



***Cladoplumaria anomala* gen. nov., sp. nov., a new genus and species of the family Halopterididae (Cnidaria: Hydrozoa) from the Chesterfield Islands region (Pacific Ocean)**

Jose A. ANSÍN AGÍS¹, Francisco RAMIL¹ and Willem VERVOORT²

(¹) *Departamento de Ecología e Biología Animal, Facultad de Ciencias, Universidade de Vigo, Campus Lagoas-Marcosende, 36200 Vigo, Spain. E-mail: agis@uvigo.es and framil@uvigo.es*

(²) *Nationaal Natuurhistorisch Museum, P.O. Box 9517, 2300 RA, Leiden, The Netherlands. E-mail: vervoort@naturalis.nnm.nl*

Abstract: This paper is the first result of the study of large collections of Plumularioidea (Cnidaria, Hydrozoa, Leptolida) collected in the seas surrounding New Caledonia (Pacific Ocean) by French expeditions. A new genus of the family Halopterididae is described and its relations with other representatives of this family are discussed. The gonosome in its shape approaches the type of phylactocarp also met with in Aglaopheniidae; while the gonothecae (female with nematothecae and male without nematothecae) are nearer to those of the family Halopterididae.

Résumé : *Cladoplumaria anomala* gen. nov. sp. nov., un nouveau genre et une nouvelle espèce de la famille des Halopterididae (Cnidaria, Hydrozoa) des Iles Chesterfield (océan Pacifique). Dans ce travail, nous présentons les premiers résultats de l'étude d'une importante collection d'Hydroïdes appartenant à la superfamille des Plumularioidea (Cnidaria, Hydrozoa, Leptolida) recueillis par des expéditions françaises dans la région de la Nouvelle Calédonie (Océan Pacifique). Un nouveau genre de la famille des Halopterididae est décrit, et ses relations avec les autres genres de la famille sont discutées. La présence de phylactocarpes protégeant les gonothèques est une caractéristique typique des Aglaopheniidae, mais la présence de nématothèques sur les gonothèques, au moins sur les femelles, est un caractère propre de la famille des Halopterididae.

Keywords: Cnidaria, Hydrozoa, Leptolida, *Cladoplumaria anomala* sp. nov., Chesterfield Islands, Pacific Ocean.

Introduction

Since 1978 the «Institut Français de recherche scientifique pour le développement en coopération (ORSTOM), Centre de Nouméa, Nouvelle Calédonie» has sampled the marine fauna of the New Caledonian region in the south-western

Pacific Ocean between 10°-30°S and 160°-175°E. During these expeditions large and interesting collections of Leptolida (Cnidaria, Hydrozoa) have been obtained that so far have been partly studied. The results of a detailed study of two leptolid families, Thyroscyphidae and Sertulariidae, have so far been published (Vervoort, 1993). The present paper is based on the study of a part of the large collection of the superfamily Plumularioidea and contains the description of a new species of the family Halopterididae.

Material

Material examined

Chesterfield Islands. CHALCAL 1: Stn CP 5, 19°29.10'S, 158°37.63'E, 290 m depth, 16.07.1984: fragments of several large colonies of which many with gonosome ('phylactocarp' and male and female gonothecae). Holotype, a fragmented colony to be deposited in the Muséum National d'Histoire Naturelle, Paris under no. Hy 1293.

Results

Genus *Cladoplumaria* gen. nov.

Diagnosis

Robust colonies composed of a rigid, ramified polysiphonic axis (hydrocaulus); branches polysiphonic, always originating from a hydrocladium. Hydrocladia alternately arranged along axis and branches, originating from primary tube and alternately directed left and right, placed on distinct apophysis provided with well-developed mamelon. Hydrothecae on basal parts of the branches and on the hydrocladia, tubular, with smooth rim. All nematothecae conical, bithalamic and movable. Gonothecae protected by a phylactocarp; at least the female gonothecae bearing nematothecae.

Type species: *Cladoplumaria anomala* sp. nov.

Etymology

The name of the genus, *Cladoplumaria*, has been derived from *Cladocarpus* Allman, 1888 and *Pseudoplumaria* Ramil & Vervoort, 1992, two genera of Plumularioidea with which the new genus shows superficial resemblance. The gender is female.

Cladoplumaria anomala sp. nov. (Figs 1-4, Table 1)

Diagnosis

Cladoplumaria anomala sp. nov. is characterized by polysiphonic, ramified colonies, apophyses with a well developed mamelon, hydrothecae placed on hydrocladia and basal part of branches (Fig. 3A, C). The gonothecae are protected by a dichotomously branched phylactocarp (Fig. 2D, 4D); the female gonothecae have long nematothecae (Fig. 2 A-C), these are lacking in the male gonothecae (Fig. 4A-C).

Etymology

The species name 'anomala' is derived from the greek adjective 'anomalus', abnormal, referring to the condition of the gonosome.

Description

Colony large, about 200 mm high, composed of a dense mass of hydrorhizal fibers from which the polysiphonic

Table 1. Measurements of *Cladoplumaria anomala* in μm .
Tableau 1. Biométrie de *Cladoplumaria anomala* en μm .

	Chalcal 1 CP 5
Height of (fragmented) colony (in mm)	8-196
Diameter Stem	55-100
Hydrotheca, length abcauline wall	190-210
length adcauline wall	210-220
diameter at rim	70-90
Mesial nematothecae, length	75-100
Diameter at rim	25-30
Lateral nematothecae, length	65-80
Diameter at rim	20-30
Female Gonothecae, length	440-500
Maximum diameter	290-320
Phylactocarp, length	1830-2140
Female Gonothecal nematothecae, length	350-500
Diameter at rim	40-60
Male gonothecae, length	290-380
Diameter at rim	150-190

axis arises. All material was detached, but the flattened mass of hydrorhizal fibers suggests that it developed on firm substrate. Colony irregularly branched, with a tendency towards alternate disposition of branches.

Primary axial tube of main stem undivided, with a longitudinal series of hydrocladial apophyses, distal parts may show irregular division into internodes by means of straight septa. Apophyses alternately directed left and right; two or three nematothecae between two successive apophyses. Each apophysis with one well developed mamelon on upper surface and with two axillary nematothecae, one on back of apophyses near its insertion, second on axis above apophysis. Secondary tubes running parallel with primary tube, develop from hydrorhizal mass leading towards strong polysiphony of stem and branches; stem basally 1.5 mm diameter. Secondary tubes with many nematothecae; all nematothecae bithalamic and movable.

Branches originating from hydrocladia, becoming polysiphonic by apposition of secondary tubes. Basal part of primary tube of branch with a linear series of hydrothecae flanked by nematothecae in same position as those on the hydrocladia. Series of hydrothecae followed by apophyses supporting hydrocladia, alternately directed left and right; the, originally axillary, hydrothecae gradually change into mamelons. The ultimate structure of the branches is as that of the main stem.

Hydrocladia inserting on apophyses, alternately directed left and right, undivided or with an occasional oblique node. Hydrothecae tubular, narrow and deep; adcauline wall fully adnate, abcauline wall moderately concave, hydrothecal rim

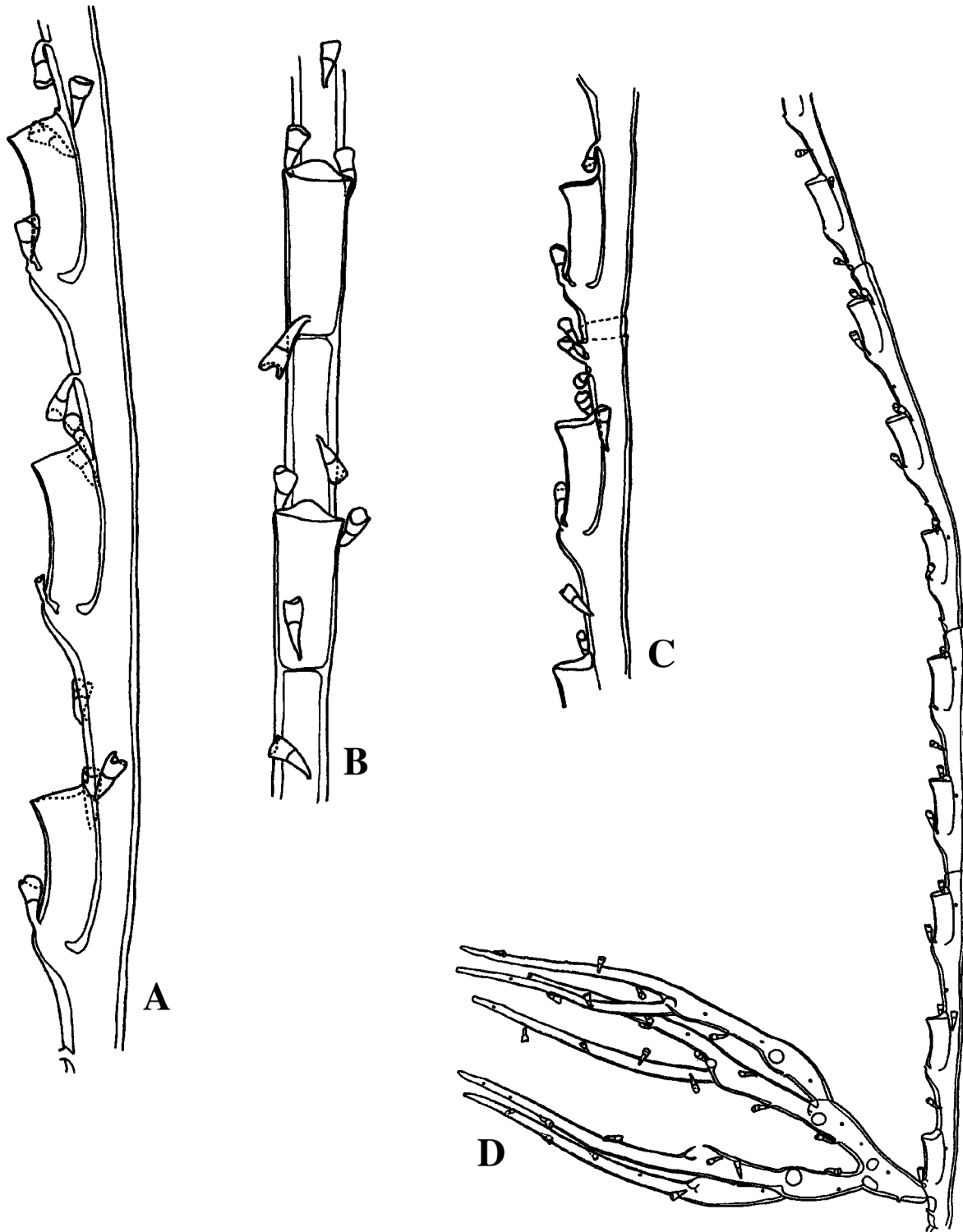


Figure 1. *Cladoplumaria anomala* sp. nov. **A.** Hydrocladial internodes, lateral view, x 102.5. **B.** Hydrocladial internodes, frontal view, x 102.5. **C.** Regenerated hydrocladia after damage with two extra nematothecae, x 77.5. **D.** Hydrocladium with phylactocarp, x 38.3.

Figure 1. *Cladoplumaria anomala* sp. nov. **A.** Articles d'un hydroclade, vue latérale, x 102,5. **B.** Articles d'un hydroclade, vue frontale, x 102,5. **C.** Régénération d'un hydroclade endommagé avec deux nématothèques supplémentaires, x 77,5. **D.** Hydroclade avec un phylactocarpe, x 38,3.

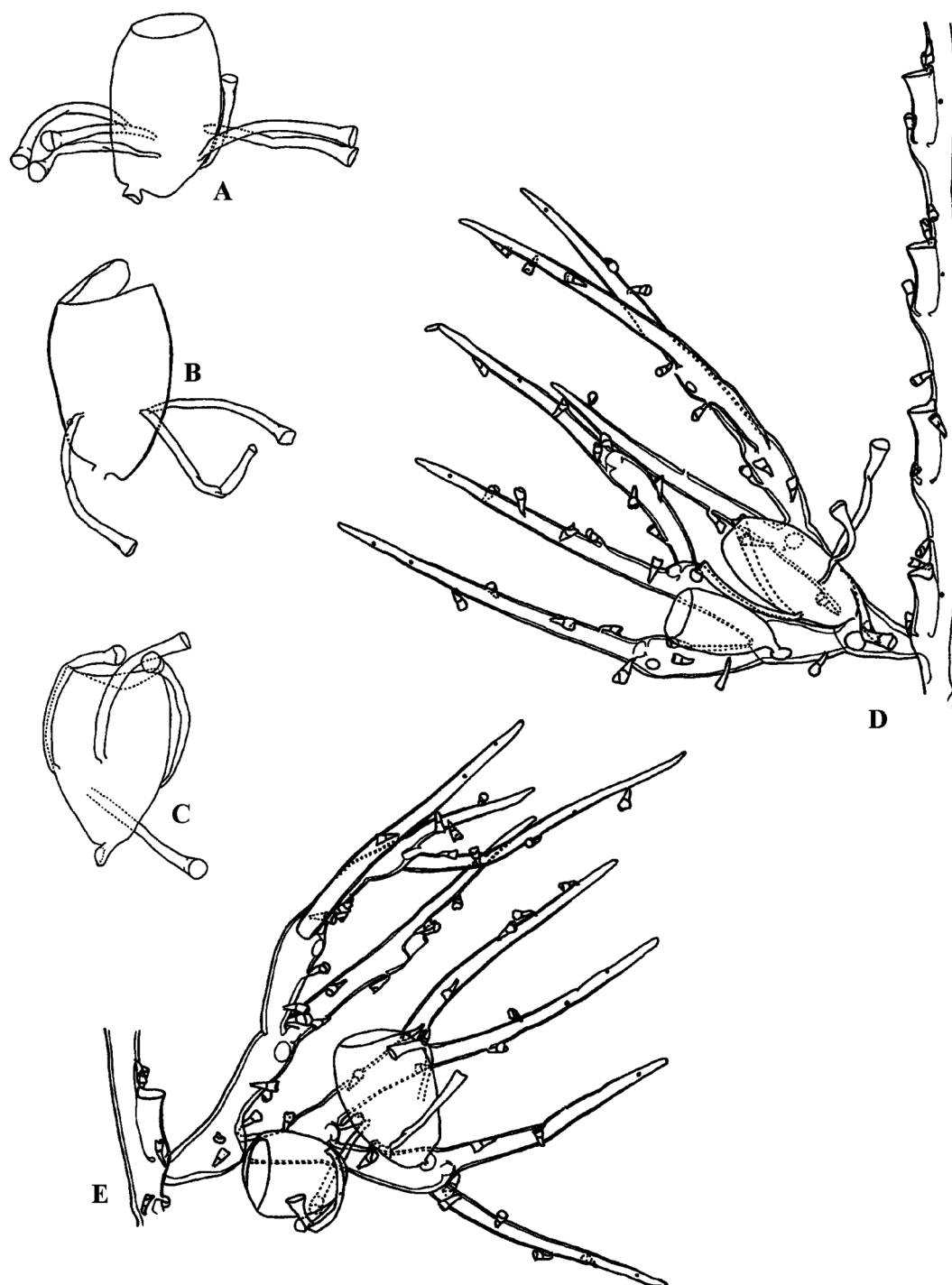


Figure 2. *Cladoplumaria anomala* sp. nov. **A-C.** Female gonothecae with nematothecae, x 61. **D.** Hydrocladium with phylactocarp and two female gonothecae, x 51.6. **E.** Phylactocarp with two female gonothecae and a hydrotheca in the last segment of a branch, x 51.6.

Figure 2. *Cladoplumaria anomala* sp. nov. **A-C.** Gonothèque femelle avec nématothèques, x 61. **D.** Hydroclade avec phylactocarpe et deux gonothèques femelles, x 51,6. **E.** Phylactocarpe avec une hydrothèque sur le dernier segment d'une branche, x 51,6.

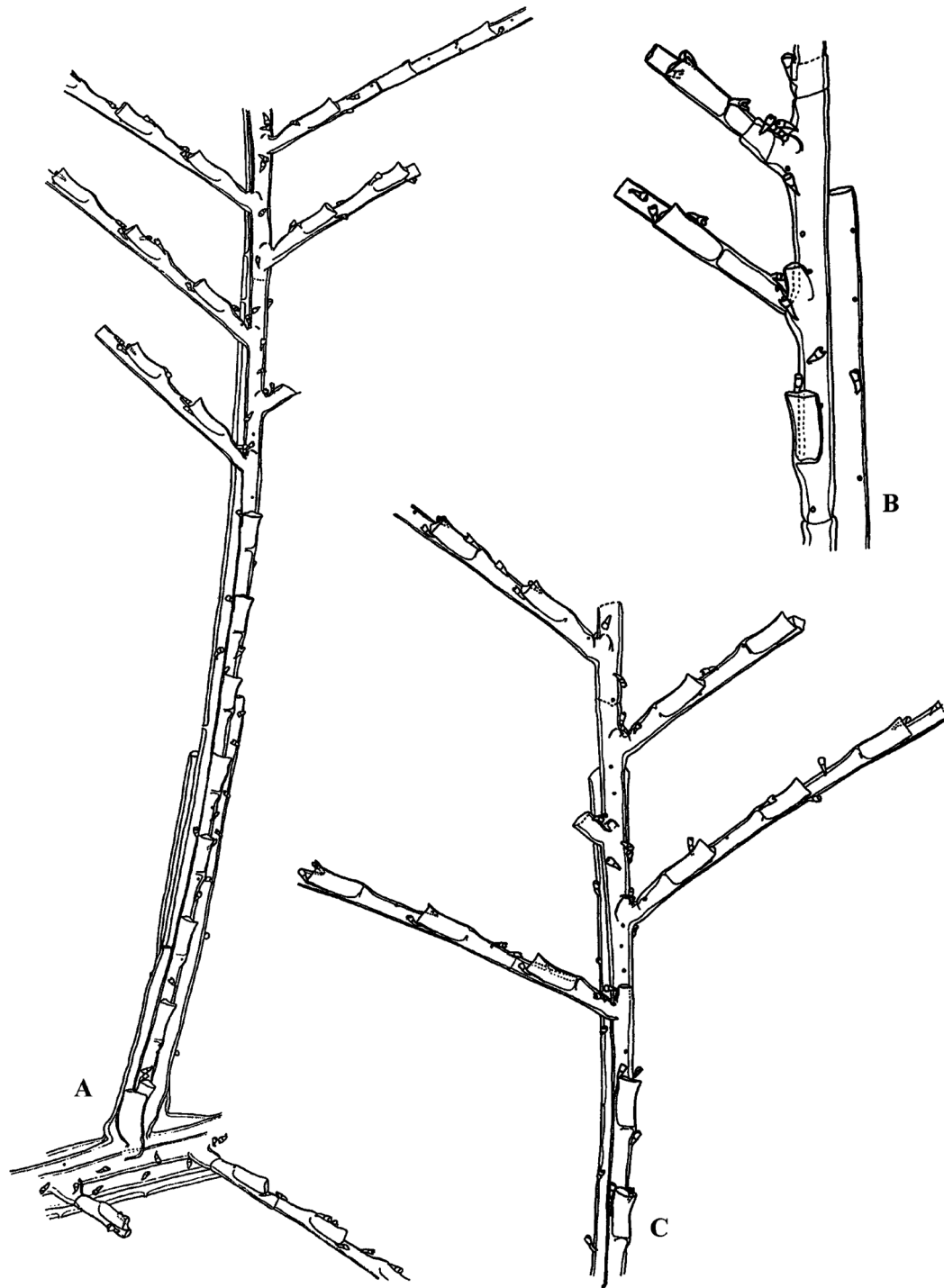


Figure 3. *Cladoplumaria anomala* sp. nov. **A.** Basal portion of a branch, x 26,6. **B.** Transition from hydrotheca to mamelon, x 51. **C.** Basal portion of a branch to show the transition from hydrotheca to mamelon as well as the arrangement of hydrocladia, x 35.

Figure 3. *Cladoplumaria anomala* sp. nov. **A.** Partie basale d'une branche, x 26,6. **B.** Transformation d'une hydrothèque en un mamelon, x 51. **C.** Partie basale d'une branche avec la disposition typique des hydroclades et la transformation d'une hydrothèque en un mamelon, x 35.

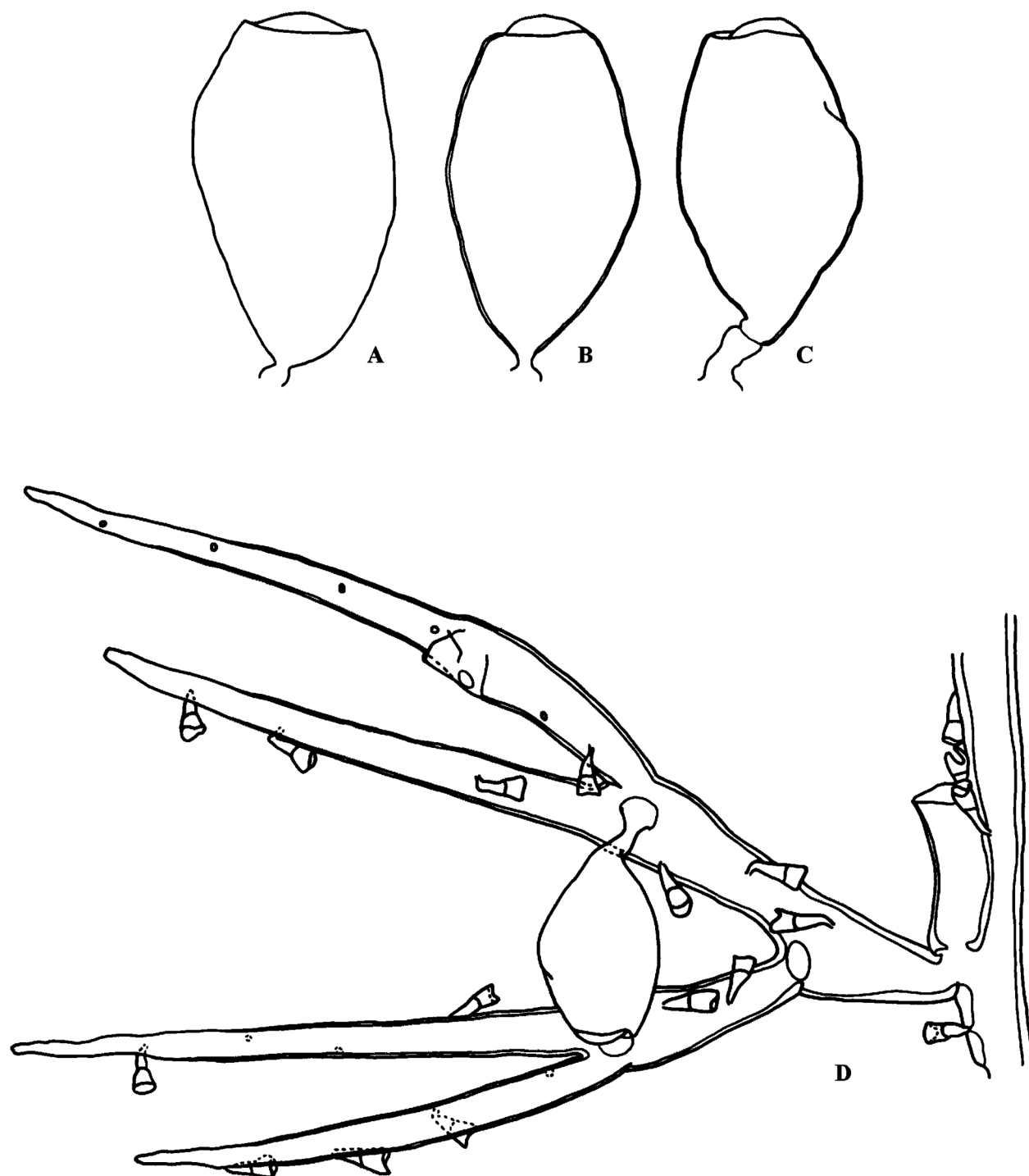


Figure 4. *Cladoplumaria anomala* sp. nov. A-C. Male gonothecae, x 170. D. Phylactocarp with a male gonotheca and a hydrotheca in the last segment of a branch, x 105.

Figure 4. *Cladoplumaria anomala* sp. nov. A-C. Gonothèque mâle, x 170. D. Phylactocarpe avec une gonothèque mâle et une hydrothèque sur le dernier segment d'une branche, x 105.

smooth. Pair of flanking nematothecae inserting at slightly different height near hydrothecal rim, projecting above hydrotheca. Two median nematothecae between two consecutive hydrothecae, when internode is present one of these becomes infracalycine, the second inserts close to basal node. Nematothecae as those on stem and branches.

Gonosome shaped as ramified phylactocarp, inserting at base of first hydrocladial hydrotheca and composed of forked basal part supporting two prongs that give rise to secondary and tertiary branches. In angle between branches a mamelon with distal, circular aperture; in addition each segment with two or three nematothecae; distal segments with increased number of nematothecae, pointed. Gonothecae globular, shortly stalked, top flattened with circular lid. Gonothecae inserting under a mamelon in wider part of segments. Each female gonotheca with three to five long, tubular nematothecae inserting slightly under its middle; male gonothecae without nematothecae.

Perisarc moderately developed, fairly strong on stems, branches and hydrocladia, thinning out along abcauline wall of hydrotheca; gonothecae with thin walls. Polyps badly preserved, nematocysts could not be studied.

Variability

Occasionally three nematothecae are present between two consecutive hydrothecae. New branches and hydrocladia, developing after damage and subsequent regeneration, usually have internodes separated by nodes. Sometimes the phylactocarp inserts under the second or third hydrotheca of a hydrocladium. In two phylactocarps the last segment of a branch is provided with a hydrotheca flanked by two lateral nematothecae (Figs. 2E, 4D).

Discussion

Cladoplumaria gen. nov. is characterized by large, polysiphonic, ramified colonies, apophyses with a well developed mamelon, hydrothecae placed on hydrocladia and basal part of branches and accompanied by four bithalamic and movable nematothecae (two laterals and two median infracalycine), while the gonothecae are inserted on a dichotomously branched phylactocarp; the female having long nematothecae. These characters are also found in the plumularioid families Halopterididae Millard, 1962, and Plumulariidae McCrady, 1859. The presence of phylactocarps is characteristic of many genera of Aglaopheniidae Marktanner-Turneretscher, 1890, but the morphology of the bithalamic, movable nematothecae excludes the genus *Cladoplumaria* from the Aglaopheniidae with monothalamic, immovable nematothecae, those in the cormidia being at least partly coalescent with the hydrotheca. The gonothecae, in this family, have no nematothecae (Calder, 1997). The morphology of the nematophores and nematothecae

also excludes its inclusion in the family Kirchenpaueriidae Stechow, 1921. The two remaining families of Plumulariodea, the Plumulariidae McCrady, 1859, and Halopterididae Millard, 1962 have recently been discussed by Calder (1997) and the Halopterididae were reviewed by Schuchert (1997), but the limits between Plumulariidae and Halopterididae are not clearly determined. Schuchert (1997) considers that the most important diagnostic character of Halopterididae is the presence of hydrothecae on the hydrocaulus, and that the absence of hydrothecae on the caulus (or their reduction to a "mamelon") must be seen as a synapomorphy that unites in a clade the families Plumulariidae, Kirchenpaueriidae and Aglaopheniidae. Contrary to Schuchert's opinion, Calder (1997) considers the presence of the large mamelons on the cauline apophyses (regarded as atrophied hydrothecae) and the presence of nematothecae on the gonothecae as typical characters of Halopterididae. We have here largely followed Calder (1997) in his views concerning the allocation of genera to both families, pending a phylogenetic revision of the Halopterididae referred to by Schuchert (1997).

To the Plumulariidae are here referred the following genera: *Nemertesia* Lamouroux, 1812 (= *Antennularia* Lamarck, 1816; *Antennopsis* Allman, 1877; *Nemertella* Stechow, 1923), *Plumularia* Lamarck, 1816, *Hippurella* Allman, 1877 (= *Antomma* Stechow, 1919), *Callicarpa* Fewkes, 1881, *Sciurella* Allman, 1883, *Monothecha* Nutting, 1900, *Sibogella* Billard, 1911 (= *Stechowia*, Nutting, 1922), *Dentitheca* Stechow, 1920 (= *Sphaerocystis*, Fraser, 1943), *Monotheccella* Stechow, 1923, and *Cladacanthella* Calder, 1997 (= *Acanthella* Allman, 1883). The taxonomic position of *Plumella* Stechow, 1920 is left undecided for the moment. So far gonothecae with nematothecae have only been observed in *Plumularia wasini* Jarvis, 1922. Phylactocarps or phylactocarp-like structures protecting the gonothecae have been observed in certain genera (*Hippurella* Allman, 1877 and *Callicarpa* Fewkes, 1881).

In the Halopterididae, we here place the following genera: *Antennella* Allman, 1877, *Halopteris* Allman, 1877 (= *Heteroplön* Allman, 1883; *Acladia* Marktanner-Turneretscher, 1890; *Heterotheca* Stechow, 1921), *Monostaechas* Allman, 1877, *Schizotricha* Allman, 1883, *Polyplumaria* G.O. Sars, 1879, *Calvinia* Nutting, 1900, *Nuditheca* Nutting, 1900, *Gattyia* Allman, 1885 (= *Paragattyia* Warren, 1908), *Antennellopsis* Jäderholm, 1896, *Anarthrocladia* Naumov, 1955, *Astrolabia* Naumov, 1955, *Pentatheca* Naumov, 1955, *Corhyza* Millard, 1962, *Pseudoplumaria* Ramil & Vervoort, 1992, and *Diplopteroides* Peña Cantero & Vervoort, 1999 (= *Diplopterón* sensu Nutting, 1900). Nematothecae on the gonothecae occur in many genera and insertion of gonothecae on a phylactocarp is found in one (*Diplopteroides*). The arrangement of the genera in Plumulariidae or

Table 2. Genera of the family Halopterididae and principal differentiating characters.**Tableau 2.** Genres de la famille Halopterididae et principaux caractères distinctifs.

	Stem	Hydrocladia	Hydrotheca	Nematothecae	Gonothecae	Species	Remarks
<i>Antennella</i> Allman, 1877	Flexuous, monosiphonic, heteromerously segmented, internodes occasionally fused, frequently forming tufts with adnate stems, unbranched (can be considered hydrocladia rising directly from stolon).	Only exceptionally present. Hydrotheca with one or two pairs of lateral ('flanking') nematothecae; varied number of nematothecae between hydrothecae.	One to each hydrothecate internode (or more on fused internodes), campanulate to cylindrical; rim smooth.	Bithalamic, movable, not fused to hydrotheca or internode, with exception of unpaired nematotheca under hydrotheca that may become fixed; reduced nematotheca behind hydrotheca may be present.	Unprotected, ovoid to saccate, with flattened top, inserting on thecate internode under hydrotheca; nematothecae may be present.	16	Colonies occasionally like those of <i>Halopteris</i> or <i>Monostaechas</i> .
<i>Halopteris</i> Allman, 1877	Flexuous or rigid, usually monosiphonic and segmented, occasionally branched, internodes with hydrothecae and alternate or opposite apophyses supporting hydrocladia, forming pinnate colonies.	Heteromerously segmented, rarely branched. Secondary tubes, when present, may develop hydrothecae and hydrocladia.	One to each hydrothecate internode of stem or hydrocladium, campanulate to cylindrical, rim smooth or with one abcauline cusp.	Bithalamic, movable, not fused to hydrotheca or internode, with exception of unpaired nematotheca under hydrotheca that may become fixed; reduced nematotheca behind hydrotheca may be present.	Unprotected, generally ovoid to globular, inserting on thecate internode under hydrotheca; nematothecae may be present.	32	Probably a polyphyletic group of species (cf. Schuchert, 1997). Species of <i>Antennella</i> occasionally resemble monosiphonic <i>Halopteris</i> species.
<i>Monostaechas</i> Allman, 1877	Stem, if present, polysiphonic and composed of intercommunicating tubes; hydrocladia may also rise directly from stolon.	Heteromerously segmented, branching characteristic: successive branches arising from posterior surface of previous hydrocladium, forming helicoid or scorioid sympodia.	One to each hydrothecate internode of hydrocladium, campanulate to cup-shaped; no hydrothecae on stem (if present). Rim smooth.	Bithalamic, movable, not fused to hydrotheca or internode, with exception of unpaired nematotheca under hydrotheca that may become fixed; reduced nematotheca behind hydrotheca may be present.	Unprotected, ovoid or globular, with flattened top, inserting on thecate internode under hydrotheca, with nematothecae.	5	Species of <i>Antennella</i> occasionally resembling <i>Monostaechas</i> in mode of branching
<i>Schizotricha</i> Allman, 1883	Erect, mono- or polysiphonic, branched or unbranched; primary axial tube homomerously segmented, internodes each with one hydrotheca and one apophysis, alternately directed left or right; colony pinnate.	Heteromerously segmented, usually sympodially branched, branches inserting below hydrotheca, on anterior or lateral surface.	One hydrotheca on each stem internode; one on each hydrothecate internode of hydrocladium, campanulate to cup-shaped; rim circular. Smooth.	Bithalamic, movable, not fused to hydrotheca or internode; one pair of 'flanking' nematothecae placed near hydrothecal rim	Unprotected, pear-shaped with flattened top to elongated sack-shaped, inserting on thecate internode under hydrotheca, with nematothecae.	15	
<i>Antennellopsis</i> Jäderholm, 1896	Stem either 'hydrocladia' rising directly from stolon or a polysiphonic stem composed of stolon-like tubes.	Unbranched, either directly inserted on stolon or on tubes from polysiphonic stem, basal part ahydrothecate, remainder hydrothecate and usually unsegmented.	Hydrotheca deep cup-shaped; adcauline wall completely fused to internode, on front of hydrocladium.	One pair of lateral nematothecae and two unpaired between successive hydrothecae, bithalamic, immovable.	Unprotected, elongated ovoid, with flattened top, inserted directly below hydrotheca, with nematothecae	1 or 2	Either one species with two differing modes of growth (age-related?) or two separate species.
<i>Corhiza</i> Millard, 1962	Erect, branched or unbranched, composed of intercommunicating tubes forming hydrothecate hydrocauli with pinnately arranged hydrocladia, or directly hydrocladia.	Unbranched, basal part ahydrothecate; thecate part heteromerously segmented.	Hydrotheca campanulate to cylindrical, adcauline wall with free part. Rim smooth, circular or sinuated.	Bithalamic, one or two pairs of lateral ('flanking') nematothecae and a varied number on rest of hydrothecate and ahydrothecate internodes.	Unprotected, ovoid with flattened top, inserted directly below hydrotheca, with nematothecae	9	Probably polyphyletic; some species quite near to <i>Antennella</i> .

<i>Gattya</i> Allman, 1886	Erect, branched or unbranched, mono- or polysiphonic; when monosiphonic with hydrothecae and hydrocladia, when polysiphonic hydrocladia, hydrothecae and nematothecae only on main tube.	Unbranched, homo- or heteromously segmented, arrangement sub-opposite to alternate.	Hydrotheca campanulate to cup-shaped; part of adcauline wall free; rim with several cusps. Abcauline hydrothecal wall in some species with inwardly projecting ledge.	Bithalamic and movable; one pair of lateral ('flanking') nematothecae, one (unpaired) above, one under hydrotheca; one nematotheca on ahydrothecate internode (if present)	Unprotected, pear-shaped, inserted directly below hydrotheca, with nematothecae.	8	
<i>Calvinia</i> Nutting, 1900	Erect, polysiphonic, pinnately branched, ultimate parts monosiphonic, with hydrothecae.	Homomously segmented; segmented, nematotheca-bearing process at base of each hydrotheca.	Hydrotheca cup-shaped, with smooth, circular rim.	Bithalamic and movable, a pair of lateral ('flanking') nematothecae near hydrothecal rim and others distributed over internode and nematophorous process.	Unprotected, globular, inserted at base of nematophorous process; with nematothecae.	1	Characters of genus based on single species known
<i>Nuditheca</i> Nutting, 1900	Erect, polysiphonic, branched or unbranched, ultimate parts monosiphonic, with hydrothecae.	Pinnately arranged along stem and branches, typically branched, homomously segmented; occasionally ahydrothecate internode present.	Hydrotheca deep cup-shaped, adcauline wall adnate to internode; rim smooth, circular or sinuated.	Bithalamic, unmovable; one pair of lateral ('flanking') nematothecae and one unpaired nematotheca under hydrotheca.	Unprotected, elongated sack-shaped, inserting on internode under hydrotheca; with nematothecae	3	
<i>Astrolabia</i> Naumov, 1955	Erect, polysiphonic basally, monosiphonic in upper parts and there segmented, each segment with big apophysis and modified hydrotheca in its axil; apophyses alternately directed left and right.	Branched, pinnately arranged; branching at top of first hydrocladial internode; segmentation homomously though first internode differing in shape (by branching!) and arrangement of nematothecae.	Hydrotheca elongated cup-shaped, adcauline wall adnate to internode; rim smooth though sinuated. Axillary hydrotheca on stem internode modified, more or less tubular; slightly curved.	Bithalamic, unmovable, two pairs of lateral ('flanking') nematothecae: one near hydrothecal rim, one at middle of adcauline wall of hydrotheca; single (unpaired) nematotheca under hydrotheca.	Unprotected, elongated sack-shaped, inserted on hydrocladia under hydrotheca, apparently without nematothecae and with lateral, slit-like mouth.	2	
<i>Anarthrocladia</i> Naumov, 1955	Erect, branched, polysiphonic, basally thick, gradually narrowing towards monosiphonic apical parts bearing axial hydrothecae.	Unbranched, long, in two closely packed opposite rows, division into internodes indistinct to completely absent.	Hydrotheca campanulate with slightly everted, smooth rim, adcauline wall fully adnate to internode.	Lateral ('flanking') nematothecae modified, scale-shaped, directed anterior. Unpaired nematotheca at hydrothecal base, bithalamic.	Unprotected, big, elongated ovoid, with single basal nematotheca and big, laterally directed aperture.	1	Characters of genus based on single species known.
<i>Pentatheca</i> Naumov, 1955	Erect, occasionally branched, polysiphonic, gradually narrowing apically towards monosiphonic, hydrothecate part.	Unbranched, arranged along both sides of stem, homomously segmented over whole length, each internode with one hydrotheca and two pairs of nematothecae.	Hydrotheca campanulate with slightly everted, smooth, circular rim; adcauline wall fully adnate to internode.	Bithalamic though immovable; one pair on each side of hydrothecal rim, a second pair basally on internode under base of hydrotheca. Unpaired nematotheca absent.	Unprotected, big, elongated ovoid, with basal pair of nematothecae; aperture big, laterally directed.	1	Characters of genus based on single species known.

<i>Pseudoplumaria</i> Ramil & Vervoort, 1992	Erect, branched and polysiphonic, gradually thinning and becoming monosiphonic; branches originating from secondary tubes, alternating or in opposite pairs. Internodes of monosiphonic parts long, with nematothecae and apophyses alternately directed left and right; with big, reduced, axillary hydrotheca (mamelon) or occasionally normal hydrotheca.	Unbranched, homomerously segmented (except for short ahydrothecate basal internode), with one hydrotheca having one or two pairs of lateral ('flanking') nematothecae and a varied number of movable or immovable bithalamic nematothecae.	Cup-shaped to cylindrical, about half of adcauline wall free from internode; rim circular, smooth.	All bithalamic, movable or immovable.	Unprotected, pear-shaped to elongated sack-shaped, inserting on apophyses, with 4-13 nematothecae, occasionally considerable elongated.	2	
<i>Polyplumaria</i> G.O. Sars, 1874	Erect, polysiphonic, pinnately branched, branches formed from secondary tube. Monosiphonic, ultimate parts indistinctly segmented, with apophyses alternately directed left and right, having a modified axillary hydrotheca in the shape of a big mamelon.	Typically with secondary, occasionally with tertiary hydrocladia, homomerously segmented (except for short ahydrothecate basal internode), with one hydrotheca, a pair of lateral nematothecae and three unpaired ones, one below, two above hydrotheca of which one occasionally on separate internode.	Cup-shaped to cylindrical, large portion of adcauline wall free from internode; rim circular, smooth.	All bithalamic and movable.	Pear-shaped, inserting on apophysis, with six to nine basal nematothecae.	6	
<i>Diplopteroides</i> Peña Cantero & Vervoort, 1999	Erect, unbranched, polysiphonic; monosiphonic ultimate parts hydrothecate, with apophyses having a hydrotheca at their base.	Unbranched, undivided or irregularly divided into internodes; hydrothecae with two pairs of lateral ('flanking') nematothecae and additional nematothecae between hydrothecae.	Elongated cup-shaped to tubular, only fraction of adcauline wall free. Rim sinuated.	Bithalamic, movable, not fused to hydrotheca or internode; one pair of 'flanking' nematothecae placed near hydrothecal rim; a second pair halfway hydrothecal border	'Protected' by phylactocarp-like structure composed of forked nematophorous and occasionally hydrothecate branches inserting at base of first hydrotheca of hydrocladium; gonothecae globular with flattened top inserted on arms of 'phylactocarp' and having a few nematothecae.	3	Characters of gonosome only based on type of genus; two remaining species with unknown gonosome.
<i>Cladoplumaria</i> gen. nov.	Erect, polysiphonic, with alternate branches derived from hydrocladia becoming covered by secondary tubes; ultimate parts monosiphonic, irregularly segmented, with nematothecae and apophyses alternately directed left and right, having a modified axillary hydrotheca or mamelon.	Unbranched, irregularly divided into internodes with several hydrothecae; each hydrotheca with pair of lateral ('flanking') nematothecae and two median nematothecae, one above, one below hydrotheca.	Tubular, adcauline wall completely adnate to internode; rim smooth, slightly sinuated	Bithalamic and movable	'Protected' by phylactocarp-like, dichotomously branched nematophorous structure inserting at base of first hydrocladial hydrotheca. Gonothecae globular with flattened top, inserted on 'arms' of 'phylactocarp', each with 3-5 elongated nematothecae	1	Characters of genus based on single species known.

Halopterididae presented here differs from views expressed by Ansín Agís et al. (2001) in a recent paper and is the result of weighing the evidence presented by Calder (1997) and the comparison with the morphology of the present new species.

Cladoplumaria anomala sp. nov., in colony structure, arrangement of hydrothecae and accompanying nematothecae shows affinities with *Polyplumaria* and *Pseudoplumaria*, from which genera it differs by the presence of phylactocarps and the pattern of ramification, as in *Polyplumaria* and *Pseudoplumaria* the branches arise from secondary tubules and not from a hydrocladium. The presence of phylactocarps in the family Halopterididae only occurs in the genus *Diplopteroides* Peña Cantero & Vervoort, 1999 (= *Diplopterum* sensu Nutting 1900), but in this genus the colonies are unbranched, there is a cauline hydrotheca at base of each hydrocladium and the gonothecae are without nematothecae. The various genera of Halopterididae and their principal characters are listed in Table 2.

The phylactocarp of *Cladoplumaria anomala* sp. nov. could also be conceived as a branched hydrocladium as occurs in species of *Schizotricha*, the forked basal portion of the phylactocarp representing the first internode of a primary hydrocladium with its mamelon, giving rise to hydrocladia of lower order. This suggestion seems to be strengthened by the occasional occurrence of a hydrotheca flanked by two lateral nematothecae on one of the branches.

Aknowledgements

The authors wish to express their gratitude to Dr. A. Crosnier (Muséum National d'Histoire Naturelle, Paris, France) for providing the material for this study. We extend our gratitude to Dr. D.R. Calder and Dr A. Peña Cantero for their suggestions about the position of the new genus in Plumularioidea. The first author also had financial support from the European Union PARSYST program to spend two weeks at the Muséum National d'Histoire Naturelle in Paris to work on plumulariid material.

References

- Allman G.J. 1874.** Report on the Hydroida collected during the expedition of H.M.S. "Porcupine". *Transactions of the Zoological Society of London*, **8**: 469-481.
- Allman G.J. 1877.** Report on the Hydroida collected during the exploration of the Gulf Stream by LP. de Pourtalès, assistant United States Coast Survey. *Memoirs of the Museum of comparative Zoölogy at Harvard College*, **5**: 1-66.
- Allman G.J. 1883.** Report on the Hydroida dredged by H.M.S. Challenger during the years 1873-76. Part 1. Plumularidae. *Report on the Scientific Results of the Voyage of H.M.S. Challenger, Zoology*, **7**: 1-55.
- Allman G.J. 1885.** Description of Australian, Cape, and other Hydroida, mostly new, from the collection of Miss H. Gatty. *Journal of the Linnean Society Zoology*, **19**: 132-161.
- Ansín Agís J., Ramil F. & Vervoort W. 2001.** Atlantic Leptolida (Hydrozoa, Cnidaria) of the families Aglaopheniidae, Halopterididae, Kirchenpaueriidae and Plumulariidae collected during the CANCAP and Mauritania-II expeditions of the National Museum of Natural History. *Zoologische Verhandelingen Leiden*, **333**: 1-268.
- Bedot M. 1921.** Notes systématiques sur les plumularides. 2^{ème} partie. *Revue suisse de Zoologie*, **29**: 1-40.
- Billard A. 1911.** Note sur un nouveau genre et une nouvelle espèce d'hydroïde: *Sibogella erecta*. *Archives de Zoologie expérimentale et générale*, (5)**6**, notes et revue, 108-109.
- Bouillon J. 1985.** Essai de classification des Hydropolypes-Hydroméduses (Hydrozoa-Cnidaria). *Indo-Malayan Zoology*, **1**: 29-243.
- Calder D.R. 1997.** Shallow-water hydroids of Bermuda: (Superfamily Plumularioidea). *Life Sciences Contributions of the Royal Ontario Museum*, **161**: 1-85.
- Fewkes J.W. 1881.** Report on the Acalephae. In: Reports on the results of dredging, under the supervision of Alexander Agassiz, in the Caribbean Sea, in 1878, 1879, and along the Atlantic coast of the United States, during the summer of 1880, by the U.S. Coast Survey Steamer Blake. *Bulletin of the Museum of comparative Zoology at Harvard College*, **8**: 127-140.
- Fraser C. McLean 1943.** Distribution records of same hydroids in the collection of the Museum of Comparative Zoology at Harvard College, with description of new genera and new species. *Proceedings of the New England zoological Club*, **22**: 75-98.
- Jäderholm E. 1896.** Ueber aussereuropäische Hydroiden des zoologischen Museums der Universität Upsala. *Bihang till Kungliga svenska Vetenskaps-Akademiens Handlingar*, **21**, Afd. 4: 1-20.
- Jarvis F.E. 1922.** The hydroids from the Chagos, Seychelles and other islands and from the coasts of British East Africa and Zanzibar. In: Reports of the Percy Sladen Trust Expedition to the Indian Ocean in 1905, under the leadership of Mr. J. Stanley Gardiner, M.A. *Transactions of the Linnean Society of London (Zoology)*, **18**: 331-360.
- Lamarck J.-B. (= J.B.P.A. Démonet, Chevalier de Lamarck) 1816.** *Histoire naturelle des animaux sans vertèbres*. 7 vols: Paris, vol. 2: 1811-1822.
- Lamouroux J.V.F. 1812.** Extrait d'un mémoire sur la classification des polypes coralligènes non entièrement pierreux. *Nouveau Bulletin des Sciences par la Société philomatique de Paris*, **3** (5^{ème} année, 63): 181-188.
- Marktanner-Turneretscher G. 1890.** Die Hydroiden des kk naturhistorischen Hofmuseums. *Annalen des KK naturhistorischen Hofmuseums*, **5**: 195-286.
- McCrary J. 1859.** Gymnophthalmata of Charleston Harbor. *Proceedings of the Elliott Society of the natural History of Charleston, South Carolina*, **1**: 103-221.
- Millard N.A.H. 1962.** The Hydrozoa of the south and west coasts of South Africa. Part I. The Plumulariidae. *Annals of the South*

- African Museum*, **46**: 261-319.
- Millard N.A.H. 1975.** Monograph on the Hydroida of southern Africa. *Annals of the South African Museum*, **68**: 1-513.
- Naumov D.V. 1955.** Novye rody i vidy gidroidov (Hydroidea) iz more Dal'nego Vostoka. New genera and species of Hydroidea from the Far eastern Seas. *Trudy zoologicheskogo Instituta, Leningrad*, **18**: 19-25.
- Nutting C. 1900.** American hydroids. Pt. 1. The Plumularidae. *Special Bulletin of the United States national Museum*, **4**: 1-285.
- Nutting C. 1927.** Report on Hydroida collected by the United States Fisheries steamer Albatross in the Philippine region, 1907-1910. In: Contributions to the biology of the Philippine Archipelago and adjacent regions, part 3. *Bulletin of the United States national Museum*, **100**: 195-242.
- Peña Cantero A.L. & Vervoort W. 1999.** Review of the genus *Schizotricha* Allman, 1883 (Cnidaria, Hydrozoa, Halopterididae). *Journal of natural History*, **33**: 351-386.
- Ramil F. & Vervoort W. 1992a.** Report on the Hydroida collected by the "BALGIM" expedition in and around the Strait of Gibraltar. *Zoologische Verhandelingen Leiden*, **277**: 3-262.
- Ramil F. & Vervoort W. 1992b.** *Pseudoplumaria* gen. nov., a new Atlantic genus of the family Plumulariidae (Cnidaria: Hydrozoa). *Zoologische Mededelingen Leiden* **66**: 485-492.
- Sars G.O. 1874.** Bidrag til Kundskaben om Norges Hydroider. *Forhandlinger i Videnskabs-Selskabet i Kristiania*, 1873: 91-150.
- Schuchert P. 1997.** Review of the family Halopterididae (Hydrozoa, Cnidaria). *Zoologische Verhandelingen Leiden*, **309**: 1-162.
- Stechow E. 1919.** Zur Kenntnis der Hydroidenfauna des Mittelmeeres, Amerikas und anderer Gebiete, nebst Angaben über einige Kirchenpauer'sche Typen von Plumulariden. *Zoologische Jahrbücher (Abteilung für Systematik, Geographie und Biologie der Tiere)*, **42**: 1-172.
- Stechow E. 1920.** Neue Ergebnisse auf dem Gebiete der Hydroidenforschung. *Sitzungsberichte der Gesellschaft für Morphologie und Physiologie in München*, **31**: 9-45.
- Stechow E. 1921.** Neue Genera und Species von Hydrozoen und anderen Evertibraten. *Archiv für Naturgeschichte*, (A) **87**: 248-265.
- Stechow E. 1923.** Zur Kenntnis der Hydroidenfauna des Mittelmeeres, Amerikas und anderer Gebiete. II. Teil. *Zoologische Jahrbücher (Abteilung für Systematik, Ökologie und Geographie der Tiere)*, **47**: 29-270.
- Totton A.K. 1930.** Coelenterata. Part V. Hydroida. *British Antarctic ('Terra Nova') Expedition, 1910. Natural History Report (Zoology Series)*, **5**: 131-252.
- Vervoort W. 1968.** Report on a collection of Hydroids from the Caribbean region, including an annotated checklist of Caribbean hydroids. *Zoologische Verhandelingen Leiden*, **92**: 1-124.
- Vervoort W. 1993.** Cnidaria, Hydrozoa, Hydroida: Hydroids from the Western Pacific (Philippines, Indonesia and New Caledonia) I: Sertulariidae (Part 1). In: A. Crosnier (ed.), Résultats des Campagnes MUSORSTOM. Vol. 11. *Mémoires du Muséum national d'Histoire naturelle*, **158**: 89-298.
- Warren E. 1908.** On a collection of hydroids, mostly from the Natal coast. *Annals of the Natal Government Museum*, **1**: 269-355.