BRYOZOANS

BRYOZOANS ASSOCIATED WITH ALGAE COLLECTED AT THE STATE HERBARIUM OF S. AUSTRALIA AND FOUND ON SETTLEMENT PLATES USED FOR ENVIRONMENTAL SURVEYS

R. N. Baldock 2024

WHAT ARE THEY?

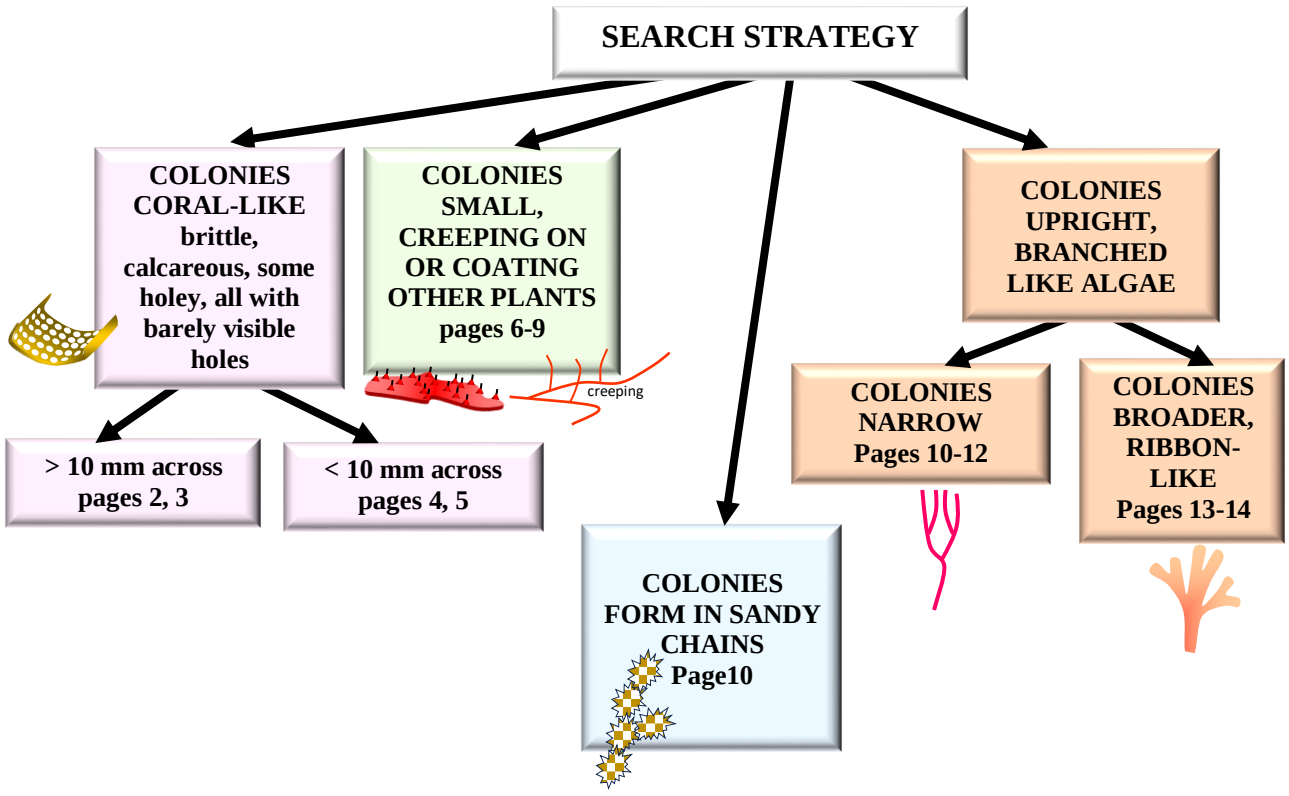
- bryozoans often grow on host plants (as epiphytes) or animals (as epizoites) in marine habitats.
- some resemble algae, some resemble hydroids.
- individuals (called zooids) always occur in colonies of branched stalks ***or*** fan-shaped flexible straps ***or*** flat or convoluted brittle plates or discs. Each zooid has a U-shaped gut and bunch of tentacles at the mouth. Unlike Hydroids which they often resemble, there are ***no stinging cells*** on the tentacles.
- bryozoans may be naked or found in cups (zoothecae) made of flexible material or are hard and calcified. Cups may have prominent lids and spines.

THE ILLUSTRATIONS BELOW

- bright images are from backlit specimens, those that are blue-coloured have been stained to emphasize features
- for the larger colonies a 10 cent piece is used as a scale. It is 24 mm or about an inch in diameter
- some identifications will require the use of a microscope. Use of a hand lens to view zoothecae is advisable

NAMES

- bryozoans specifically associated with algae can also be found under the Webpage "***Algal intimates***"
- identifications use Bock, P. E., *Bryozoans (Phylum Bryozoa)* ***in*** Shepherd S. A. & Thomas, I. M. (1982). *Marine Invertebrates of South Australia. Part I*. Adelaide, Government Printer.
- an extensive illustrated treatment of bryozoans is in Gowlettt-Holmes, K (2008) *A field guide to marine invertebrates of South Australia.* Sandy Bay, Tasmania, Notomares. It is good for identifying larger types viewed in their natural underwater habitats.
- common names come from Edgar, J. (2008) Australian Marine Life, the plants and animals of temperate waters. Sydney, New Holland
- The https://www.bryozoa.net/ site of Bock is useful to check on recent information including name changes.



COLONIES CALCAREOUS, CORAL-LIKE > 10 mm ACROSS

Lanceopora obliqua
as *Parmularia* in Edgar 2008
(Little fan bryozoan)

Colonies about 5 cm high, of a stony, (calcified) fragile orange disc with radiating lines of zooids at the end of a soft, transparent stalk. Colonies may cluster and are ***often in sand***

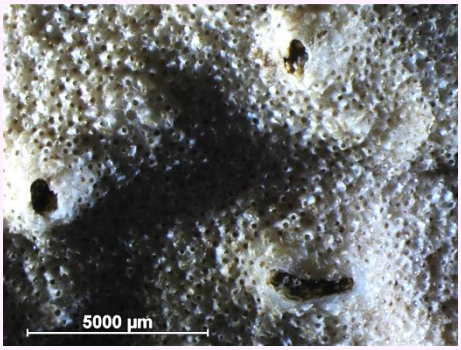
off Glenelg tyre reef. Photo: D Muirhead

Celleporaria cristata†

Colonies commonly on stems of seagrasses, stony (calcified) but fragile, about 50 mm across, lobed. Individual zooids occur on both sides of the colony, minute spines protruding from the surface Collected at Whyalla SA,

Celleporaria ?foliata†
(Nippled bryozoan)

Colonies lobed, individual zooids on both sides of the colony, minute spines protruding from the edges of zooid cups. Bumps with apical openings are scattered on surfaces. Collected at Whyalla SA. 2010



†**acceptable names for species in the genus *Celleporaria* continue to be problematic**

Adeona grisea

as *Petralia undata* i***n*** Shepherd (1982)
(Black sieve bryozoan)

colonies fragile, rarely collected whole; punctured with holes. Specimen from Whyalla SA, 20006

Triphyllozoon umbonatum

(Lace coral)

colony rippled and perforated

underwater image: D Muirhead

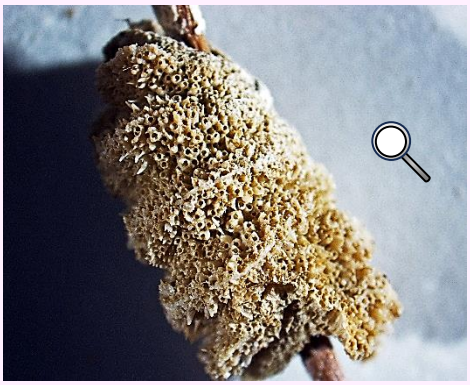
COLONIES CALCAREOUS, CORAL-LIKE <10 MM ACROSS

found also in "***Algal intimates***"

Lichenopora echinata
(Prickly bryozoan)

immature colony of calcified *Lichenopora* on a settlement sheet, Pt Bonython SA, 2008.
Tubes, spiny at their openings, radiate from the centre of the colony.

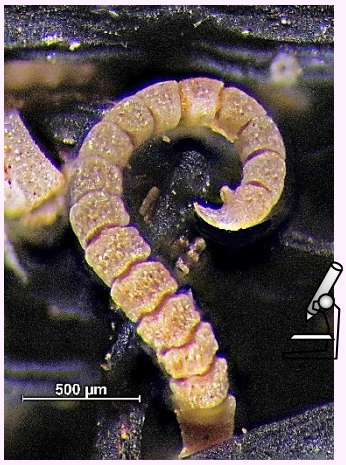
Celleporaria cristata



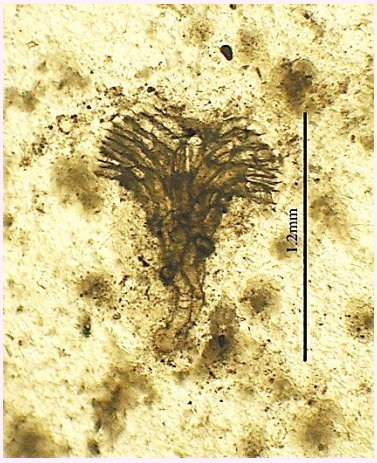
two magnifications of colonies wrapped around a seagrass stem – ***no gap*** between colonies

Diploporella alata
as *Thairopora cincta* in Shepherd (1982)

Above and right:
two magnifications of ring-shaped colonies encircling a stiff, straight seagrass stem - ***slight gaps*** between colonies



Above:
colonies on the curved, flexible lateral of the Brown alga, *Acrocarpia*



colonies consist of a flat basal plate and erect tree-like part.

Left: immature colonies of calcified *Diaperoecia* scattered on settlement sheets, Pt Pirie SA, 2004

Centre: basal plate of a colony, the erect section of the colony (arrowed) just appearing

Far right, above: detail of basal plates and slightly more advanced erect parts of colonies

Far right, below: erect part of a young colony detached from its basal disc

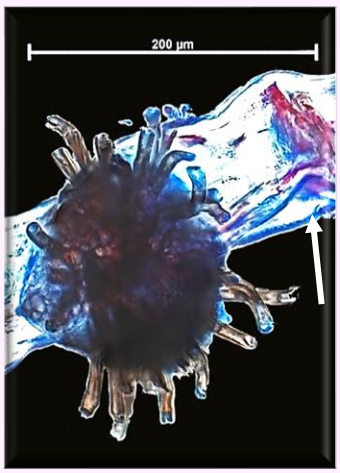
Diaperoecia

Mesonea

Mesonea radians from Pt Pirie 2003 on a settlement sheet (with a colony of *Microporella* in the background)

colonies tree-like, stony (calcified). Zooids alternate in 2 rows inside fine tubes protruding from the colony surface

Tubulipora



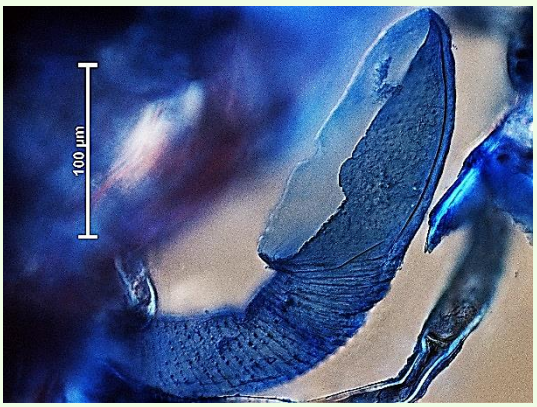
immature colony of *Tubulipora* from Pt Bonython 2008, attached to a sea grass stem.
Zooids form erect. calcified tubes

Tubulipora from Pt Pirie 2006.
The colony flat, calcified, radiating ***fan-shaped*** branches of erect well-separated zooid tubes

?young colony attached to a filament of the Red alga, *Camotagnea oxyclada* (arrowed)

COLONIES SMALL, CREEPING ON OR COATING OTHER PLANTS

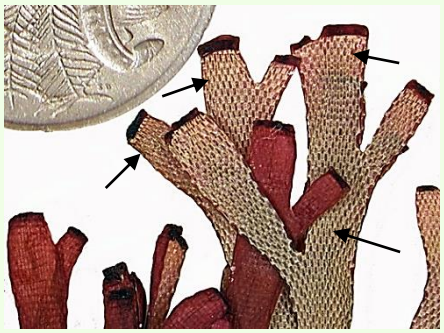
found also in "***Algal intimates***"

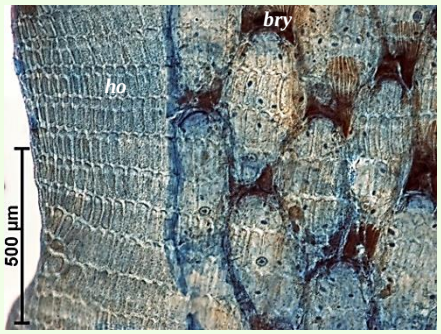


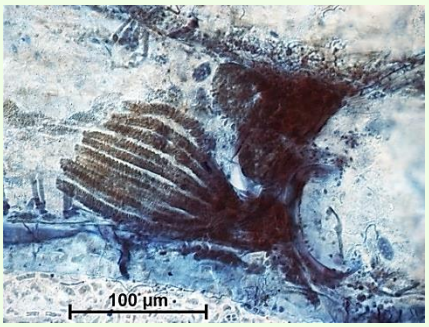
Aetea anguina

*Aetea anguin*a on the Brown alga, *Zonaria angustata*, Pt Pirie 2003,
tube vertical, hooked and ringed (annulated); the swelling at the end has extremely fine pits

Bathypora nitens
Usually associated with the Red alga *Amansia*





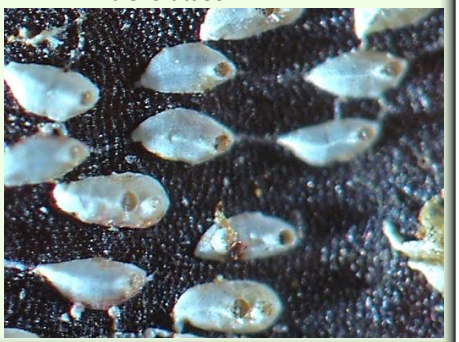


Left: Red alga *Amansia pinnatifida* showing bright red, uncoated surface of fronds, contrasting the surfaces coated with *Bathypora* colonies (arrowed)
Centre: detail of rows of cells of the host, *Amansia* (***ho***) and the bryozoan zooids of *Bathypora* (***bry***)
Right: a single zooid with extended tentacles

Below, left: colonies spreading over the Brown alga *Lobophora*

Beania

Below, centre and right: detail of zooids connected by a short tube



Corbulella ?corbula

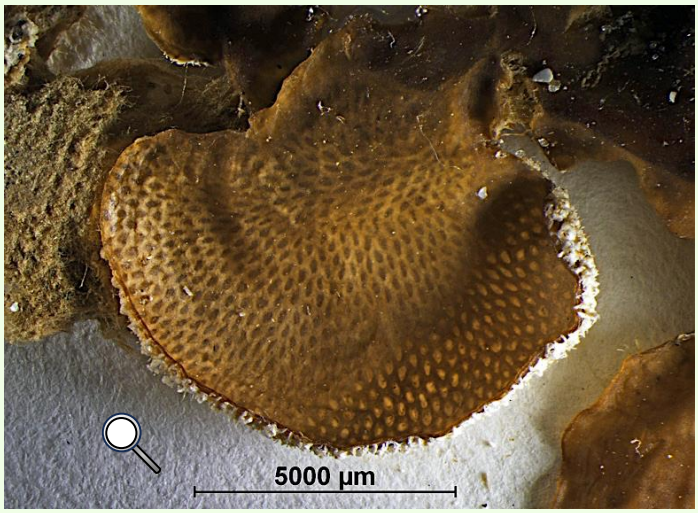
Corbulella corbula (previously *Crassimarginatella*)
Left:
surface view of a colony on a plastic settlement sheet
Above and right: detached zooids from Point Bonython, SA 2008
characteristic spines – ones bordering the zooid and others arching spines over the surface of the zooid chamber

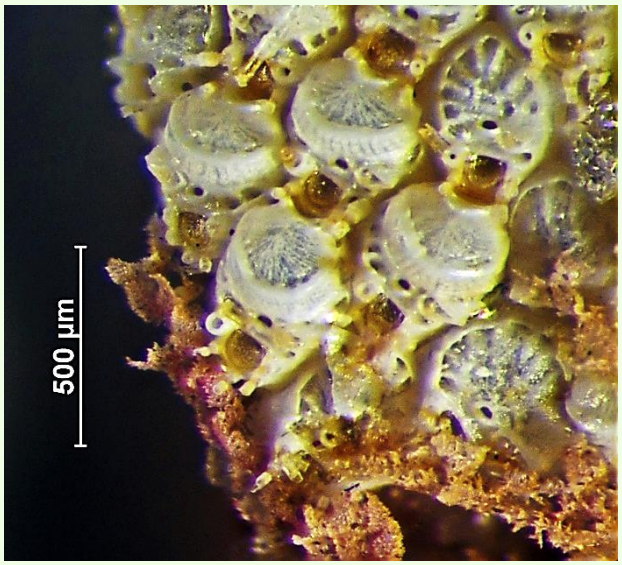
Emma

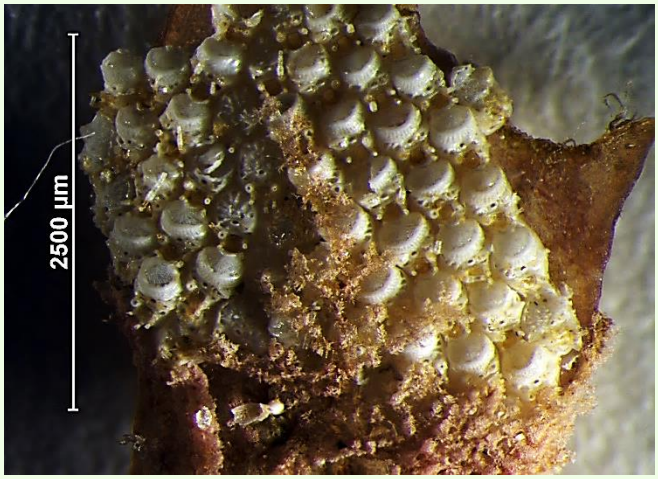
triangular zoothecae alternate in groups of 2-3, connected by flexible, tubular joints,
found on the flat blade of the Brown alga *Zonaria*

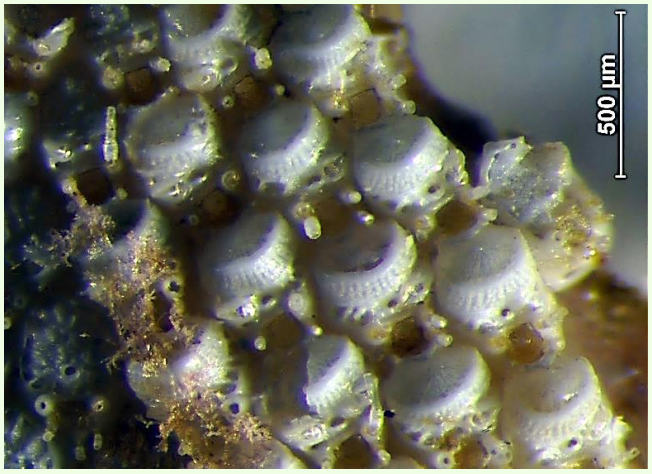
COLONIES FORM PLATES OR FLAT COATINGS ON SUBSTRATES

Calloporina diadema



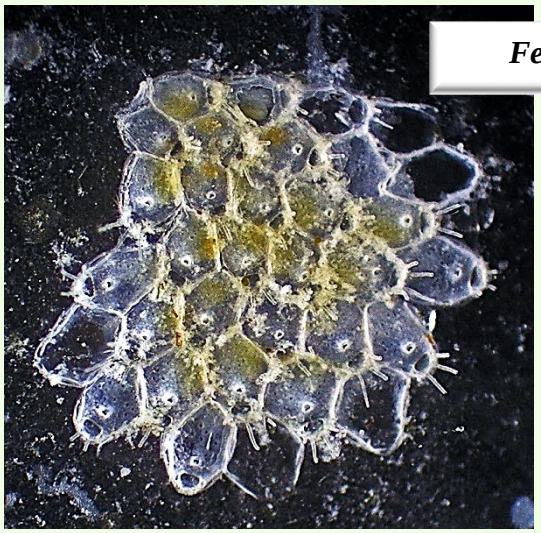






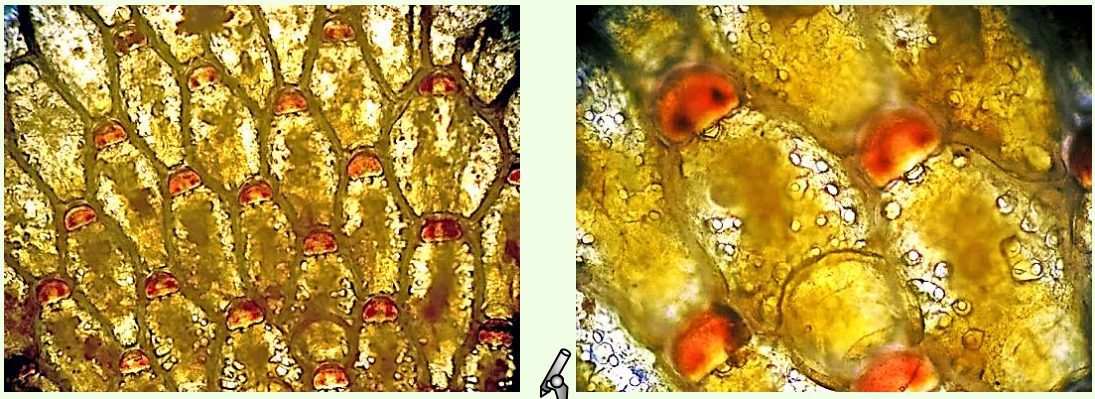
This bryozoan forms thin plates on the Red alga *Sonderopelta coriacea.* Individual zooids protrude from the surface of the plate, pencil-like tubes projecting from their sides. Zooids have a ***prominent collar*** punctured with ***rows*** of minute holes

Fenestrulina



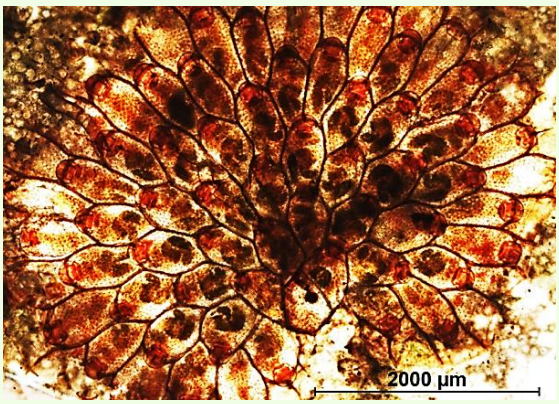
Immature colony of *Fenestrulina*
settlement sheet Pt Pirie SA, 2007 (with darkfield and normal transmitted light to emphasize the features)
Colony generally single-layered, spreading, composed of 5-sided zooids. Openings may have up to 5 spines

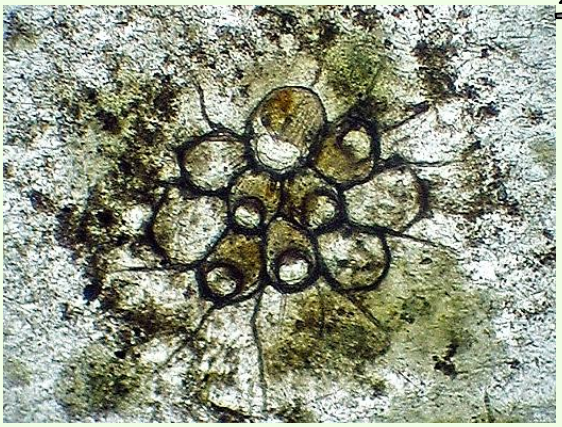
Microporella

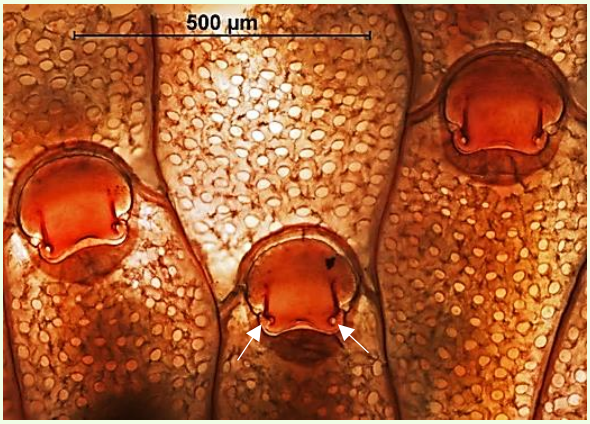


Microporella ciliata
single layer of closely-packed zooids with coloured lids and vertical rows of relatively large pores

**Watersipora arcuata*







Colonies flat, single layered, zooids radiating. Zooid frontal wall highly perforate
Each zooid has a valve with prominent “hinges” (arrowed) and frontal surface with many pores
This is a common introduced fouling organism of boat hulls and harbour facilities

COLONIES FORM IN SANDY CHAINS

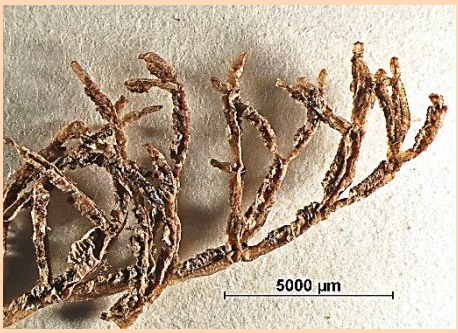
Cryptopolyzoon wilsoni

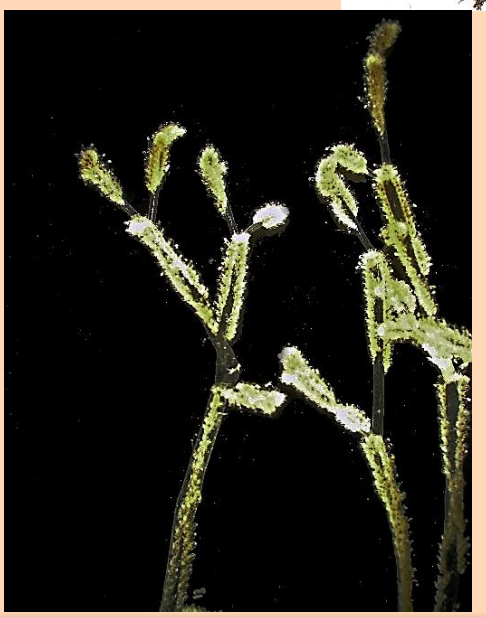
Colonies, consisting of branching chains of nodules connected by narrow tubes, are ***covered with sand grains*** obliterating the presence of individual zooids Common on algae, rocks and other bryozoans

COLONIES UPRIGHT, BRANCHED LIKE ALGAE

branches narrow

Amathia



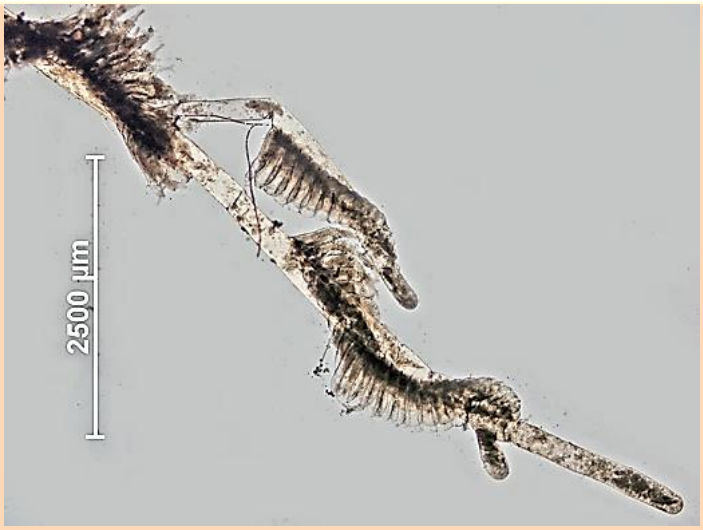


Above: *Amathia biseriata*, dried specimen, Garden I., Port Adelaide estuary, March 2007

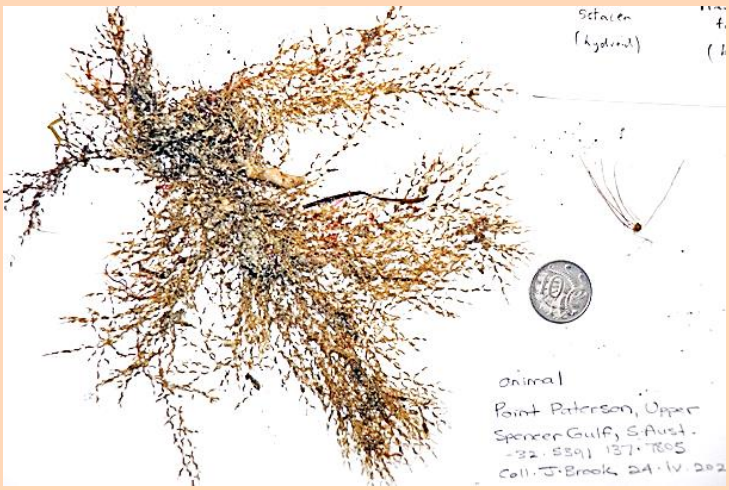
Left fresh material in two scales: colonies tree-like, ***not calcified***, zooids transparent, clustered together in ***2*** straight rows along branches in this species

Amathia continued next page

Amathia (continued)



Left: *Amathia tortuosa*, Garden I., Port Adelaide estuary, 2007; Pt Paterson upper Spencer Gulf SA 2002
Centre: Colonies bushy, ***not calcified*** to 10 cm high, light brown, or coloured by encrusting Red algae
Right: Zooids joined together in linear groups (***twisted*** in this species) along the branch



Amathia verticillata
previously
Zoobotryon verticillatum

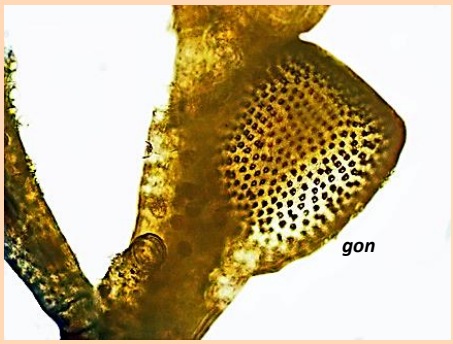
specimen, from Pt Pirie, SA 2006
Colonies can be large, up to 50 cm high, bushy, ***transparent***.
Zooids bunched, in 2 rows, separated from each other.

This is a nuisance ***fouling organism*** of boat hulls, pipes and solid structures.

Catenicella ?buskii

colony flimsy, flat branched, flexible, to 40 cm high.
Zooids connect end-to end (in chains - are concatenated)
Two enlarged single, detached zooids are

Crisia acropora

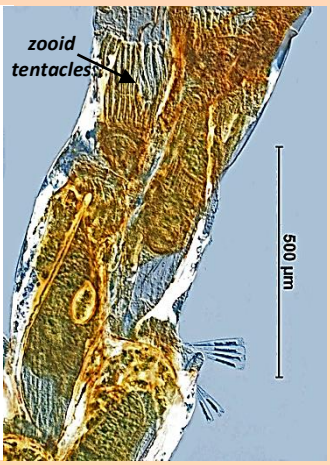


colony of calcified sections (internodes) about 2 mm long, with narrow, flexible joints (nodes, arrowed)
Each section has about 8-10 zooids in 2 opposite rows
Reproductive individuals (gonozooids, ***gon***) large, goblet-shaped very different to the feeding zooids

Dimetopia

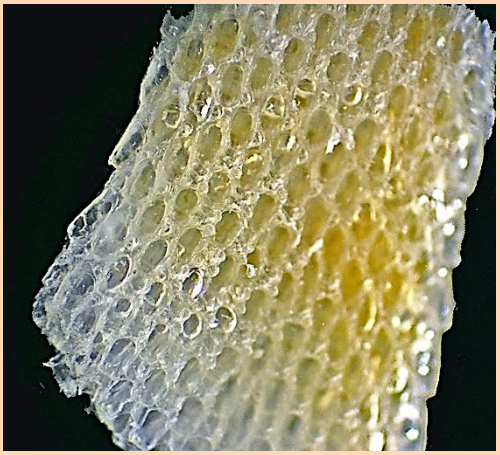
colonies transparent, erect, and fork at the upper part of zooids; several spines ring the openings of zooids. Found on algae at Pt Stanvac, SA 2008

COLONIES UPRIGHT, BRANCHED LIKE ALGAE
branches broader, ribbon-like



Bugula neritina

colony brown purple, to 80 cm branches flat., zooids alternating in ***two*** longitudinal rows.
This is a serious ***fouling organism*** found worldwide.



Bugularia dissimilis
(flat-branched bryozoan)

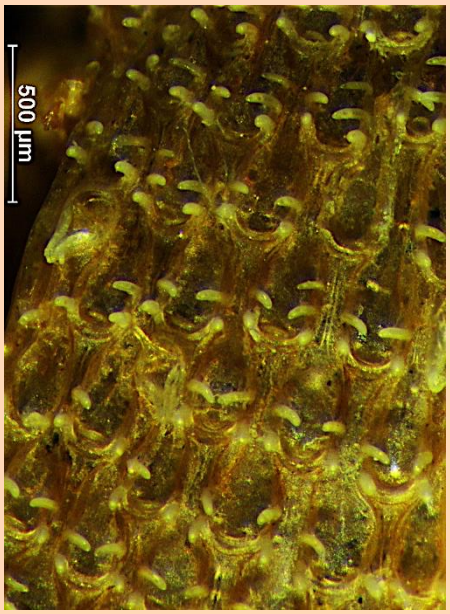
colony to 100 mm high, bushy, flexible and flat, zooids in ***many*** longitudinal rows

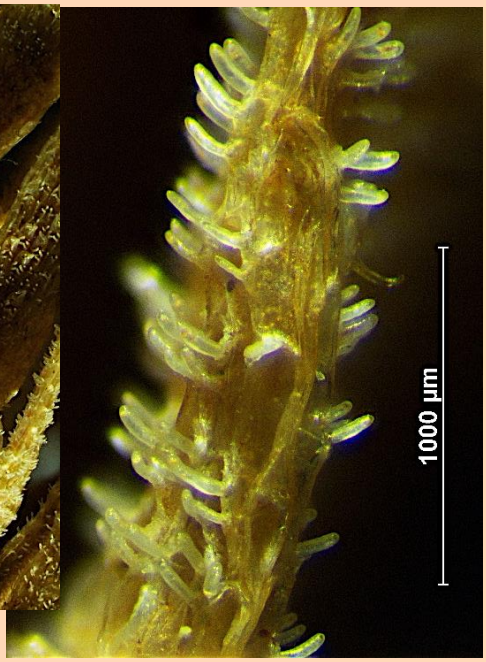
Hincksinoflustra denticulata

drift specimen from Kent Reserve, Encounter Bay SA. Collected by B Smart, 14.ix.2024.

Hincksinoflustra continued next page

Hincksinoflustra continued





zooids on both sides of flat, orange, ribbon-shaped branches,
oval zooid cups in rows with 5 finger-like spines around the periphery

SPECIES ILLUSTRATED ABOVE

species	author	page	previous name
Adeona grisea	Lamouroux, 1812	3	*Petralia undata*
Aetea anguina	(Linnaeus, 1758)	6	
Amathia biseriata	Krauss, 1837	10	
Amathia tortuosa	Tenison Woods, 1879	11	
Amathia verticillata	(della Chiaje, 1822)	11	*Zoobotryon verticillatum*
Bathypora pinnatifida	(Hincks, 1880)	6	
Bugula neritina	(Linnaeus, 1758)	13	
Bugularia dissimilis	(Busk, 1852)	13	
Calloporina diadema	(MacGillivray, 1869)	8	
Catenicella ?buskii	Wyville Thomson, 1858	12	
Celleporaria foliata	(MacGillivray, 1888)	2	
Celleporaria cristata	(Lamarck, 1816)	2, 4	
Corbulella ?corbula	(Hincks, 1880)	7	
Crisia acropora	Busk, 1852	12	
Cryptopolyzoon wilsoni	(Dendy, 1889)	10	
Diaperoecia		5	
Dimetopia		12	
Diploporella alata	(Lamouroux, 1821)	4	*Thairopora cincta*
Emma		7	
Fenestrulina		8	
Hincksinoflustra denticulata	(Busk, 1852)	14	
Lanceopora obliqua	(MacGillivray, 1869)	2	*Parmularia obliqua*
Lichenopora echinata	(MacGillivray)	4	
Mesonea radians	(Lamarck, 1816)	5	
Microporella		9	
Triphyllozoon umbonatum	(Hincks, 1878)	3	
Tubulipora		5	
**Watersipora arcuata*	Banta 1969	9	