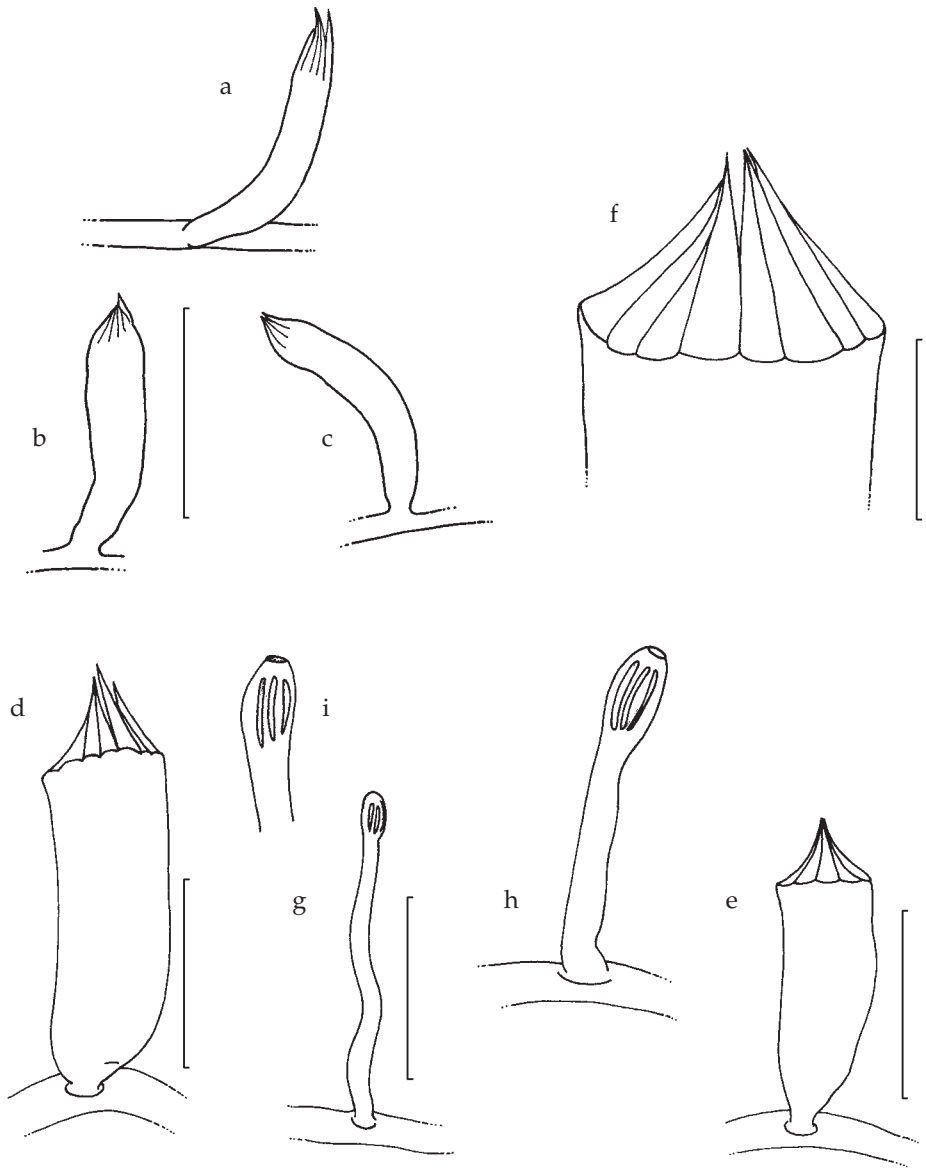

Fig. 10. a-c, ?*Mitrocomella* spec., Stn 6.070, hydrothecae; d-i, *Lafoeina tenuis* G.O. Sars, 1874, Stn 5.072, slide 5214; d, e, hydrothecae; f, distal part of hydrotheca with opercular plates; g, h, nematothecae, i, distal part of nematotheca. Scale bar for a-c = 0.5 mm; for d, e = 0.25 mm; for f-i = 0.1 mm.

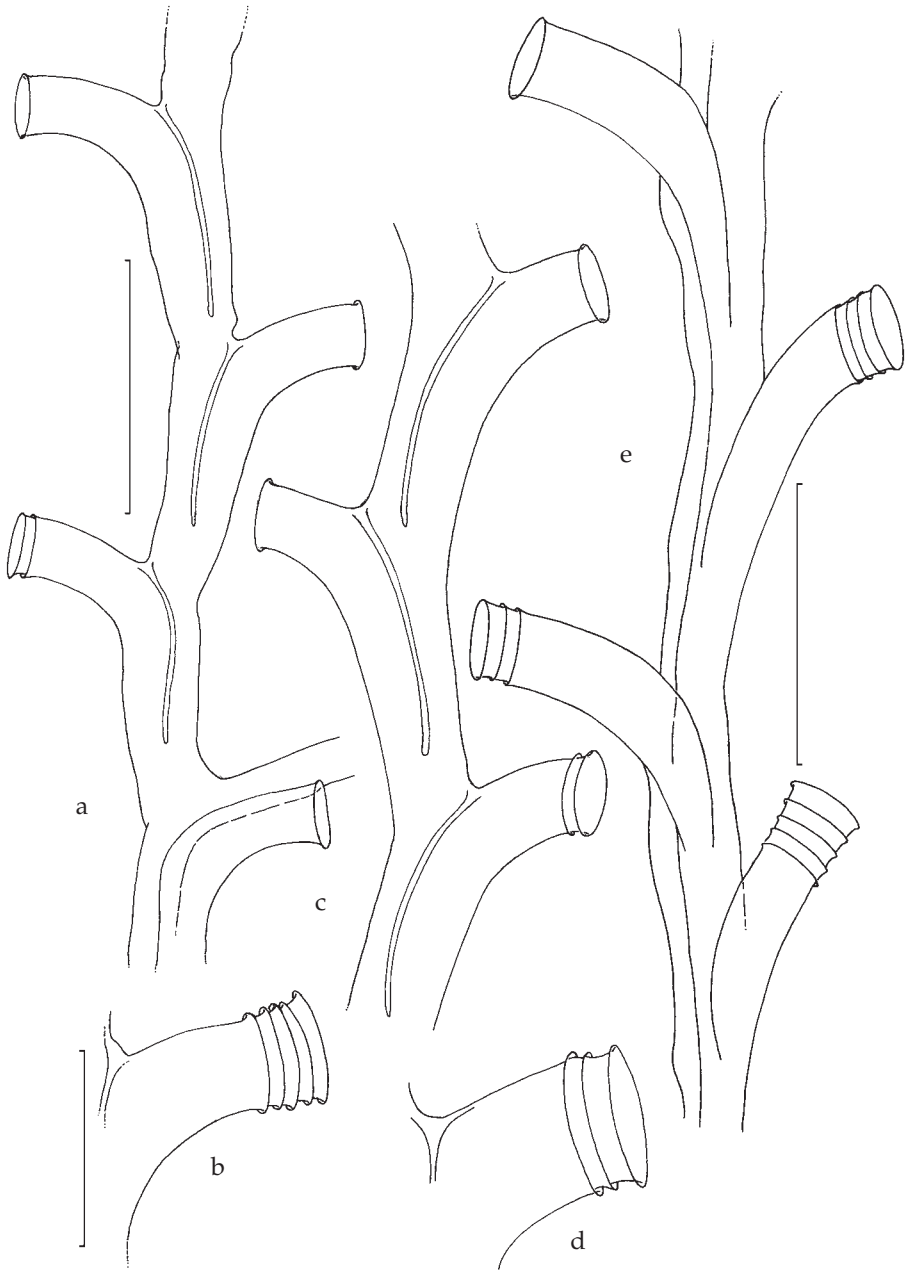

Fig. 11. a-d, *Acryptolaria conferta* var. *minor* Ramil & Vervoort, 1992; a, b, Stn 2.099, slide 5224, part of monosiphonic stem and distal part hydrotheca with renovations; c, d, Stn 2.092, slide 5148, part of monosiphonic stem and distal part hydrotheca with renovations. e, *Acryptolaria longitheca* (Allman, 1877), Stn 5.003, slide 5348, part of monosiphonic stem; hydrothecae renovated. Scale bar for a, c = 0.5 mm; for b, d = 0.25 mm; for e = 1 mm.

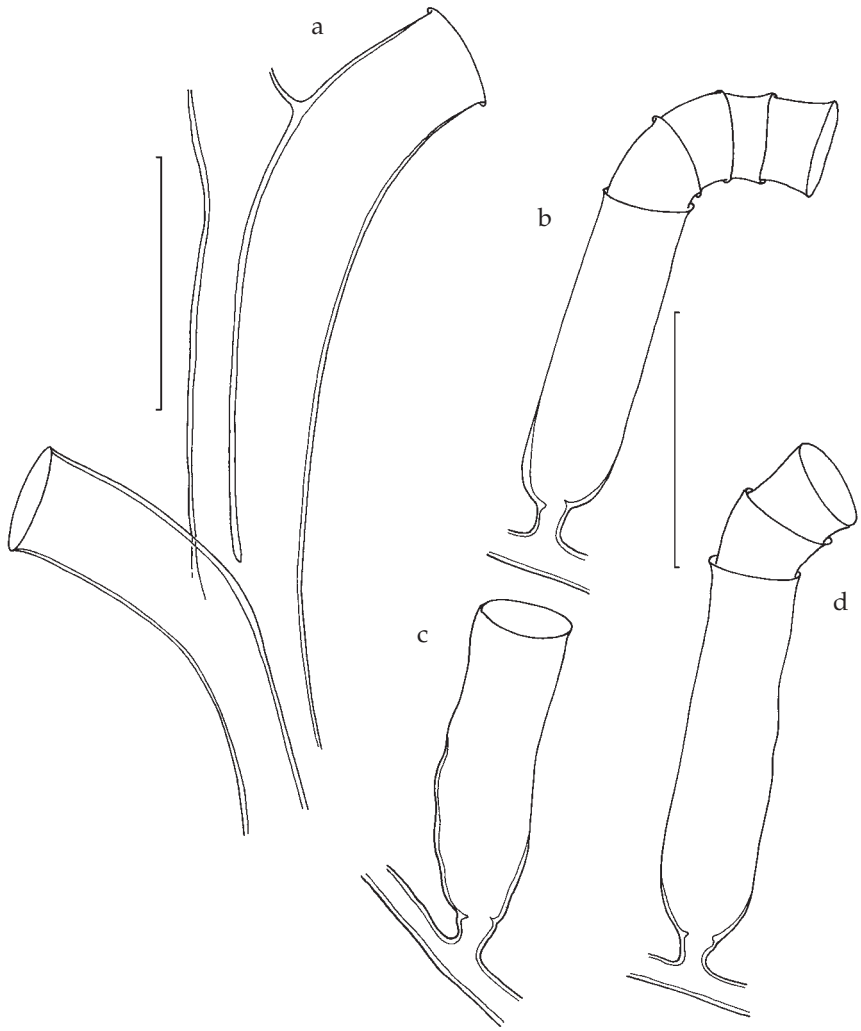

Fig. 12. a, *Acryptolaria longitheca* (Allman, 1877), Stn 5.003, slide 5348, part of monosiphonic stem with non-renovated hydrothecae. b-d, *Hebellopsis scandens* (Bale, 1888), Stn 5.112, slide 5364, renovated and non-renovated hydrothecae. Scale bar for a-d = 0.5 mm.

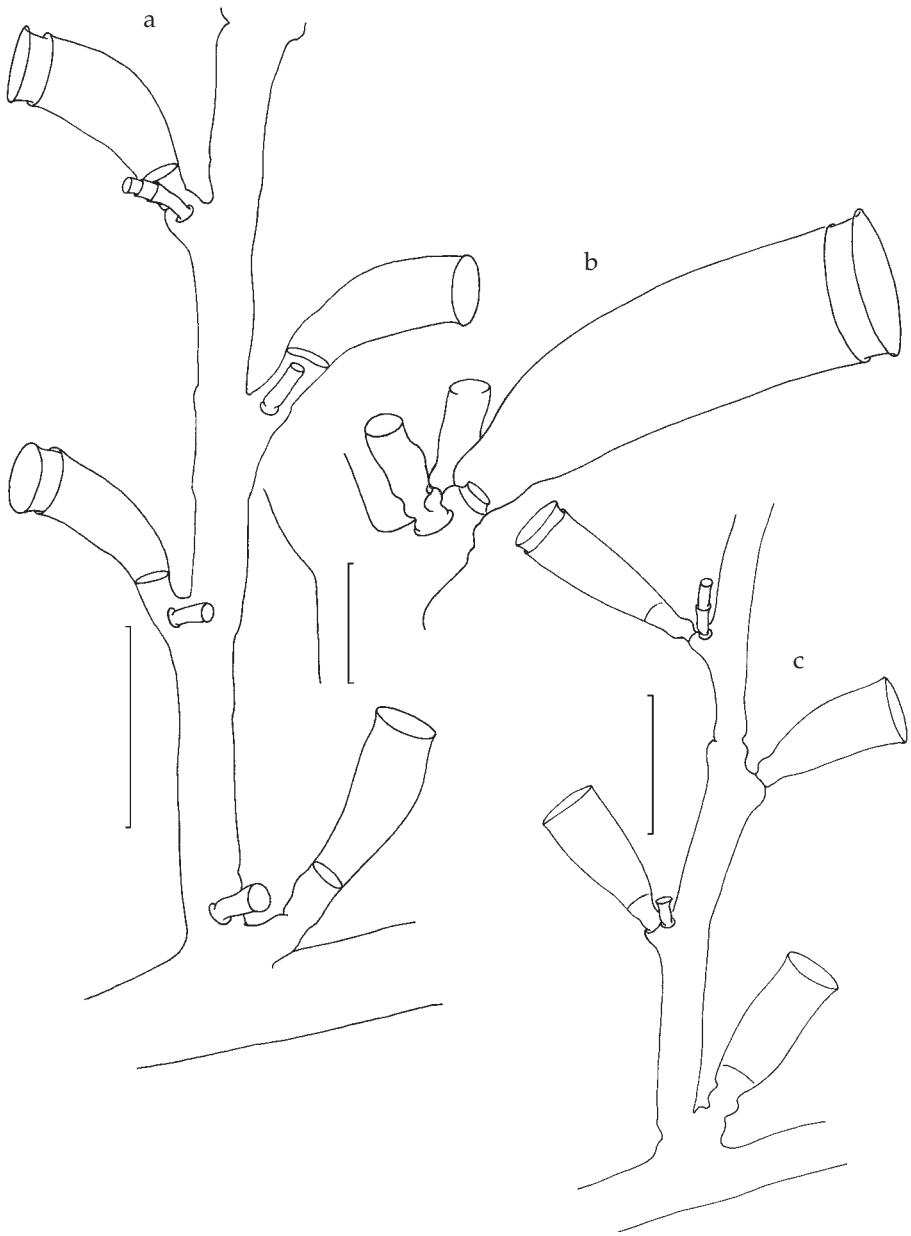

Fig. 13. a, b, *Zygophylax biarmata* Billard, 1905. a, Sta 7.140, slide 5206, side branch with axillary hydrotheca; b, Stn 6.078, slide 5196, hydrotheca with two nematothecae on apophysis. c, *Zygophylax brownei* Billard, 1924, Stn 4.158, slide 5208, part of hydrocladium. Scale bar for a = 0.25 mm; for b = 0.1 mm; for c = 0.5 mm.

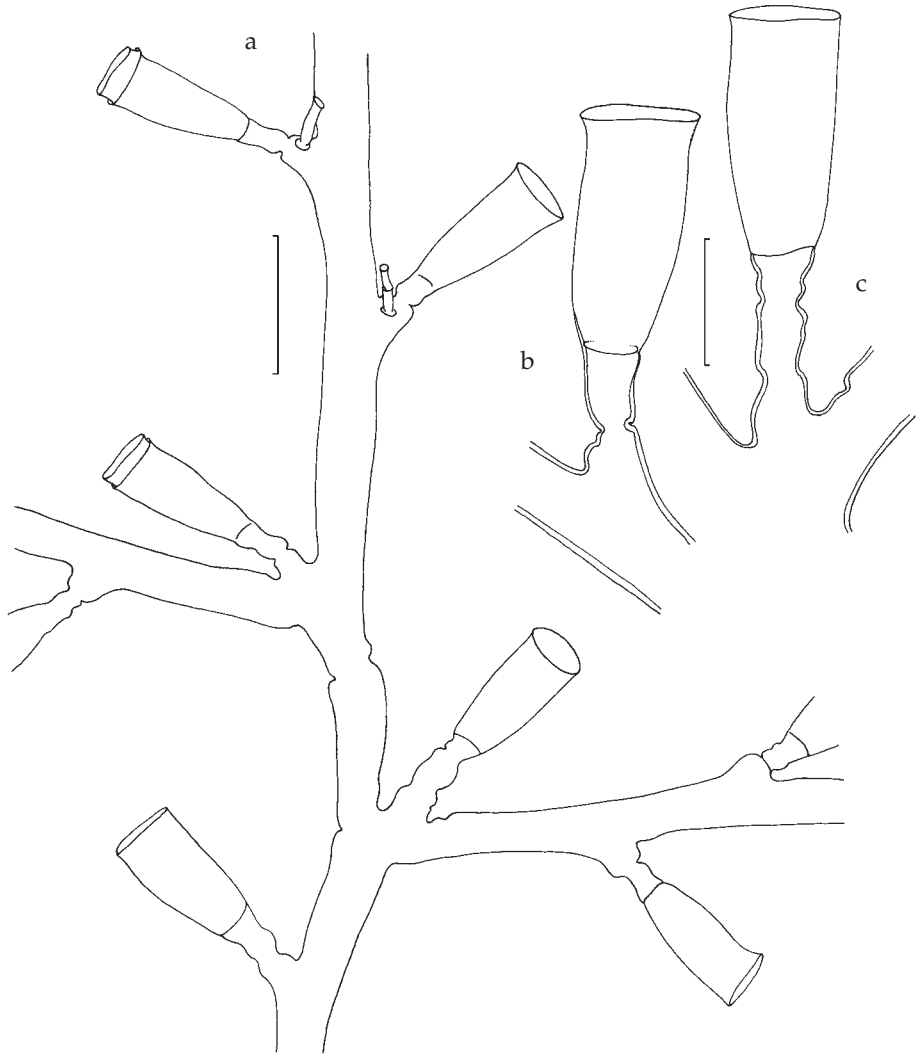

Fig. 14. *Zygophylax brownei* Billard, 1924, Stn 4.158, slide 5208. a, part of colony; b, c, hydrothecae. Scale bar for a = 0.5 mm; for b, c = 0.25 mm.

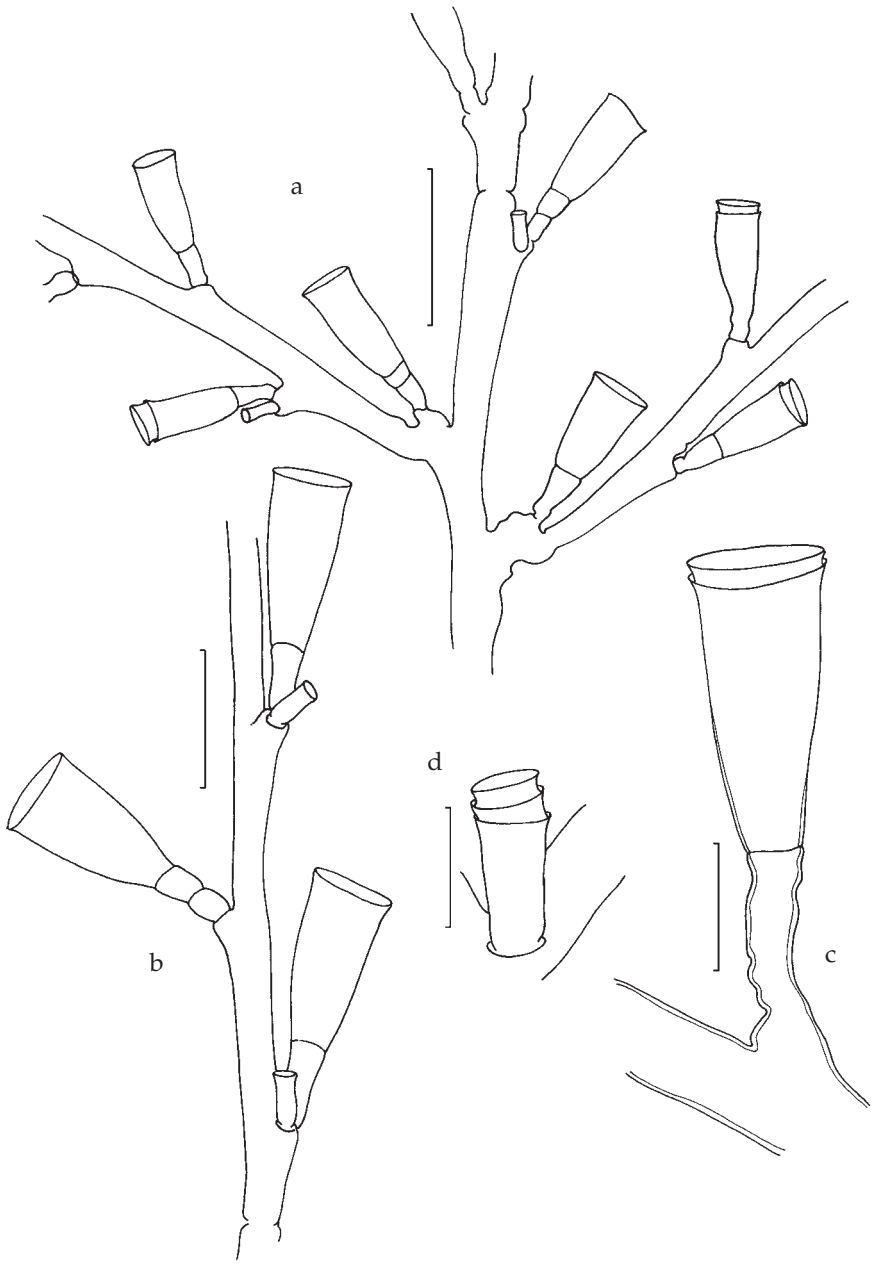

Fig. 15. *Zygophylax leloupi* Ramil & Vervoort, 1992, Stn 7.023, slide 5221. a, part of colony; b, part of hydrocladium; c, hydrotheca; d, nematotheca. Scale bar for a = 1 mm; for b = 0.5 mm; for c = 0.25 mm; for d = 0.1 mm.

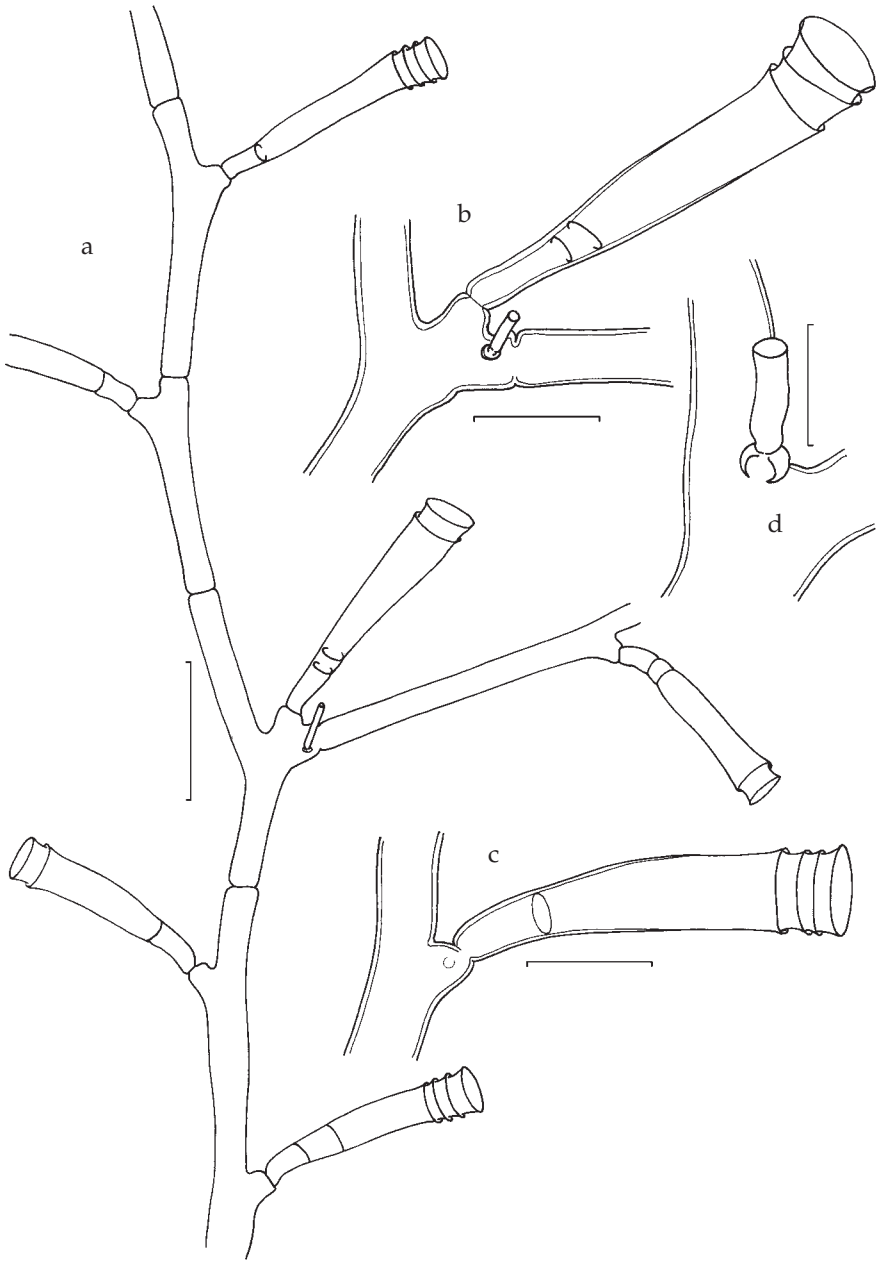

Fig. 16. *Zygophylax levinseni* (Saemondsson, 1911), Stn 6.050, slide 5133. a, part of colony; b, axillary hydrotheca; c, hydrotheca with renovations; d, nematotheca. Scale bar for a = 0.5 mm; for b, c = 0.25 mm; for d = 0.1 mm.

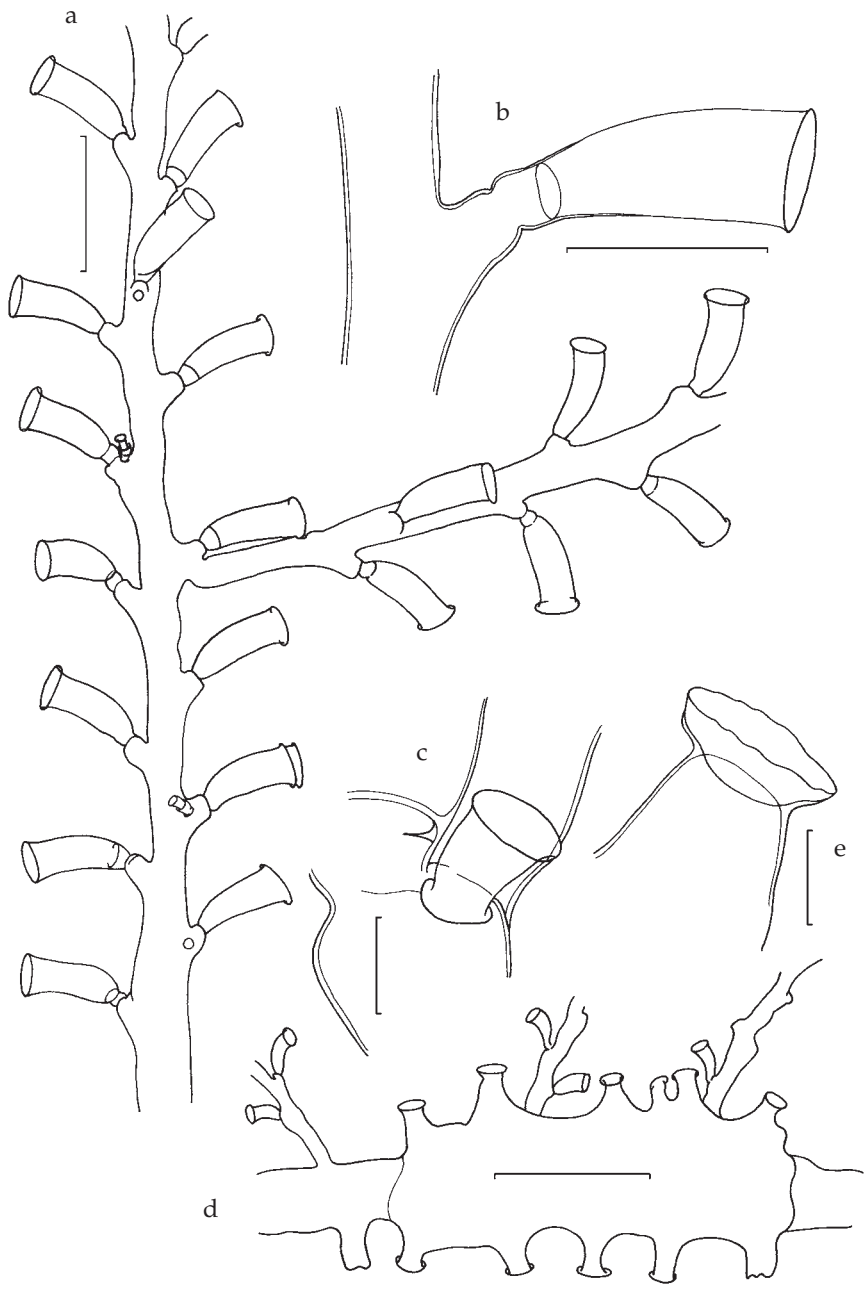

Fig. 17. *Zygophylax parabiarmata* spec. nov. Paratypes. a-c, Stn 6.137, slides 5126; a, monosiphonic part of stem with side branch; b, hydrotheca; c, nematotheca. d, e, Stn 6.148, slide 5149; d, coppinia; e, distal part of gonotheca. Scale bar for a = 0.5 mm; for b = 0.25 mm; for c, e = 0.05 mm; for d = 1 mm.

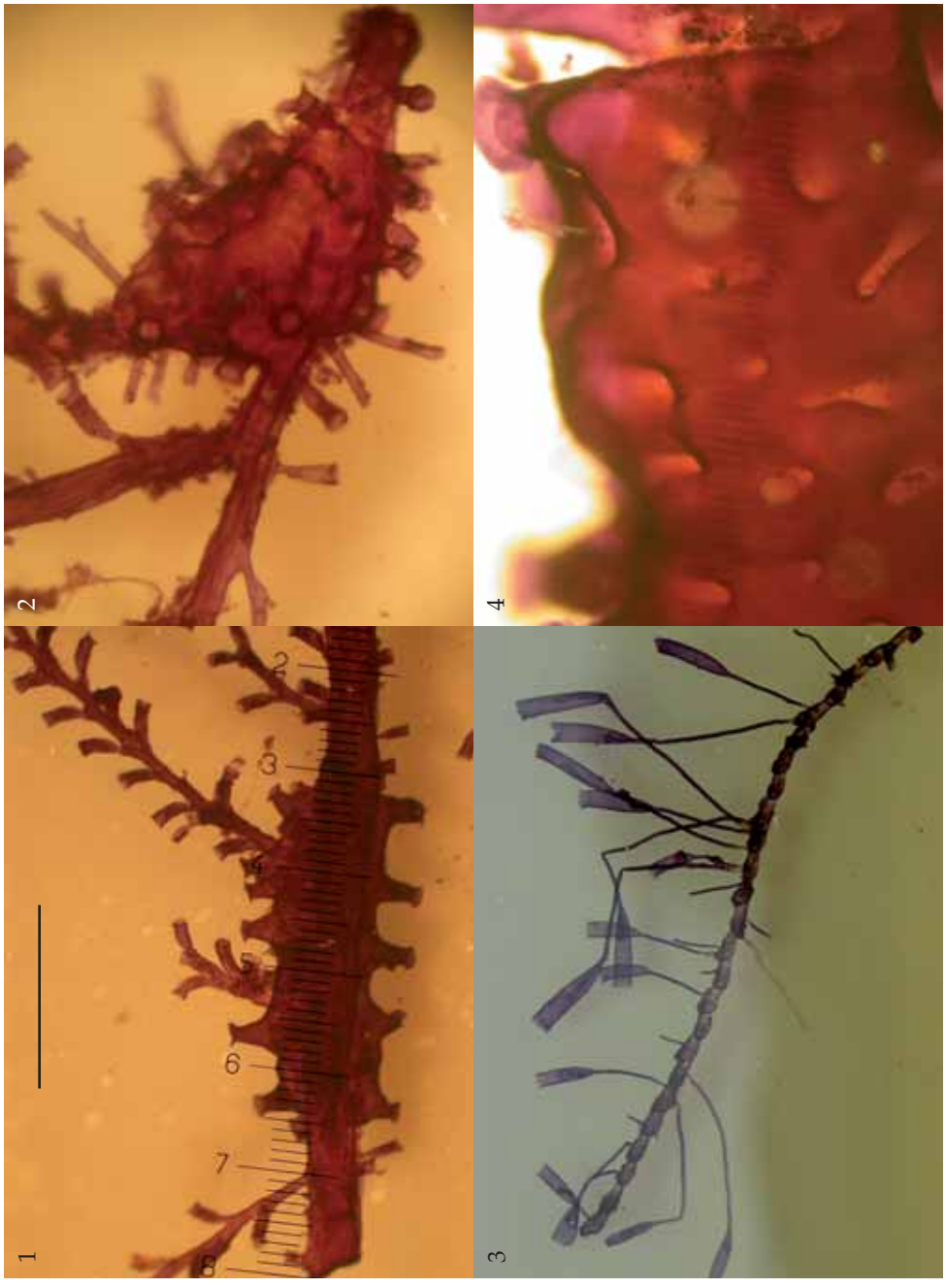

Fig. 18. 1, 4, *Zygophylax parabiarmata* spec. nov., paratype, Stn 6.137, slide 5126, coppinia, haemalum stained microslide; 2, *Zygophylax biarmata* Billard, 1905, Stn 5.135, slides 5139, coppinia, haemalum stained microslide; 3, *Modeeria rotunda* (Quoy & Gaimard, 1827), Stn 2.119, slide 5164, hydrothecae, haemalum stained microslide. Scale bar for 1, 2 = 2.15 mm; for 3 = 3 mm; for 4 = 0.6 mm.

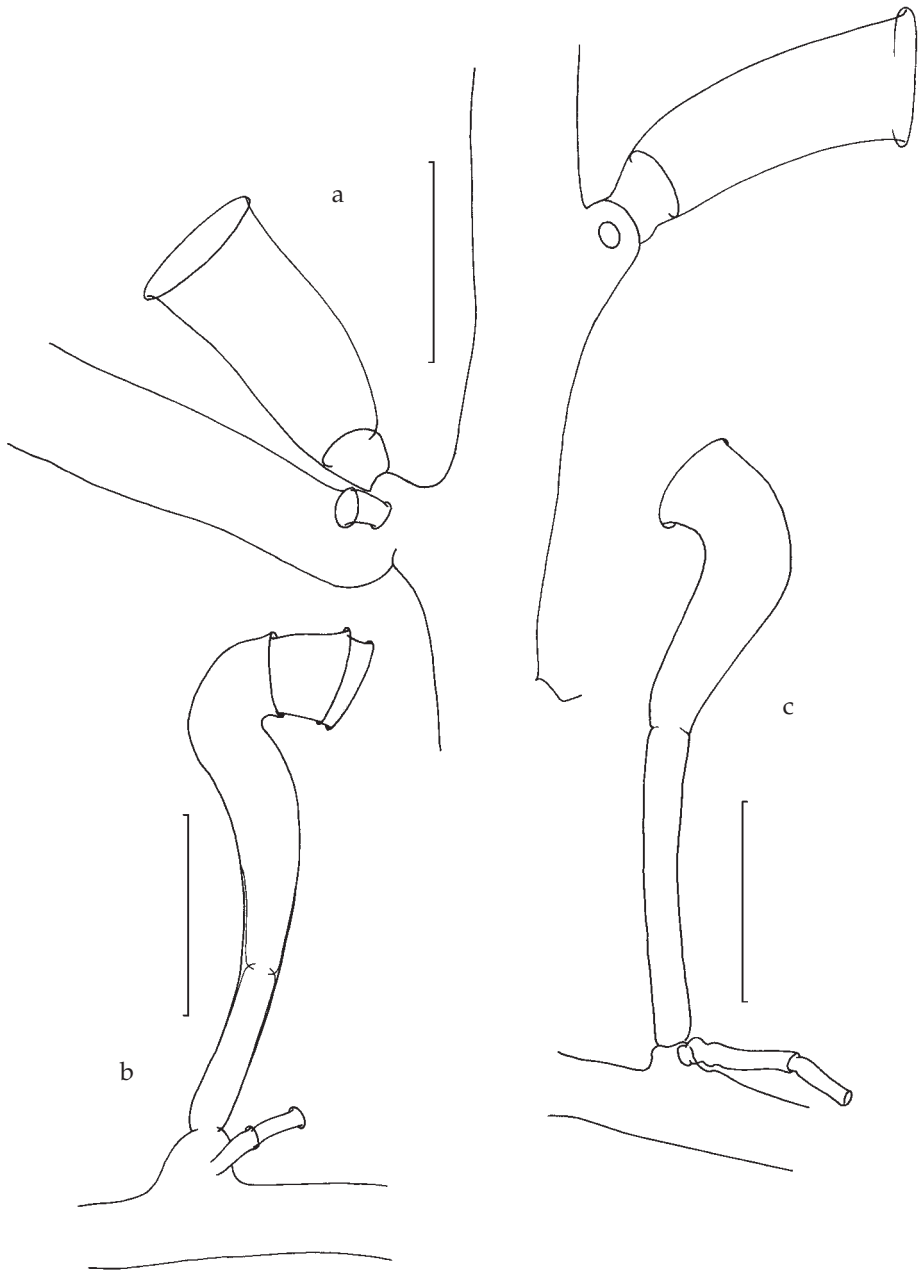

Fig. 19. a, *Zygophylax parabiarmata* spec. nov., paratype, Stn 6.137, slide 5126, monosiphonic part of stem with proximal part of side branch, axillary hydrotheca and normal hydrotheca. b, c, *Zygophylax sibogae* Billard, 1918, Stn 6.094, slide 5137, hydrothecae. Scale bar a-c, 0.25 mm.

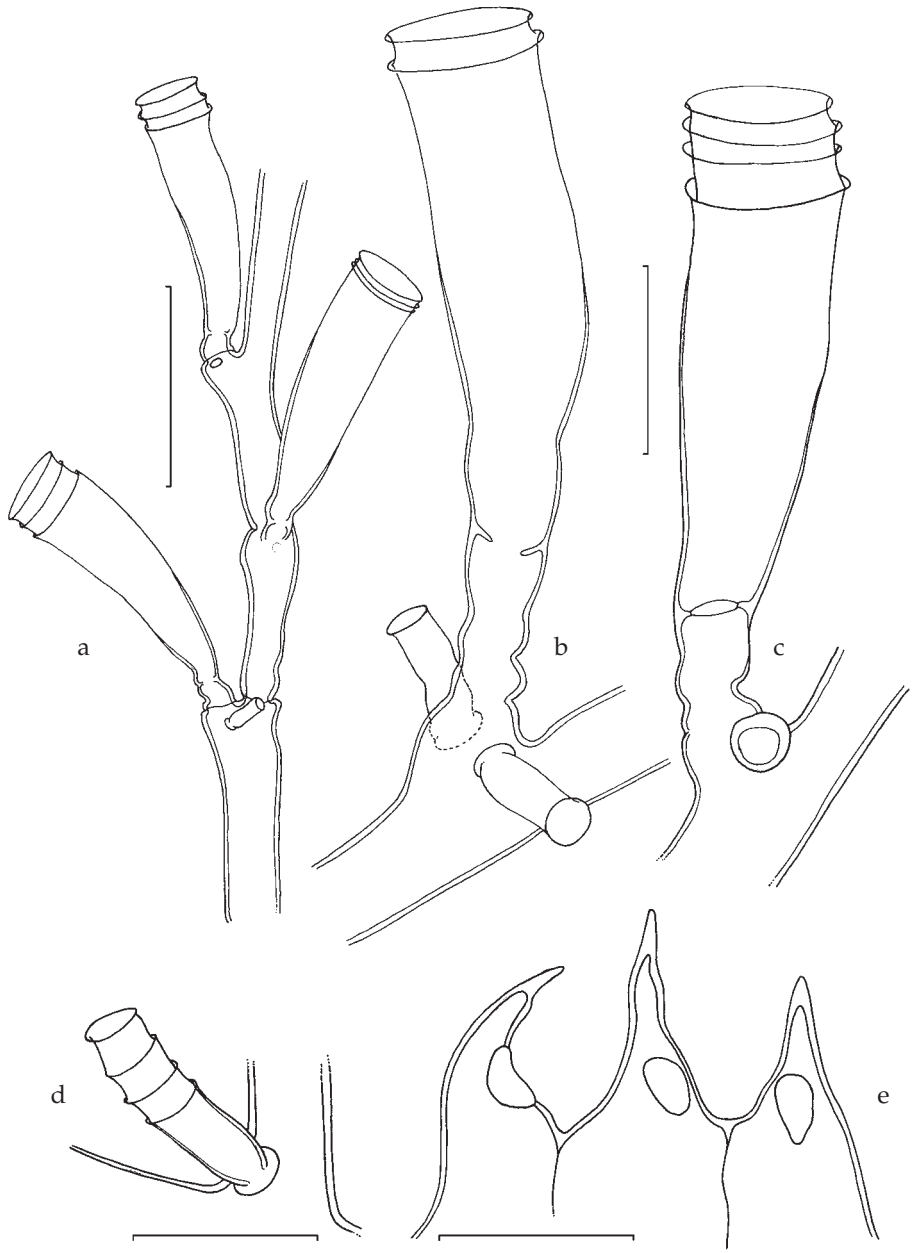

Fig. 20. *Zygophylax sagamiensis* Hirohito, 1983, Stn 7.140, slides 5352-5354. a, monosiphonic part of stem; b, c, hydrothecae and nematothecae; d, nematotheca in axil of side branch; e, distal portions of three gonothecae to show the pointed apices and gonothecal apertures. Scale bar for a, e = 0.25 mm; for b-d = 0.1 mm.

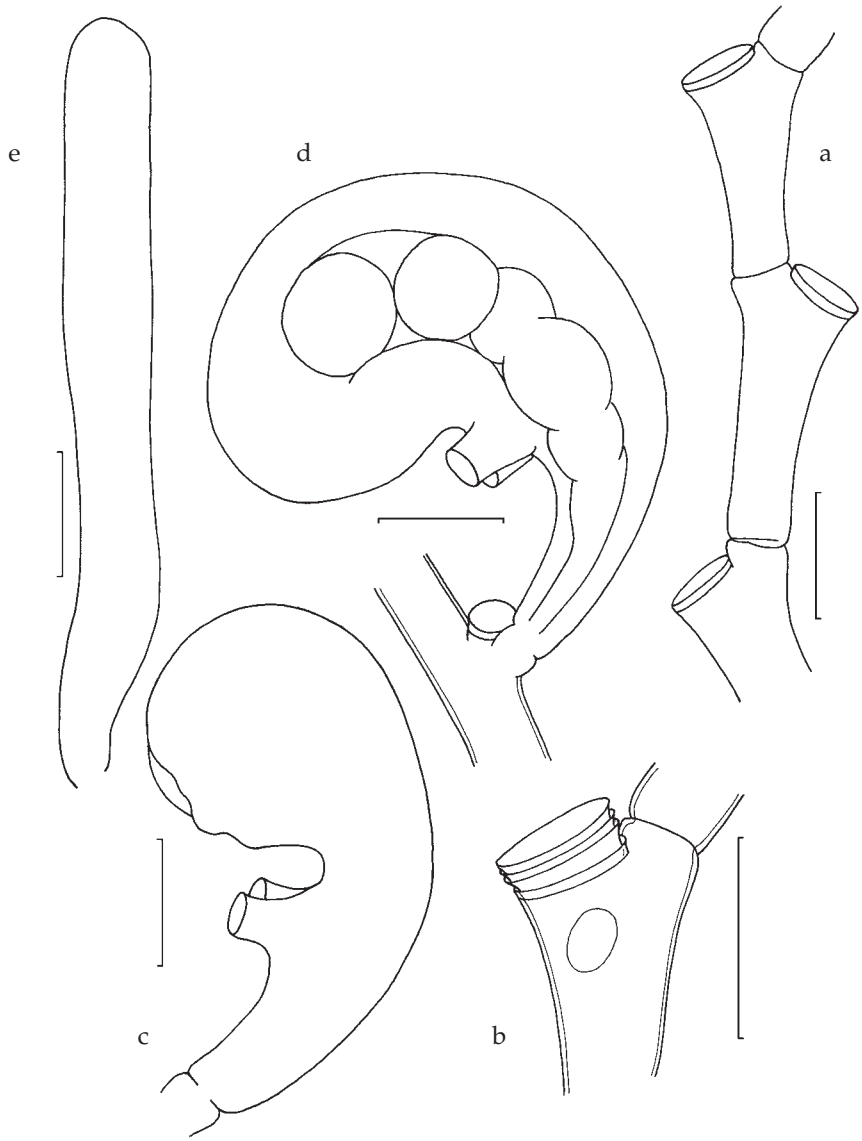

Fig. 21. *Halecium sessile* Norman, 1867, Stn 2.058, slides 5223. a, monosiphonic distal part of stem; b, repeatedly renovated hydrotheca; c, young female gonotheca; d, mature female gonotheca; e, outline of male gonotheca. Scale bar for a – e = 0.25 mm.