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DESCRIPTIONS OF SOME THECATE HYDROIDS (CNIDARIA-HYDROZOA) FROM THE EGYPTIAN MEDITERRANEAN WATERS.

PART IV Families : PLUMULARIIDAE, HALOPTERIDAE & KIRCHENPAUERIIDAE

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ABSTRACT

This is Part four of the studies on thecate hydroids of the Egyptian Mediterranean waters, prepared by the author. This part deals with the families Plumulariidae, Halopteridae & Kirchenpaueriidae. These families are represented in the present collection by five species: ***Aglaophenia acacia, Aglaophenia lophocarpa, Monotheca femina, Antenella secundaria & Kirchenpaueria pinnata.***

All are newly recorded in the Egyptian Mediterranean waters. At the same time four species: ***Aglaophenia lophocarpa, Monotheca femina, Antenella secundaria & Kirchenpaueria pinnata*** *are new records for the Eastern Mediterranean. The present study includes description and distribution of the recorded species.*

INTRODUCTION

The families Plumulariidae, Halopteridae & Kirchenpaueriidae are represented in all Oceans, but they occur in much greater numbers of species and individuals in warm waters (El Beshbeeshy, 1991). Johnston (1847) and many earlier workers referred Plumulariid genera (the three families in the

present work) to the Sertulariidae, from which the Plumulariidae were first separated by Agassiz (1862). The Medusa-generation is lacking in this family. The aim of the present work is to describe the recorded species beside the discussion of their Morphology & Distribution. It is hoped that the publication of these base line data of (Part I- Part IV) will facilitate further studies of our fauna & flora.

MATERIALS

The specimens were selected from the deposited collections of Marine Biological Reference Collection Center (NIOF), Alexandria. The collections were previously dredged during the period 1966-1979 from the area of the Mediterranean Sea which lies between Port Said & West of El Alamin. The collections were preserved in formaline 10 %.

METHODS

The hydroid specimens were sorted from the other marine bottom fauna & preserved in 10 % Formaline. They were examined under the ordinary light Microscope & Streomicroscope. Their dimensions were measured by means of Eye-Piece Micrometer. The descriptive drawings were made by the aid of Camera Lucida. All samples were documented & they are now deposited in the Marine Biological Reference Collection Centre, Alexandria.

Family Plumulariidae Agassiz, 1862
Subfamily Diphenylamine Broch, 1910
Genus *Aglaophenia* Linnaeus, 1758
***Aglaophenia acacia* Allman, 1883.**

(Figs. 1A & 1B)

Plumularia patagonica D'orbigny, 1846 : 27.
Aglaophenia acacia Allman, 1883: 38 pl. 12, Figs. 1-4; Vervoort, 1972: 201-202; El Beshbeeshy, 1991 : 277-279, Fig.70 a,b; Svoboda & Cornelius, 1991: 14-16, Figs. 1, 17 a-b, 20 a-b, 21 a-b.

Site of collections :

Port Said, St. 24, S.N. 191, 27.12. 1969, 9m.; Al Kalch, St. 2, 9.4. 1969. 15m.; unknown locality, St. 3, caught by "Faras El Bahr" Ship, 15.8. 1969, 20 m.; Arabs Gulf, St. 1, S.N. 142, 18.8. 1971, 18 m..

Description :

Stolon short, little branched. Stems erect, thick, monosiphonic, grouped closely, without annuli, followed by one prosegment and several internodes; often lacking cladia below first pair of branches. Major branches widely spaced on stem, typically paired. At the point on branching, caulus back versally resulting in a trified arrangement. Hydrotheca narrow and deep, rim with 9 cusps, outermost longest grading to shortest on stem side; interthecal ridge short, distinct. Mesial nematotheca arising from middle of hydrotheca, free part with gutter-shaped opening along upper side. Lateral nematotheca arising slightly above hydrothecal rim; gutter shaped.

Corbula (Fig. 1 B) long with ribs completely fused, typically with 9-12 ribs on each side.

Measurements (in mm.)

Hydrotheca, total depth.....0.210 - 0.250
, diameter at rim.....0.190 - 0.220
total length of the median nematotheca.....0.180 - 0.200
, diameter at its rim.....0.100 - 0.110
Corbula, total length.....1.20 - 2.00
, maximal diameter.....0.50 - 0.65

Distribution :

This species is scattered in its distribution. From the East Atlantic, it was recently recorded from all United Kingdom waters (Svoboda & Cornelius, 1991). In the West Atlantic it is recorded off North Carolina (Fraser, 1944) & in the Caribbean (Svoboda, 1979). ***Aglaophenia acacia*** was also recorded from Patagonia (Argentina) (Vervoort, 1972; El Beshbeeshy, 1991). This species was recorded from the Western Mediterranean (Tunisia, Italy) (Svoboda, 1979) &

from the Eastern Mediterranean (Israel) (Svoboda & Cornelius, 1991). ***Aglaophenia acacia*** is a newly recorded species in the Egyptian Mediterranean waters.

Remarks :

This species is similar to ***Aglaophenia lophocarpa*** Allman, 1877. It may appear that ***A. acacia*** was based simply on older, branching specimens of ***A. lophocarpa***, and that the original description of the latter was based on young, unbranched material; but this seems unlikely. In both nominal species the opening between hydrotheca and Mesial nematotheca may close secondarily, a character between the two, but this is nevertheless rare in ***A. lophocarpa.*** The two taxa have been recorded growing side by side, both fertile in the Strait of Meşsinia and off Monte Argentario, Grosseto, Italy (Scoboda, 1979) and after all prove distinct.

Aglaophenia lophocarpa **Allman, 1877**
(Fig. 1. C)

Aglaophenia apocarpa Allman, 1877: 41
Aglaophenia elongata Picard, 1955: 190
Aglaophenia lophocarpa Allman, 1877: 41 pl. 24, Figs. 1-4; Stechow, 1923: 250; Svoboda,1979: 82-86, Figs. 12 e, 13 e; Svododa & Cornelius, 1991: 22-23. Fig. 5.

Site of collections :

Abu Qir, S.N. 166, St. 4, 17.4. 1970, 7m.; Abu Qir, S.N. 170, St. 9, 18.4.1970, 15 m.; Abu Qir, S.N. 171, St. 10, 20.4.1970, 7 m.; El Alamein, S.N. 226, St. 2, 28.7.1970, 10 m.; El Alamain, St. 2, 8.1.1978, 14 m.

Description :

Stolon short, little branched. Cauli monosiphonic, dark, erect, rigidly stiff, always unbranched. The basal part is formed by an undivided segment followed

by a prosegment with a single nematotheca. Rest of axis formed by regular succession of segments each bearing an apophysis & three nematotheca: one under the apophysis and two axillary; apophysis alternately directed left and right. Hydrocladia composed of regular succession of hydrothecate internodes separated by transverse nodes; each internode bearing one hydrotheca and three nematothecae: one median fused with the hydrothecal base and two laterals. Hydrotheca elongated, deep, with poorly developed internal septum at abcauline bottom. Hydrothecal rim with four pairs of lateral cusps and one median abcauline cusp, all well developed. Median nematotheca covering basal third of abcauline hydrothecal wall; free part pointing away from hydrotheca almost perpendicularly to hydrothecal length axis; terminal aperture gutter-shaped. Laterals slightly projecting above hydrothecal rim; their terminal apertures are also gutter-shaped. Foramen into hydrotheca open in most specimens, closed less commonly than in ***Aglaophenia acacia***. Corbulae are not observed in the present specimens.

Measurements (in mm.)

Hydrotheca, total depth.....0.275 - 0.300
, diameter at rim.....0.150 - 0.160
total length of the median nematotheca.....0.180 - 0.200
, diameter at its rim.....0.040 - 0.050

Distribution :

It was recorded from the Caribbean & the Azores (Svoboda, 1979). From Mediterranean this species was recorded from Italy, Marseiles, France, Catalonian Coast (Spain) (Svoboda & Cornelius, 1991), but not from the Eastern Mediterranean. This species is newly recorded from the Eastern Mediterranean & the Egyptian Mediterranean waters.

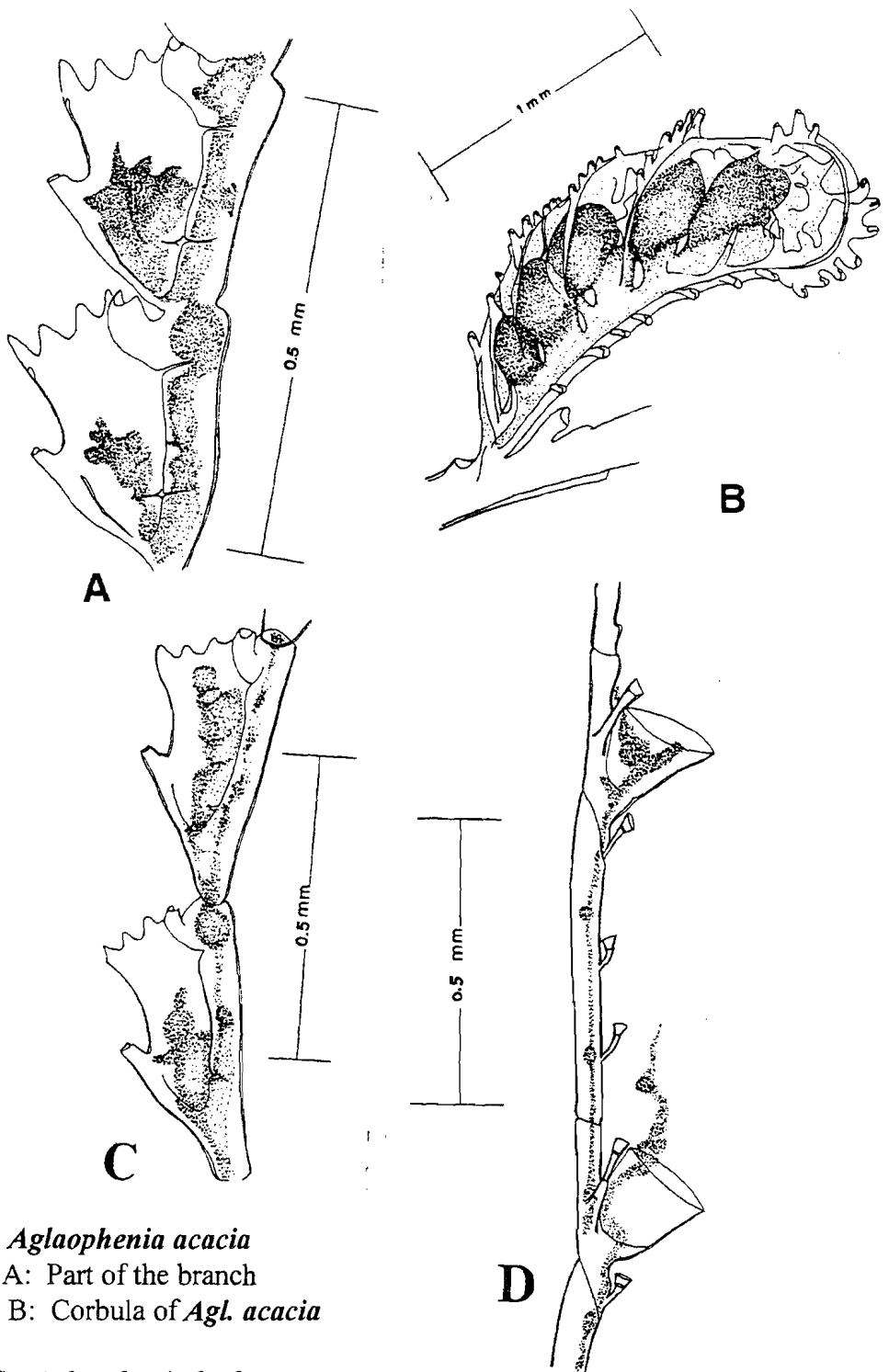

Figure (1): ***Aglaophenia acacia***
A: Part of the branch
B: Corbula of ***Agl. acacia***

C: ***Aglaophenia lophocarpa***
D: ***Antennella secundaria***

Genus *Monotheca* Nutting, 1900

Monotheca femina (Garcia-Corrales, Aguirre Inchaurbe & Gonzalez Mora,1978) **(Fig. 2, A,B)**

Plumularia femina Garcia-Corrales, Aguirre Inchaurbe & Gonzalez Mora, 1978: 57-60, Fig. 26 a-d.

Site of collections :

St. 3, caught by Faras Bahr Ship, 15.8.1969, 20 m.; Abu Qir, St. 10, S.N.171, 20.4.1970..; El Kalch, St. 4, S.N. 228, 28.7.1970, 13 m.; El Dabaa, St. 3, S.N. 168, 24.4.1977,6m.

Description :

The samples studied are made up of a branching hydrorhiza creeping over the substrate. From this hydrorhiza a number of erected colonies arise at irregular intervals, branching always in one plane. Each colony is made up of monosiphonical hydrocaulus which is divided by transverse nodes into internodes. Hydrocaulinar internodes adopte a zigzag form. Each internode has an apophysis in its upper region. This apophysis bears a short hydrocladium. Each hydrocaulinar internode has three nematothecae, two of them at the upper axilla of the apophysis and the remaining one at the medial zone of it. Hydrocladiae are very short and have the same structure in all specimens studied. Each hydrocladium contains two internodes only. The first of these is athecate while the second internode, next to the proceeding one, is thecate. The athecate internodes lack of nematotheca. The thecate internode has one hydrotheca and three nematothecae. On the upper side of each of these internodes there is a bell-shaped thin walled hydrotheca with a smooth free upper rim. The whole of its abcauline wall adnate to the internode. Two out of the three nematothecae of the thecate internode are placed at the upper end, on two lateral apophysis which are at the upper margin of the hydrotheca; the third one occupies a median position, below such hydrotheca. In the examined specimens, the gonotheca arise laterally from the apophysis of the hydrocauline internodes. The gonotheca (Fig. 2 B) is pear-shaped, with its walls transversely annulated, and a large operculum at its upper end.

Measurements (in mm.)
Hydrotheca

Diameter at margin.....0.180 - 0.200
Depth.....0.150 - 0.170
Length of abcauline wall.....0.110 - 0.120
Length of adcauline wall.....0.140 - 0.170
Length of the thecate internode.....0.200 - 0.250
Length of the athecate internode.....0.100 - 0.110

Gonotheca
Maximum height.....0.600 - 0.750
Maximum diameter.....0.380 - 0.450

Distribution :

This species was first recorded by Garcia Corrales, ***et al.***, 1978 from Catalonia (the Mediterranean Coast of Spain). As far as the available literature allows, it was concluded, that this species is newly recorded from both Eastern Mediterranean and the Egyptian Mediterranean waters.

Remarks :

This species reflects accurately the characters of the Genus ***Monotheca*** Nutting, 1900 much more than the Genus ***Plumularia*** Lamarck, 1816 such as: the Hydrocladia bearing each a single hydrotheca and consisting of two internodes, of which the distal one bears the hydrotheca and supports two supracalycine nematothecae on an enlargement or a bifurcation of its distal end, while in the case of Genus ***Plumularia***, the Hydrocladia bearing each a number of hydrothecae. Therefore I have set this species under the Genus ***Monotheca*** and also after a discussion with Prof. Dr. W. Vervoort from the "Rijksmuseum Van Natuurlijke Historie, Leiden, Netherlands", who concurred with me. At present the species ***Plumularia obliqua*** Johnston, 1847 is known as ***Monotheca obliqua*** (Johnston, 1847).

Family Halopteridae Millard, 1962
Genus *Antennella* Allman, 1877
***Antennella secundaria* (Gmelin, 1791)**

(Fig. 1. D)

Sertularia secundaria Gmelin, 1791 : 3856.
Antennella secundaria - Millard, 1975: 332-334; Rees Fig. & Vervoort, 1987: 113 Figs. 23 a-b; Ramil & Vervoort, 1992: 143-14, Fig. 37 a-d.

Site of collections :

El Tarh, 10.5. 1969, 6 m.; El Madeea (Makka), S.N. 355, St. 5, 16.10.1969, 5m.; Abu Qir, St. 13, S.N. 86, 15.5.1970, 10 m.; Abu Qir, St. 14, S.N. 83, 17.5.1970, 15 m.; Abu Qir, St. 17, S.N. 85, 18.5.1970, 13 m..

Description :

Colony composed of stolonal tube from which rise fairly stiff, upright,unbranched axes, each composed of basal part, divided in variable number of internodes by means of transverse nodes and bearing one to four frontal nematothecae. Rest of axis composed of regular succession of thecate and athecate internodes; thecate internode separated from proceeding athecate internode by means of oblique node and from following (athecate) internode by means of transverse node. Thecate internodes each with hydrotheca and four nematothecae: One median infracalycine, two laterals at end of well developed apophysis besides hydrothecal margin and single smaller supracalycine nematotheca behind free part of abcauline hydrothecal wall. Hydrotheca cup-shaped, walls straight, slightly diverging; part of abcauline wall free from internode; rim smooth. Athecate internodes with two frontal nematothecae. Gonothecae are not represented in the examined specimens.

Variability :

Some of the colonies examined presented considerable variations in the length of the intermediate (athecate) internodes, that in the basal part of the colony may be long and much shorter in the distal region, while in the same colony the length of the thecate internodes remains approximately constant.

Measurements (in mm.)

Hydrotheca, length abcauline wall.....0.190 - 0.210
total depth.....0.180 - 0.195
length free part adcauline wall.....0.100 - 0.110
diameter at rim.....0.195 - 0.210

Distribution :

Antennella secundaria is a cosmopolitan species with a preference for warmer seas (Gili, Vervoort & Pages, 1989). It was previously recorded from the Western Mediterranean, Alboran Sea (Templado ***et al.***, 1986) and from the Gibraltar Strait region (Ramil & Vervoort, 1992). This species is newly recorded from both Eastern Mediterranean and the Egyptian Mediterranean waters.

Family Kirchenpaueriidae Millard, 1962
Genus *Kirchenpaueria* Jickeli, 1883
***Kirchenpaueria pinnata* (Linnaeus, 1758)**

(Fig. 2 C,D)

Sertularia pinnata Linnaeus, 1758: 813.
Plumularia pinnata - Hincks, 1868: 295-296, pl. 65, Fig. 1.
Kirchenpaueria echinulata-Picard, 1958: 1.
Kirchenpaueria pinnata - Bedot, 1916: 645; Vervoot, 1946: 167-171; Millard, 1975: 372-375, Figs. 119 A-D; Roca & Moreno, 1987: 46, Fig. 1;
Ramil & Vervoort: 158-161, Fig. 41 a-c.

Site of collections :

Port Said, St. 26, 19.9.1966, 7 m.; El Madea (Makka), St. 5, S.N. 355,16.10.1969, 5 m.; Abu Qir, St. 14, S.N. 83, 17.5.1970, 15 m.; Sidi Krer, Sec. C., St. 2, 2.11.1978, 25m..

Description :

Stems unbranched, erect and monosiphonic, basally with some hydrorhiza fibres, Axis composed of succession of segments separated by well marked transverse nodes, each segment distally with apophysis on which inserts a hydrocladium. Apophysis, and consequently Hydrocladia, alternately directed left and right, each apophysis on upper surface with circular opening "mamelon", from which emerges naked sacrostyle. Moreover there is a second opening on axial wall just above apophysis from which emerges another naked sacrostyle. Hydrocladia basally with short internode without hydrotheca or nematotheca, followed by regular succession of hydrothecate and intermediate internodes separated by slightly oblique nodes. Each hydrothecate internode with one hydrotheca, one reduced, lip-shaped median infracalycine nematotheca and one naked sarcostyle immediately behind free part of abcauline wall of hydrotheca.

Hydrotheca cup-shaped, widening distally; part of adcauline wall free, abcauline wall straight and hydrothecal rim smooth. Intermediate internodes without nematothecae or sarcostyles.

Gonothecae are not observed in the examined specimens.

Variability :

In one colony of the examined specimens there was no regular succession of hydrothecate and intermediate internodes in the Hydrocladia. There is either no intermediate internode after the first hydrothecate internode or the intermediate internodes begin to appear after the second hydrothecate internode.

Measurements (in mm)

Hydrothecate internode, length.....0.350 - 0.400
Intermediate internode, length.....0.220 - 0.300
Hydrotheca, total depth.....0.080 - 0.110
length free part adcauline wall.....0.100 - 0.140
diameter at rim.....0.170 - 0.200

Distribution :

Kirchenpaueria pinnata is widely distributed in the Atlantic Ocean, ranging from the North Atlantic (Broch, 1918) as far south as the coasts of South Africa (Millard, 1975). It was recorded from the Western Mediterranean, Catalonian (the Mediterranean Coast of Spain) (Roca & Moreno, 1987), Coast of Morocco (Ramil & Vervoort, 1992).

It was also recorded from the Eastern Mediterranean (Coast of Israel) by Picard, 1958 as ***K. echinulata***. This species is recorded here for the first time from the Egyptian Mediterranean waters.

Remarks :

The considerable morphological variability in this species has resulted in the establishment of several species and numerous varieties that have all been united by Bedot (1916) as a single species: ***Kirchenpaueria pinnata*** (Linnaeus, 1758), a view which has been adopted here.

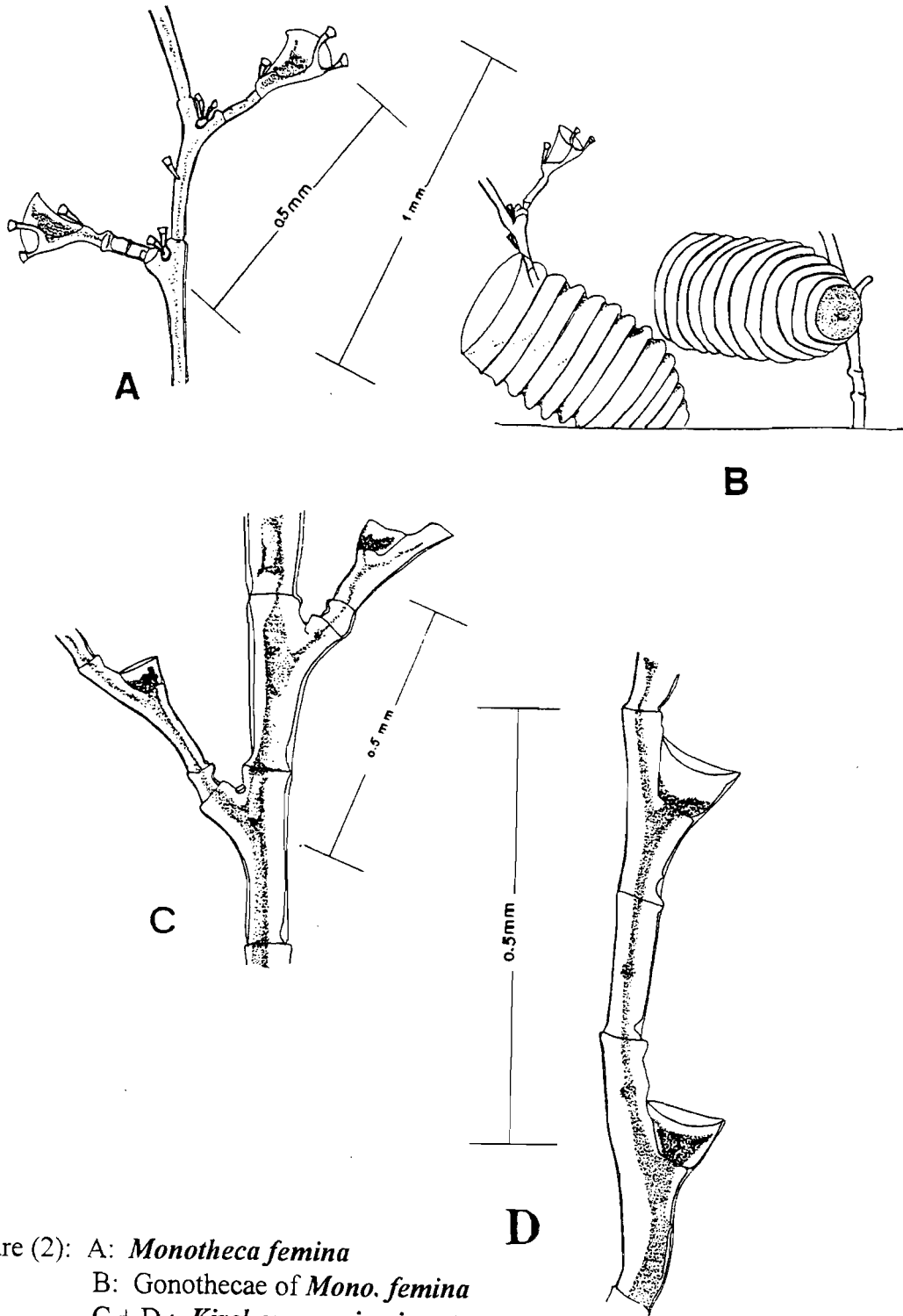

Figure (2): A: ***Monotheca femina***
B: Gonothecae of ***Mono. femina***
C + D : ***Kirchenpaueria pinnata***

REFERENCES

Agassiz, L., 1862. Contributions to the natural history of the United States of America. II monograph. 4: 1-380, pls. 1-25.

Allman, G.J., 1877. Report on the Hydroida collected during the exploration of the Gulf Stream.-Mem. Mus. Comp. Zool., Harvard 5 (2): 1-66, pls. 1-34..

----------, 1883. Report on the Hydroida dredged by H.M.S. Challenger during the years 1873-76.-Rep. Sci. Res. Challenger Exp. (Zool. Ser.) 20: 1-55, pls. 1-20.

Bedot, M., 1916. Sur le genre Kirchenpaueria.-Revue suisse Zool. 24 (11):637-648, Figs. 1-46, pls. 2-4.

Broch, H., 1910. Die Hydroiden der Arktischen Meere.-Fauna Arctica 5 (1):127-248.

Broch, H., 1918. Hydrida. (Part II).- Danish Ingolf Exped. 5 (7): 1-206, Figs. 1-95, pl. 1.

D'Orbigny, A., 1846. Voyage dans L Amerique meridionale, execute pendant les annes 1826-1833. Zoophytes, 5 (4): 7-28, pls. 1-13.

El-Beshbeeshy, M.S., 1991. "Systematische, morphologische & zoogeographische Untersuchungen an den thecaten Hydroiden des patagonischen Schelfs". Ph.D. thesis, Fachbereiche Biologie, Universitat Hamburg, Germany, 390 pp, Figs. 1-102, Tabs. 1-80.

Fraser, C. McLean, 1944. Hydroids of the Atlantic coast of North America:1-451, pls. 1-94. Toronto, the University of Toronto Press.

Garcia-Corrales, P., A.A. Aguirre Inchaurbe & D. Gonzalez Mora, 1978. Contribucion al conocimiento de los hydrozoos de las costas espanolas. Parte I: Halecidos, Campanularidos y Plumularidos.- Boln. Inst. esp. Oceanogr. 4 (253): 5-73, Fig. 1-32.

Gili, J.M., W. Vervoort & F. Pages, 1989. Hydroids from the West African coast:Guinea Bissau, Namibia & South Africa.-Scient. mar. 53 (1): 67-112, Figs. 1-33.

Gmelin, J.F., 1791. Systema naturae. Thirteenth edition. Vol. 1, part 6:3021-3910.- Lipsiae, G.E. Beer.

Hincks, Th., 1868. A history of the British hydroid zoophytes. Vol. 1: 1-338. Figs. 1-45. London.

Jickeli, C.F., 1883. Der Bau der Hydroidpolypen.- Morph. Jb. 8: 373-416, 580-680.

Johnston, G., 1847. A history of the British zoophytes. Second edition: (vol.1): 1-488, Figs. 1-87. London.

Lamarck, J.B.P.A. de, 1816. Historire naturelle des animaux sans vertebres.Vol. 2: 1-568.- Paris.

Linnaeus, C., 1758. Systema naturae. Tenth edition: (vol. 1): 1-842.- Holmiae (Stockholm).

Millard, N.A.H., 1962. The Hydrozoa of the south and west coasts of South Africa. Part I.The Plumulariidae.- Ann. S. Afr. Mus. 46: 261-319, Figs.1-12.

Millard, N.A.H., 1975. Monograph on the Hydroida of southern Africa.- Ann. S.Afr. Mus. 68: 1-513, Figs. 1-43.

Nutting, C.C., 1900. American hydroids. Part I. The Plumularidae.- Spec. Bull.Smithson. Inst., U.S. Natl Mus. 4: 1-285, pls. 1-34.

Picard, J., 1955. Hydraires des environs de Castiglione (Algerie).- Bull. Stat.Aquicult. Peche Castiglione, 7: 177-199.

Picard, J., 1958. Origines et affinities de la fauna d'hydropolypes(gymnoblastes et calyptoblastes) et d'hydromeduses (anthomeduses et leptomeduses) de la Mediterranea. Rapp. P.V. Reun. Comm. Int. Explor. Scient. Mer. Mediterr. (NS) 14: 187-199, Tabs. 1-2.

Ramil, F. & W. Vervoort, 1992. Report on the hydroida collected by the"Balgim" expedition in and around the Strait of Gibraltar. Zoologische Verhandelingen, Leiden 277: 1-262, Figs. 1-68.

Rees, W.J. & W. Vervoort, 1987. Hydroids from the John Murray Expedition to the Indian Ocean, with revisory notes on Hydrodendron, Abietinella, Cryptolaria & Zygophylax (Cnidaria: Hydrozoa).- Zool. Verh., Leiden 237: 1-209, 1-43, Figs. 1-43, tabs. 1-37.

Roca, L. & I. Moreno, 1987. Cosideraciones sobre la subfamilia Kirchenpaueriinae (Cnidaria, Hidrozoa, Plumulariidae) y sus representantes en las aguas costeras de Mallorca.- Thalassas 5 (1): 45-51, Figs. 1-3.

Stechow, E., 1923. Zur Kenntnis der Hydroidenfauna des Mittelmeeres, Amerikas und anderer Gebiete. II Teil.- Zool. Jahrb. (Syst., Geog. u. Biol. Tiere) 47: 29-279, Figs. 1-35.

Svoboda, A., 1979. Beitrag zur Okologie, Biometrie und Systematik der mediterranen Aglaophenia Arten (Hydroida).- Zool. Verh., Leiden 167: 1-114, Figs. 1-17.

Svoboda, A. & P.F.S. Cornelius, 1991. The European and Mediterranean species of Aglaophenia (Cnidaria: Hydrozoa).- Zool. Verh., Leiden, 274: 1-72, Figs. 1-25.

Templado, J., Garcia-Carrascosa, M., Baratech, L., Capaccioni, R., Juan, A., Lopez-Ibor, A., Silvestre, R. & C. Masso, C., 1986. Estudio preliminar de la fauna asocida a los fondos corallifros del mar de Alboran (SE de Espana).-- Boln Inst. esp. Oceanogr., 3 (4): 93-104, Fig. 1, Tabs. 1-4..

Vervoort, W., 1946. Hydrozoa (C1) A. Hydropolypen.- Fauna Nederl. 14: 1-336, Figs. 1-137.

----------, 1972. Hydroids from the Theta, Vema and Yelcho cruises of the Lamont-Doherty geological observatory.- Zool. Verh., Leiden 120: 1-247, Figs. 1-83.