

Two new species and a new record of hydroids (hydrozoa: hydroidolina) from Port Phillip, Australia

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Abstract

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A hydroid colony from Port Phillip, southern Australia, yielded two new species, *Sertularella eleganta* and *Bimeria lutea* and a new record of *Campanularia laminocarpa* Millard, 1966, previously known from South Africa. Four other known species were epizoic on *Sertularella eleganta*.

Keywords

Southern Australia, Port Phillip, *Sertularella eleganta* sp. nov., *Bimeria lutea* sp. nov., *Campanularia laminocarpa* Millard, 1966.

Introduction

A collection of hydroids made using scuba from the jetty at the historic site of South Channel Fort in Port Phillip, southern Australia, yielded a colony of a new species of *Sertularella* (*S. eleganta*), a new species of *Bimeria* (*B. lutea*) and a new record of *Campanularia laminocarpa* Millard, 1966, previously known from South Africa. Other species sparsely epizoic on the colony of *S. eleganta* were *Clytia hemisphaerica* (Linnaeus, 1767), *Obelia dichotoma* (Linnaeus, 1758), *Monothecha flexuosa* (Bale, 1894) and *Lafoeina amirantensis* (Millard and Bouillon, 1973).

The new species and new record are described. Type and voucher material is lodged in Museum Victoria (NMV F).

Sertularella Gray, 1847

Diagnosis. (Bouillon *et al.*, 2006). Colony erect, branched or unbranched, monosiphonic or polysiphonic, hydrocaulus and hydrocladia when present, with two longitudinal rows of hydrothecae, hydrothecal margin with four cusps, submarginal teeth present or absent, operculum pyramidal, composed of four triangular valves, retracted hydranth with abcauline caecum, gonophores as solitary fixed sporosacs, acrocysts in some species.

Sertularella eleganta sp. nov.

Figure 1A-F

Material examined. NMV F228240, holotype, colony initially 5% formalin preserved later transferred to alcohol; fertile colony on rock

in crevice 1m deep, coll: J.E.Watson, 22/3/2016. NMV F228241, microslide malinol mounted, from holotype colony.

Description. Hydrotheca comprised of narrow stolonal tubes reptant on concrete surface. Colony without definite main stem, branching from base, branches monosiphonic except proximally where some are lightly fascicled from upward-growing stolons which become primary branches. Branches straight, secondary branches given off irregularly from primaries below a hydrotheca at an angle of c. 45°. Branch internodes variable in length, an indistinct oblique node at junction of adnate and free hydrothecal adcauline wall, marked by an indentation and narrowing of perisarc. Proximal internode of secondary branch cylindrical, long to first hydrotheca.

Hydrothecae alternate, tubular, widely separated along branches, set at an angle of 40–50° to internodal axis, walls smooth, narrowing from base to margin. Hydrotheca widest at junction of adnate and free adcauline wall, adnate adcauline wall almost parallel to internodal axis, free adcauline wall slightly concave to straight, ratio of length of adnate to free adcauline wall 1:2, abcauline wall weakly convex to straight. Floor of hydrotheca short, transverse to internode with a small central foramen. Margin delicate with four equidistant cusps with shallow embayments between and four large thin internal submarginal cusps of similar shape and size below margin. Operculum of four very thin flaps. Hydranth too decomposed for description.

Gonothecae borne abundantly along lower to mid sections of branches, inserted singly on a short unsegmented pedicel

opposite a hydrotheca, facing obliquely upwards. Body of mature gonotheca elongate oval, variable in length with three to five broad corrugations, obscure proximally becoming more prominent distally, surmounted by a long narrow neck above distalmost deep corrugation, with four equidistant very long, sharp, often inwardly curved apical spines. Gonophores female, some extruded from gonotheca as acrocysts.

Perisarc moderately thin throughout. Colour in life pale yellowish-grey, stolons pale brown.

Table 1. Measurements (μm) of *Sertularella eleganta*

Branch	
internode length	520-800
width at node	160-184
length to first secondary internode	700-1000
Hydrotheca	
length of abcauline wall	440-480
length of adnate adcauline wall	280-320
length of free adcauline wall	576-650
width at margin	192-208
Gonotheca	
length overall	1400-1740
maximum width	680-880
length of neck	296-360
width of neck	168-232
length of apical spines	72-96

Remarks. The colony was growing in a sheltered crevice between concrete jetty footings in an oceanic strong current-flow habitat. The delicate flexuous perisarc suggests a deep water species. Many hydrothecae are infested with one or two large crustacean eggs.

The nearest congeners of *Sertularella eleganta* are *Sertularella robusta* Coughtrey 1876 and *Sertularella natalensis* Millard, 1968. *Sertularella robusta* is a very common southern Australian species occurring in the same habitat as *Sertularella eleganta* in Port Phillip. While similar to *S. robusta* the hydrothecae of that species are sometimes faintly rugose, and the gonothecae is more ridged and terminal spines are shorter. Colony morphology of *S. natalensis* differs from *S. eleganta* in the ratio of fixed:free wall and in striations on the hydrothecae. Although *Sertularella* is a genus with many species, no others have the same morphological, hydrothecal and gonothecal characters as *Sertularella eleganta*.

Etymology. The species name refers to the elegantly branched colony.

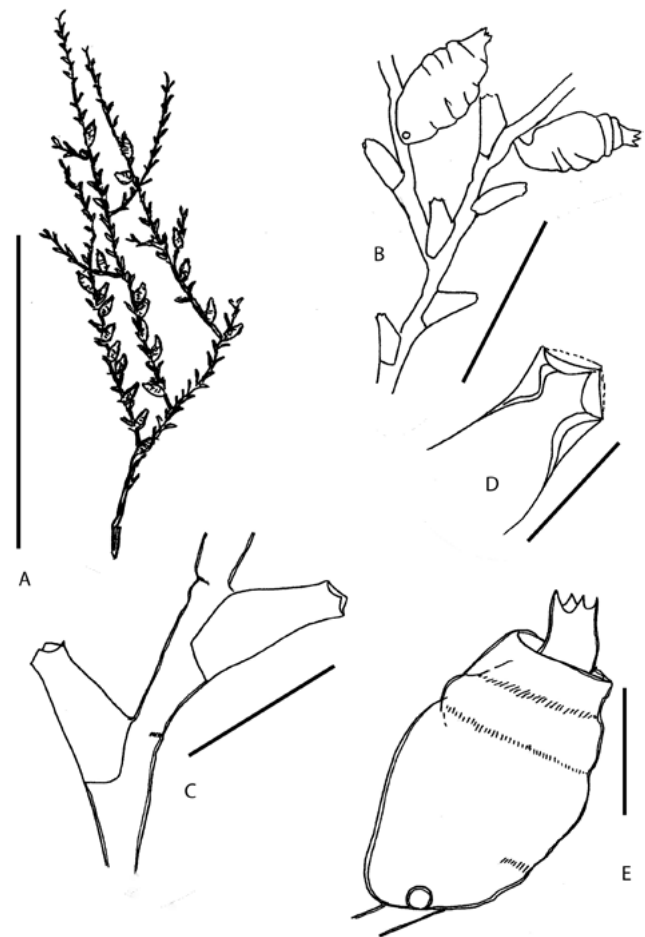


Figure 1A-E. *Sertularella eleganta* sp. nov. Holotype NMV F228241. 1A fertile branch. 1B, part of branch with gonothecae. 1C, branch internodes. 1D, submarginal hydrothecal cusps. 1E, gonotheca. Scale bar: 1A, 20 mm, 1B,C 2 mm, 1D, E, 0.5 mm.

***Bimeria* Wright, 1859**

Diagnosis. (Bouillon *et al.*, 2006). Colony stolonal or with erect branching hydrocauli, stem with firm perisarc enveloping hydranth, extending as a pseudohydrothecal sheath over proximal portion of tentacle, hydranth ovoid to vasiform, hypostome dome-shaped, one or two close whorls of tentacles, gonophores as fixed sporesacs.

***Bimeria lutea* sp. nov.**

Figure 2A-E

Material examined. NMV F228242 holotype, fertile colony alcohol preserved, epizoid on *Sertularella eleganta*, 1m deep, coll: J.E.Watson, 22/3/2016. NMV F228243, malinol mounted microslide from holotype colony.

Description. Colonies fertile, borne abundantly on lower branches of *Sertularella eleganta*. Hydrorhiza of tubular stolons reptant on host colony. Hydrocauli straggling, hydranths

borne on single pedicels or on sparsely and irregularly branched stems to 4-5 mm long (rarely 8 mm long). Stems and pedicels monosiphonic, thick, of same diameter as stolons, deeply annulated above junction with stolon and above and below each branch, annulations often fading into corrugations before becoming smooth. Branching predominantly of first order, occasionally second order.

Hydrothecae terminal on pedicels of variable length, hydrotheca vasiform (preserved), a pseudohydrotheca covering body, hypostome dome-shaped with 10-12 finger-shaped tentacles arranged in an untidy whorl below hypostome (live material), the pseudohydrotheca continuing as a thin gelatinous pellicle over proximal region of tentacles.

Gonophores male, elongate oval, arising singly on a short annulated pedicel from stem and branches, enclosed in a thick gelatinous sheath, spadix central, leaf-shaped, opaque.

Cnidome (from live material) clusters of nematocysts of two categories in transverse bands along tentacles, none discharged:

- microbasic euryteles, loaf-shaped, 4-5 x 8.5-9 μm ,
- desmonemes, droplet-shaped, 4 x 6 μm .

Perisarc very thick on proximal stem region; hydrocaulus, hydranth and gonophores invested with very fine sediment. Colour of colony in life: stolons pale brown, hydrocaulus and tentacles white, hypostome yellow, spadix of gonophore brown.

Table 2. Measurements (μm) of *Bimeria lutea*

Stolon, branch width	48-72
Hydranth	
length of pedicel	200-2000
length of body	160-180
maximum width	160-184
Gonophore	
length of pedicel	64-80
length	360-400
maximum width	112-200

Remarks. *Bimeria* is a genus of nine species (Bouillon *et al.* 2006), two of which are known from Australia. *Bimeria australis* Blackburn 1937 (redescribed by Watson 1978) is from the same southern Australian locality as *B. lutea*, and *Bimeria currumbensis* Pennycuik, 1959 is from tropical southern Queensland. The morphology of *B. lutea* fits with neither Australian species. Colonies of *B. australis* are not as abundantly rampant as those of *B. lutea*; they are buff-coloured with a wrinkled hydrocaulus and the stems stand erect from the substrate. *B. currumbensis* described from meagre infertile material by Pennycuik (1959) is a much larger species and lacks an annulated hydrocaulus.

Bimeria vestita Wright, 1859 is a known epizoite of sertulariid hydroids and has been described by Millard (1975), Calder (1988) and Migotto (1996); the type material was

re-examined by Marques *et al.* (2000). Differences between the various descriptions are such that it is likely that more than one species may be involved. The type as described by Marques *et al.* (2000) is much larger and more branched than *B. lutea*, the number of tentacles is greater, the nematocysts are smaller (probably due to shrinkage), the pedicels widen distally and those of the gonophore are longer. Millard (1975) mentioned but did not figure a branching male spadix in *B. vestita*; her material may be a different species, possibly more closely related to *B. lutea* than to *B. vestita*.

Etymology. The species is named for the yellow colour of the hypostome.

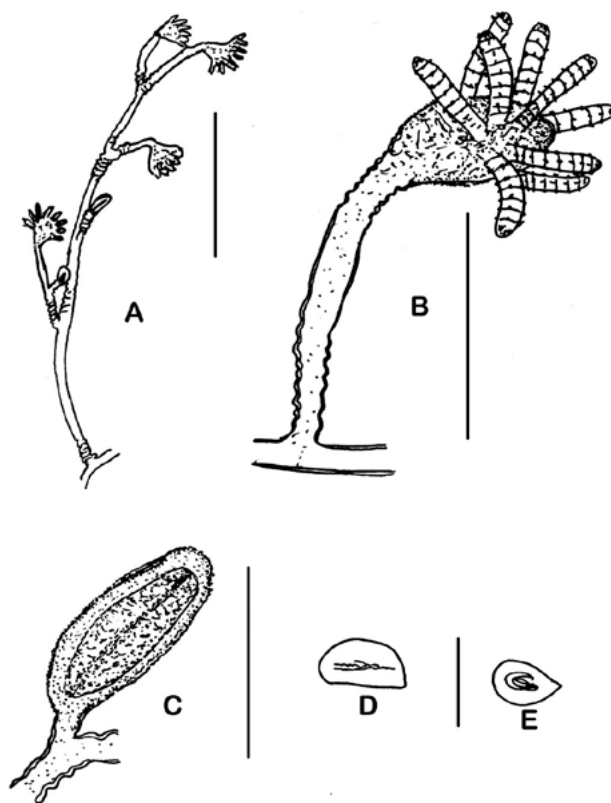


Figure 2A-E. *Bimeria lutea* sp. nov. (holotype colony NMV F228242). 2A, branched stem. 2B, pedicellate hydrotheca (from live material). 2C, male gonophore. 2D, microbasic eurytele. 2E, desmoneme. Scale bar: 2A, 2 mm. 2B, C, 0.3 mm. 2D, E, 10 μm .

Campanularia Lamarck, 1816

Diagnosis. (Bouillon *et al.* 2006). Colony stolonial, seldom erect and branched, hydrorhiza not anastomosing, hydrothecal pedicel unbranched, hydrotheca campanulate or bell-shaped with entire or cusped margin, demarcated from pedicel basally by a variously developed annular perisarcal thickening, hydrothecal walls with unthickened perisarc, not abruptly everted distally, true diaphragm absent, subhydrothecal spherule present, gonophores fixed sporosacs, gonotheca on hydrorhiza.

***Campanularia laminocarpa* Millard, 1966**

Figure 3A-E

Campanularia laminocarpa Millard, 1966: 211, fig. 67F-K
Clytia sp. Watson 1975: 158, fig. 1.

Material examined. Microslide NMV F228244, malinol mounted, from small infertile colony epizoic on *Sertularella eleganta* in crevice, 1m deep, coll: J.E.Watson, 22/3/2016. **Other Material:** NMV F228246 microslide, malinol mounted, fertile colony on *Syntheicum patulum* (Busk, 1852) on reef, North Arm Channel Western Port, 8m, coll: J.E. Watson 16/12/1996. NMV F228247 microslide, malinol mounted, fertile colony on *Syntheicum patulum*, reef, 2 km offshore from McGaurans Beach, Ninety Mile Beach, Bass Strait, 16m, coll: J.E. Watson 12/8/1983. Microslide (author's collection), malinol mounted, Fluted Cape, Tasmania, 15m deep, coll: J.E.Watson, April, 1975.

Description. Colony (NMV F228244) stolonial, hydrorhizal stolon tubular, reptant on *Sertularella eleganta*. Hydrocaulus pedicellate, unbranched, monosiphonic, pedicels variable in length and width, deeply annulated or spirally ringed throughout, rarely with smooth patches, pedicel terminating in a cushion-shaped shoulder supporting a spherule. Hydrotheca proximally narrow with a moderately long subhydrothecal chamber with shallow perisarcial distal ring, walls then widening to become parallel, sometimes expanding, circular in section. Margin not everted, with 8-10 long cusps separated by moderately deep and wide embayments, a slight thickening of perisarc below margin.

Gonothecae male [Western Port (NMV F228246) and Bass Strait (NMV F228247)], very large, campanulate, flattened, borne from hydrorhiza on a short unsegmented pedicel, held obliquely away from host, perisarc smooth without ornamentation, aperture occupying entire distal margin, sealed by a thin dome-shaped operculum torn aside at maturity. Perisarc thin and transparent throughout, gonotheca fragile and easily collapsed.

Table 3. Measurements (μm) of *Campanularia laminocarpa*

Pedicel	
length	400-680
width	36-40
Hydrotheca	
length overall	368-464
width at margin	128-168
width at diaphragm	44-56
depth of subhydrothecal chamber	36-40
diameter of spherule	40-44
length of cusp	40-48
Gonotheca	
length including pedicel	1400-2000
width of margin	800-900

Remarks. I have compared several specimens of *Campanularia* epizoic on *Syntheicum patulum* (Busk, 1852) collected over many years of scuba diving from the southern Australian localities of Western Port, Bass Strait and Tasmania with a specimen *Campanularia laminocarpa* Millard, 1966 (gift to author from Millard in 1985). Although the size, shape and dentition of the hydrotheca varies within Australian localities, morphology and dimensions of the gonothecae clearly establishes the Australian material as *C. laminocarpa*. Minor morphological differences between the South African and Australian material such as hydrothecal marginal replication of the South African species replaced by submarginal thickening in the Australian material may be due to environmental factors or colony maturity. The weak perisarcial thickening at the junction of the subhydrothecal chamber with the body, commented upon by Millard (1966), is present in some Australian hydrothecae and can be mistaken for a diaphragm (see Watson 1975: 158). The hydrothecal margins of the present specimens of *C. laminocarpa* are very fragile and easily collapsed, resulting in changes in apparent shape of the cusps in mounted specimens.

The small infertile colony on branches of the *Sertularella eleganta* host is intergrown with *Clytia hemisphaerica*.

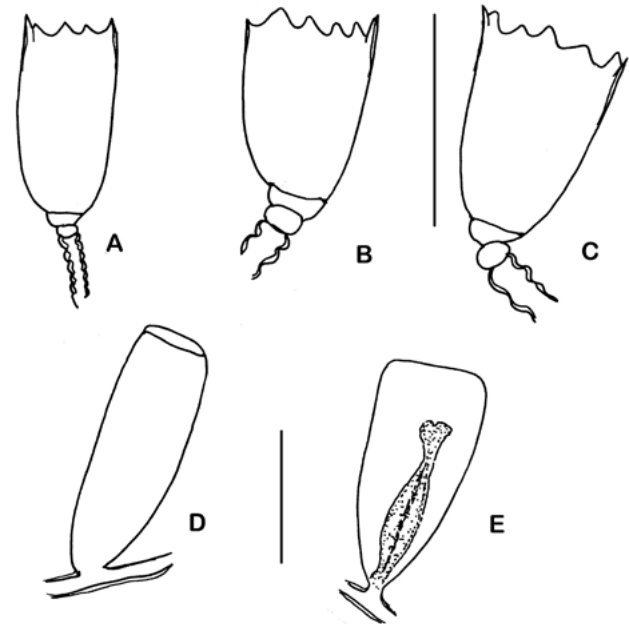


Figure 3A-E. *Campanularia laminocarpa*. 3A (NMV F228244), hydrotheca from *Sertularella eleganta*, South Channel Fort. 3B, hydrotheca (NMV F228246) from colony on *Syntheicum patulum*, North Arm Channel, Western Port. 3C, hydrotheca (NMV F228247) from colony on *Syntheicum patulum*, off Ninety Mile Beach, Bass Strait. 3D, E, gonothecae from colony, Ninety Mile Beach, Bass Strait. Scale bar: 3A-C, 0.3 mm. 3D, E, 1.0 mm.

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