

SOME RECORDS OF THE SUPERFAMILY PLUMULARIOIDEA L. AGASSIZ, 1862 (CNIDARIA, HYDROZOA) FROM THE BAY OF BISCAY

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Some records of the superfamily Plumularioidea L. Agassiz, 1862 (Cnidaria, Hydrozoa) from the Bay of Biscay.— Nineteen hydrozoan species belonging to four families Aglaopheniidae (9 spp.), Halopteridae (3 spp.), Kirchenpaueriidae (1 sp.) and Plumulariidae (6 spp.) were collected from 61 stations along the Cantabrian coast and the continental shelf and slope (depth range littoral-1347 m). A systematic account of the superfamily Plumularioidea and comments on the distribution and depth range of the species are given. The presence of *A. lophocarpa* in the Bay of Biscay is confirmed. *Cladocarpus multiseptatus* (Bale, 1915), so far recorded only from the Mediterranean and the Indo-Pacific is recorded for the first time in Atlantic waters.

Key words: Hydroids, Plumularioidea, Bay of Biscay.

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INTRODUCTION

The superfamily Plumularioidea established by Bouillon (1984) comprises the families Aglaopheniidae Broch, 1918, Halopteridae Millard, 1962, Kirchenpaueriidae Millard, 1962 and Plumulariidae Johnston, 1833. Benthic hydroids of the Bay of Biscay have been studied in recent years by several authors. VERVOORT (1985) reported 21 deep-water hydroids dredged by BIOGAS cruises but only two species belonging to the family Plumulariidae. Along the Basque coast, ISASI & SAIZ (1986), ALTUNA et al. (1983) and AGUIRREZABALAGA et al. (1984, 1986, 1987, 1988) mentioned a total of 22 species referred to the superfamily Plumularioidea.

In Asturias coast, GARCÍA et al. (1978, 1979, 1981) collected 25 littoral species (3 Plumularioidea) and ANADÓN (1988) 14 species (5 Plumularioidea) growing on *Gelidium* sp. ÁLVAREZ-CLAUDIO (1993) reported 65 species (15 belonging to Plumularioidea are studied in this paper). Other works in the same area are: ALTUNA & ÁLVAREZ-CLAUDIO (1993-1994) and ÁLVAREZ-CLAUDIO (1993-1994a, 1993-1994b).

The purpose of this paper is to provide a systematic account of the Aglaopheniidae, Halopteridae, Kirchenpaueriidae and Plumulariidae families grouped by BOUILLON (1985) in the superfamily Plumularioidea from the southern of the Bay of Biscay.

MATERIAL AND METHODS

Fourteen localities were sampled along the central Cantabrian coast. Most of them at different depths, (littoral, sublittoral (0-10 m) and shallow benthic (10-50 m)) making 33. Sublittoral and shallow benthic species were collected by diving and dredging. The hydrozoan samples from the COCACE cruise (Central Cantabrian Oceanographic Cruise, Oviedo University) were taken from 28 benthic stations located on the continental shelf and slope (depth range 50-1347 m). They were sampled with an anchor-dredge and an epibenthic sledge. At each station sediment samples were also taken. The grain sizes of the sediments are given according to the Wentworth classification (BUCHANAN & KAIN, 1971).

Station list with species collected (see fig. 1 for localities)

1. Artedo, 12 IV 94, intertidal, *Aglaophenia octodonta*, *Nemertesia antennina*, *Plumularia setacea*; 2. Las Llanas, 10 III 89, intertidal, *Kirchenpaueria pinnata*; 31. Arnao, 4 VIII 92, intertidal, *A. octodonta*; 32. Arnao, 4 VIII 92, 5 m, *Aglaophenia kirchenpaueri*, *Monothecha obliqua*; 41. Punta Forcada, 30 VII 92, 35 m, *A. tubulifera*, *P. setacea*; 42. Punta Forcada, 30 VII 92, 45 m, *A. tubulifera*, *Gymnangium montagui*, *Antennella secundaria*; 5. San Juan de Nieva, 30 VII 92, 5 m, *A. octodonta*; 61. Cabo Negro, 24 VIII 92, intertidal, *A. octodonta*, *A. pluma*; 62. Cabo Negro, 24 VIII 92, 1 m, *A. pluma*, *A. tubulifera*; 63. Cabo Negro, 24 VIII 92, 5 m, *A. kirchenpaueri*, *A. octodonta*; 64. Cabo Negro, 24 VIII 92, 25 m, *A. kirchenpaueri*, *A. tubulifera*, *G. montagui*, *Nemertesia ramosa*; 65. Cabo Negro, 24 VIII 92, 35 m, *A. kirchenpaueri*, *A.*

tubulifera; 66. Cabo Negro, 24 VIII 92, 45 m, *A. tubulifera*; 7. Cabo Peñas, 20 V 87, 10-20 m, *A. octodonta*; 81. Carranques, 3 VIII 92, 5 m, *A. octodonta*; 82. Carranques, 3 VIII 92, 15 m, *A. octodonta*; 91. Xivares, 3 VIII 92, intertidal, *A. kirchenpaueri*; 92. Xivares, 3 VIII 92, 25 m, *A. tubulifera*, *K. pinnata*; 93. Xivares, 3 VIII 92, 35 m, *Antennella secundaria*; 94. Xivares, 3 VIII 92, 45 m, *A. lophocarpa*, *A. tubulifera*; 101. Cabo Torres, 31 VII 92, 5 m, *A. octodonta*; 102. Cabo Torres, 31 VII 92, 15 m, *A. kirchenpaueri*; 111. Sta Catalina, 31 VII 92, intertidal, *A. tubulifera*; 112. Sta. Catalina, 31 VII 92, 1 m, *A. tubulifera*, *A. octodonta*, *K. pinnata*; 113. Sta. Catalina, 31 VII 92, 5 m, *A. octodonta*; 12. El Rinconín, 16 II 91, intertidal, *P. setacea*; 131. La Providencia, 1 VIII 92, 5 m, *A. octodonta*; 132. La Providencia, 1 VIII 92, 15 m, *A. kirchenpaueri*; 133. La Providencia, 1 VIII 92, 35 m, *A. kirchenpaueri*, *A. tubulifera*, *P. setacea*; 134. La Providencia, 1 VIII 92, 45 m, *A. tubulifera*; 141. Argüero, 1 VIII 92, 1 m, *A. octodonta*, *A. pluma*; 142. Argüero, 1 VIII 92, 5 m, *A. octodonta*, *A. pluma*; 143. Argüero, 1 VIII 92, 15 m, *A. octodonta*, *M. obliqua*.

COCACE cruise (Oviedo University): A1, 43°40,90'N-5°49,20'W, 25 II 87, 50 m, fine sand, *A. pluma*; A2, 43°35,37'N-6°04,07'W, 1 VI 87, 66 m, very fine sand, *Polyplumaria flabellata*; A3, 43°35,60'N-6°09,60'W, 1 VI 87, 60 m, shell debris, *N. ramosa*; A4, 43°38,28'N-6°05,36'W, 24 II 88, 72 m, ?, *A. tubulifera*, *Lytocarpia myriophyllum*, *A. secundaria*, *Halopteris catharina*, *Schizotricha frutescens*, *N. antennina*, *Nemertesia irregularis*, *N. ramosa*, *P. setacea*, *P. flabellata*; B3, 43°42,04'N-5°54,05'W, 5 VII 87, 117 m, coarse sand and stones, *A. tubulifera*, *A. secundaria*; B4, 43°41,50'N-6°01,50'W, 5 VII 87, 108 m, medium size sand, shell and

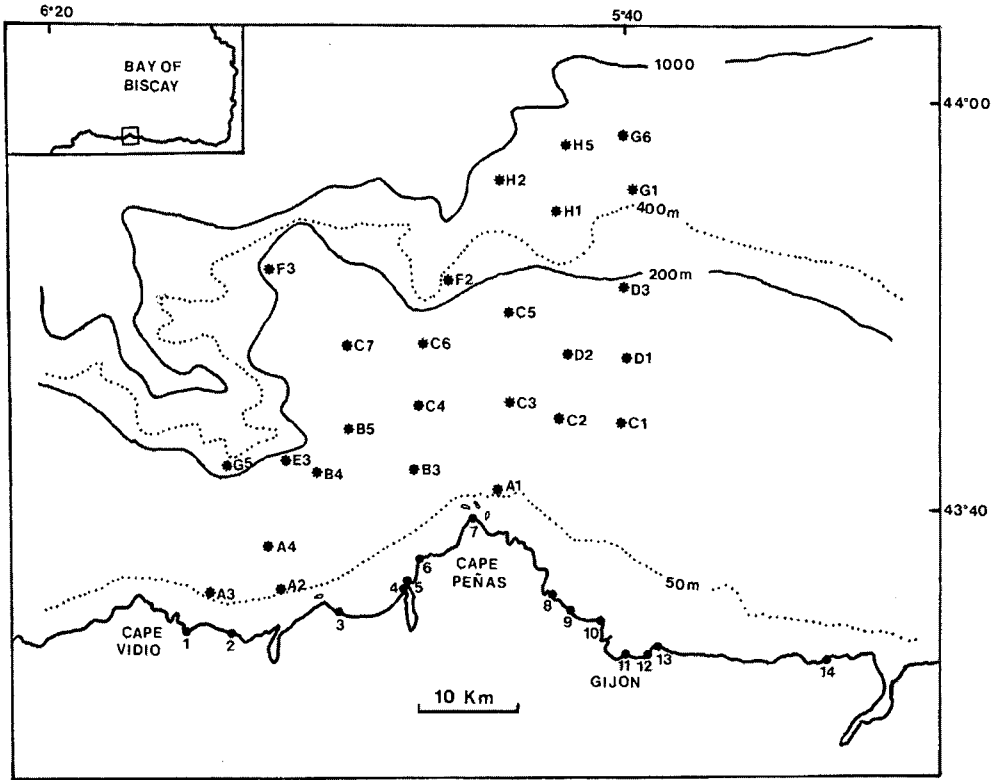


Fig. 1. Map of the sampled area showing collecting stations.

coral debris, *N. irregularis*; B5, 43°44,00'N-5°58,95'W, 3 VI 87, 121 m, stones, *A. lophocarpa*, *Cladocarpus sigma*, *P. setacea*; C1, 43°44,53'N-5°40,79'W, 28 IV 87, 146 m, fine sand and shell debris, *L. myriophyllum*, *H. catharina*; C2, 43°44,82'N-5°44,91'W, 6 V 87, 150 m, fine sand, stones and coral debris, *A. secundaria*, *N. ramosa*; C3, 43°45,55'N-5°48,52'W, 6 V 87, 146 m, fine sand, stones and shell debris, *H. catharina*, *N. ramosa*, *P. flabellata*; C4, 43°45,37'N-5°54,45'W, 26 II 87, 130 m, coarse sand and coral debris, *C. sigma*, *N. antennina*, *N. ramosa*; C5, 43°49,87'N-5°48,73'W, 29 VI 87, 150 m, stones and coral debris, *C. sigma*, *H. catharina*, *P. flabellata*; C6, 43°48,38'N-

5°54,00'W, 4 VII 87, 146 m, fine sand and stones, *H. catharina*, *N. ramosa*, *P. flabellata*; C7, 43°48,38'N-5°59,20'W, 4 VII 87, 154 m, medium size sand, *A. lophocarpa*, *C. sigma*; D1, 43°47,80'N-5°40,08'W, 29 VI 87, 160 m, fine sand, *L. myriophyllum*; D2, 43°48,11'N-5°44,21'W, 29 VI 87, 161 m, fine sand, *L. myriophyllum*; D3, 43°51,23'N-5°40,69'W, 28 VI 87, 172 m, fine sand and shell debris, *L. myriophyllum*, *N. antennina*; E3, 43°42,62'N-6°03,70'W, 13 VI 87, 183 m, fine sand, *C. sigma*, *H. catharina*, *N. antennina*, *N. ramosa*, *P. flabellata*; F2, 43°53,00'N-5°58,30'W, 2 VII 87, 307 m, fine sand, *C. sigma*, *L. myriophyllum*, *S. frutescens*; F3, 43°51,93'N-

6°04,71'W, 2 VI 87, 227 m, stones, *A. lophocarpa*, *Cladocarpus multiseptatus*, *C. sigma*, *A. secundaria*, *S. frutescens*, *P. flabellata*; G1, 43°56,00'N-5°39,34'W, 28 IV 87, 468 m, very fine sand, *L. myriophyllum*, *N. antennina*; G2, 43°51,37'N-5°52,72'W, 26 II 87, 300 m, fine sand, *A. lophocarpa*; G5, 43°42,01'N-6°08,00'W, 2 VI 87, 424 m, coarse sand and shell debris, *L. myriophyllum*, *P. flabellata*; G6, 43°58,69'N-5°39,97'W, 29 IV 87, 549 m, very fine sand and stones, *A. secundaria*; H1, 43°55,00'N-5°45,00'W, 1 VII 87, 702 m, fine sand and stones, *A. lophocarpa*, *C. sigma*, *A. secundaria*; H2, 43°56,50'N-5°48,90'W, 1 VII 87, 893 m, very fine sand, stones and *Lophelia pertusa* coral bank, *P. flabellata*; H5, 43°58,06'N-5°43,95'W, 29 IV 87, 769 m, very fine sand, stones and *L. pertusa* coral bank, *C. sigma*, *K. pinnata*, *N. ramosa*; I3, 43°57,20'N-5°54,00'W, 3 VII 87, 1347 m, silt, *L. myriophyllum*.

SYSTEMATIC ACCOUNT

Family Aglaopheniidae Broch, 1918

Aglaophenia kirchenpaueri (Heller, 1868)
Plumularia kirchenpaueri Heller, 1868. HELLER (1868): 40, 82, pl. 2, fig. 4.
Aglaophenia kirchenpaueri Svoboda, 1979. SVOBODA (1979): 87-90, figs. 12g, 13g, 15g(1-2), 16g, pl. 5 fig. f; SVOBODA & CORNELIUS (1991): 20-21, figs. 4, 17c-d, 20d, 21c-d.

Material studied

St. 32, 5 m, six colonies; St. 63, 5 m, eight colonies; St. 64, 25 m, 10 colonies; St. 65, 35 m, five colonies; St. 91, intertidal, two colonies growing on *Chondrus* sp.; St. 102, 15 m, 12 colonies; St. 132, 15 m, four infertile colonies, three fertile colonies; St. 133, 35 m, two colonies.

Colonies 1-2.5 cm high. *A. kirchenpaueri*

was collected from the intertidal to 35 m depth. It has previously been mentioned in the southern Bay of Biscay from the Basque coast between 10 and 25 m depth by AGUIRREZABALAGA et al. (1986, 1988) and ISASI & SAIZ (1986). It is known from the British Isles to Cape Verdian Islands (SVOBODA & CORNELIUS, 1991) and the Mediterranean Sea. The maximum recorded depth for the species is 373 m in the Alboran Sea (RAMIL & VERVOORT, 1992).

Aglaophenia lophocarpa Allman, 1877

Aglaophenia lophocarpa Allman, 1877. ALLMAN (1877): 41, pl. 24, figs. 1-4; SVOBODA, 1979: 82, figs. 12b-e, 13e, 15e(1-3); SVOBODA & CORNELIUS, 1991: 22-23, fig. 5.

Material studied

St. 94, 45 m, six colonies; St. B5, 121 m, one colony; St. C7, 154 m, two fertile colonies; St. F3, 227 m, 13 colonies; St. G2, 300 m, one fertile colony; St. H1, 702 m, one fertile colony.

Colonies 1-2.5 cm high. The depths records of the species in the studied area vary between 45 and 702 m. So far it has been dubiously recorded from the Basque coast by ISASI & SAIZ (1986). It is known from the north eastern Atlantic from the Azores (BEDOT, 1921) and Guinea Bissau (GILI et al., 1989). It is dubiously mentioned as from the Gulf of Cadiz, Morocco and the Strait of Gibraltar by RAMIL & VERVOORT (1992). It also occurs in the Caribbean and Mediterranean. The present record confirms the presence of *A. lophocarpa* in the Bay of Biscay.

Aglaophenia octodonta (Heller, 1868)

Plumularia octodonta Heller, 1868. HELLER (1868): 40, pl.2, fig. 3.

Aglaophenia octodonta Svoboda, 1979. SVOBODA

(1979): 65, figs. 12a, 13a, 15a, 16a, pl. 5c; SVOBODA & CORNELIUS, 1991: 23-25, fig. 6.

Material studied

St. 31, intertidal, four fertile colonies; St. 5, 5 m, three colonies; St. 61, intertidal, four colonies growing on *Corallina* sp.; St. 63, 5 m, two fertile colonies; St. 7, 10-20 m, 120 fertile colonies; St. 81, 5 m, two colonies; St. 82, 15 m, four colonies; St. 101, 5 m, six colonies; St. 112, 1 m, four colonies; St. 113, 5 m, 12 colonies; St. 131, 5 m, 10 colonies; St. 141, 1 m, five colonies; St. 142, 5 m, two fertile colonies; St. 143, 15 m, two colonies.

Colonies 1.2-4.5 cm high. Depth range in the studied area from intertidal to 20 m. It is known from the Basque coast where it is frequent between 6 and 10 m depth (ALTUNA et al., 1983). This species has a wide distribution in the Mediterranean (SVOBODA, 1979). It has also been mentioned in some Atlantic localities including Roscoff (NW France) by TEISSIER (1965) and Galicia (North Atlantic coast of Spain) by CHAS & RODRÍGUEZ (1977).

Aglaophenia pluma (Linnaeus, 1758)

Sertularia pluma Linnaeus, 1758. LINNAEUS (1758): 811.

Aglaophenia pluma Svboda, 1979. SVOBODA (1979): 98-102, figs. 15j(1-4); SVOBODA & CORNELIUS (1991): 30-34, figs. 10f, 12, 13a-g, 19a-b, 24a-b.

Material studied

St. 61, intertidal, 10 colonies growing on *Corallina* sp.; St. 62, 1 m, four colonies; St. 141, 1 m, five colonies; St. 142, 5 m, four colonies; St. A1, 50 m, six young colonies.

Colonies 4 mm - 3 cm high. *A. pluma* is a near cosmopolitan coastal species common from intertidal to 20 m depth. It has been previously reported in the Bay of Biscay from the Santander coast (RIOJA, 1906), the Basque coast (ALTUNA et al., 1983; ISASI &

SAIZ, 1986) and from Asturias coast by GARCÍA et al. (1978) and ANADÓN (1988).

Aglaophenia tubulifera (Hincks, 1861)

Plumularia tubulifera Hincks, 1861. HINCKS (1861): 256, pl. 7 figs. 1-2.

Aglaophenia tubulifera Svboda, 1979. SVOBODA (1979): 86-87, figs. 12f, 13f, 15f(1-4), 16f, pl. 5 figs. g-i; SVOBODA & CORNELIUS (1991): 36-37, figs. 15-16, 19c-d, 24c-d.

Material studied

St. 41, 35 m, eight colonies; St. 42, 45 m, eight colonies; St. 62, 1 m, 10 colonies; St. 64, 25 m, four colonies; St. 65, 35 m, 12 colonies; St. 66, 45 m, five colonies; St. 92, 25 m, 10 colonies; St. 94, 45 m, 15 colonies; St. 111, intertidal, three colonies growing on *Corallina* sp.; St. 112, 1 m, 10 colonies; St. 133, 35 m, six colonies; St. 134, 45 m, four colonies; St. A4, 72 m, 106 infertile colonies, 26 fertile colonies; St. B3, 117 m, two infertile colonies.

Colonies 1-4 cm high. Depth range in the studied area intertidal to 117 m. *A. tubulifera* is well distributed in the eastern Atlantic. In the Mediterranean there are few records. In the Bay of Biscay waters it has been reported by PICTET & BEDOT (1900) from northern Spain, from Santander by RIOJA (1906) and from the Basque coast by ISASI & SAIZ (1986) and AGUIRREZABALAGA et al. (1986, 1988). It has a wide vertical distribution, from 1 m to 1200 m depth.

Cladocarpus multiseptatus (Bale, 1915) (fig. 2)

Cladocarpella multiseptata Bale, 1915. BALE (1915): 304-306, pl. 47 figs. 1-5.

Cladocarpus cf. *multiseptatus* Ramil & Vervoort, 1992. RAMIL & VERVOORT (1992): 109-111, fig. 27a.

Material studied

St. F3, 227 m, one colony.

A single colony 1.5 cm high. Hydrocaulus polysiphonic basally, monosiphonic distally. Hydrocladia inserting on

apophyses alternately pointing left or right, divided into internodes. Each internode with 9-13 perisarcal ridges behind the hydrotheca, 2-4 under the hydrotheca and 1 or 2 in distal part of internode. Hydrothecae elongated. Adcauline hydrothecal wall completely adnate, without intrathecal septum. Abcauline wall slightly curved outwards under hydrothecal rim. Hydrothecal rim sinuous with a well developed slightly curved median cusp. Median infracalycine nematotheca placed on internode slightly under hydrotheca with two apertures, one apically transverse slit-shaped and one circular situated at the end of a short tube placed at base of nematotheca. Lateral nematothecae with two apertures, one apical with uneven rim and one basal on adcauline side placed at the end of a short tube. Although the studied material is scarce it agrees closely the main characteristics of the species given by RAMIL & VERVOORT (1992). The main measurements are also similar to that of above cited authors. Hydrocladial internode, length: 773-870 μm ; hydrotheca depth: 487-574 μm ; hydrotheca diameter at rim: 187-195 μm ; median nematotheca, length: 94-105 μm ; lateral nematotheca, length: 102-144 μm . The gonotheca is still unknown. The species is only known from one Australian locality at 135 m depth (BALE, 1915) and from the Mediterranean (395 m depth) (RAMIL & VERVOORT, 1992) where the authors mentioned that its presence must remain doubtful dubious due to the scanty material seen, only a fragment of a hydrocladium. As records of the species are too far apart and the collected material is scarce, Boero (com. pers.) pointed out the possibility that Indo-Pacific and Mediterranean-Atlantic material could be sibling species. Despite of this, there are some previous records of species as *Stegopoma bathyale* so far only known from the Indic and recently

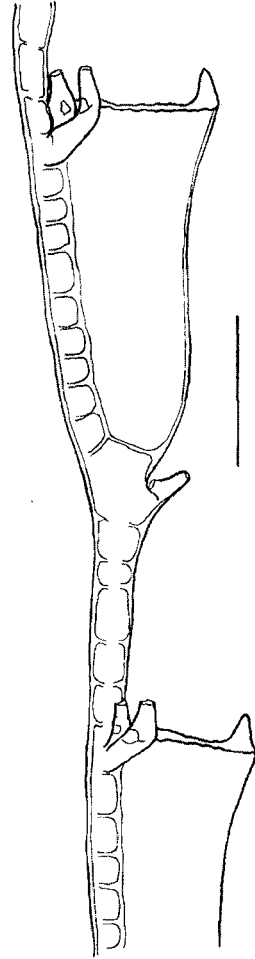


Fig. 2. *Cladocarpus multiseptatus* (Bale, 1915). Fragment of hydrocladium showing hydrothecae and nematothecae. (Scale bar: 100 μm).

recorded in the Atlantic by RAMIL & VERVOORT, 1992. This record is then considered the first mention of this species in Atlantic waters.

- Cladocarpus sigma* (Allman, 1877)
- Aglaophenia sigma* Allman, 1877. ALLMAN (1877): 45, pl. 26 figs. 9-10.
- Cladocarpus sigma* Bedot, 1921. BEDOT (1921): 326.

Material studied

St. B5, 121 m, four infertile colonies; St. C4, 130 m, 14 infertile colonies, three fertile colonies; St. C5, 150 m, five infertile colonies, 32 fertile colonies; St. C7, 154 m, three fertile colonies; St. E3, 183 m, two fertile colonies; St. F2, 307 m, three colonies; St. F3, 227 m, 24 infertile colonies, 80 fertile colonies; St. H1, 702 m, one fertile colony; St. H5, 769 m, 50 fertile colonies.

Colonies 2-8.5 cm high. It has been found between 121 and 769 m growing on *Lophelia pertusa* branches, Porifera and on a sunken rope. *C. sigma* is a well known species, widely distributed in the Atlantic Ocean. In the Bay of Biscay it has been reported by PICTET & BEDOT (1900) and along the Basque coast by AGUIRREZABALAGA et al. (1984).

Gymnangium montagui (Billard, 1912)

Halicornaria montagui Billard, 1912. BILLARD (1912): 473, figs. 6, 8.

Gymnangium montagui Teissier, 1965. TEISSIER (1965): 29; MILLARD, 1975: 446, fig. 134f.

Material studied

St. 42, 45 m, 10 colonies; St. 64, 25 m, eighteen infertile colonies, two fertile colonies.

Colonies 2-5 cm high. *G. montagui* is not a common species in either Atlantic or Cantabrian waters, whence it is mentioned only occasionally. AGUIRREZABALAGA et al. (1987, 1988) reported two infertile colonies from the Basque coast from 7 to 35 m depth.

Lytocarpia myriophyllum (Linnaeus, 1758)

Sertularia myriophyllum Linnaeus, 1758. LINNAEUS (1758): 810.

Lytocarpia myriophyllum Ramil & Vervoort, 1992. RAMIL & VERVOORT (1992): 137-143, figs. 35b-d, 36a-j.

Material studied

St. A4, 72 m, seven fertile colonies; St. C1,

146 m, one fertile colony; St. D1, 160 m, two colonies; St. D2, 161 m, one fertile colony; St. D3, 172 m, eight infertile colonies, 40 fertile colonies; St. F2, 307 m, two colonies; St. G5, 424 m, two fertile colonies; St. G1, 468 m, one infertile colony, two fertile colonies; St. I3, 1347 m, one colony.

Colonies 1-60 cm high originating from depths between 72 and 1347 m. This species has a wide distribution in the Atlantic Ocean and the Mediterranean Sea. In the Bay of Biscay it has been reported from the northern coast of Spain (PICTET & BEDOT, 1900; BEDOT, 1921) and from the Basque coast (AGUIRREZABALAGA et al., 1986). It has a wide depth range, from 30 to 1592 m (RAMIL & VERVOORT, 1992).

Family Halopteriidae Millard, 1962

Antennella secundaria (Gmelin, 1791)

Sertularia secundaria Gmelin, 1791. GMELIN (1791): 3856.

Antennella secundaria Ramil & Vervoort, 1992. RAMIL & VERVOORT (1992): 143-145, fig. 37a-d.

Material studied

St. A4, 72 m, two infertile colonies, 10 fertile colonies; St. B3, 117 m, 15 fertile colonies; St. C2, 150 m, three fertile colonies; St. F3, 227 m, 12 infertile colonies, 18 fertile colonies; St. G6, 549 m, three fertile colonies; St. H1, 702 m, one fertile colony.

Colonies 1-1.5 cm high. The depths ranged between 72 and 702 m. It has been found growing on a sunken rope, a polychaete tube and on *Cladocarpus sigma* stems. The species occurs from the littoral zone down to a depth of at least 700 m. It is a temperate to tropical coastal species. In the Bay of Biscay it has previously been recorded by PICTET & BEDOT (1900) and on the Basque coast by ALTUNA et al. (1983).

Halopteris catharina (Johnston, 1833)

Plumularia catharina Johnston, 1833. JOHNSTON (1833): 497, figs. 61, 62.

Halopteris catharina Ramil & Vervoort, 1992. RAMIL & VERVOORT (1992): 145-148, fig. 37e-g.

Material studied

St. A4, 72 m, seven infertile colonies, 29 fertile colonies; St. C1, 146 m, two colonies; St. C3, 146 m, 45 colonies; St. C6, 146 m, one colony; St. C5 150 m, one colony; St. E3, 183 m, nine colonies.

Colonies 5-25 mm high growing on *Tubularia* sp., *Nemertesia* sp. stems and Porifera. The depths vary between 72 to 183 m. *H. catharina* has a wide distribution in the Atlantic Ocean. The recorded depth range is between 10 and 544 m. In the southern Bay of Biscay it was recorded at 100 m depth from the Basque coast by (AGUIRREZABALAGA et al., 1984).

Schizotricha frutescens (ELLIS & SOLANDER, 1786)

Sertularia frutescens Ellis & Solander, 1786. ELLIS & SOLANDER (1786): 55, pl.6 figs. a, A, pl. 9 fig. 1.

Schizotricha frutescens Ramil & Vervoort, 1992. RAMIL & VERVOORT (1992): 150, fig. 38b-d.

Material studied

St. A4, 72 m, three fertile colonies; St. F3, 227 m, one colony; St. F2, 307 m, one fertile colony.

Colonies 2.5-3.5 cm high. In the studied area the depth records range between 72 and 307 m. This species is widely distributed in Atlantic Ocean and the Mediterranean Sea from sublittoral to below 1000 m depth. In the Bay of Biscay it has previously been recorded from Santander (RIOJA, 1906) and from the Basque coast at 100 m depth (AGUIRREZABALAGA et al., 1984).

Family Kirchenpaueriidae Millard, 1962

Kirchenpaueria pinnata (Linnaeus, 1758)

Sertularia pinnata Linnaeus, 1758. LINNAEUS (1758): 813.

Kirchenpaueria pinnata Ramil & Vervoort, 1992. RAMIL & VERVOORT (1992): 158-161, fig. 41a-c.

Material studied

St. 2, intertidal, four colonies; St. 92, 25 m, four colonies; St. 112, 1 m, five colonies; St. H5, 769 m, five infertile colonies and one fertile colony growing on *L. pertusa* branches.

Colonies 1.5-5 cm high. Depth range in the studied area intertidal to 769 m. *K. pinnata* is well known in the Atlantic Ocean and the Mediterranean Sea. It has been previously reported from the littoral Asturian coast (Cantabrian Sea) growing on *Gelidium* sp. by ANADÓN (1988) and in the Basque coast by ALTUNA et al. (1983).

Family Plumulariidae Johnston, 1833

Nemertesia antennina (Linnaeus, 1758)

Sertularia antennina Linnaeus, 1758. LINNAEUS (1758): 811.

Nemertesia antennina Ramil & Vervoort, 1992. RAMIL & VERVOORT (1992): 163-169, figs. 42a-r, 43a-h.

Material studied

St. 1, intertidal, one colony; St. A4, 72 m, three infertile colonies, 39 fertile colonies; St. C4, 130 m, eight fertile colonies; St. D3, 172 m, 21 colonies; St. E3, 183 m, four colonies; St. G1, 468 m, one fertile colony.

Colonies 1-5 cm high. Depth range in the studied area intertidal to 468 m. *N. antennina* is a coastal cosmopolitan species widely distributed in the Atlantic Ocean. In the Bay of Biscay it has been reported only by VERVOORT (1985), from 2100 m depth.

Nemertesia irregularis (Quelch, 1885)

Antennularia irregularis Quelch, 1885. QUELCH (1885): 8-9, pl. 2 fig. 4.

Nemertesia irregularis Ramil & Vervoort, 1992. RAMIL & VERVOORT (1992): 170-173, fig. 48a.

Material studied

St. A4, 72 m, four fertile colonies; St. B4, 108 m, four colonies.

Colonies 2-9 cm high. Depth range 72-108 m. *N. irregularis* is principally distributed in the eastern Atlantic. Its general depth range is from intertidal to at least 300 m. From the Bay of Biscay it was mentioned by BILLARD (1923) and it has also been mentioned from off Santander by ARÉVALO (1906).

Nemertesia ramosa (Lamarck, 1816)

Antennularia ramosa Lamarck, 1816. LAMARCK (1816): 123.

Nemertesia ramosa Ramil & Vervoort, 1992. RAMIL & VERVOORT (1992): 173-176, fig. 44a-f.

Material studied

St. 64, 25 m, five colonies; St. A3, 60 m, two colonies; St. A4, 72 m, three infertile colonies, 14 fertile colonies; St. C4, 130 m, four fertile colonies; St. C3, 146 m, one colony; St. C6, 146 m, one colony; St. C2, 150 m, two fertile colonies; St. E3, 183 m, two colonies; St. H5, 769 m, one fertile colony growing on *L. pertusa* branches.

Colonies 1-4.5 cm high. Depth range 25-769 m. This species has a wide distribution in the eastern Atlantic and Mediterranean. In the Bay of Biscay it has been mentioned by PICTET & BEDOT (1900) from northern Spain, by RIOJA (1906) from Santander and from the Basque coast by AGUIRREZABALAGA et al. (1988). General depth range 20 to at least 1200 m.

Monothecha obliqua (Johnston, 1847)

Laomedea obliqua Johnston, 1847. JOHNSTON (1847): 106, pl. 28 fig. 1.

Plumularia obliqua Millard, 1975. MILLARD (1975): 396-397, fig. 125a-b.

Material studied

St. 32, 5 m, four colonies; St. 143, 15 m, two colonies.

Colonies 0.3-0.7 cm high. *M. obliqua* is known in the eastern Atlantic but it is more widely reported from the Mediterranean Sea. This species has previously been recorded in this area by ANADÓN (1988) growing on *Gelidium* sp. It has a depth range from littoral to at least 70 m.

Plumularia setacea (Linnaeus, 1758)

Sertularia setacea Linnaeus, 1758. LINNAEUS (1758): 813.

Plumularia setacea Ramil & Vervoort, 1992. RAMIL & VERVOORT (1992): 191-193, fig. 47f-i.

Material studied

St. 1, intertidal, 40 fertile colonies growing on *A. octodonta*; St. 41, 35 m, six colonies; St. 12, intertidal, 10 colonies; St. 133, 35 m, four colonies; St. A4, 72 m, nine infertile colonies and one fertile colony growing on *N. antennina*; St. B5, 121 m, 18 colonies growing on *N. antennina*.

Colonies 0.5-1.5 cm high. *P. setacea* is a near cosmopolitan-coastal species. It has been previously recorded in the Bay of Biscay from the Asturias coast by GARCÍA et al. (1978) and ANADÓN (1988); from Santander by RIOJA (1906) and from the Basque coast by ALTUNA et al. (1983), AGUIRREZABALAGA et al. (1988) and ISASI & SAIZ (1986). Depth range from intertidal to at least 600 m.

Polyplumularia flabellata G. O. Sars, 1874

Polyplumularia flabellata G. O. Sars, 1874. SARS (1874): 101-102, pl. 2 figs. 16-22; RAMIL & VERVOORT (1992): 193-197, fig. 50a-g.

Material studied

St. A2, 66 m, one colony; St. A4, 72 m, one colony; St. C6, 146 m, one colony; St. C3, 146 m, one fertile colony; St. C5, 150 m, one

colony; St. E3, 183 m, 12 infertile colonies, 48 fertile colonies; St. F3, 227 m, one infertile colony, two fertile colonies; St. G5, 424 m, one colony; St. H2, 893 m, one colony.

Colonies 5-8 cm high. *P. flabellata* is a widely distributed species in deeper coastal temperate Atlantic waters. RAMIL & VERVOORT (1992) recorded it first time from the Mediterranean. In the Bay of Biscay, it was previously recorded from northern Spain by PICTET & BEDOT (1900), from Santander by RIOJA (1906) and from the Basque coast by AGUIRREZABALAGA et al. (1984) at 100 m depth. The depth records of this species range between 60 and 1378 m.

REMARKS

In the southern Bay of Biscay study area, the collection of the Aglaopheniidae made included nine species, the Halopteridiidae three species, the Kirchenpaueriidae one species and the Plumulariidae six species. Thus a total number of 19 species were recorded. A check list of the Plumularioida species so far known from southern Bay of Biscay numbers 23.

Five of the species previously mentioned have not been recorded in the present work: *Aglaophenia picardi*, *Aglaophenia parvula*, *Aglaophenia tubiformis*, *Halopteris diaphana* and *Ventromma halecioides*. Since they were listed in the closely Basque coast by AGUIRREZABALAGA et al. (1984, 1986, 1987, 1988) its absence could be due to several factors as the sampling procedure, the seasonality, etc. Some of them are most often found from intertidal and in partly shaded to dark locations that not were often sampled in this work. Most of the samples were taken in the warm season (May, June, July and August) and temperature plays an important role in determining the composition in time of hydroid populations (BOERO, 1984).

The presence of *A. lophocarpa* is confirmed by its occurrence at several stations in the studied area. *C. multiseptatus*, so far recorded only from the Mediterranean and Indo-Pacific (RAMIL & VERVOORT, 1992), must be added to the list of open Atlantic species.

The more frequent species along the Cantabrian coast are *A. octodonta* and *A. tubulifera* collected from the intertidal to shallow benthic depths. Four species (*C. sigma*, *L. myriophyllum*, *N. ramosa* and *P. flabellata*) were collected from nine stations showing a wide depth range from 25 m to at least 769 m. Twelve species were recorded from a wide vertical range in the studied area as in other regions, so they can be considered eurybathic. They are: *A. lophocarpa*, *A. tubulifera*, *C. sigma*, *L. myriophyllum*, *A. secundaria*, *H. catharina*, *S. frutescens*, *K. pinnata*, *N. antennina*, *N. ramosa*, *P. setacea* and *P. flabellata*.

The Plumularioida in the studied area consist mainly of widely distributed species in the northeastern Atlantic: *A. kirchenpaueri*, *A. octodonta*, *A. tubulifera*, *L. myriophyllum*, *P. flabellata*, *G. montagui*, *N. irregularis*, *N. ramosa*, *K. pinnata* and *S. frutescens*. *G. montagui* and *N. irregularis* are not found in the Mediterranean Sea and *N. ramosa*, *K. pinnata*, *S. frutescens* are also found in southern Atlantic. *A. lophocarpa*, *C. sigma* and *H. catharina* are anfiatlantic species. Only three are cosmopolitan: *A. secundaria*, *N. antennina* and *P. setacea* and *A. pluma* and *M. obliqua* could be considered near cosmopolitan species.

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