PHYLUM: BRYOZOA

Authors

Wayne Florence[1] and Lara Atkinson[2]

Citation

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[1] Iziko Museums of South Africa, Cape Town
[2] South African Environmental Observation Network, Egagasini Node, Cape Town

Phylum: BRYOZOA

Lace/Moss animals

Bryozoans are sessile, colonial animals that may be found in most marine habitats, with a few freshwater species.

Commonly referred to as "moss animals" or "false lace-corals", bryozoans are, by nature of their diverse colony morphologies, often mistaken for more primitive taxa such as seaweeds, sponges or corals. Colonies can differ in size and form, ranging between calcified coral-like masses of twisted plates or encrusting sheets, lightly calcified fans and bushes, or gelatinous bushy masses. Each colony is comprised of small functional zooids that are less than 1 mm in length. Zooids vary in function and structure. Autozooids are specialised for feeding the colony, avicularia may defend the colony and gonozooids play a role in reproduction. It is the ultra-structural character of these zooids that is critically diagnostic for bryozoan identification and, as a consequence, colony morphology alone is largely unreliable for species-level determination.

There are approximately 5 000 known species of bryozoans. The latest South African checklist reports 288 species in South Africa. The marine species are classified in the orders Cyclostomatida, Ctenostomatida and Cheilostomatida. In the very basic sense the orders can be distinguished as follows:

Order Cyclostomatida

Colonies may be encrusting or erect with zooids that are commonly long and tubular. Reproductive swellings known as gonozooids are common.

Order Ctenostomatida

Colonies may be encrusting or erect with zooids that are simple and zooidal walls that are membranous or gelatinous.

Order Cheilostomatida

Colonies may be encrusting or erect with zooids that are simple and zooidal walls that are calcified, flexible or rigid.

Collection and preservation

Shortly after collection, specimens should be photographed with an appropriate scale/ruler captured in the photograph.

The following information should be recorded:

- Colony growth form – and whether whole or fragmented
- General surface information
- Consistency
- Size (dimensions)
- Colour – *in situ*/freshly collected
- Substrate type and attachment
- Associated biota

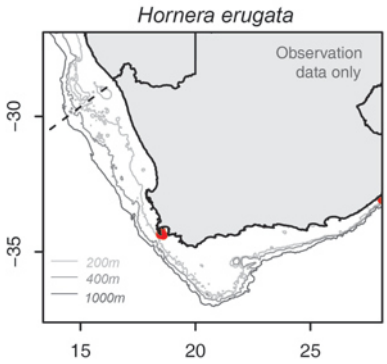
Bryozoa specimens can be frozen or placed in 70% ethanol for storage and 96% ethanol for molecular studies. In the case of larger colonies, a piece can be collected with the complete colony being photographed.

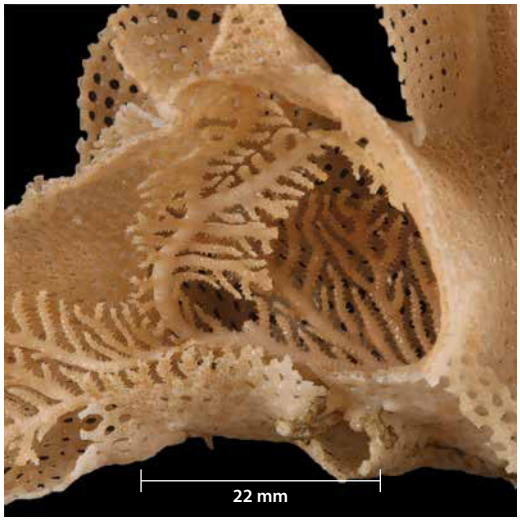
References

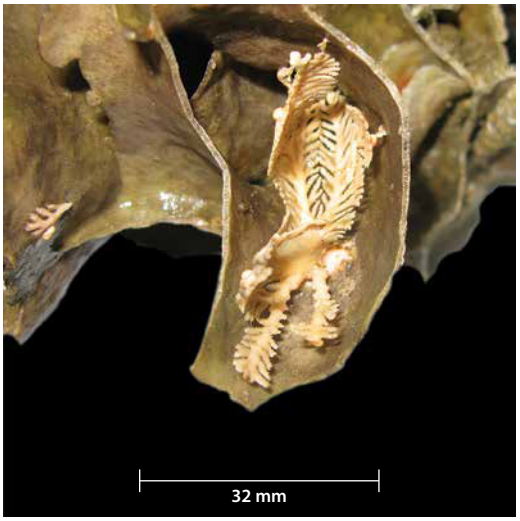
Bock PE and Gordon DP. 2013. Phylum Bryozoa Ehrenberg, 1831. In: Zhang Z-Q (Ed.) Animal Biodiversity: An Outline of Higher-level Classification and Survey of Taxonomic Richness (Addenda 2013). *Zootaxa*, 3703, 67-74. http://dx.doi.org/10.11646/zootaxa.3703.1.14

Hayward PJ and Ryland JS. 1999. Cheilostomatous Bryozoa. Part 2. Hippothoidea – Celleporoidea. *Synopses of the British Fauna* (New Series) 14: 1-416 (Barnes RSK and Crothers JH, editors). Field Studies Council, Shrewsbury.

Hornera erugata (HorEru)	
Phylum:	Bryozoa
Class:	Stenolaemata
Order:	Cyclostomatida
Family:	Horneridae
Genus:	*Hornera*
Species:	*erugata*
Common name:	Brittle tree bryozoan







Distinguishing features

Erect, delicately calcified and branching. Forms curved tree-like branches with secondary branches emanating from a central tubular main branch. Tubular zooids protrude from the frontal surface (usually facing away from substratum), while the basal surface is smooth in this species. Commonly epizoic on other bryozoans and hard substrata.

Colour

Off-white.

Size

Branches may be 50-100 mm in length.

Distribution

Endemic. Occur at depths of 35-90 m on the West, South and East Coasts of South Africa.

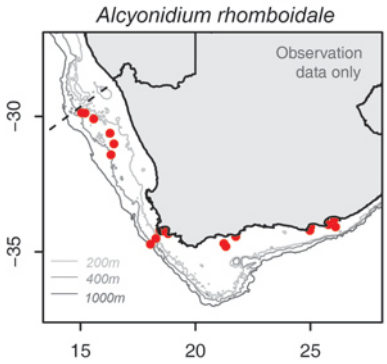
Similar species

H. americana (West Coast) and *H. pluraramusii* (South Coast) appear similar, but can only be distinguished by examining fine details.

Reference

Hayward PJ and Cook PL. 1983. The South African Museum's Meiring Naudé Cruises. Part 13, Bryozoa II. *Annals of the South African Museum* 91: 1–161.

Alcyonidium rhomboidale (AlcSpp)	
Phylum:	Bryozoa
Class:	Gymnolaemata
Order:	Ctenostomatida
Family:	Alcyonidiidae
Genus:	*Alcyonidium*
Species:	*rhomboidale*
Common name:	Rubbery bryozoan



Distinguishing features
Erect or semi-erect, flexible, fleshy/gelatinous mass of lobes. Zooids can be found on both sides of the lobes and have a rhomboid shape.

Colour
Yellow to brown.

Size
Colony may be 150 mm in diameter.

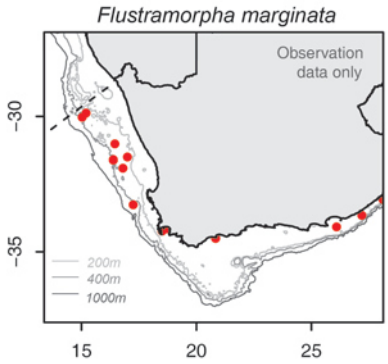
Distribution
Endemic. West Coast from north of Cape Columbine to the South Coast, Agulhas Bank. From 5 m to 400 m depth.

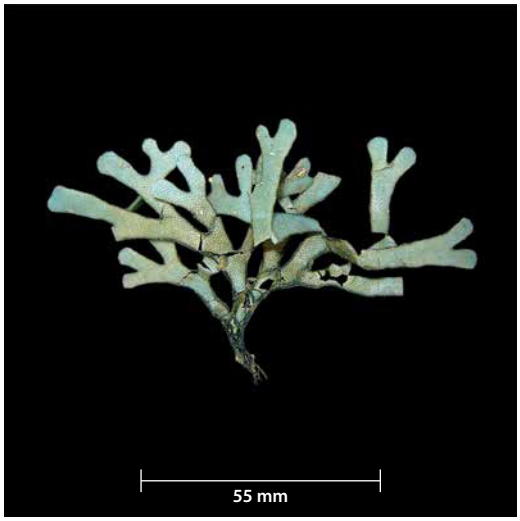
Similar species
Alcyonidium chondroides is not as robust, with thinner, strappy, translucent fronds.

Reference
Florence WK, Hayward PJ and Gibbons MJ. 2007. Taxonomy of shallow-water Bryozoa from the west coast of South Africa. *African Natural History* 3: 1–58.

Flustramorpha marginata (Bryzo3)

Phylum:	Bryozoa
Class:	Gymnolaemata
Order:	Cheilostomatida
Family:	Microporellidae
Genus:	*Flustramorpha*
Species:	*marginata*
Common name:	Green strappy-tree bryozoan





Distinguishing features
Erect, forming lightly calcified, flexible, narrow, strappy fronds that branch dichotomously. Margins and internodes on the face of the fronds are thickened, attached to substrate by a holdfast.

Colour
Blue-green.

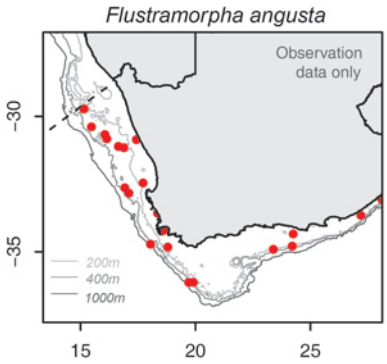
Size
Branches may be 50-100 mm in length.

Distribution
Endemic. West Coast from False Bay to South Coast, Algoa Bay in South Africa. From 29 m to 450 m depth.

Similar species
F. angusta and *Securiflustra securifrons* may appear similar, but *F. marginata* is distinguished by its blue-green colour.

References
Hayward PJ and Cook PL. 1983. The South African Museum's Meiring Naudé Cruises. Part 13, Bryozoa II. *Annals of the South African Museum* 91: 1–161.

Flustramorpha angusta (FluAng)	
Phylum:	Bryozoa
Class:	Gymnolaemata
Order:	Cheilostomatida
Family:	Microporellidae
Genus:	*Flustramorpha*
Species:	*angusta*
Common name:	Fragile strappy-tree bryozoan



Distinguishing features

Similar to *F. marginata*: erect, forming lightly calcified, flexible, narrow, strappy fronds that branch dichotomously. However, this species is less robust and cream to light brown in colour. Margins and internodes on the face of the fronds are thickened, attached to substrate by a holdfast.

Colour

Cream to light brown.

Size

Branches may be 50-100 mm in length.

Distribution

Endemic. West Coast of South Africa to northern KwaZulu-Natal from 17 m to 780 m depth.

Similar species

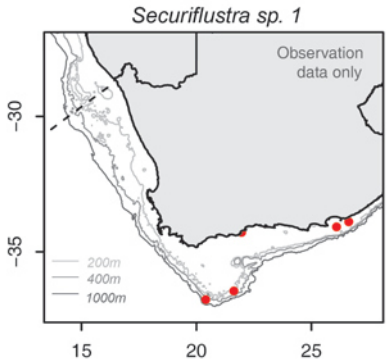
F. marginata and *Securiflustra securifrons* may appear similar, but *F. angusta* is distinguished by being more fragile, with thickened margins and its cream-brown colour.

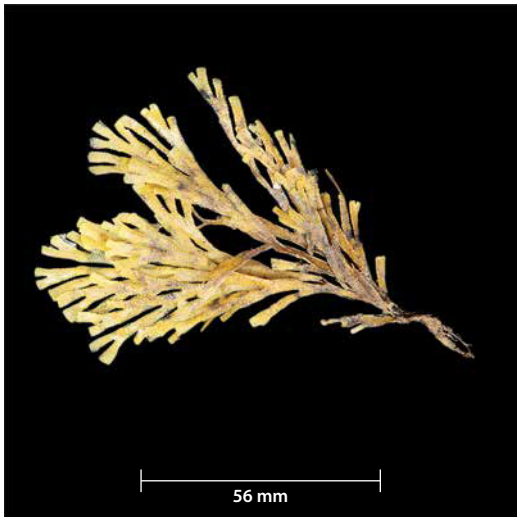
References

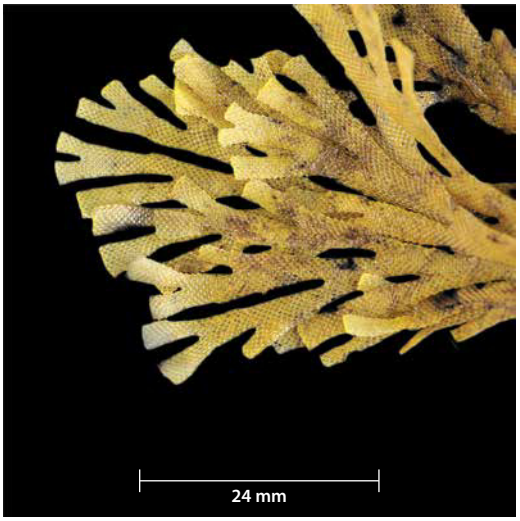
Hayward PJ and Cook PL. 1983. The South African Museum's Meiring Naudé Cruises. Part 13, Bryozoa II. *Annals of the South African Museum* 91: 1–161.

Securiflustra sp. 1 (SecPap)

Phylum:	Bryozoa
Class:	Gymnolaemata
Order:	Cheilostomatida
Family:	Flustridae
Genus:	*Securiflustra*
Species:	sp. 1
Common name:	Paper tree bryozoan







Distinguishing features
Erect, forming lightly calcified, flexible, narrow, strappy fronds that branch dichotomously, having paper-thin blades that are yellow to brown in colour. Attach to substrate by a holdfast.

Colour
Yellow to brown.

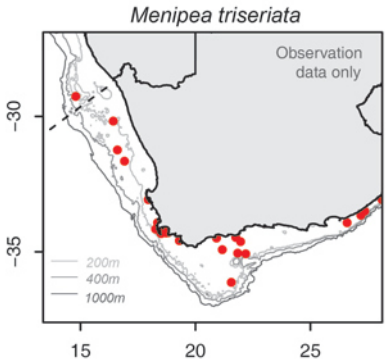
Size
Branches may be 50-100 mm in length.

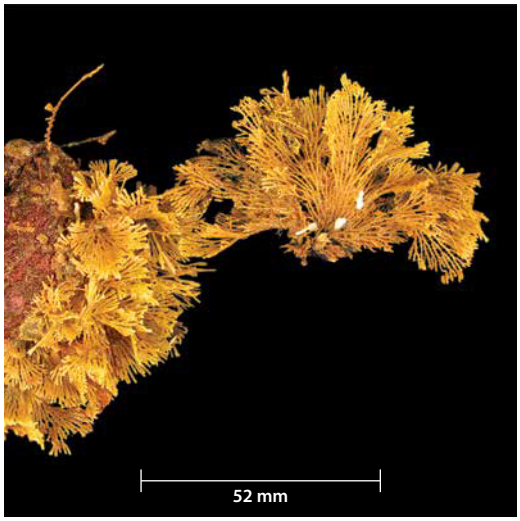
Distribution
Recorded from the South Coast of South Africa at a depth of 72 m but may have greater depth range. The South African specimens appear to be consistent with the genus *Securiflustra*, which is reported to be endemic to Europe. Taxonomy of this species is uncertain and specimens must be retained.

Similar species
Similar in apperance to *Flustramorpha* species. *F. marginata* and *F. angusta* may appear similar, but *Securiflustra* is distinguished by paper-thin blades with no marginal thickening and its yellow colour. *F. marginata* is blue-green and *F. angusta* is cream to light brown.

References
Hayward PJ and Cook PL. 1983. The South African Museum's Meiring Naudé Cruises. Part 13, Bryozoa II. *Annals of the South African Museum* 91: 1–161.

Menipea triseriata (MenTri)	
Phylum:	Bryozoa
Class:	Gymnolaemata
Order:	Cheilostomatida
Family:	Candidae
Genus:	*Menipea*
Species:	*triseriata*
Common name:	Spiral bush bryozoan





Distinguishing features
Erect form, lightly calcified tree-like colony that may or may not have thin branches arranged in a spiral whorl-like pattern.

Colour
Yellow to pale orange.

Size
Branches may be 50-100 mm in length.

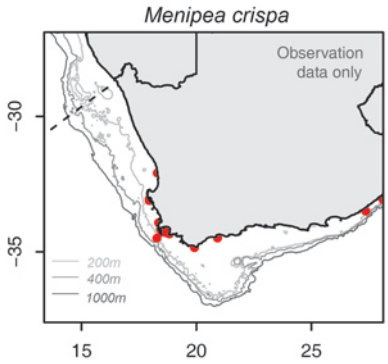
Distribution
Endemic. West, South and East Coasts of South Africa from shallow subtidal to 287 m depth.

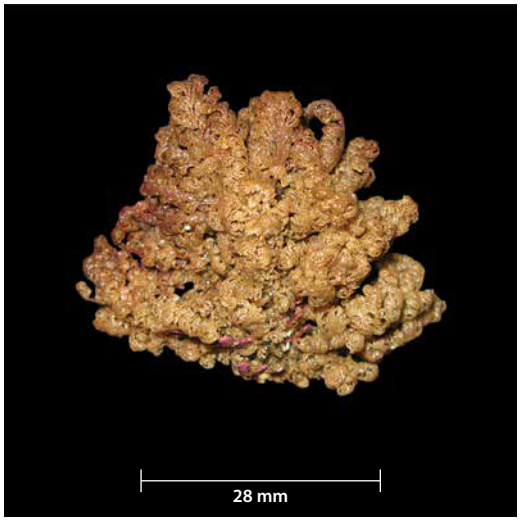
Similar species
Menipea ornata is a similar species (not depicted in this guide) with broader branches and is more robust. Specimens should be retained.

References
Florence WK, Hayward PJ and Gibbons MJ. 2007. Taxonomy of shallow-water Bryozoa from the west coast of South Africa. *African Natural History* 3: 1–58.

Menipea crispa (MenCri)

Phylum:	Bryozoa
Class:	Gymnolaemata
Order:	Cheilostomatida
Family:	Candidae
Genus:	*Menipea*
Species:	*crispa*
Common name:	Claw-like bryozoan





Distinguishing features
Erect form, lightly calcified tree-like colony, easily recognisable by its inward-curving branches and yellow to brown colour.

Colour
Tan to brown.

Size
Branches may be 50-100 mm in length.

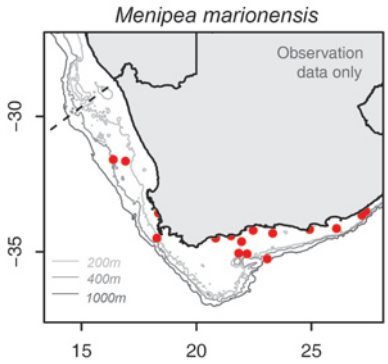
Distribution
Endemic. West, South and East Coasts of South Africa from shallow subtidal to 400 m depth.

Similar species
M. ornata, M. triseriata and *M. marionensis*, but *M. crispa* is distinguished by inward-curling branches.

References
Florence WK, Hayward PJ and Gibbons MJ. 2007. Taxonomy of shallow-water Bryozoa from the west coast of South Africa. *African Natural History* 3: 1–58.

Menipea marionensis (MenSpp)

Phylum:	Bryozoa
Class:	Gymnolaemata
Order:	Cheilostomatida
Family:	Candidae
Genus:	*Menipea*
Species:	*marionensis*
Common name:	Spiral tree bryozoan



Distinguishing features

Erect form, distinctly tree-like colony that is more delicate than other *Menipea* species, having finer spirally arranged branches. Colour is tan to cream or white.

Colour

Tan to pale white.

Size

Branches may be 50-100 mm in length.

Distribution

Endemic. Found in waters of the West Coast of South Africa to just south of East London. Depth range from 55 to 400 m.

Similar species

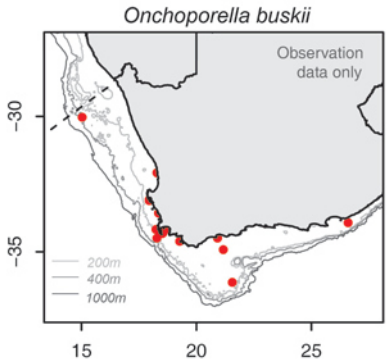
M. triseriata, M. ornata and *M. crispa* similar, but *M. marionensis* has finer branching and a distinctly tree-like shape.

References

Florence WK, Hayward PJ and Gibbons MJ. 2007. Taxonomy of shallow-water Bryozoa from the west coast of South Africa. *African Natural History* 3: 1–58.

Onchoporella buskii (OncBus)

Phylum:	Bryozoa
Class:	Gymnolaemata
Order:	Cheilostomatida
Family:	Calwellidae
Genus:	*Onchoporella*
Species:	*buskii*
Common name:	Elastic band bryozoan



Distinguishing features
Erect, forming flexible and very lightly calcified fronds that are strap-like and translucent. Zooids are convex, giving the branches a scaly appearance on one side of branches only.

Colour
Fronds translucent to tan.

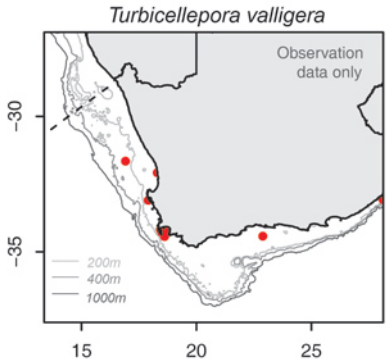
Size
Colony may be 100-150 mm in diameter.

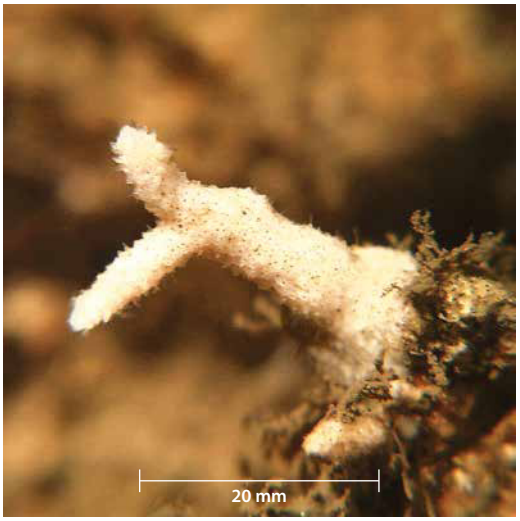
Distribution
West and South Coasts of South Africa, Namibia to Port Elizabeth from shallow subtidal to 400 m depth.

Similar species
Alcyonidium chondroides, which is more gelatinous and rubbery in texture.

References
Florence WK, Hayward PJ and Gibbons MJ. 2007. Taxonomy of shallow-water Bryozoa from the west coast of South Africa. *African Natural History* 3: 1–58.

Turbicellepora valligera (TurVal)	
Phylum:	Bryozoa
Class:	Gymnolaemata
Order:	Cheilostomatida
Family:	Celleporidae
Genus:	*Turbicellepora*
Species:	*valligera*
Common name:	False stag-horn bryozoan





Distinguishing features

Erect, but originates from an encrusting base which develops into tapered cylindrical branches that are heavily calcified and branch dichotomously. Resembles stag-horn coral.

Colour

Off-white to light orange, but sometimes with a green tinge.

Size

Branches may be 50-100 mm in length.

Distribution

Endemic. West Coast, Port Nolloth to the East Coast of South Africa. Depth range from 2 to 278 m.

Similar species

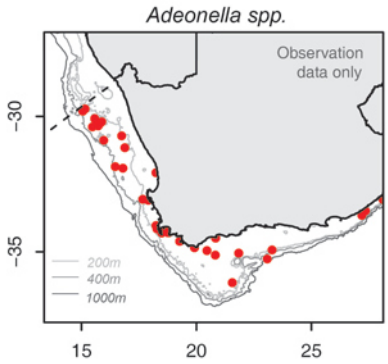
Can be distinguished from *Adeonella* spp. by its cylindrical branches. *Adeonella* have flattened strap-like branches.

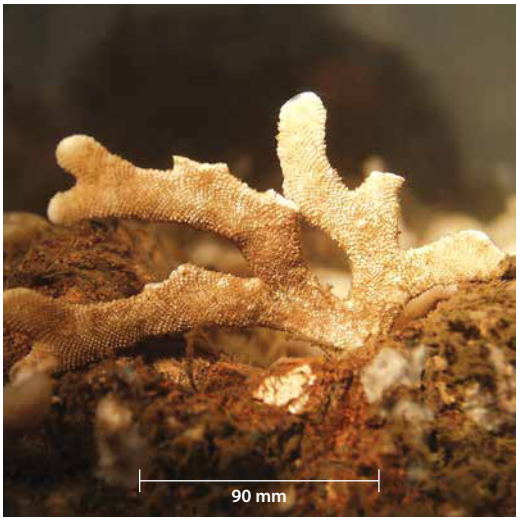
References

Florence WK, Hayward PJ and Gibbons MJ. 2007. Taxonomy of shallow-water Bryozoa from the west coast of South Africa. *African Natural History* 3: 1–58.

Potential VME

Adeonella spp. (Adeon)	
Phylum:	Bryozoa
Class:	Gymnolaemata
Order:	Cheilostomatida
Family:	Adenellidae
Genus:	*Adeonella*
Species:	spp.
Common name:	Sabre bryozoan





Distinguishing features

Erect, brittle, forming calcified, flattened, strap-like colonies that branch dichotomously. Branches may fuse to form coral-like structures. Zooids are large enough to be visible on both sides of straps. Often mistaken for *Stylaster* hydrozoans. Not flexible and has sandpapery texture.

Colour

Mainly white, but some species may be tan to light brown in colour.

Size

Colonies may be anything from 50-200 mm in length.

Distribution

Most species endemic to South Africa. Found in waters of the West, South and East Coasts of South Africa. Depth range from shallow subtidal to 880m.

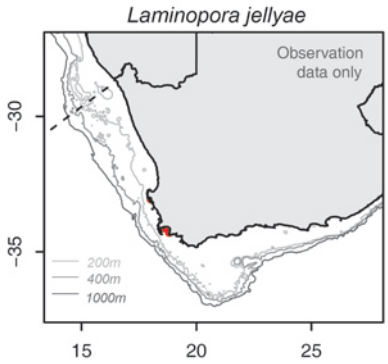
Similar species

Species of this genus are weakly characterised and difficult to identify beyond the generic level; even when using zooidal characters.

References

Florence WK, Hayward PJ and Gibbons MJ. 2007. Taxonomy of shallow-water Bryozoa from the west coast of South Africa. *African Natural History* 3: 1–58.

Laminopora jellyae (LamJel)	
Phylum:	Bryozoa
Class:	Gymnolaemata
Order:	Cheilostomatida
Family:	Adeonellidae
Genus:	*Laminopora*
Species:	*jellyae*
Common name:	Bladed bryozoan



Distinguishing features
Erect or encrusting, forming large twisted masses of fused, heavily calcified plates that resemble plated corals.

Colour
Dark to light brown in colour, sometimes with a greenish tinge.

Size
Colonies may be 100-300 mm in diameter.

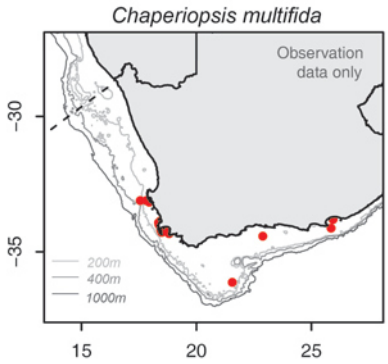
Distribution
Endemic. West Coast, False Bay to East London. Depth range from 15 to 147 m.

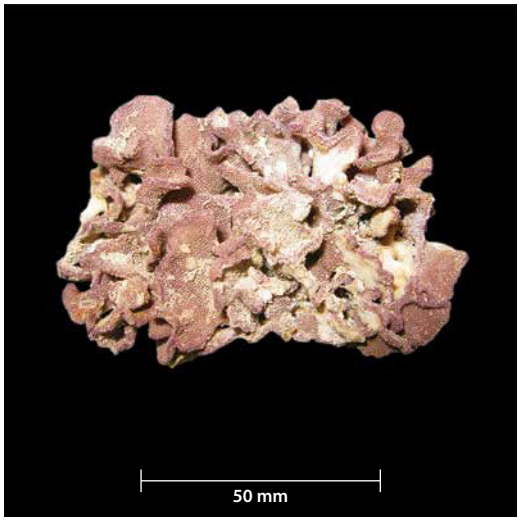
Similar species
No obvious similar species known.

References
Florence WK, Hayward PJ and Gibbons MJ. 2007. Taxonomy of shallow-water Bryozoa from the west coast of South Africa. *African Natural History* 3: 1–58.

Chaperiopsis multifida (ChaMul)

Phylum:	Bryozoa
Class:	Gymnolaemata
Order:	Cheilostomatida
Family:	Chaperiidae
Genus:	*Chaperiopsis*
Species:	*multifida*
Common name:	Furry bryozoan





Distinguishing features
Erect, but originates from an encrusting base which develops into a series of folded erect plates. Zooids are found on both sides. Colony appears furry on the surface because of several branched spines that cover zooids.

Colour
Dark red to maroon or dusky pink.

Size
Colonies may be 100-150 mm in diameter.

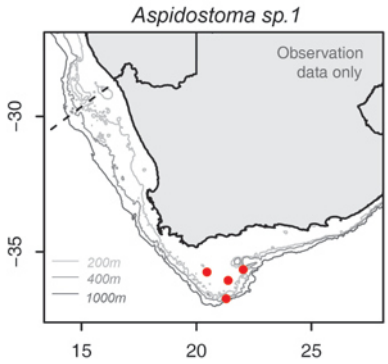
Distribution
Endemic to South Africa. West Coast of South Africa to East Coast, Durban from shallow subtidal to 375 m.

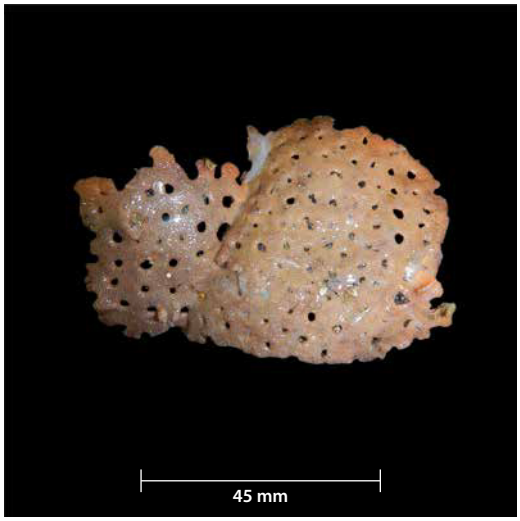
Similar species
Laminopora jellyae also form folded, erect plates but these are smooth in texture compared to those of *C. multifida*, which are "furry" and more textured.

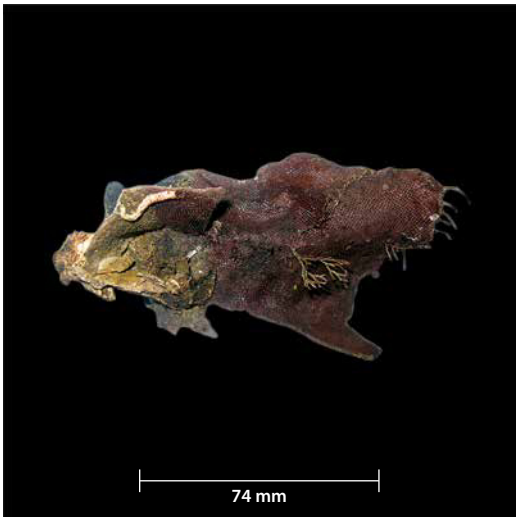
References
Florence WK, Hayward PJ and Gibbons MJ. 2007. Taxonomy of shallow-water Bryozoa from the west coast of South Africa. *African Natural History* 3: 1–58

Potential VME

Aspidostoma sp. 1 (Asp1)	
Phylum:	Bryozoa
Class:	Gymnolaemata
Order:	Cheilostomatida
Family:	Aspidostomatidae
Genus:	*Aspidostoma*
Species:	sp. 1
Common name:	Pore-plated bryozoan







Distinguishing features
Erect colonies, forming plates sometimes with perforations that are irregular in shape and size. Some specimens may not have perforations. Zooids can be seen on both sides of plates. Usually collected as fragments.

Colour
Deep red to maroon.

Size
Fragmentary; intact colony size unknown.

Distribution
South Coast, Agulhas Bank, South Africa from 90 to 780 m.

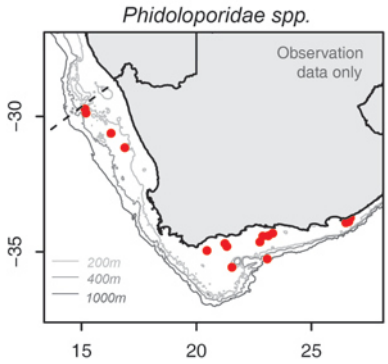
Similar species
Aspidostoma livida is deep blue in colour and plates have large perforations irregular in shape.

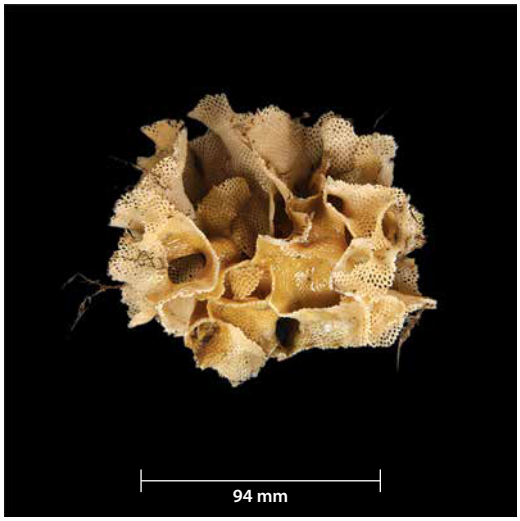
References
Florence WK. 2016. Some deep-water cheilostome Bryozoa from the south coast of South Africa. *African Natural History* 12: 05-11.

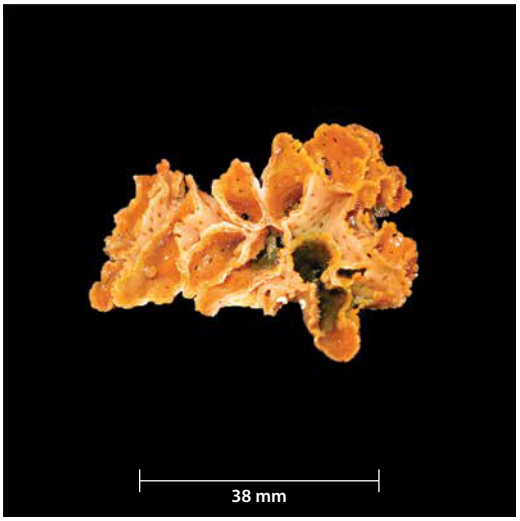
Potential VME

Phidoloporidae spp. (Lace)

Phylum:	Bryozoa
Class:	Gymnolaemata
Order:	Cheilostomatida
Family:	Phidoloporidae
Genus:	Phidoloporidae
Species:	spp.
Common name:	Honeycomb false lace coral







Distinguishing features
Erect, forming coral-like mass with folded plates that are often regularly perforated, giving the colony a honeycomb appearance.

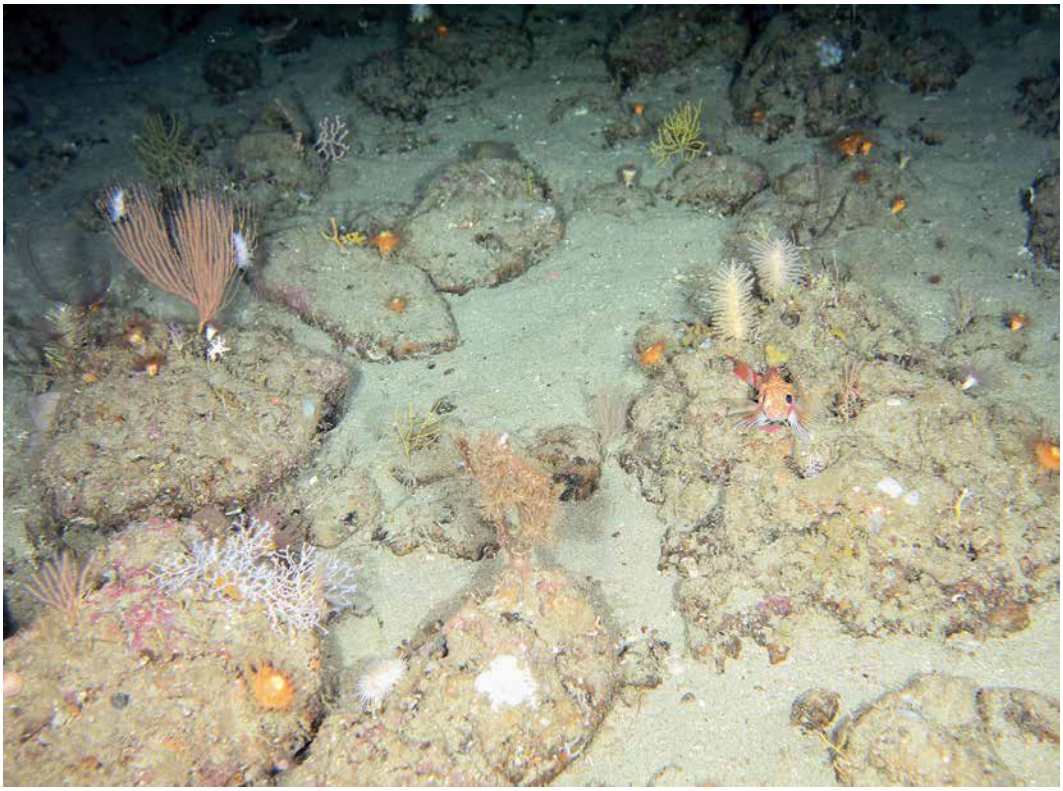
Colour
Off-white or cream to orange.

Size
Colonies may be 50–200 mm in diameter.

Distribution
Found between depths of 2-775 m on the West, South and East Coasts of South Africa.

Similar species
There are many genera and species in the family Phidoloporidae that have the characteristic honeycomb-plated morphology that is coral-like. *Reteporella lata* (depicted left) is cream in colour with robust perforated plates. *Schizoretepora tessellata* (depicted right) is orange in colour and may or may not have pores, which appear to be a plastic feature related to environmental pressures.

References
Florence WK, Hayward PJ and Gibbons MJ. 2007. Taxonomy of shallow-water Bryozoa from the west coast of South Africa. *African Natural History* 3: 1–58.



One of the interesting species from outer shelf habitats on the South Coast is the hemichordate *Cephalodiscus gilchristi* (the spiky network of gelatinous tubes in centre of photo) which has produced the most effective compound ever tested against cancer. Other visible invertebrates include seafans, cup corals and bottlebrush soft corals (*Thouarella* sp.). Photo credit: ACEP Deep Secrets Project.

Bryozoan lace corals, like other habitat forming invertebrates, provide biogenic habitat for fish. Photo credit: ACEP Surrogacy Project.