

Some hydroids (Hydrozoa: Hydroidolina) from Dampier, Western Australia: annotated list with description of two new species.

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Abstract

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Eleven species of hydroids including two new (*Halecium corpulatum* and *Plumularia fragilia*) from a depth of 50 m, 50 km north of Dampier, Western Australia are reported. The tropical hydroid fauna of Western Australia is poorly known; species recorded here show strong affinity with the Indonesian and Indo–Pacific region.

Keywords

Hydroids, tropical species, Dampier, Western Australia

Introduction

A collection of hydroids provided by the Western Australian Museum is described. The collection comprises 11 species including two new. Material was collected 50 km north of Dampier, Western Australia, from the gas production platform *Ocean Legend* (019° 42' 18.04" S, 118° 42' 26.44" E). The collection was made from a depth of 50 m by commercial divers on 4th August, 2011.

The species in the collection show a strong affinity with the northern Indian Ocean, Indonesian and Indo–Pacific regions. The tropical hydroid fauna of the western Australian coast from Geraldton to Darwin is poorly known. Stechow (1925) reported on some hydroids collected in Shark Bay and Watson (1997, 2000) described collections from the Abrolhos Islands and Darwin. Other reports relevant to the present study are those from the Indonesian region by Billard (1913), Vervoort (1941) and Schuchert (2003) and from the Aru Sea (Stechow and Müller 1923). Other than those collected by scuba diving from the Abrolhos and Darwin, all other material is from dredging hence many new species are still being found in habitats only collectable by hand sampling.

Type and voucher material is deposited in the Western Australian Museum (WAM Z). In the following text only synonymies relevant to the Indonesian, Australian and Indo–Pacific and regions are given.

Family Eudendriidae L. Agassiz, 1862

Eudendrium racemosum (Cavolini, 1785)

Figure 1A

Sertolaria racemosa Cavolini, 1785: 160, pl. 6, figs 1–7, 14–15

Sertolaria racemosa. – Gmelin, 1791: 3854

Eudendrium racemosum. – Ehrenberg, 1834: 296. – von Lendenfeld, 1885: 351, 353. – Millard and Bouillon, 1973: 33. – Watson, 1985: 204, figs 63–67

Material examined. WAM Z31857, material ethanol preserved. Four infertile colonies, the tallest 40 mm long, on purple sponge.

Description. Hydrorhiza a tangled mass of stolonal tubes. Stems fascicled, stolons becoming stems in a loose untidy mass of tubes with much adventitious matter embedded between the tubes. Largest colony comprised of several heavily fascicled main branches, branching and rebranching roughly alternate, ultimate branches monosiphonic. Hydranth pedicels more or less alternate on ultimate branches, cylindrical, smooth, length variable, with two to four obscure annulations at base. Hydranth large with approximately 20 stubby tentacles.

Cnidome: all nematocysts undischarged,

– small euryteles, abundant in tentacles,

– large isorhizas, rare on hydranth body.

Measurements of *Eudendrium racemosum*, (μm) preserved material

Branch, distance between pedicels	1000–1800
Hydranth pedicel	
length	760–1700
diameter	136–184
Hydranth, width below tentacles	320–448

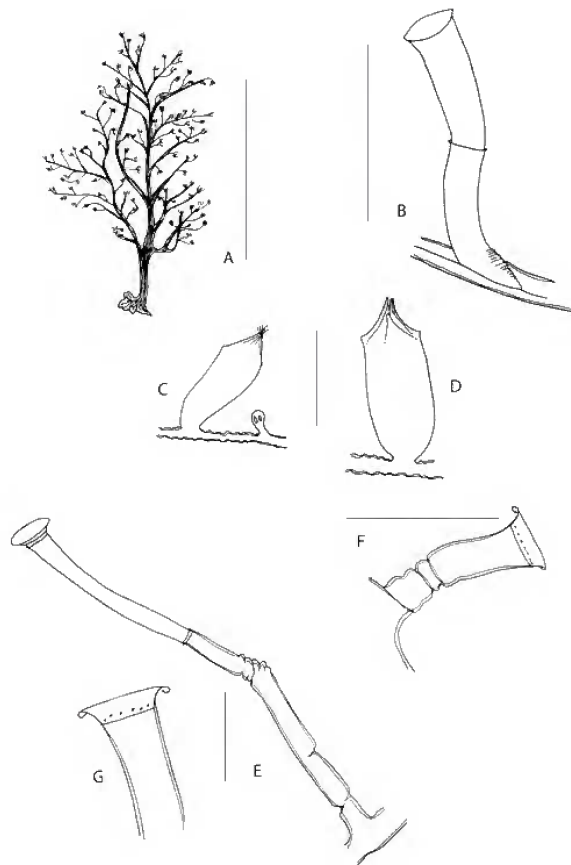


Figure 1A–G. A. *Eudendrium racemosum* from photograph of whole colony. B. *Filellum serratum*, regenerated hydrotheca. C, D. *Lafoeina amirantensis*. C, small hydrotheca and nematotheca on hydrorhiza. D, large hydrotheca. E–G. *Halecium tenellum*. E, unbranched stem. F, basally annulated hydrophore. G, hydrotheca with strongly everted rim and desmocytes. Scale bar, mm: A, 20. B, C, E, F, G, 0.2. D, 0.1.

Remarks. No supplementary cnidophores are present on the hydranths (see Watson 1985). The colonies of *E. racemosum* are substrate for most of the smaller hydroid species in the collection.

Distribution. Mediterranean Sea, Seychelles, Vietnam, South China Sea, Japan; previously recorded in Australia from the Great Barrier Reef (Pennycuik 1959).

Family Lafoeidae A. Agassiz, 1865

Filellum serratum (Clarke, 1879)

Figure 1B

Lafoëa serrata Clarke, 1879: 242.

Reticularia serrata.– Ralph, 1958: 312.

Filellum serratum.– Millard, 1975: 178.– Gravier–Bonnet, 1979: 22.– Hirohito, 1995: 110.– Watson, 2000: 5, fig. 2C.

Material examined. WAM Z31858, microslide, malinol mount. One small infertile colony creeping on stem of *Eudendrium racemosum*.

Description. Hydrothecae long, tubiform, base adnate to substrate, distal two thirds of body erect, diameter narrower on adnate section, abcauline surface closely transversely striated above adnate adcauline wall. Margin circular, rim slightly everted, some with some marginal replications.

Measurements of *Filellum serratum*, (μm)

Hydrotheca	
length of free part	240–640
diameter of free part	84–92
diameter at margin	104–116

Remarks. Although the material is in poor condition the abcauline striations are a good indicator of identity as *Filellum serratum*. The dimensions conform with *F. serratum* from Darwin (Watson 2000).

Distribution. Cosmopolitan, previously recorded from Darwin and temperate Western Australia.

***Lafoeina amirantensis* Millard and Bouillon, (1973)**

Figure 1C, D

Egmondella amirantensis Millard and Bouillon, 1973: 40.– Millard, 1975: 133.– Gibbons and Ryland, 1989: 389.– Ramil and Vervoort, 1992: 22.

Lafoeina amirantensis.– Calder, 1991: 10.– Watson, 1994: 147.– Calder and Vervoort, 1998: 15.– Watson, 2000: 5, fig. 2A, B.

Material examined. WAM Z31850. Infertile colonies on *Eudendrium racemosum*; one microslide, malinol mount.

Description. Colonies stolonial, creeping on branches of host, stolons flattened, roughened and coated with fine sediment. Hydrothecae minute, arising at intervals along hydrorhiza, subconical to cylindrical, very variable in size, sometimes asymmetrically curved, base expanding from a short, wide pedicel, operculum of numerous segments overlapping at apex, no demarcation between opercular segments and body of hydrotheca. Nematothecae sparse, on hydrorhiza between hydrothecae, minute, clavate.

Measurements of *Lafoeina amirantensis*, (µm)

Hydrorhiza, width	28–48
Hydrotheca	
length including operculum	152–200
maximum width	52–80
Nematotheca, length	24–40

Remarks. The specimen conforms to previous descriptions of *Lafoeina amirantensis*.

Distribution. Cosmopolitan, previously recorded in Australia from Bass Strait and Darwin (Watson 1994a, 2000).

Family Haleciidae Hincks, 1868

***Halecium tenellum* Hincks, (1861)**

Figure 1E– G

Halecium tenellum Hincks, 1861a: 252, pl. 6, figs 1–4.– Vervoort, 1959: 229, fig. 8.– Vervoort, 1966: 102, fig. 2.– Millard, 1975: 156, fig. 50F–L.– Vervoort and Watson, 2003: 98, fig. 19A, B.

Material examined. WAM Z31849. Abundant infertile colonies on *Eudendrium racemosum*; one microslide, malinol mount.

Description. Hydrorhiza creeping on host, stolons tubular, undulating. Hydrocaulus monosiphonic, cylindrical, variable in length, mostly unbranched but some branched once or twice. Hydrophore smooth, cylindrical, a few transverse proximal septa marking site of branching from below or within a hydrotheca; hydrophore expanding slightly to below hydrotheca. Hydrotheca shallow dish-shaped, expanding to margin, rim

strongly outrolled, diaphragm transverse, a row of desmocytes above, no marginal replications. Perisarc smooth, thin.

Measurements of *Halecium ?tenellum*, (µm)

Hydrocaulus, basal length	400–900
Hydrophore	
length below hydrotheca	80–520
width	48–60
Hydrotheca	
width at diaphragm	60–80
depth to diaphragm	20–22
width across margin	92–124

Remarks. Identification of *Halecium* to species level in closely similar species groups is difficult with infertile material. The present material is doubtfully referred to *H. tenellum*.

Distribution. Atlantic, Indian and Pacific Oceans, probably New Zealand. Not previously recorded from Australia.

***Halecium corpulatum* sp. nov.**

Figure 2A–F

Material examined. Holotype WAM Z31865, one microslide, malinol mount and remaining preserved material from holotype colony. Three sparsely fertile stems, probably fragmented colony.

Description. Hydrorhiza comprising tangled stolons becoming fascicular tubes of erect stem. Stems fascicled, thick, arborescent, almost planar, branching irregular from opposite to alternate, polysiphonic tubes reaching to base of ultimate branches.

Hydrophores arising from just below a hydrotheca, usually one but sometimes two opposite, one to six successive secondary hydrophores arising linearly from diaphragm of preceding hydrotheca. Hydrophores moderately long, cylindrical, increasing slightly in diameter to below hydrotheca, one to three proximal abcauline partial septa fading out on adcauline wall. One or two thickenings of perisarc at the base of a hydrotheca above junction with hydrophore.

Hydrotheca shallow dish-shaped, adcauline wall of primary hydrotheca closely adpressed to primary hydrophore, succeeding hydrothecae expanding smoothly from a transverse diaphragm to margin, a row of desmocytes just above diaphragm, sometimes a concave pseudo-diaphragm below. Margin everted and strongly outrolled, not replicated, ratio of depth of hydrotheca to diameter of margin 1:4–1:5.

Hydranth (preserved material) with a long conical or cylindrical peduncle with about 20 moderately long tentacles.

Gonotheca inserted on a very short pedicel within a hydrotheca, lenticular, wall smooth, perisarc thin, apex slightly pointed, no evidence of aperture. Gonophore probably male.

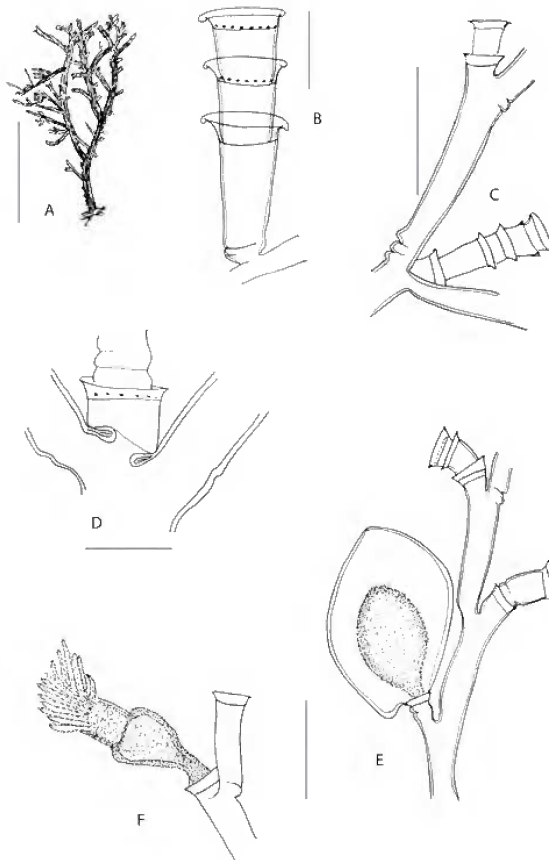


Figure 2A–F. *Halecium corpulatum* sp. nov. A, holotype colony. B, linear series of hydrophores. C, branching of stem. D, dichotomous branching of hydrophores from below a hydrotheca showing basal thickening below hydrotheca. E, male gonotheca. F, hydranth (preserved material). Scale bar, mm: A, 25. B, D, 0.2. C, E, F, 0.5.

Measurements of *Halecium corpulatum*, (μm)

Hydrophore, primary	
length	800–940
width	152–184
Hydrotheca	
width at diaphragm	140–180
diameter of margin	216–248
depth, diaphragm to margin	40–56
Gonotheca	
height	860
width	660

Remarks. The colony may have originally been much taller as it is broken off at the top. In many respects including the thickening at the base of many primary hydrophores *Halecium corpulatum* resembles *Hydrodendron sibogae* (Billard, 1929) but the absence of nematothecae places it in *Halecium*. The few gonothecae available for study do not resemble those of any large arborescent species such as *Halecium muricatum* (Ellis & Solander, 1786), *H. dichotomum* Allman, 1888 and *H. lankesteri* (Bourne, 1890). The gonothecae however, resemble Gibbons and Ryland's (1989) description of *Halecium sibogae* from Fiji; their specimen may well have been *H. corpulatum*.

While the unusually long skirt-like shape of the hydranth is probably an artefact of preservation the living hydranth nevertheless must have been extraordinarily large.

Etymology. Describes the large, corpulent hydranth.

Family Hebellidae Fraser, 1812

Hebella costata (Bale, 1884)

Figure 3A

Campanularia costata Bale, 1884: 56.– Stechow and Müller, 1923: 463.

Scandia corrugata Millard and Bouillon, 1973: 60.

Hebella muscensis Millard and Bouillon, 1975: 10.– Boero *et al.*, 1997: 22.

Hebellopsis costata.– Watson, 2000: 6, fig. 3A.

Hebella costata.– Watson and Vervoort, 2003: 64.

Material examined. WAM Z31866. Infertile colony on *Eudendrium racemosum*; microslide, malinol mounted.

Description. Hydrorhiza creeping on stem and branches of host. Hydrothecal pedicels variable in length, almost smooth and straight to gnarled, widening to base of hydrotheca. Hydrotheca tubular, straight to slightly bent, body with five to seven undulations becoming more pronounced distally, no diaphragm visible. Margin circular, transverse or slightly oblique to hydrothecal axis, rim weakly everted, not replicated.

Measurements of *Hebella costata*, (μm)

Pedicel	
length	176–440
maximum width	96–128
Hydrotheca	
length	800–1080
diameter at margin	460–600

Remarks. The material falls within the dimensional range of *Hebella costata* reported from Darwin (Watson 2000).

Distribution. Indian Ocean, Indonesia, tropical Australia.

Family Sertulariidae Lamouroux, 1812

Diphasia digitalis Busk, (1852)

Figure 3B, C

Sertularia digitalis Busk, 1852: 387, 393.

Diphasia digitalis (Busk).– von Lendenfeld, 1885a: 415, 633.– Bale, 1884: 101.– Bale, 1915: 265.– Jäderholm, 1920: 4.– Billard, 1931: 249.– Vervoort, 1972: 99.– Pennycuik, 1959: 191.– Millard, 1975: 257.– Watson, 1996: 78.– Watson 2000: 14, fig. 10A, B.– Schuchert, 2003: 166, fig. 25.

Material examined. WAM Z31867. Two broken infertile stems, the longer 22 mm; microslide, malinol mount.

Description. Hydrorhiza creeping, stolons tubular. Stems sparingly branched, proximal athecate stem segment long, tubular, with a strong distal hinge joint. Hydrothecae paired, one pair per internode, nodes transverse, indistinct to absent, marked only by a narrowing of internode. Hydrotheca long,

tubular, expanding from base to margin, free adcauline wall convex, abcauline wall concave. Margin quadrangular, with a low abcauline cusp and an indistinct longitudinal pleat extending downwards from margin, fading out near base of hydrotheca. Remains of operculae visible inside many hydrothecae. Perisarc smooth.

Measurements of *Diphasia digitalis*, (μm)

Internode	
distance between hydrothecae	1020–1300
width across hydrothecal base pair	256–384
Hydrotheca	
adcauline wall length adnate	800–840
adcauline wall length free	240–300
width across margin	264–296
width at floor	92–100

Remarks. The hydrothecae contain much adventitious matter presumably acquired during collection. The margins of most hydrothecae are damaged.

The specimens conform to previous descriptions of *Diphasia digitalis* from Australia (Watson 2000). The longitudinal hydrothecal pleat is inconspicuous and may be due to the young age of the colony.

Distribution. Circumglobal in tropical and subtropical waters. Australian distribution – Torres Strait (Busk 1852), Queensland (Pennycuik 1959), north–western Australia (Watson 1996, 2000).

Family Halopterididae Millard, (1962)

Halopteris glutinosa Lamouroux, (1816)

Figure 3D

Aglaophenia Glutinosa Lamouroux, 1816:171.

Plumularia glutinosa.– Billard, 1909: 327.– Billard, 1910: 36, fig. 16.

Plumularia buskii Bale, 1884: 125, pl. 10, fig. 3, pl. 19, figs 34–35.– Bale, 1887: 22.

Plumularia buski.– Billard, 1913: 21, fig. 11.

Halopteris buski.– Watson, 1973: 184.– Schuchert, 1997: 58, figs 18, 19.– Vervoort and Watson, 2003: 353.

Halopteris glutinosa.– Watson, 2005: 537, fig. 37A, B.

Material examined. WAM Z31868. One stem fragment 5 mm long, detached from substrate; microslide, malinol mounted.

Remarks. Billard (1913) recorded *H. glutinosa* (as *Plumularia buski*) from nine sites on sand, shell sand and *Lithothamnion* from depths of 13–522 m in Indonesia. A specimen from Japan (author's collection) is also *H. glutinosa*.

Distribution. Southern and south–western Australia, New Zealand, Indonesia and Japan.

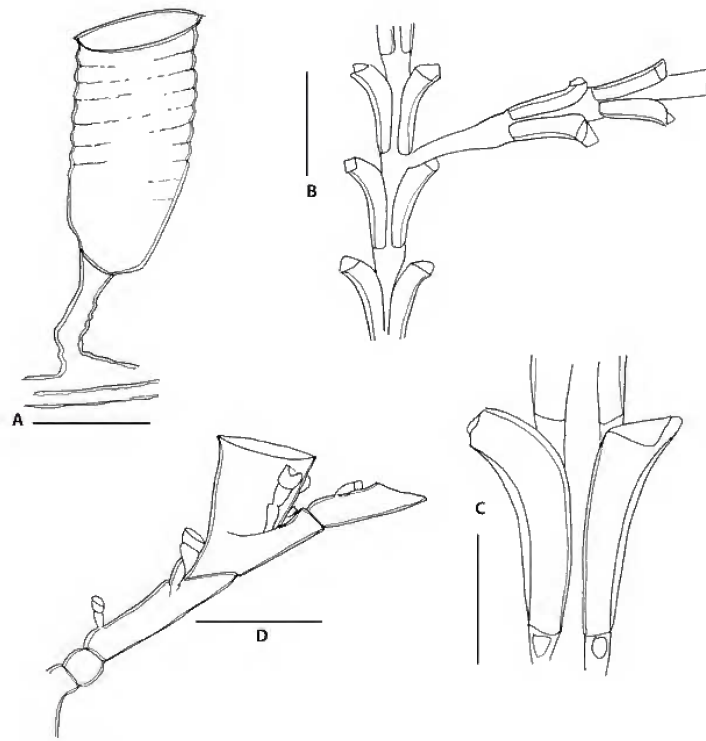


Figure 3A–D. A. *Hebella costata*. Hydrotheca with proximal corrugations. B, C. *Diphasia digitalis*. B, branched stem. C, stem internode with opposite hydrothecae. D. *Halopteris glutinosa*. Hydrocladial athecate and thecate internodes. Scale bar, mm: A, 0.5. B, 1.0. C, D, 0.25.

Family Plumulariidae McCrady, (1859)

Plumularia fragilia sp. nov.

Figure 4A–D

Material examined. Holotype, WAM Z31846, One infertile stem on *Lytocarpia delicatula* (Busk, 1852); microslide, malinol mounted.

Description. Hydrorhiza a tubular creeping stolon. Stems pinnate, slender, to 13 mm long, monosiphonic, proximal hydrocauline segment long, straight, athecate, following internodes long, cylindrical, nodes transverse, distinct, a slight tumescence below each node.

Hydrocladia distal on cauline internode, alternate, position not quite planar. Apophysis smooth, directed upward at an angle of about 45° to hydrocaulus, abcauline apophysial wall contiguous with cauline internode, adcauline wall concave with three deep septa, distal node transverse.

Hydrocladia with two or three hydrothecae, cylindrical, narrow, beginning with a proximal athecate internode with transverse proximal and oblique distal node, usually with indistinct internal supplementary proximal and distal septa. First athecate internode followed by alternate hydrothecate and athecate internodes; athecate internodes variable in

length, sometimes much longer than hydrothecate internode; hydrothecate internode long, straight with almost transverse distal node; nodes often with one or two internal septa.

Hydrotheca seated about halfway along internode, small, deep bowl-shaped, abcauline wall weakly concave to straight, adcauline wall weakly convex, completely adnate to internode, floor of hydrotheca transverse to hydrocladial axis, margin circular, oblique to hydrocladial axis, rim everted.

Nematothecae all of same shape and similar in size, bithalamic, moveable, slender conical, base long, cup wider than deep, margin circular, not excavated. One median nematotheca about halfway along athecate internode, one median inferior on hydrothecate internode well below base of hydrotheca, bases of twin laterals inserted just below hydrothecal margin; one or two nematothecae on cauline internode, standing out from internode, one about one third distance up internode from apophysis, the other two thirds distance up internode and on same side as hydrocladium, two nematothecae in axil, a bun-shaped hydrostatic pore at base of axillar nematothecae.

Colony colourless (preserved material), perisarc thin.

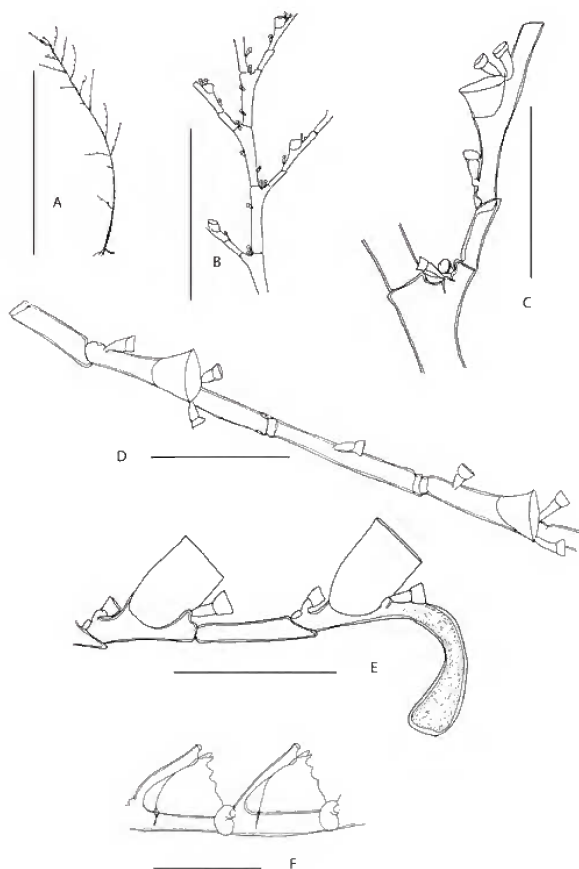


Figure 4A–E. A. *Plumularia fragilia* sp. nov., holotype colony. B, stem internodes and alternate hydrocladia. C, proximal part of hydrocladium and apophysis with axial nematothecae. D, hydrocladium with athecate and thecate internodes. E. *Plumularia bedoti*. Distal part of hydrocladium with developing anastomose. F. *Lytocarpia delicatula*. Two hydrocladial hydrothecae. Scale bar, mm: A 10. B, 1.0. C–F, 0.2

Measurements of *Plumularia fragilia*, (μm)

Hydrorhiza, width	40–56
Stem	
internode length	264–320
width at node	56–64
Hydrocladium	
apophysis, adcauline length	36–48
first athecate internode length	84–120
succeeding athecate internodes, length	220–260
thecate internode, length	248–284
width at node	24–36

Hydrotheca	
abcauline wall, length	40–46
width at margin	72–80
Twin lateral nematothecae	
length of base	42–52
depth of cup	10–14
width of cup	30

Remarks. *Plumularia fragilia* is a very small species. It closely resembles but is somewhat smaller than *Plumularia setacea* recorded from Darwin by Watson (2000). Stems are flaccid out of fluid. Cauline nematothecae may be absent leaving no scars on the internode

Descriptions of *Plumularia mossambicae* Millard, 1975, *P. Antonbruuni* Millard, 1967, *P. strobilophora* Billard 1913 and *P. orientalis* Billard, 1911 were compared with *Plumularia fragilia*. *P. mossambicae* is larger in dimensions, lacks cauline nematothecae, the abcauline hydrothecal wall is straight, and the margin is not everted. Millard's figure of *P. antonbruuni* shows differences in structure and is also larger in all dimensions than *P. fragilia*. *P. strobilophora* is closer in overall dimensions, but the hydrothecae are more bowl-shaped and have no marginal eversion. While *P. orientalis* also has an outrolled margin, its dimensions are larger than *P. fragilia*.

Etymology. The species is named to describe the fragility of the colony.

Plumularia bedoti Billard, (1911)

Figure 4E

Plumularia bedoti Billard, 1911: 64.– Billard 1913: 27.– Watson, 2000: 54, fig. 42A–D.

Material examined. WAM Z31847. Infertile stem fragment 13 mm long. Microslide, malinol mount.

Remarks. The material conforms with the description of *Plumularia bedoti* from Darwin (Watson 2000). The stem is lightly fascicled and there are distal anastomoses on the hydrocladia.

Distribution. Indonesia, tropical Australia (Darwin).

Family Aglaopheniidae Marktanner-Turneretscher, (1890)

Lytocarpia delicatula Busk, (1852)

Figure 4F

Plumularia delicatula Busk, 1852: 396.

Aglaophenia delicatula.– Bale, 1884: 167.– Kirkpatrick, 1890: 604.– Billard, 1913: 106.– Pennycuik, 1959: 185. – Watson, 2000: 57, fig. 46A–E.

Thecocarpos delicatulus.– Millard and Bouillon, 1973: 94.

Lytocarpia delicatula.– Schuchert, 2003: 235, fig.76.

Material examined. WAM Z31848. Several pinnate stems to 35 mm long, one stem fertile; microslide, malinol mounted.

Remarks. The material conforms with the description of *Lytocarpia delicatula* from Darwin by Watson (2000) and from Indonesia by Schuchert (2003). Male and female gonophores are borne on the same corbula.

Distribution. Maldives, Moçambique, Indonesia, tropical northern and eastern Australia.

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