

The Hydrozoa, Octocorallia and Scleractinia of subantarctic Marion and Prince Edward Islands: Illustrated keys to the species and results of the 1982 - 1989 University of Cape Town surveys

Margo L Branch

Zoology Department, University of Cape Town, Rondebosch 7700, South Africa

Gary C Williams

Department of Marine Biology, South African Museum, Cape Town*

*Present address: Department of Invertebrate Zoology, California Academy of Sciences, Golden Gate Park, San Francisco, California 94118 USA

The benthic Hydrozoa, Octocorallia and Scleractinia (Cnidaria) of subantarctic Marion and Prince Edward Islands were sampled over the period 1982-1989 by dredging, SCUBA-diving and intertidal surveys. Illustrated keys are provided for the identification of all the species recorded from the islands during this and previous surveys. Summaries are provided of the depth distributions, abundances and habitats of the species, and the geographical distribution is discussed. The currently known fauna comprises 31 species of Hydrozoa (of which 18 are new records including 2 unidentified), 14 species of Octocorallia (of which 8 are new records including 3 unidentified) and 6 species of Scleractinia (of which 4 are new records and one identified to genus - one a probable new genus). New taxa are not formally described in this paper.

Die bentiëse Hydrozoa, Octocorallia en Scleractinia (Cnidaria) van subantarktiese Marion- en Prins Edward-eiland is gemonster gedurende die tydperk 1982-1989 deur baggerwerk, onderwaterduik en tussengetyopnames. Geïllustreerde sleutels word voorsien vir die identifisering van al die spesies tydens hierdie en vorige opnames. Opsommings word voorsien van die diepteverspreiding, volopheid en habitat van spesies, en die geografiese verspreiding word bespreek. Die fauna soos tans bekend bestaan uit 31 spesies van Hydrozoa (18 is nuwe inskrywings, insluitend 2 ongeïdentifiseer), 14 spesies van Octocorallia (8 is nuwe inskrywings, insluitend 3 ongeïdentifiseer) en 6 spesies van Scleractinia (4 is nuwe inskrywings - een geïdentifiseer volgens genus en een waarskynlik 'n nuwe inskrywing). Nuwe taksa word nie formeel beskryf in dié artikel nie.

Introduction

The Cnidarian fauna of the subantarctic Marion Island (46°54'S, 37°45'E) and Prince Edward Island (46°38'S, 37°57'E) has been sampled during several expeditions including those of the British HMS *Challenger* (1873-1876) and RRS *Discovery* (1935). The Cnidaria were poorly represented in these collections, dredging by the HMS *Challenger* yielding only three species of Hydrozoa (Allman 1883 & 1888), two species of Scleractinia (Moseley 1876 & 1881) and six species of Octocorallia (Wright & Studer 1889). *Marion du Fresne* MD08 cruise (1976) (Zibrowius 1980 & personal communication) collected two species of Scleractinia - *Flabellum apertum* and *Desmophyllum cristagalli*.

South African research began with land-based surveys and concentrated on the intertidal and shallow-water benthos. Sampling by Fuller (1967) produced 11 hydrozoans (Millard 1971). There are no records of Octocorallia or Scleractinia in the intertidal or shallow waters (<50 m depth) around the islands. More recently research was extended offshore by the University of Cape Town, with dredging undertaken from the SA *Agulhas* over the period 1984-1989 (GM Branch *et al* 1993) and subtidal SCUBA-diving surveys in 1982, 1987 and 1989 (Beckley & Branch 1992). The material is housed in the South African Museum, Cape Town. Table 1 summarises the records of the University of Cape Town surveys and those from the intertidal collections made by Fuller (Millard 1971). It also documents the abundance, depth, substratum and habitat of these taxa. New records for the Prince Edward Islands are shown in the systematic list. A detailed analysis of the overall community patterns appears in GM Branch *et al* (1993).

Where possible, the illustrations were taken from actual specimens collected by the University of Cape Town, including those mounted by Dr Millard and housed in the South African Museum. Others were adapted from depictions in the existing literature, notably Millard

(1971, 1975 & 1977) and Cairns (1982). Bayer (1981a) provides a key to the world genera of octocorals excluding sea pens.

Three species of Zoanthidea and ten species of Actinaria were collected. These will be described in a later paper.

ML Branch was responsible for the sections on the Hydrozoa and Scleractinia and GC Williams for the Octocorallia.

This paper forms part of a series dealing with the benthic invertebrate fauna of Marion and Prince Edward Islands including the Crustacea (Branch, Griffiths, Kensley & Sieg 1991), Mollusca and Brachiopoda (Branch, Arnaud, Canterra & Gianakouras 1991), Pycnogonida (Arnaud & Branch 1991), Echinodermata (Branch, Jangoux, Alva, Massin & Stapanato 1993) and Polychaeta (Branch in press).

Acknowledgements

This research was carried out under the supervision of Prof GM Branch with funding provided by the South African Scientific Committee for Antarctic Research (SASCAR), the Department of Environment Affairs and the Foundation for Research Development. The South African Department of Transport provided logistic support, and the Captains of the *SA Agulhas* are thanked for continual support. D Gianakouras led the dredging and sorting programme and Drs L Beckley, GM Branch and GC Williams the SCUBA surveys. Dr NAH Millard helped with the identification of the Hydrozoa and Dr SD Cairns examined the Scleractinia. Thanks are due to the staff and students of the University of Cape Town who participated in both the collection and the sorting of this material, as well as to C Attwood who provided computer analyses. E Hoensen and the staff of the SA Museum are gratefully acknowledged for the smooth transfer of the collection to the South African Museum.

Systematic list of species

- * = New records
 # = New species (included in the keys but not named beyond generic level: listed here by catalogue numbers of the South African Museum)
 ## = Species not determined

Phylum Cnidaria	Page
Class Hydrozoa	6
Order Hydroida (From Millard 1975)	
Suborder Athecata	
Family Bougainvilliidae	
<i>Rhizorhagium antarcticum</i>	
Hickson & Gravely, 1907	8
Family Clavidae	

#	<i>Rhizogeton</i> sp. aff <i>R. nudum</i> Broch 1909, SAM H 4476	7
	Family Corynidae	
	<i>Coryne conferta</i> Allman, 1876	7
	Family Eudendriidae	
*	<i>Eudendrium rameum</i> (Pallas, 1766)	8
*	<i>Eudendrium tottoni</i> Stechow, 1932	8
	Family Hydractiniidae	
	<i>Hydractinia parvispina</i> Hartlaub, 1905	7
	Family Mariothelidae	
	<i>Candelabrum meridianum</i> (Briggs, 1939)	7
	= <i>Myriothela meridiana</i> Briggs, 1939	
	Family Tubulariidae	
##	<i>Tubularia</i> sp.	7
	Suborder Thecate	
	Family Campanulariidae	
	<i>Campanularia subantarctica</i> Millard, 1971	9
*	<i>Orthopyxis norvegica</i> (Broch, 1948)	9
	= <i>Campanularia norvegica</i> Broch, 1948	
	<i>Obelia geniculata</i> (Linnaeus, 1758)	9
	<i>Silicularia rosea</i> Meyen, 1834	9
	Family Campanulinidae	
*	<i>Modeeria rotunda</i> (Quoy & Gaimard, 1927)	8
#	? <i>Opercularella</i> sp. SAM H 4417	8
	Family Haleciidae	
	<i>Halecium delicatulum</i> Coughtrey, 1876	11
*	<i>Halecium tenellum</i> Hincks, 1861	11
*	<i>Halecium jaederholmi</i> Vervoort, 1972	12
*	<i>Halecium dufresneae</i> Millard, 1977	11
	<i>Hydrodendron arboreum</i> (Allman, 1888)	11
	Family Lafoeidae	
*	<i>Filellum antarcticum</i> (Hartlaub, 1904)	9
*	<i>Grammaria abietina</i> (M Sars, 1850)	10

	Page		Page
<i>Lafoea dumosa</i> (Fleming, 1820)	10	*## <i>Clavularia</i> sp. SAM H 4278 & SAM H 4288	15
= <i>L. fruticosa</i> (M Sars, 1851)		Family Alcyoniidae (soft corals)	
* <i>Zygophylax crozetensis</i> Millard, 1977	10	* <i>Anthomastus antarcticus</i> Kükenthal, 1910b	14
Family Plumulariidae		* <i>Rhodelinda gardineri</i> (Gohar, 1940)	15
<i>Plumularia insignis</i> Allman, 1883	12	Family Paragorgiidae (scleraxonian gorgonian)	
* <i>Plumularia setacea</i> (Linnaeus, 1758)	12	* <i>Paragorgia arborea</i> (Linnaeus, 1758)	14
Family Sertulariidae		Family Acanthogorgiidae (holaxonian gorgonians)	
<i>Sertularella picta</i> (Meyen, 1834)	12	<i>Acanthogorgia ramossissima</i> Wright & Studer, 1889	15
* <i>Symplectoscyphus curvatus</i> Jäderholm, 1917	13	Family Primnoidae (holaxonian gorgonians)	
<i>Symplectoscyphus marionensis</i> Millard, 1971	13	<i>Candidella spinosa</i> (Wright & Studer, 1889)	16
* <i>Symplectoscyphus subarticulatus</i> (Coughtrey, 1975)	13	*## <i>Narella</i> sp. SAM H 4298 & SAM H 4442	16
* <i>Symplectoscyphus subdichotomus</i> (Kirchenpauer, 1884)	13	<i>Primnoeides sertularoides</i> Wright & Studer, 1889	16
* <i>Symplectoscyphus vanhoeffeni</i> Totton, 1930	13	<i>Thouarella variabilis</i> Wright & Studer, 1889	16
= <i>Symplectoscyphus</i> sp. in Millard, 1971		Family Isidiidae (holaxonian gorgonians)	
Family Syntheciidae		<i>Primnoisis antarctica</i> (Studer, 1879)	15
<i>Staurotheca dichotoma</i> Allman, 1888	10	<i>Primnoisis sparsa</i> Wright & Studer, 1889	15
Class Anthozoa	17	Order Pennatulacea (sea pens)	
Subclass Hexacorallia (anemones and corals)		Family Virgulariidae	
Order Scleractinia (hard corals) (from Cairns, 1982)		*## <i>Halipterus</i> sp. SAM H 4441 & SAM H 4280	14
Family Caryophylliidae		Family Pennatulidae	
* <i>Cyathoceras irregularis</i> Cairns, 1982	17	* <i>Pennatula inflata</i> Kükenthal, 1910a	14
* <i>Desmophyllum cristigalli</i> Milne Edwards & Haime, 1848	17	* <i>Pennatula phosphorea</i> Linnaeus, 1758	14
<i>Solenosmilia variabilis</i> Duncan, 1873	17		
# <i>Trochocyathus</i> sp. SA MH 4453	17	Summary of species	
Family Flabellidae		Hydrozoa 31 species, 18 new records, 2 unidentified.	
<i>Flabellum apertum</i> Moseley, 1876		Scleractinia 6 species, 4 new records, 2 unidentified.	
# SAM H 4452 (?new genus aff. <i>Stenorynthus</i>)	17	Octocorallia 14 species, 8 new records, 3 unidentified.	
Subclass Octocorallia	14		
(sea pens and soft corals)			
Order Alcyonacea			
Family Clavulariidae (stoloniferous octocorals)			

Cnidaria of Marion and Prince Edward Islands

Key to the classes and orders

- 1 Medusa present at least for part of the life cycle; polyp either small and solitary or colonial; coelenteron with 4 septa or septa absent .. 2

Medusa never present; only a polyp stage in the life cycle; coelenteron subdivided by many septa or mesenteries.
Class: **Anthozoa** 3
- 2 Polyp stage dominant, commonly colonial; coelenteron undivided; medusa with a velum.
Class: **Hydrozoa** (sea firs) A (p6)

Medusoid stage dominant; coelenteron usually subdivided by 4 septa; medusa without a velum; polyp solitary and usually small and short-lived.
Class: **Scyphozoa** (jelly-fish) not included here.
- 3 Tentacles numerous, usually simple; polyps solitary or colonial; skeleton present or absent 4

Tentacles 8, always pinnate; polyps always colonial; skeleton mainly spicular and flexible.
Order: **Octocorallia** (sea pens and soft corals) B (p14)
- 4 Skeleton absent..... 5

Rigid calcareous skeleton; polyps usually colonial.
Order: **Scleractinia** (corals) C (p17)
- 5 Polyps usually solitary, with a pedal disc.
Order: **Actiniaria** (sea-anemones) not included here.

Polyps usually colonial, no pedal disc.
Order: **Zoanthidea** (Zooanthids) not included in this paper.

A Hydrozoa (Adapted from Millard 1975)

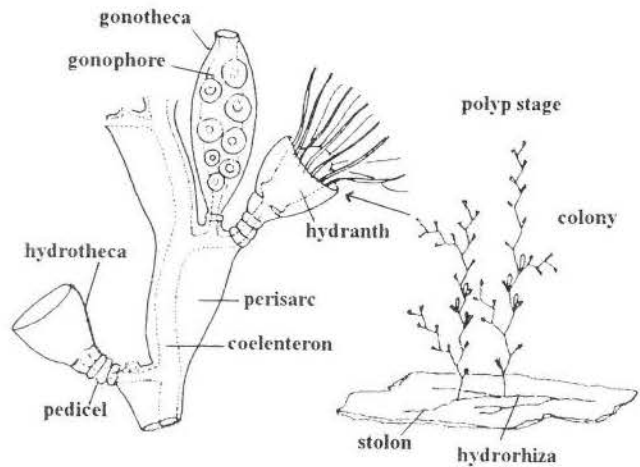
Athecata

- 1 Athecate colony (hydranths not seated in a thecal cup); medusae deep, umbrella-shaped.
Suborder **Athecata**..... 2

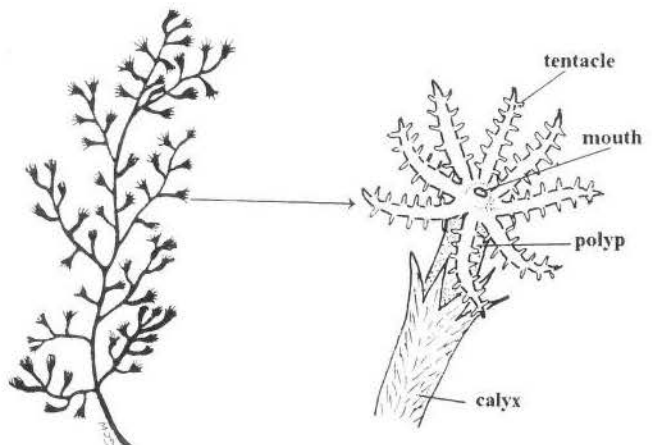
Thecate colony (hydranths in definite cup-like hydrothecae), medusae usually flat.
Family **Thecata** 9
- 2 External skeleton absent 3

External skeleton present as a firm, transparent perisarc around the pedicel 5

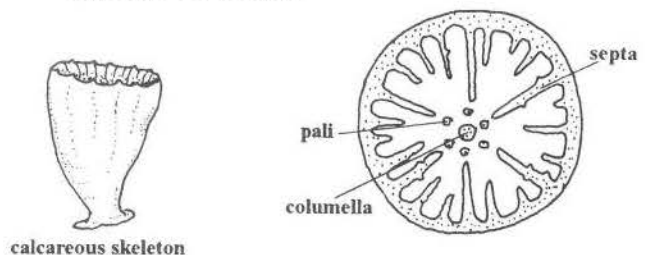
Typical Hydrozoa



Typical Octocorallia



Typical Scleractinia



- 3 Hydranth solitary with numerous capitate (knob-tipped) tentacles scattered over the whole body; base may be divided and is attached by short tentacles; male and female blastostyles occur immediately above the base; colour purple with orange tinges; up to 25 mm long; occurs under rocks in littoral region.

Candelabrum meridianum (Briggs, 1939)

Hydranth unbranched, tentacles all filiform. 4

- 4 Hydranths solitary or stolonal, tentacles scattered over surface with a whorl around the conical hypostome; about 3 mm high; gonophores on stolon; depth about 10 m.

Rhizogeton sp. SAM H 4476 aff. *R. nudum* Broch, 1909

Colony of different types of upright hydranths arising from a flat coenosarc layer; gastrozooids with 11 to 16 tentacles in a whorl around a well-developed hypostome; coenosarc layer with smooth hollow spines projecting; gonophores borne on special gonozooids; up to 6 mm high; on pebbles under stones in lower littoral region.

Hydractinia parvispina Hartlaub, 1905

- 5 Hydranth with two whorls of tentacles; gonophores borne on the space between the whorls; unbranched stems arise from a stolon; perisarc stiff, smooth, extends to base of hydranth. *Tubularia* sp.

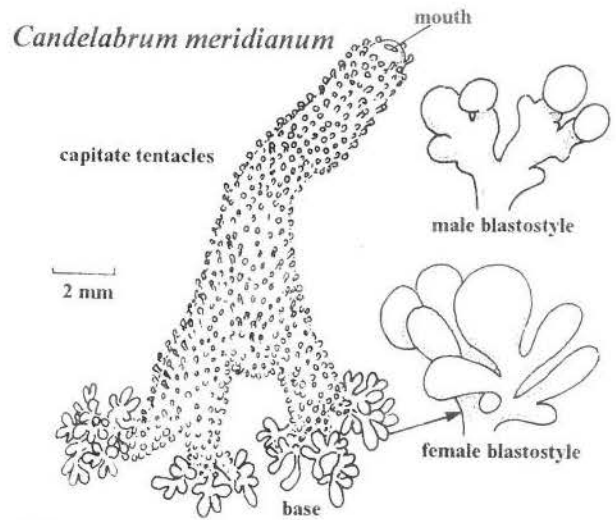
Hydranths with a single whorl of tentacles or scattered capitate tentacles; hydranths borne on a branching stem; perisarc often annulated. 6

- 6 Hydranths pink to orange with scattered white capitate tentacles, 14 to 20 tentacles of which 4 surround the mouth; stem branching irregularly; perisarc closely annulated and ending at the base of the hydranths; intertidal in crevices and under rocks.

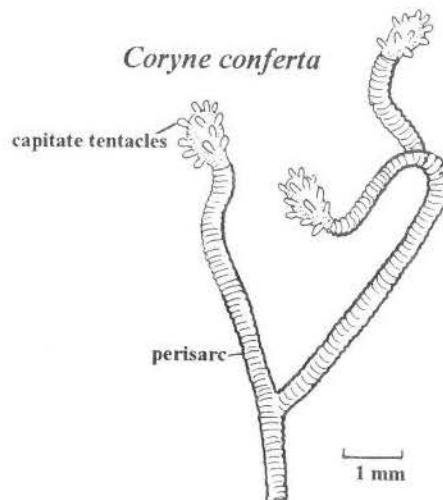
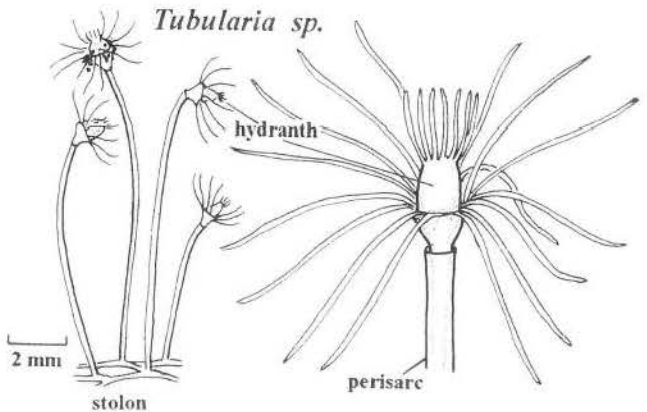
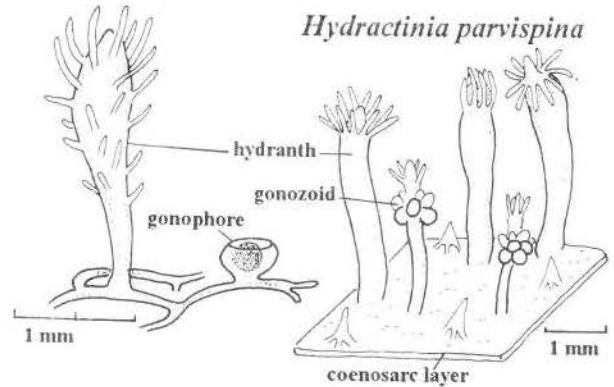
Coryne conferta Allman, 1876

(This species may be conspecific with *Coryne pusilla* Gaertner, 1774 which is a well-known near-cosmopolitan form with 30 to 40 tentacles.)

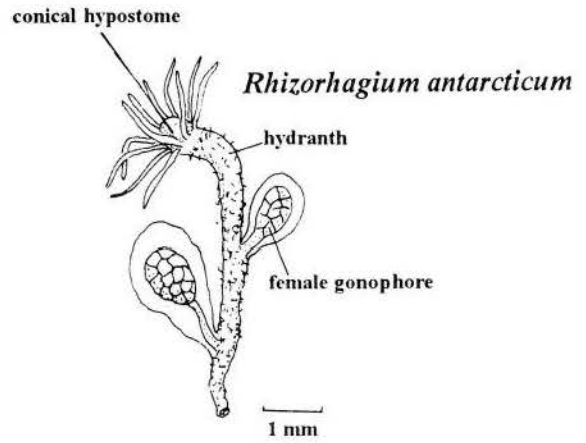
Filiform tentacles in one whorl around the mouth. 7



Rhizogeton sp.

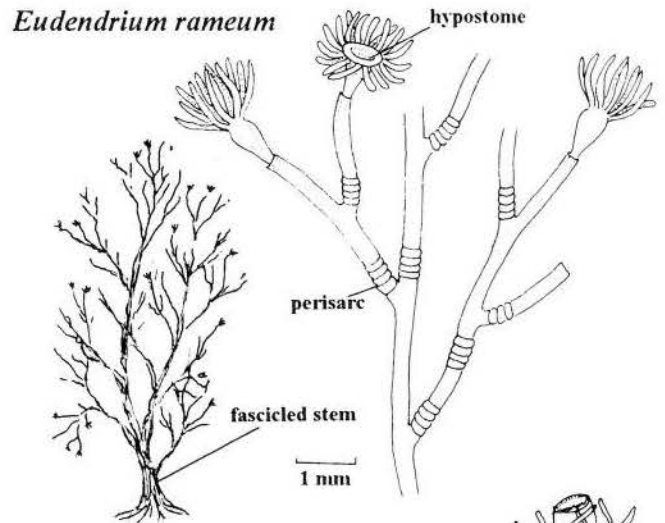


- 7 Hydranth with one whorl of 11 to 13 filiform tentacles around a conical hypostome; stems up to 5 or 6 mm long, with terminal and possibly one or two lateral hydranths; perisarc smooth or irregularly corrugated especially at the origin of the branches, partly expanded over the base of the hydranth as a pseudohydrotheca, silt adhering to the surface; colour, opaque white; gonophores creamy-red, borne on the stem, completely enclosed in perisarc, egg-shaped when mature containing 30-40 eggs.
Rhizorhagium antarcticum (Hickson and Gravely, 1907)



Hydranth large with a trumpet-shaped hypostome; reproductive sporosacs are borne on the hydranth body just below the tentacles; colonies branching, perisarc annulated at the origin of the branches and rarely at other points. 8

- 8 Colony stiff, bushy with thick fascicled (of entwined tubes) stems up to 120 mm tall and 5 mm in diameter at the base; hydranth brown, with approximately 20 tentacles.
Eudendrium rameum (Pallas, 1766)



Colony delicate, stems flexuose, up to 16 mm tall, unfascicled or weakly fascicled at the base.
Eudendrium tottoni Stechow, 1932

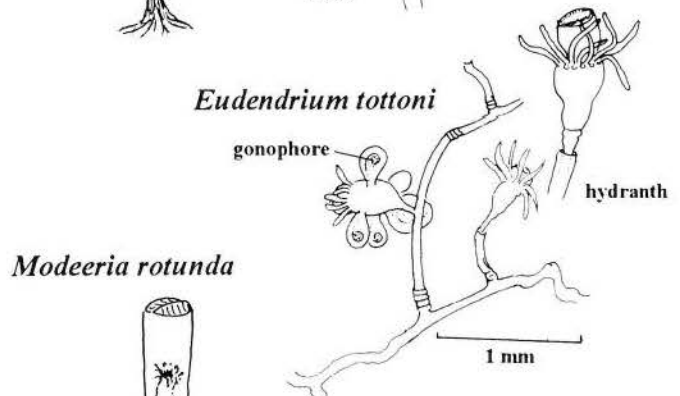
- 9 Hydrothecae deep, tubular or campanulate (bell-like), usually pedicillate (with stalk). 10

Hydrothecae never deep and tubular, either adnate (fused to stem) or if pedicillate then saucer-shaped and too shallow to house retracted hydranth. 20

- 10 Hydrothecal aperture closed by an operculum; hydrotheca pedicillate, borne on creeping stolons. Family **Campanulinidae** 11

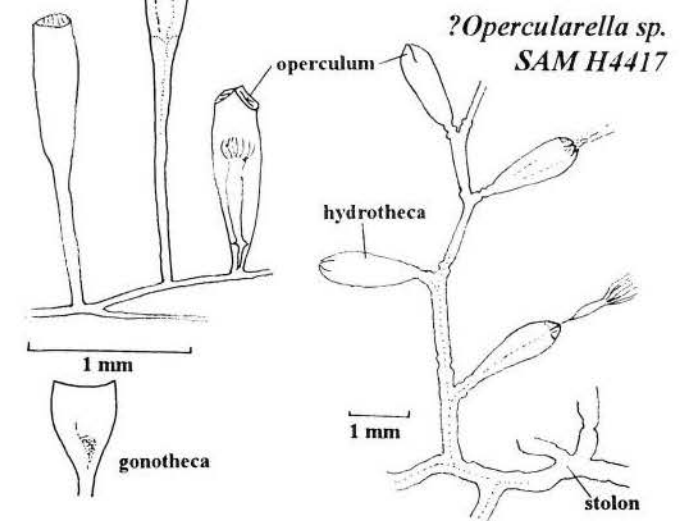
Hydrotheca without operculum 12

- 11 Operculum consists of two pleated membranes which meet one another like the roof of a gable; colony growing on other hydroids, creeping stolons give rise to solitary, pedicillate hydrothecae and gonothecae; hydranth with about 13 tentacles.
Modeeria rotunda (Quoy & Gaimard, 1827)



Operculum pyramidal, 4 valves; colony growing on other hydroids, branching stolons give rise to delicate upright stems with alternating, elongated hydrothecae; annular constrictions occur on the stem above the hydrothecae and at the base of the hydrothecae; white.

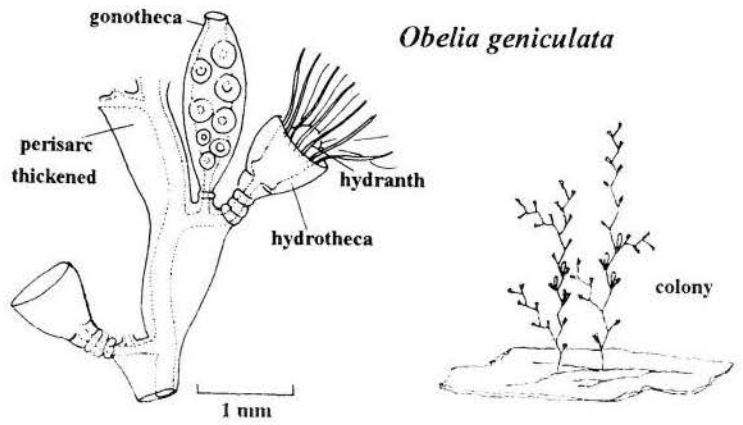
? ***Opercularella*** sp. SAM H 4417



- 12 Hydrotheca campanulate; pedicel long; colony stolonial, with creeping stolons that give rise to solitary or branching uprights; gonotheca a single oval sac.
Family **Campanulariidae** 13

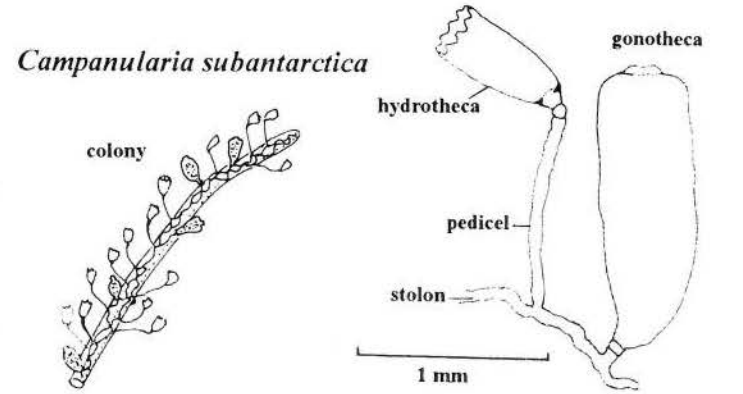
Hydrotheca tubular, pedicel short or absent; colony usually erect and branching 16

- 13 Delicate branched colony up to 20 mm; stem unfasciated, geniculate (zigzag), hydranths alternate up the stem; perisarc thickened below the shoulder that bears the hydrotheca; hydrotheca shallow bell-shaped with a thickened diaphragm at the base, pedicel annulated and shorter than the hydrotheca; gonothecae in the axil of the hydrotheca, smooth, elongate pear-shaped, aperture terminal with a short tubular neck; usually growing on laminarian algae.
Obelia geniculata (Linnaeus, 1758)



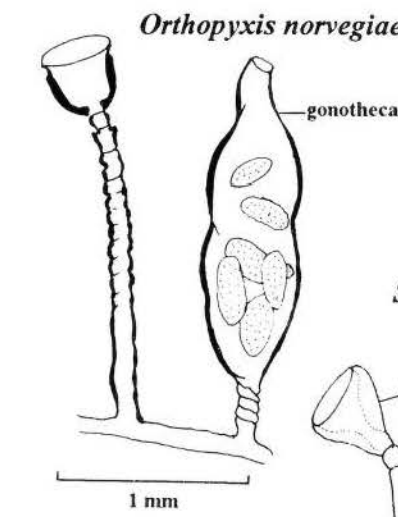
Hydranths solitary; pedicel longer than hydrotheca with a terminal spherule just below the theca.
..... 14

- 14 Hydrotheca with 9-11 blunt marginal cusps, ring of annular thickening at the base with a delicate diaphragm; pedicel corrugated; gonotheca narrow at proximal end and truncated distally with a low collar around the small aperture.
Campanularia subantarctica Millard, 1971



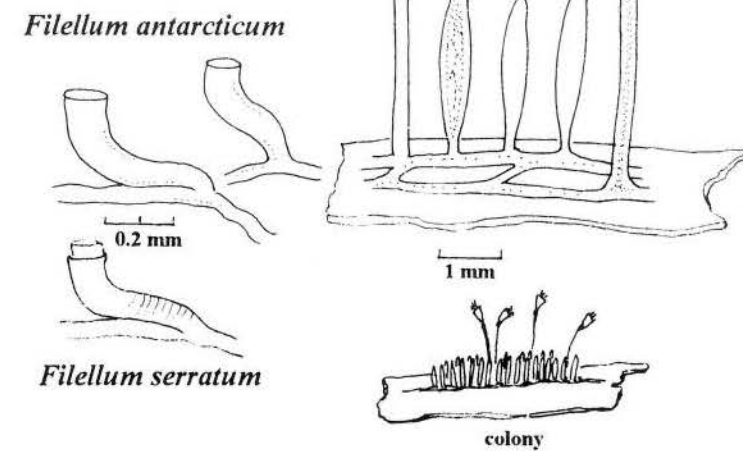
Hydrotheca margin smooth, compressed laterally, oval in section due to thickening on two sides.
..... 15

- 15 Pedicel entirely, or partly, spirally grooved; gonotheca irregularly bottle-shaped, aperture narrow, gonothecal pedicel short and annulated.
Orthopyxis norvegiae (Broch, 1948)



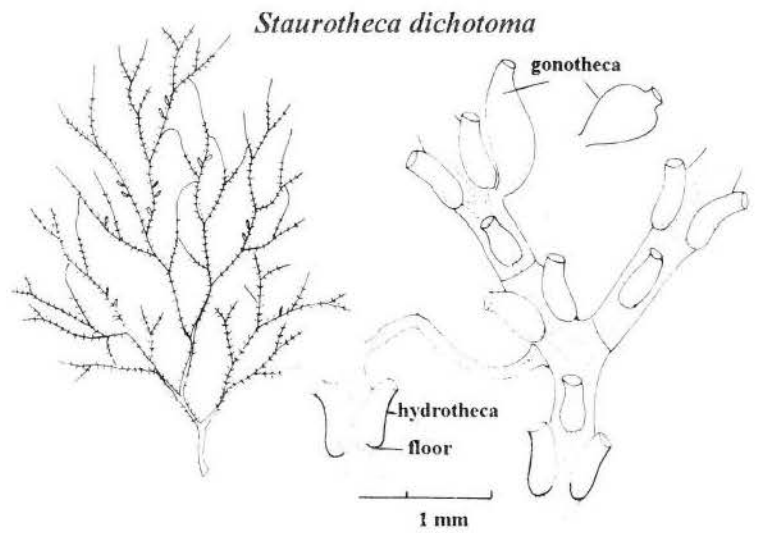
Pedicel about 6 mm long, smooth, arising from a reticulate stolon; hydrotheca margin oblique; hydranth cannot be completely housed in hydrotheca; gonotheca elongate, spindle-shaped; common on the alga *Macrocystis laevis*.
Silicularia rosea Meyen, 1834

- 16 Colony stolonial, epizootic on other hydroids; hydrotheca adherent to stolon, smooth.
Filellum ?antarcticum (Hartlaub, 1904)
(*Filellum serratum* (Clark, 1879) recorded from subantarctic has hydrotheca transversely ridged.)



Shrub-like colony, stem and main branches fasciated; large, often 90 to 200 mm 17

- 17 Colonies, brown, luxuriant, branching dichotomously and reuniting to form an elaborate reticulum; sessile hydrotheca with a definite floor; stem thickly fasciated at the base of larger colonies; hydrothecae generally three to a whorl forming 6 longitudinal rows (8 rows at the base, 4 rows at the tips), adnate for almost the entire length; female gonotheca solitary bottle-shaped. *Staurotheca dichotoma* Allman, 1888 (*Staurotheca antarctica* Hartlaub, 1904 collected from Crozet Island. Stems unfasciated; hydrothecae arranged in opposite pairs, smaller than the above species, with a greater proportion free from the stem.)

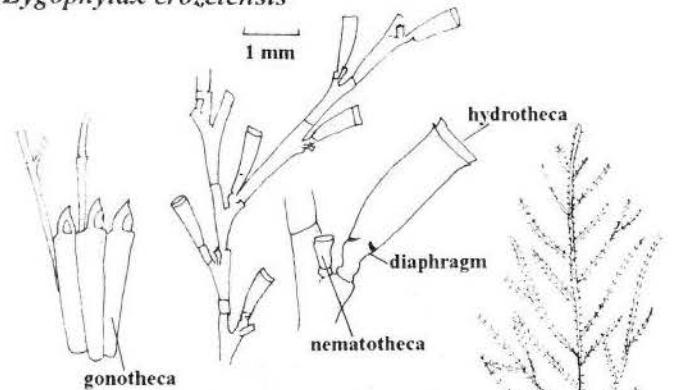


Hydrothecae with no definite floor; adnate or pedicillate; gonothecae grouped to form a nest-like structure around the stem (coppinia) with modified hydrothecae and nematothecae projecting from the surface to give a bristled appearance.

Family **Lafoeidae** 18

- 18 Hydrothecae in two longitudinal rows alternating up the stem, tubular with a short pedicel and a diaphragm; nematotheca two-chambered, positioned at base of hydrotheca; colony large, branching, fasciated stem about 200 mm, root stock forming a mass of interwoven fibres; coppinia numerous, clothe most of the larger branches, gonothecae with slender adnate bases and pointed horn-like tips with an aperture on one side.

Zygophylax crozetensis



Zygophylax crozetensis Millard, 1977

Hydrothecae in more than two rows; nematothecae absent; coppinia gonothecae bottle-shaped with a terminal aperture on a short neck, accessory tubes long and coiled 19

- 19 Colony stiff, brown, branch in one plane with alternating or sub-opposite branches; stem an axial tube with several periferal tubes that are fused inseperably; tubular hydrothecae curve out from between the tubes forming 4 to 6 longitudinal rows roughly in opposite pairs.



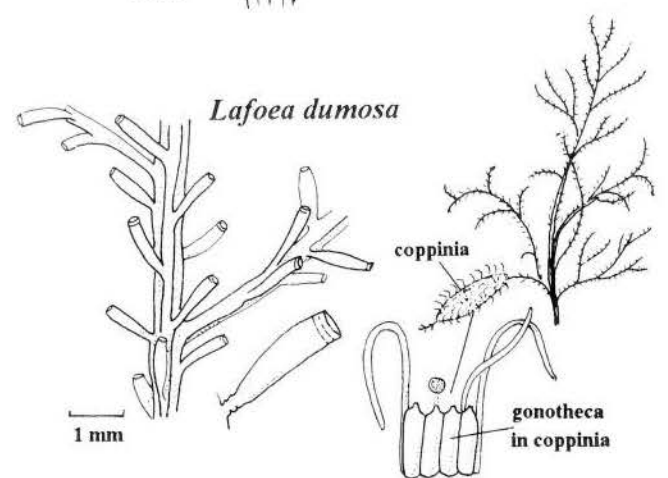
Grammaria abietina

Grammaria abietina (Sars, 1850)
 =*G. stentor* Allman, 1888
 =*G. magellanica* Allman, 1888
 =*G. insignis* Allman, 1888 (see Cornelius, 1975)

Colony flexuose, irregularly branched, loosely fasciated; hydrothecae deep, tubular, no diaphragm, pedicel definite but short.

Lafoea dumosa (Fleming, 1820)
 =*L. fruticosa* (M Sars, 1851)

- 20 Hydrotheca without an operculum 21



Lafoea dumosa

Hydrothecae in two rows, closed at the top with an operculum, aperture toothed.
 Family **Sertulariidae** 27

- 21 Hydrothecae saucer-shaped arise on both sides of the stem, regeneration leads to tiers of hydrothecae arising one within the other; sympodial growth (first hydranth terminal and new branches bud from the base of the hydranth).

Family **Haleciidae** 22

Colony feather-shaped, hydrothecae on one side of the branches only; hydrocladia (hydranth-bearing branches) arise alternately along upright stems.

Family **Plumulariidae** 26

- 22 Nematothecae present, normally one on each internode on the side opposite the hydrotheca; gonotheca strongly curved with a tubular neck, borne in clusters on a specialised branch (glomerulus); colony shrub-like with thick fascicled stem, terminal branches divided by oblique nodes; hydrotheca very shallow, margin may be slightly reflexed.

Hydrodendron arboreum (Allman, 1888)

Nematothecae absent; gonothecae solitary. 23

- 23 Hydrothecal margin strongly reflexed, primary hydrothecae free from the stem; usually growing on other hydrozoans, bryozoans or gorgonians. 24

Hydrothecal margin slightly reflexed, primary hydrothecae adnate. 25

- 24 Stem stiff, fascicled, branching irregular, height about 30 mm; primary hydrotheca sometimes containing a pseudodiaphragm, margin strongly flared, outward diameter at the margin 0.13 to 0.4 mm; female gonotheca compressed with a terminal aperture and typically flattened 'ears', the Antarctic form has less developed ears.

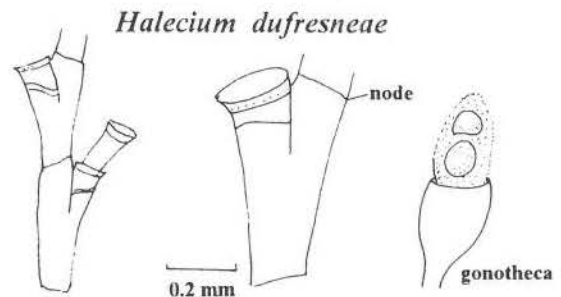
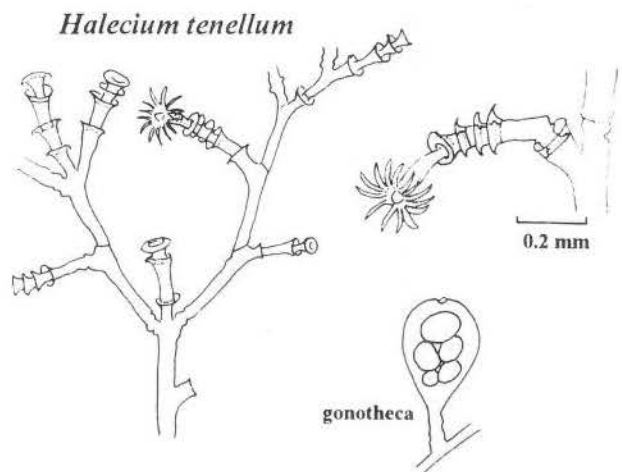
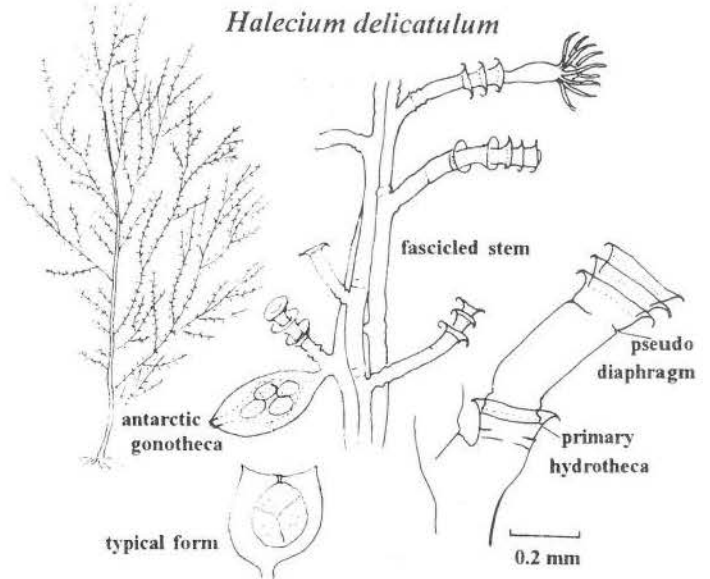
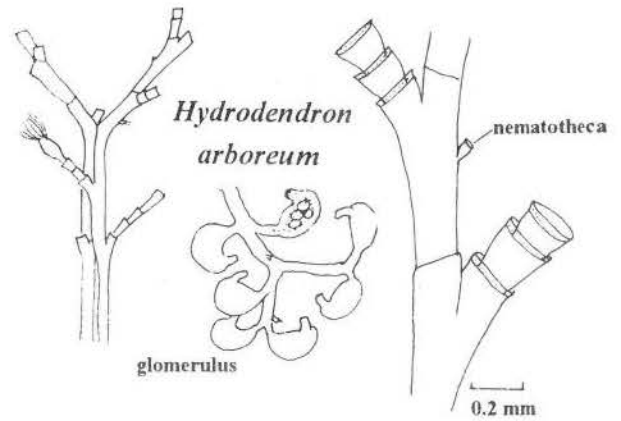
Halecium delicatulum Coughtrey, 1876 (= *H. antarcticum* Vanhöffen, 1910. Some authors consider this antarctic species to be separate on account of the habit and gonophores, see Blanco 1984, while Naumov and Stepaniants 1962 and Vervoort, 1972 consider them conspecific.)

Stems delicate, unfascicled, sparsely branched, up to 10 mm high; primary hydrotheca without pseudodiaphragm, small, delicate, margin strongly everted diameter up to 0.18 mm; female gonotheca smooth, compressed, ovoid with a terminal aperture.

Halecium tenellum Hincks, 1861

- 25 Stem thick, fascicled, 245 mm high, branching irregularly but mainly in one plane, large root stock; primary hydrotheca with a stout pseudodiaphragm in the base, adnate to the internode; gonothecae borne on the sides of the hydrotheca, flattened, widening to the truncated distal end with one or two large embryos discharged into a marsupium.

Halecium dufresneae Millard, 1977



Stem thick, fascicled, up to 160 mm high and 4-8 mm diameter at the base, branching irregularly in all planes; hydrothecae very shallow, adnate to the internodes; female gonotheca club-shaped, contains up to 6 larvae.

Halecium jaederholmi Vervoort, 1972

- 26 Main stem 10-30 mm high, unbranched - like a single feather; female gonotheca compressed with a tubular neck and a large aperture.

Plumularia setacea (Linnaeus, 1758)

Stem fascicled, much branched up to 120 mm. Hydrocladia borne alternately on side branches; large matted rootstock; common in dredges; female gonotheca with large oblique aperture but no neck.

Plumularia insignis Allman, 1883

=*P. flabellum* Allman, 1883

=*P. abietina* Allman, 1883

- 27 Hydrotheca with three marginal cusps and operculum of three valves, mouth triangular.

28

Hydrotheca with four marginal cusps and operculum of four valves, mouth quadrangular; stems slender, straggling, branching repeatedly to form tangled colonies on other hydrozoans and bryozoans; hydrotheca adnate for less than half of the adcauline height, bulging in the centre and narrowing towards the mouth, three inner teeth usually present; gonotheca opening with five teeth.

Sertularella picta (Meyen, 1834)

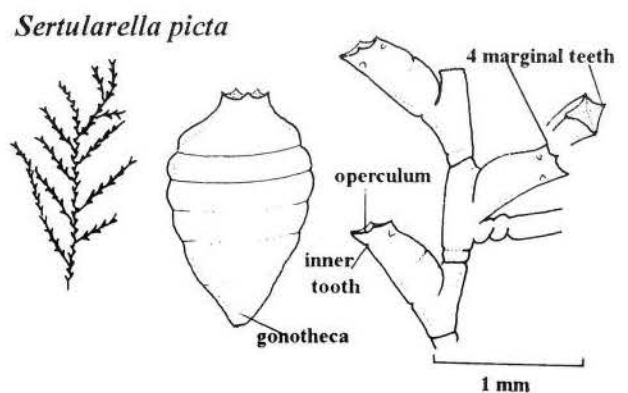
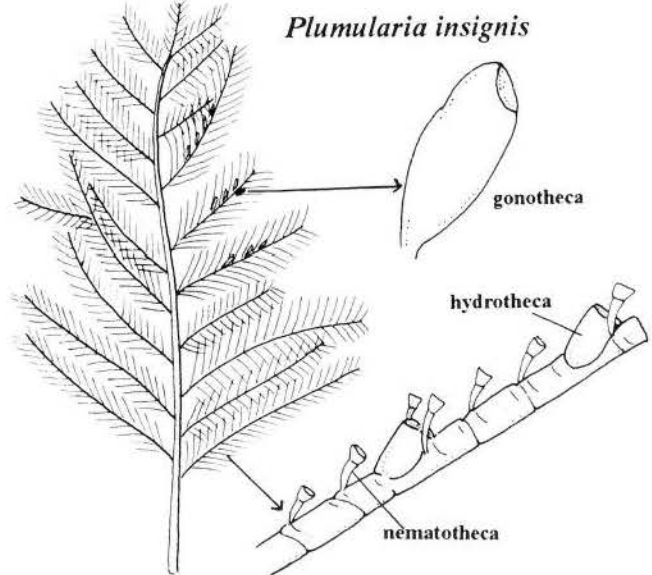
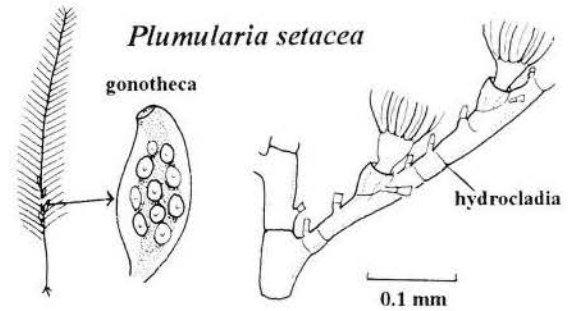
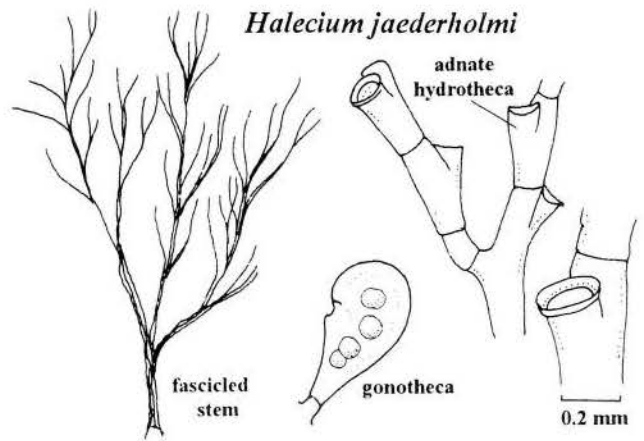
(*Sertularella geodiae* Totton, 1930 from Kerguelen Island has a stiff stem, fascicled and straight at the base, geniculate in terminal regions, branching sparsely in one plane; hydrotheca adnate for about half adcauline wall, wide mouth, no internal teeth.)

- 28 Stem less than 50 mm, unfascicled with pinnate, geniculate branching in one plane, branches of ten diverge at a wide angle giving subdichotomous effect; hydrothecae face laterally

29

Large branching stems more than 50 mm, may be fascicled at the base, branching may be in several planes not subdichotomous; hydrothecae may face slightly frontally

31



- 29 Stem stiff, coarse, pinnate geniculate; hydrothecae large, tubular, curved outwards, abcauline side 0.6-0.7 mm long, less than half of the adcauline surface adnate, diameter of hydrotheca the same in the centre and the margin; female gonotheca obovate with about 9 crested annulations, mouth funnel wide and short.
Symplectoscyphus curvatus (Jäderholm, 1917)

Stem delicate, flexuose, subdichotomously branched; hydrothecae less than 0.4 mm along abcauline side. 30

- 30 Hydrothecae widely spaced along stem, widest in the centre, more than half of the adcauline surface adnate, diameter at mouth 0.13 to 0.3; female gonotheca obovate with 9 to 11 strong, crested circular annulations, long flaring mouth-funnel; commonly entangled with other hydrozoans, branches not ending in stolons; white; depth 40-500 m.
Symplectoscyphus subdichotomus (Kirchenpauer, 1884)

Hydrothecae closely spaced along stem almost overlap, about half of adcauline side adnate, diameter at mouth 0.16 mm; female gonophore with 8-9 low annulations and a short tubular neck; branches often end in annulated stolon; brown; depth 0-15 m.

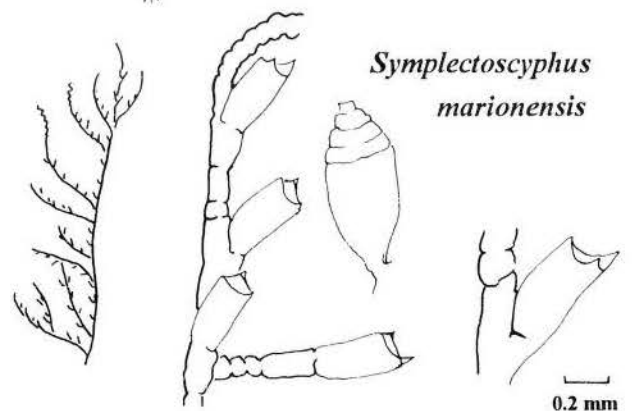
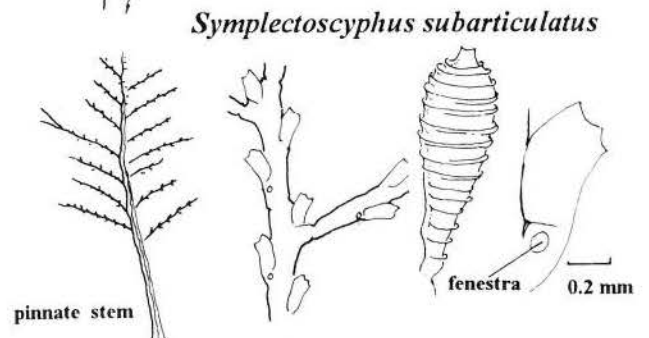
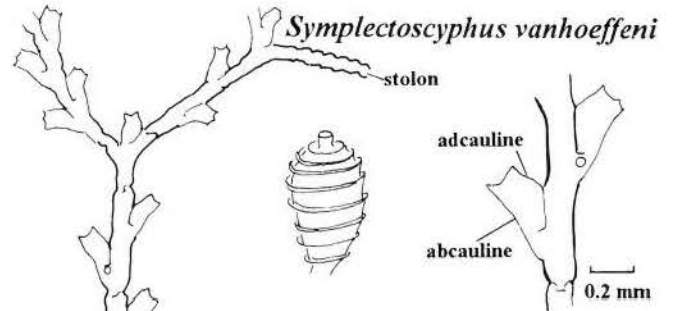
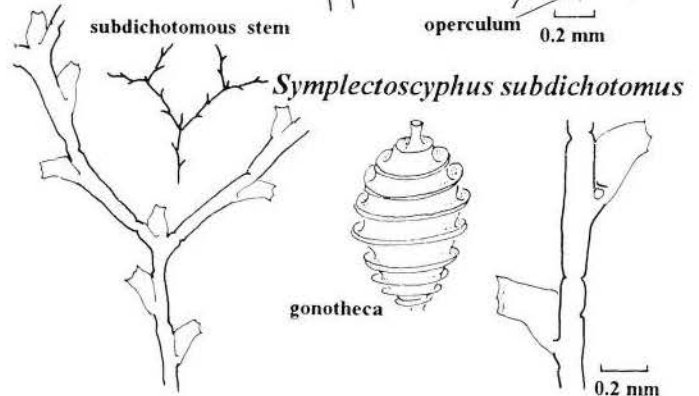
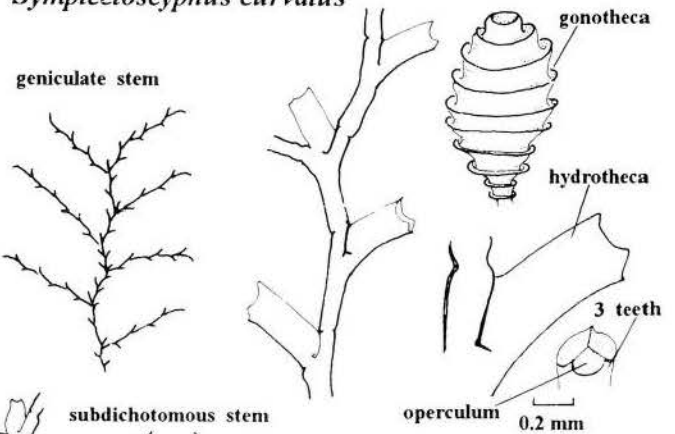
Symplectoscyphus vanhoeffeni Totton, 1930

- 31 Stem fascicled at the base, pinnately branched, each internode of the stem bears three alternating hydrothecae with a branch arising below the third; hydrothecae closely set so that in the distal region the margin of one overlaps the base of the next, adnate for nearly two thirds of the adcauline length, fenestra usually present immediately below the base; female gonotheca carrot-shaped with raised circular annulations and a tubular collar around the aperture, typically 5-8 annulations but the Kerguelen material had 15-17 annulations.
Symplectoscyphus subarticulatus (Coughtrey, 1875)

Stem not fascicled but branching irregularly in several planes, base of the branches with two or three annulations and tips often form annulated stolons; hydrothecae do not lie in one plane, fenestra absent; gonotheca with two or three annular constrictions and a short collar around the aperture.

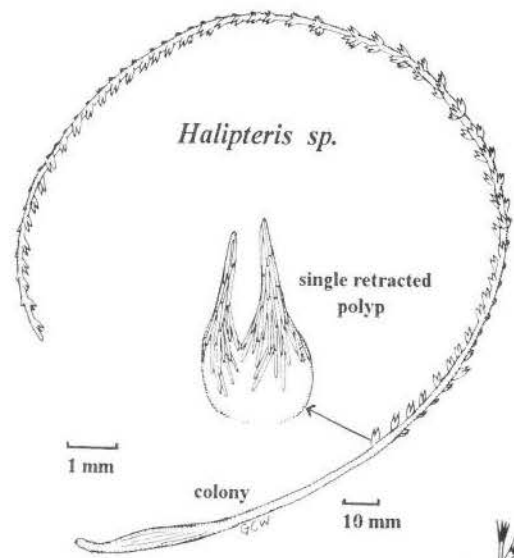
Symplectoscyphus marionensis Millard, 1971

Symplectoscyphus curvatus

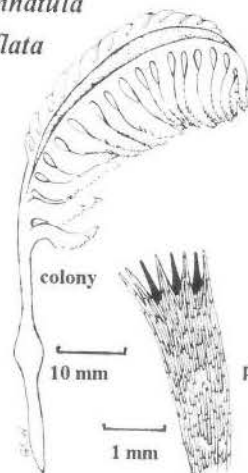


B Octocorallia

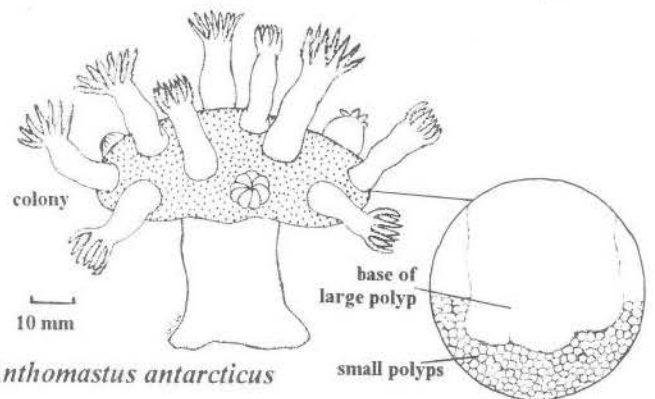
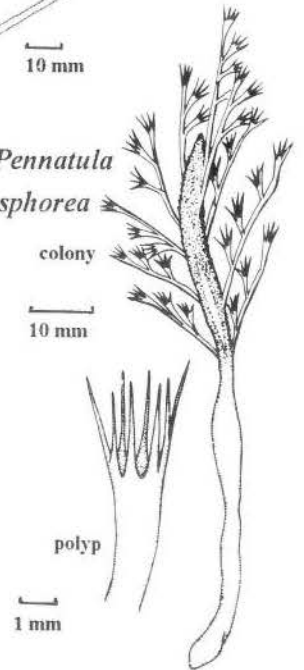
- 1 Colonies anchored in soft sediment by an unbranched fleshy peduncle. 2
- Colonies firmly attached to solid objects by a basal stolon or holdfast. 4
- 2 Polyps contained on fleshy, wing-like or branch-like polyp leaves that emanate laterally from the rachis giving the colony a feather-like appearance; calyx teeth eight. 3
- Conspicuous polyp leaves absent; polyps attached directly to the rachis or are present on raised ridges that adhere to the rachis; calyx teeth two. *Halipterus* sp.
- 3 Polyps generally 20-50 or more per polyp leaf; colony colour orange or yellowish-orange. *Pennatula inflata* Kükenthal, 1910a
- Polyps 3-10 per polyp leaf; colony colour deep brick-red. *Pennatula phosphorea* Linnaeus, 1758
- 4 Polyps dimorphic (of two distinct kinds). 5
- Polyps monomorphic (of one kind only). 6
- 5 Colonies unbranched and mushroom-shaped, single expanded polyp-bearing capitulum arises from a narrower basal stalk; colony colour brick-red. *Anthomastus antarcticus* Kükenthal, 1910b
- Colonies branched with many short, rounded, lobe-like branchlets that contain the polyps; colony colour salmon-pink. *Paragorgia arborea* (Linnaeus, 1758)
- 6 Colonies unbranched, composed of cylindrical or conical calyces arising from a common, basal, ribbon-like stolon that adheres to firm objects. 7
- Colonies branched, attached to solid objects by a single basal holdfast; stolons absent 8



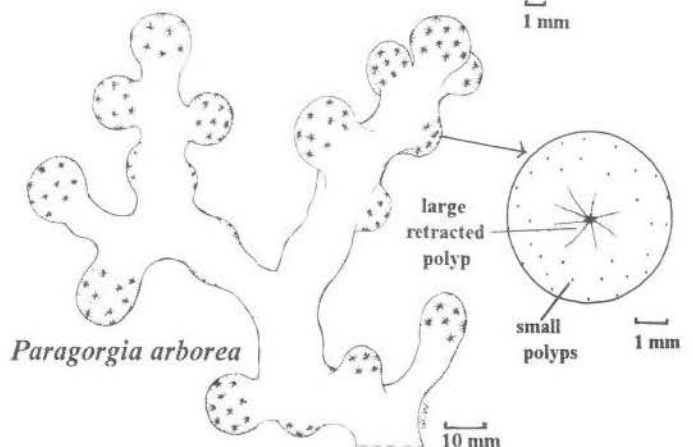
Pennatula inflata



Pennatula phosphorea



Anthomastus antarcticus



Paragorgia arborea

7 Calyces soft and flexible, composed of densely-set free sclerites; colony colour grey or light brown.

Clavularia sp.

Calyces hard and brittle, composed of inseparably-fused sclerites; colony colour rose, pink, or light red.

Rhodelinda gardineri (Gohar, 1940)

8 Colony axis jointed, composed of alternating gold-coloured nodes and milky white internodes; branches arise from internodes. 9

Colony axis continuous and uniform; nodes and internodes absent. 10

9 Colonies sparsely branched; polyps distinctly recurved, club-shaped; scales of calyx rough and spiny.

Primnoisis sparsa Wright & Studer, 1889

Colonies copiously branched; polyps slightly bent inward or not at all; scales of calyx not particularly rough or spiny.

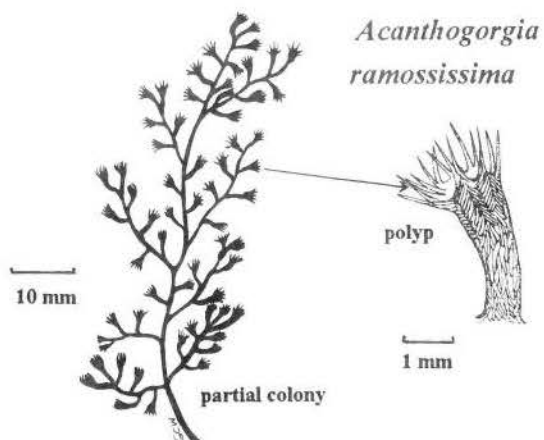
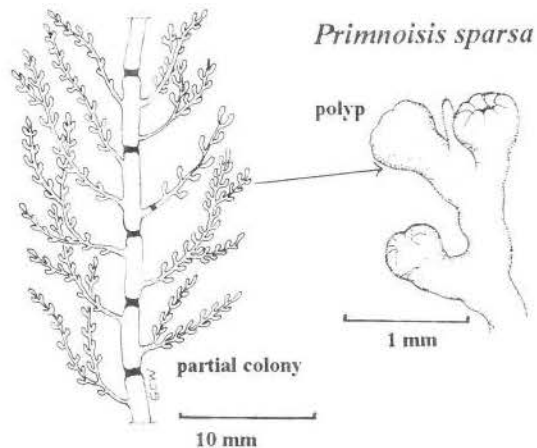
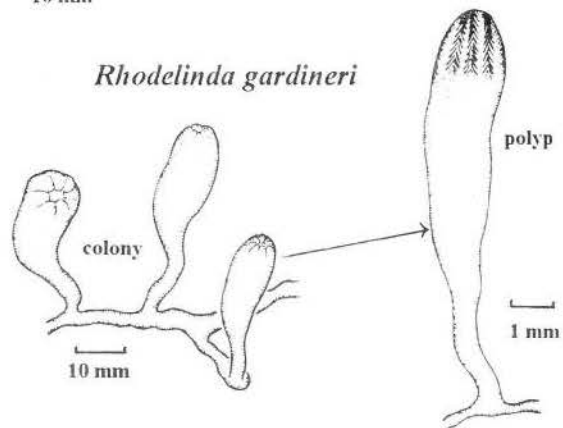
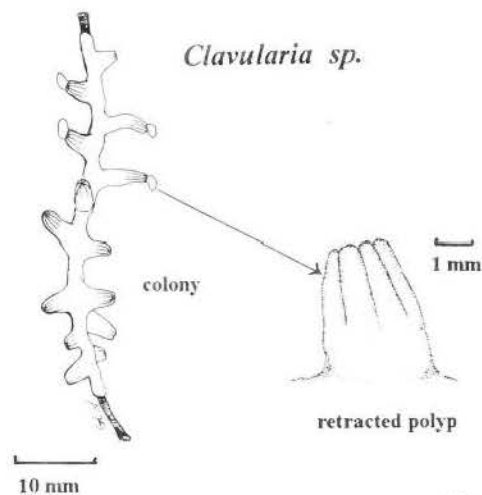
Primnoisis antarctica (Studer, 1879)

(Collected at Prince Edward Island, 567 m in depth, by HMS *Challenger* Expedition (see Bayer & Stefani, 1987: 944-946, fig 1-4) but not in the UCT collections. A comparison of the types of *Primnoisis antarctica* and *P. sparsa* is necessary to determine if they are indeed separate species.)

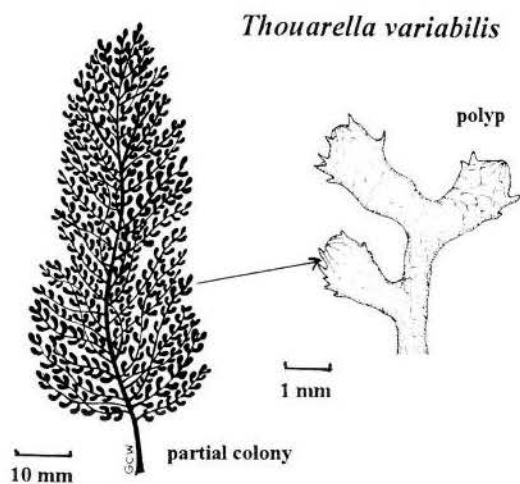
10 Colony axis has a hollow and cross-chambered central core that is surrounded by horn-like material; polyps with long spines at the tips.

Acanthogorgia ramossissima Wright & Studer, 1889

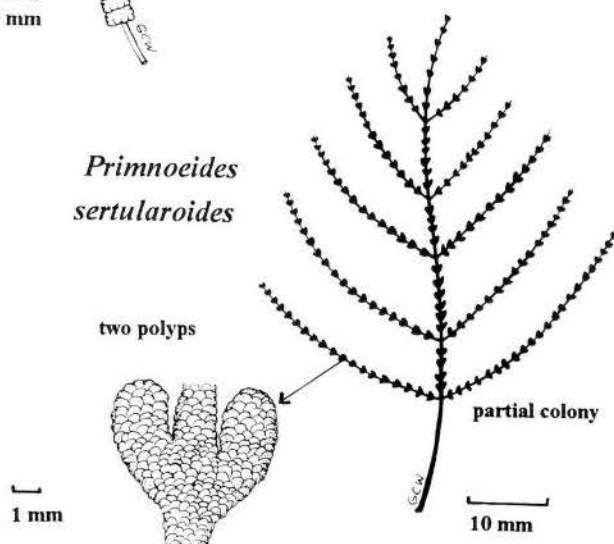
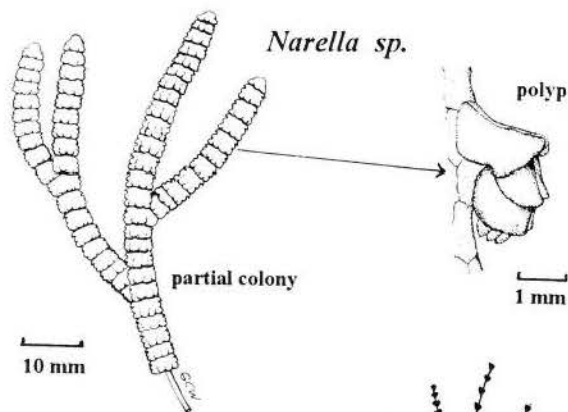
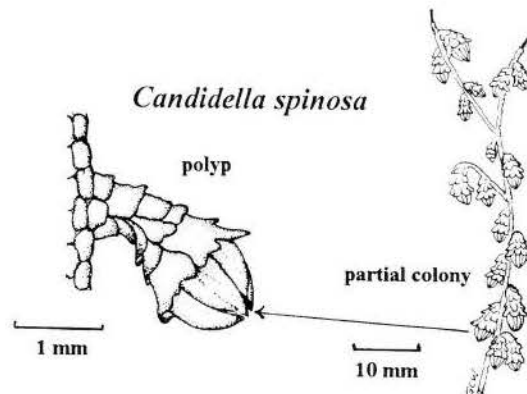
Colony axis solid throughout 11



- 11 Colonies have bottlebrush branching; polyps 2-3 mm long, club-shaped, with variably spiny tips; colour of polyps white to cream, branches light tan to bronzy-brownish.
Thouarella variabilis Wright & Studer, 1889
- Colonies have planar, dichotomous or fanlike branching. 12
- 12 Polyps distinctly clavate (club-like), arranged singly or in an irregular fashion, or in whorls of 2-4.
Candidella spinosa Wright & Studer, 1889
- Polyps not clavate, arranged in whorls of 4-8, or in distinct pairs set opposite to one another. 13



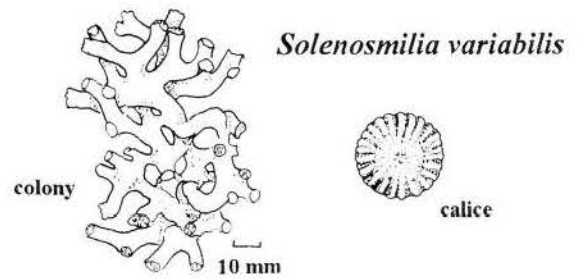
- 13 Colonies have dichotomous branching; polyps arranged in whorls, usually 6-7 polyps per whorl.
Narella sp.
- Colonies have pinnate branching; polyps arranged in conspicuous pairs, opposite one another; polyps rounded and cylindrical, not spiny; scales of the polyp's body (verruca) rounded and smooth.
Primnoeides sertularoides Wright & Studer, 1889



C Scleractinia

- 1 Colonies a tangle of anastomosing branches, intratentacular budding, terminal branches and calices approximately 6 mm in diameter, circular; septa hexamerally arranged, irregular, up to four series present; columella absent or very small and spongy.

Solenosmia variabilis Duncan, 1873

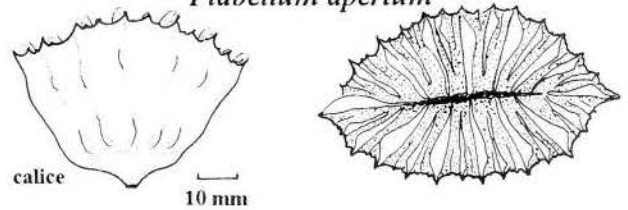


Solitary corallum, occasionally one or more individuals fused at the base. 2

- 2 Corallum compressed, transverse section elliptical; columella absent or very small. 3

Corallum transverse section circular; columella present. 4

Flabellum apertum

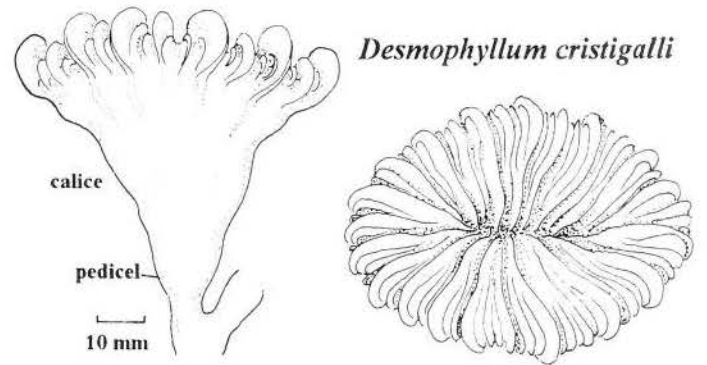


- 3 Solitary; calice sides almost parallel but taper sharply to a short pedicel 2-2.5 mm long, originally attached but becomes free early in its development; margin scalloped; septa hexamerally arranged in four cycles with rudiments of a fifth cycle, inner edges straight with numerous small pointed granules; calice pale pink, up to 58 x 40 mm.

Flabellum apertum Moseley, 1876

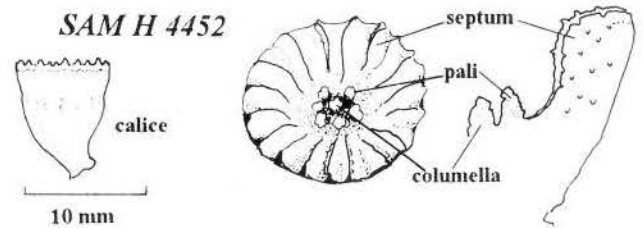
Corallum firmly attached by a large thick pedicel, individuals may be fused in clumps; calice often greatly flared; septa hexamerally arranged in five or more cycles with S1 and S2 greatly exsert; calice large up to 80 x 50 mm; cosmopolitan.

Desmophyllum cristigalli Milne Edwards & Haime, 1848



- 4 Columella short with 6 to 12 round-tipped pali; calice tubular slightly ridged, diameter 8 mm; short pedicel; septa hexamerally arranged in 3 cycles with a partial fourth cycle, small surface granules, inner edge smooth and straight, not exsert.

SAM H 4452 (Undescribed genus aff. *Stenorynthus*)



Columella with twisted ribbons; septa hexamerally arranged in four cycles with a partial fifth, S1 and S2 with slightly sinuous inner margins. 5

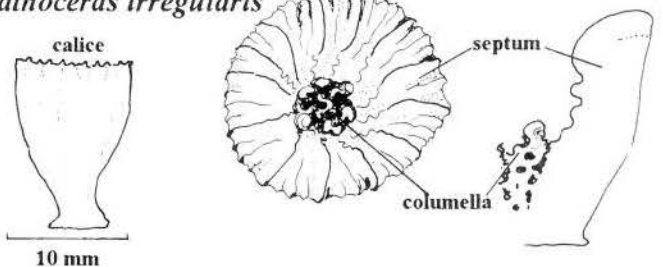
- 5 Calice deep, with fine surface granules; short pedicel; columellar short, in the base of calice, made up of about 8 coiled ribbons, partially fused together; pali absent; septa barely exsert; diameter about 10 mm.

Cyathoceros irregularis Cairns 1982

Calice smooth, porcelanous with flat costae; septum S1 and S2 exsert; pali present opposite S3; columella of 4-20 slender, twisted ribbons; septal ornamentations of carinae are squared off granules.

Trochocyathus sp. SAM A4453

Cyathoceros irregularis



Trochocyathus sp.

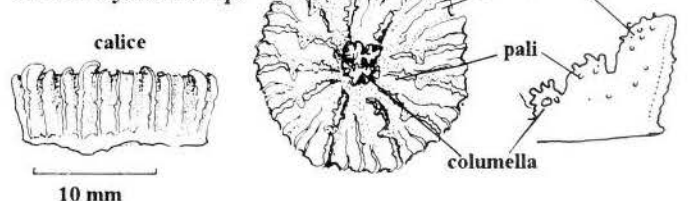
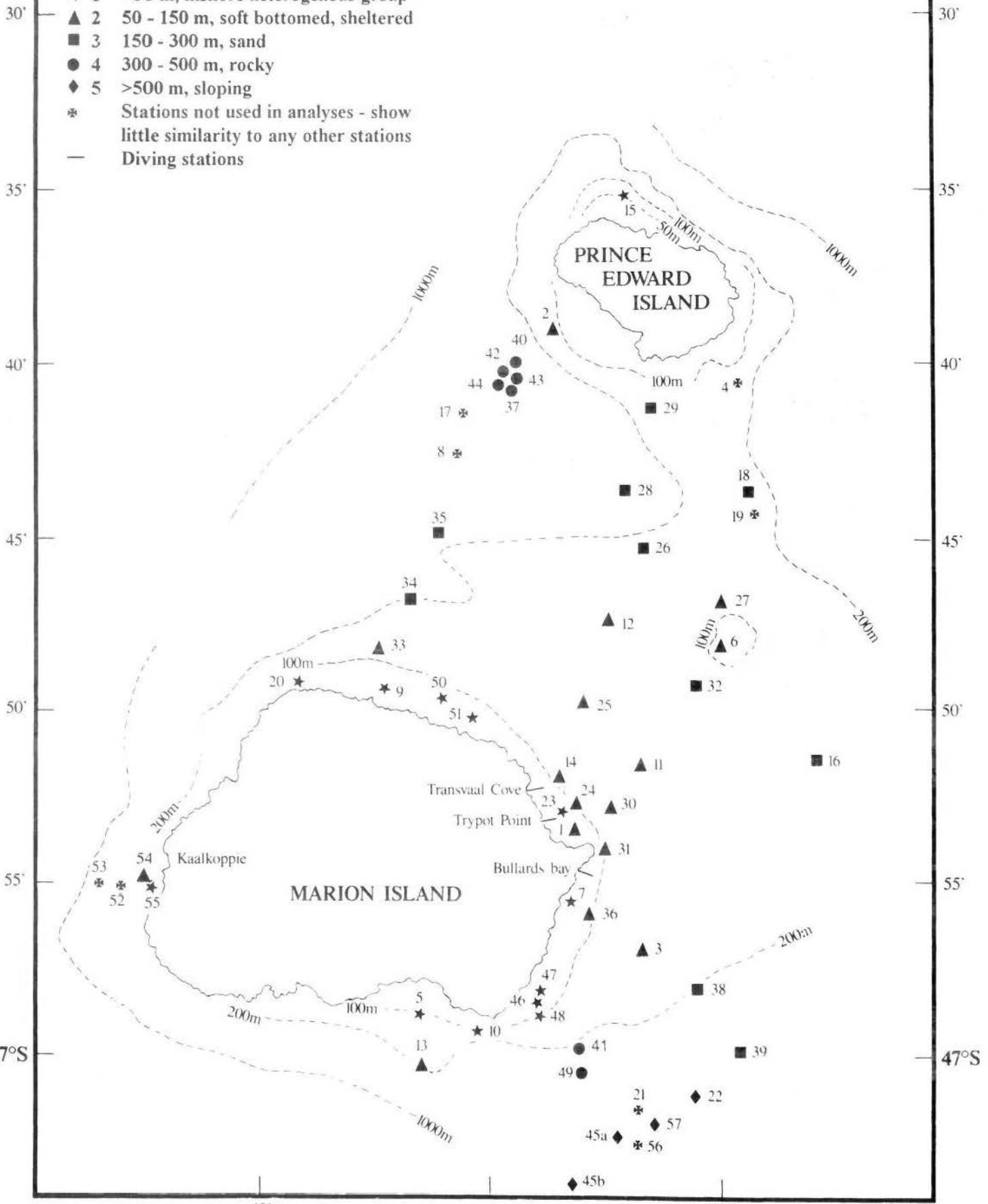


Fig 1
Map of Prince Edward Islands showing station positions and community groups

Key to community groups

- ★ 1 <50 m, inshore heterogenous group
- ▲ 2 50 - 150 m, soft bottomed, sheltered
- 3 150 - 300 m, sand
- 4 300 - 500 m, rocky
- ◆ 5 >500 m, sloping
- * Stations not used in analyses - show little similarity to any other stations
- Diving stations



Discussion

The species of Hydrozoa, Octocorallia and Scleractinia recorded from Marion and Prince Edward Islands during the 1965-1989 University of Cape Town Surveys are listed in Table 1. The localities and stations are shown in Fig 1. Collections were made at three intertidal sites in 1965 (Millard 1971) and at eight intertidal sites in 1982. Forty-four samples were collected by SCUBA-diving and analysed. Of these 36 were taken during a quantitative survey at 5, 10, and 15 m depths at Bullards Bay, Trypot Point and Transvaal Cove (Beckley & Branch 1992) and at 57 sites sampled by dredging in moderately deep waters (30-800 m). For all the species Table 1 summarises the number of stations at which each species was recorded, and the depth range. The relative abundance of the species in the dredged collections is shown in two different ways. The first relates the modal abundance of individual species to six substrate types (A-F) that range from volcanic rock, through gravel, to black volcanic sand. The second records the abundance of species within community groups that were identified by a Brey-Curtis analysis of the total species composition at each station (GM Branch *et al* 1993).

Many of the hydrozoans grew epiphytically on algae, bryozoans or other hydrozoans. Others were associated with crustaceans (especially isopods and amphipods) and *Plumularia insignis* had small bivalves of an undescribed *Pteria* sp. attached to it (Branch *et al* 1991a & 1991b). One specimen of the rarely reported *Symplectoscyphus articulatus* carried large numbers of isopods (*Arcturides* sp.) and nine small Solenogastres. The Hydrozoa, unlike the Octocorallia and Scleractinia, occurred in both the intertidal and dived samples as well as the dredged collections. Their distribution was not closely linked to the nature of the substrate although there were distinct intertidal and deep-water communities with different species. The dominant deep-water species were *Grammaria abietina*, *Halecium delicatulum*, *Lafaea dumosa*, *Plumularia insignis*, *Staurotheca dichotoma* and *Symplectoscyphus subdichotomus*, whereas the common shallow-water species were *Sertularella picta*, *Symplectoscyphus vanhoeffeni* and *Candelabrum meridianum*.

The 14 species of Octocorallia occurred only in relatively deep waters, none being recorded shallower than 100 m, with the majority being collected at depths exceeding 350 m. The greatest concentrations occurred at the deeper stations with rocky substrata. The pennatulaceans (*Haliperis* sp., *Pennatula inflata* and *Pennatula phosphorea*) tended to be rare and were the only species that anchored in soft sediment using their fleshy peduncles. *Clavularia* sp. and *Rhodelinda gardineri* were attached to rocks by creeping stolons that give rise to upright unbranched colonies. They were

both rare and small and contributed little to the overall biomass. In contrast *Thouarella variabilis* was by far the most common and widespread species and formed tall, delicate bushes, which were orange, green and yellow in colour and sheltered a variety of small spiny crustacea (Branch *et al* 1991a). Other branching species with a single holdfast were *Narella* sp. and *Primnoeides sertularoides*, which were collected only south-east of Marion Island while *Candidella spinosa* and *Acanthogorgia ramosissima* were found south-west of Prince Edward and west of Marion Island. *Primnois sparsa*, like *Thouarella variabilis*, occurred in a wider range of substrates, for although they occurred most densely in the deep, rocky stations they also extended into the deeper stations between the islands where the substrate was more sandy. One very large specimen of *Paragorgia arborea* was collected at station 44. Specimens of *Anthomastus antarcticus* were found at stations 57 and 42.

All of the Scleractinia were absent from the intertidal and shallow sub-tidal zones to a depth of 17 m, and were confined to rocky substrates in deep water (290-697 m) where they occurred in relatively small numbers. They were found at only seven stations, four grouped in the south-east of Marion Island, two to the south-west of Prince Edward Island and one west of Marion Island. *Flabellum apertum* was the only species that was common with over thirty individuals at stations 22 and 39. Station 57 yielded four species, all new records for the Prince Edward Islands, two of which are undescribed species.

Five communities could be recognised for the dredged stations (Fig 1; see GM Branch *et al* 1993 for a more detailed analysis) and two additional communities for the intertidal and shallow-water stations:

Group 1. The only common cnidarian species in this shallow (<50 m) inshore community around the islands were *Sertularella picta* and *Symplectoscyphus subdichotomus*.

Group 2. Was a shallow (50-100 m) soft-sediment community dominated by bivalves, the brachiopod *Magellania kerguelensis*, the urchin *Pseudechinus marionis* and the polychaete *Lanice flabellum*. Here *Halecium delicatulum* and *Symplectoscyphus subdichotomus* were abundant with *Lafaea dumosa* common.

Group 3. Was also a soft-sediment community occupying deeper waters (150-300 m) between the islands with a similar species composition to group 2 but here the common hydrozoans were *Grammaria abietina*, *Plumularia insignis*, *Staurotheca dichotoma* and *Symplectoscyphus subdichotomus*. Small numbers of six species of Octocorallia were collected at stations falling in this group.

Group 4. Occurred in deep (300-500 m) rocky-bottomed

Table 1

Summary of species of Hydrozoa, Octocorallia and Scleractinia recorded from Marion and Prince Edward Islands during the 1971-89 University of Cape Town Surveys

The number of stations at which each species was recorded is given for intertidal (Int), SCUBA-diving (Dv) and dredging (Dr) surveys. For these three survey methods respectively 11, 44 and 57 stations were sampled. Maximum and minimum depths are given. The modal abundance of each species is shown in relation to substratum where the modal abundance is expressed as follows: 0 = absent, 1 = 1-5, 2 = 6-15, 3 = 16-30, 4 = 31-50, 5 = 51-100 individuals or small colonies per sample. For large colonies of hydrozoans and octocorals the abundance was assessed on volume where modal abundance 3 = 0.5 litre, 4 = 0.5-1 litre and 5 = >1 litre. Substrate types are: A = >60% rock, B = 10-60% rock, C = >50% gravel, D = sand with 5-50% gravel, E = sand with >5% mud, F = sand.

Abundance is also summarised in relation to five community groups recognised by similarity analyses of the offshore dredged material (community groups 1-5, in fig 1) or for intertidal (Int, group 6 <5 m depth) and shallow-water SCUBA-samples (Dv, group 7, 5-15 m). Abundance was ranked as - = absent, r = rare, p = present, c = common, a = abundant. Ranking was assigned on the basis of the product of the modal abundance and the percentage of stations within a community group at which the species was collected.

Cnidaria	No of records			Depth		Modal abundance in substrates						Abundance in Communities						
	Int	Dv	Dr	Min	Max	Rock			Sand			Offshore					Int	Dv
						A	B	C	D	E	F	Shallow	Deep	1	2	3		
Hydrozoa						A	B	C	D	E	F	1	2	3	4	5	6	7
<i>Campanularia subantarctica</i>	1			1	5												r	-
<i>Candelabrum meridianum</i>	1	8		0	15												p	p
<i>Coryne conferta</i>	1			1	5												r	-
<i>Eudendrium rameum</i>			6	52	527	1	1	1	0	1	1	r	r	r	r	-		
<i>Eudendrium tottoni</i>			1	132	132	0	0	0	0	1	0	-	r	-	-	-		
<i>Filellum antarcticum</i>		1		5	15												-	r
<i>Grammaria abietina</i>			11	102	420	0	0	1	0	1	1	-	p	c	r	-		
<i>Halecium delicatulum</i>			14	52	693	2	0	1	0	2	2	-	a	r	r	-		
<i>Halecium dufresneae</i>			1	693	693	1	0	0	0	0	0	-	-	-	-	r		
<i>Halecium jaederholmi</i>			2	120	290	0	1	0	0	0	1	-	r	-	r	-		
<i>Halecium tenellum</i>			1	228	228	0	0	0	0	1	0	-	-	r	-	-		
<i>Hydractinia parvispina</i>	1			3	3												r	-
<i>Hydrodendron arboreum</i>			2	179	420	0	0	0	0	1	1	-	-	r	r			
<i>Lafoea dumosa</i>			11	105	597	2	0	0	0	2	1	-	c	p	p	p		
<i>Modeeria rotunda</i>			6	102	527	2	1	1	0	0	0	-	r	-	c	-		
<i>Obelia geniculata</i>		5		1	5	135	0	0	0	0	1	0	-	r	-	-	-	r
<i>Opercularella sp.</i>			3	106	140	0	0	0	0	1	1	-	p	-	-	-		
<i>Orthopyxis norvegiae</i>			1	98	98	0	0	0	0	0	1	r	-	-	-	-		
<i>Plumularia insignis</i>			19	38	527	3	2	0	0	2	1	r	r	c	a	r		
<i>Plumularia setacea</i>		2		10	15												-	r
<i>Rhizogeton sp.</i>		3		10	15												-	r
<i>Rhizorhagium antarcticum</i>	1			1	3												r	-
<i>Sertularella picta</i>	1	18	3	2	140	1	0	0	0	1	1	p	r	-	-	-	r	c
<i>Silicularia rosea</i>		2		5	5												-	r
<i>Stuarotheca dichotoma</i>			13	147	527	2	1	0	0	3	1	-	-	a	c	r		
<i>Symplectoscyphus curvatus</i>			5	200	527	3	0	0	0	0	1	-	-	p	c	-		
<i>Symplectoscyphus marionensis</i>	1	4	1	5	98	0	0	0	0	0	1	r	-	-	-	-	r	r
<i>Symplectoscyphus subarticulatus</i>			3	102	693	1	0	1	0	0	1	-	r	-	r	-		
<i>Symplectoscyphus subdichotomus</i>			26	44	527	2	1	1	0	4	3	c	a	a	c	-		
<i>Symplectoscyphus vanhoeffeni</i>	1	10		0	15												r	c
<i>Tubularia sp.</i>	1			0	5												r	-
<i>Zygophylax crozetensis</i>			3	228	693	1	1	0	0	1	0	-	-	r	r	-		

Table 1 (continued)

Cnidaria	No of records			Depth		Modal abundance in substrates						Abundance in Communities						
	Int	Dv	Dr	Min	Max	Rock			Sand			Offshore					Int	Dv
						A	B	C	D	E	F	Shallow	Deep					
Octocorallia						A	B	C	D	E	F	1	2	3	4	5	6	7
<i>Acanthogorgia ramosissima</i>			4	474	693	5	4	0	0	0	0	-	-	-	a	-		
<i>Anthomastus antarcticus</i>			2	510	697	1	0	0	0	0	0	-	-	-	r	r		
<i>Candidella spinosa</i>			3	370	527	1	1	0	0	0	0	-	-	-	p	-		
<i>Clavularia sp.</i>			2	145	368	1	0	0	0	1	0	-	-	-	r	-		
<i>Halipterus sp.</i>			2	110	368	1	0	0	0	0	1	-	r	-	r	-		
<i>Narella sp.</i>			3	368	750	1	0	0	0	0	0	-	-	r	-	r		
<i>Paragorgia arborea</i>			1	527	527	5	0	0	0	0	0	-	-	-	p	-		
<i>Pennatula inflata</i>			1	240	240	0	0	0	0	0	1	-	-	-	-	r		
<i>Pennatula phosphorea</i>			1	697	697	1	0	0	0	0	0	-	-	r	-	r		
<i>Primnoeides sertularoides</i>			4	368	697	1	0	0	0	0	0	-	-	r	-	r		
<i>Primnoisis antarctica</i>																		
<i>Primnoisis sparsa</i>			5	208	475	4	2	0	1	1	0	-	-	p	c	-		
<i>Rhodelinda gardineri</i>			3	165	474	1	1	0	0	1	0	1	1	r	p	-		
<i>Thouarella variabilis</i>			15	145	697	5	5	0	2	3	2	-	-	p	a	r		
Scleractinia						A	B	C	D	E	F	1	2	3	4	5	6	7
<i>Desmophyllum cristagalli</i> *			2	370	697	1	0	0	0	0	0	-	-	-	-	r		
<i>Flabellum apertum</i>			3	290	368	2	1	0	0	0	0	-	-	r	r	c		
<i>Solenosmilia variabilis</i> *			1	697	697	1	0	0	0	0	0	-	-	-	-	-	r	
<i>Cyathocerus irregularis</i>			4	420	697	1	0	0	0	0	0	-	-	-	r	r		
<i>Trochocyathus sp.</i> *			1	697	697	1	0	0	0	0	0	-	-	-	-	r		
SAM H 4452			1	697	697	1	0	0	0	0	0	-	-	-	-	r		

* no live material

localities south-west of Prince Edward and south-east of Marion Islands and were dominated by octocorals (nine species) and hydrozoans (13 species) and their associated crustacean, bivalve and solenogastran fauna. The octocoral *Thouarella variabilis* was the dominant species while *Acanthogorgia ramosissima* and *Primnoisis sparsa* were common to abundant. *Plumularia insignis* was the abundant hydrozoan, with *Staurotheca dichotoma*, *Modeeria rotunda*, *Symplectoscyphus curvatus* and *Symplectoscyphus subdichotomus* being common. Two species of Scleractinia were also found attached to rocks.

Group 5. The deepest (>500 m) sloping rocky sites south-east of Marion Island supported a sparse community with only four species of Hydrozoa and five of Octocorallia but all four species of Scleractinia occurred here, albeit in small numbers. *Flabellum apertum* was common at two stations.

Group 6. The intertidal community yielded nine

species of hydrozoans. Seven were found in crevices or gulleys under rocks at Transvaal Cove where *Candelabrum meridianum* was the only species collected in any quantity. *Sertularella picta* and *Symplectoscyphus marionensis* with its epizootic colonies of *Campanularia subantarctica* were collected near the mouth of the Soft Plume River, on the eastern coast of Marion Island (Millard 1971).

Group 7. The diving survey (depths 5-15 m) produced ten species. *Obelia geniculata* and *Silicularia rosea* were recorded growing on the kelp *Macrocystis laevis*. *Sertularella picta* was common as was *Symplectoscyphus vanhoeffeni*. The latter species is the same as *Symplectoscyphus* sp. recorded by Millard (1971) confirmed by the structure of female gonophores detected in the 1988 collections. *Candelabrum meridianum* were present at eight stations and a small *Rhizogeton* sp. at 10 and 15 m at Transvaal Cove.

Geographical distribution

Millard (1977) described the hydroids from the Kerguelen and Crozet shelves and recorded the distribution of the species with reference to the results of Naumov & Stephaniants (1962), Ralph (1957, 1958 & 1961), Vervoort (1972a & b) and Vanhöffen (1910). Only five out of the 33 species from these islands were shared with Marion and Prince Edward Islands. The present paper includes 16 newly recorded and two unidentified species, which together with the nine intertidal and shallow water species (Millard 1971) and those of the HMS *Challenger* make a total of 31 species for Marion and Prince Edward Islands. These records are taken together with those of Blanco (1984) to update the geographical records of Millard (1977). Four species have been recorded only from Marion Island - *Symplectoscyphus marionis*, *Campanularia subantarctica*, and the possible new species *Rhizogeton* sp. and *?Opercularella* sp. of the family Campanulinidae. Five of the species are near-cosmopolitan in shallow waters, namely *Modeeria rotunda*, *Halecium delicatulum*, *Halecium tenellum*, *Lafoea dumosa* and *Obelia geniculata*. These near-cosmopolitan species and *Fillelum antarcticum* are the only species from the Prince Edward Islands that also occur in South Africa. Together with *Silicularia rosea* and *Staurotheca subdichotomus* they are also found in the Australasian region. Twenty of the 31 species are shared with either Crozet or Kerguelen Islands, 19 with the Magellan region, and 13 with Antarctica. This supports the theory that the faunas of Marion, Kerguelen and Crozet Islands are closely linked into the Kerguelen province. The affinity between the Marion region and the Magellan region is higher (73%) than that shown by the Mollusca and Crustacea (Branch *et al* 1991a & b) and supports the recognition of a subantarctic faunal region (Briggs 1974) for the hydrozoans. They have a lower affinity (44%) to the Antarctic fauna and very little affinity to those from continental regions of Africa and Australasia.

The only previous records of octocorals from the Marion/Prince Edward region are those by Wright & Studer (1889), who recorded six species from the vicinity of Prince Edward Island. *Primnoisis antarctica* is also recorded from the Kerguelen Islands (Studer 1879, Wright & Studer 1889). *Primnoisis sparsa*, *Candidela spinosa*, *Acanthogorgia ramosissima* and *Primnoides sertularoides* have only been recorded from Marion/Prince Edward Islands, and one form of *Thouarella variabilis* is recorded from Heard Island (Wright & Studer 1889), with a tentative identification from Antarctica (Kükenthal 1912). The other eight taxa presented here are considered new records for the region. *Rhodelinda gardineri* was previously recorded from Macquarie, Tristan da Cunha and Gough Islands (Bayer 1981b). *Paragorgia arborea* has a bipolar distribution

(southern Atlantic, northern Atlantic and northern Pacific) as well as Crozet Island (Grasshoff 1979). The sea pen *Pennatula inflata* is also recorded from Somalia and Atlantic South Africa (Williams 1990), while *Pennatula phosphorea* has a cosmopolitan distribution (Kükenthal 1915). *Anthomastus antarcticus* was previously recorded only from Bouvet Island (Kükenthal 1906 & 1910). Three genera are represented in the present collection in which the species have not been determined - the stoloniferous octocoral *Clavularia*, the primnoid gorgonian *Narella* and the pennatulacean *Halipteris*. Four of the eleven identified species are known only from Marion/Prince Edward; eight of the 11 identified species are presumably restricted to the Southern oceans. One species shows a bipolar distribution, one is cosmopolitan and one extends to Africa only.

Cairns (1982 & 1990) in his synopses of the Antarctic and Subantarctic Scleractinia summarises the distribution of the known species. *Scleractinia solenosmilia* is widespread in the Atlantic and Indian Oceans and circum-subantarctic in the southern seas, and was present but not common in the collections from the Prince Edward Islands. The type locality for *Flabellum apertum* is off Prince Edward Island at station 145 of the HMS *Challenger* and it has since been shown to be circum-subantarctic. The new record of the large *Desmophyllum cristigalli* at the Prince Edward Islands extends the records of this cosmopolitan species that was previously known from the Pacific, Atlantic and Indian Oceans and the southern seas although it is not present off continental Antarctica. Prior to this collection *Cyathoceras irregularis* had only been recorded from its type locality, a seamount on the Eltanin fracture zone system on the opposite side of the globe from Marion Island. At its type locality it was attached to dead corals, usually *Solenosmilia variabilis*. Both *D. cristigalli* and *C. irregularis* were present in the dredged sample from station 57 at Marion Island at a similar depth 500-700 m. The Scleractinia do not form a large component of the fauna of Marion Island. Those that do occur are cosmopolitan or have also been found at great distances from this island group. Most of them fit into a broad subantarctic group with some affinity to the southern continents but no affinity to the Antarctic peninsula.

References

- ALLMAN GJ 1876. Descriptions of some new species of Hydroida from Kerguelen's Island. *Ann. Mag. nat. Hist.* (4)17: 113-115
- ALLMAN GJ 1883. Report on the Hydroida dredged by H.M.S. *Challenger* during the years 1873-76. Part I. Plumularidae. Rep. Voy. *Challenger* 1873-76, *Zoology* 7(20): 1-54
- ALLMAN GJ 1888. Report on the Hydroida dredged

- by H.M.S. *Challenger* during the years 1873-76. Part II. The Tubularinae, Corymorphinae, Campanularinae, Sertularinae and Thalamophora. Rep. Voy. *Challenger* 1873-76, *Zoology* 23(70): 1-90
- ARNAUD F & BRANCH ML 1991. The Pycnogonida of subantarctic Marion and Prince Edward Islands: Illustrated keys to the species. *S. Afr. J. Antarct. Res.* 21(1): 65-71
- BAYER FM 1981a. Key to the genera of octocorallia exclusive of Pennatulacea. *Proc. Biol. Soc. Wash.* 94(3): 902-947
- BAYER FM 1981b. On some genera of stoloniferous octocorals (Coelenterata: Anthozoa), with descriptions of new taxa. *Proc. Biol. Soc. Wash.* 94(3): 878-901
- BAYER FM & STEFANIJ 1987. New and previously known taxa of isidid octocorals (Coelenterata: Gorgonacea), partly from Antarctic waters. *Proc. Biol. Soc. Wash.* 100(4): 937-991
- BECKLEY L & BRANCH GM 1992. A quantitative Scuba diving survey of the sublittoral macrobenthos at sub-antarctic Marion Island. *Polar Biol.* 11: 553-563
- BLANCO OM 1984. Contribucion al Conocimiento de Hydrozoos Antarticos y Subantarticos. *Contrib. Inst. Antar. Argentino* 294: 1-53
- BRANCH GM, ATTWOOD CG, GIANAKOURAS D & BRANCH ML 1993. Patterns in the benthic communities on the shelf of the subantarctic Prince Edward Islands. *Polar Biol.* 13: 23-34
- BRANCH ML 199X. The Polychaeta of Marion and Prince Edward Islands. *S. Afr. J. Antarct. Res.* in press.
- BRANCH ML, GRIFFITHS CL, KENSLEY B & SIEG J 1991a. The benthic Crustacea of subantarctic Marion and Prince Edward Islands. *S. Afr. J. Antarct. Res.* 21: 3-44
- BRANCH ML, ARNAUD PM, CANTERA J & GIANAKOURAS D 1991b. The benthic Mollusca and Brachiopoda of subantarctic Marion and Prince Edward Islands. *S. Afr. J. Antarct. Res.* 21: 45-64
- BRANCH ML, JANGOUX M, ALVA V, MASSIN CL & STAMPANATO S 1993. The Echinodermata of subantarctic Marion and Prince Edward Islands. *S. Afr. J. Antarct. Res.* Vol 23 No 1 & 2: 37-70
- BRIGGS EA 1939. Hydroida. Sci. Rep. *Australias Antart. Exped. (C)* 9(4): 1-46
- BRIGGS JC 1974. *Marine Zoogeography*. New York et al.: McGraw-Hill
- BROCH H 1909. Die Hydroiden der Arktischen Meere. *Fauna arct.* 5: 129-248
- BROCH H 1948. Antarctic hydroids. *Scient. Results Norw. Antarct. Exped.* 28: 1-23
- CAIRNS SD 1982. Antarctic and Subantarctic Scleractinia. *Biology of the Antarctic seas XI, Antarctic research series* 34: 1-74
- CAIRNS SD 1990. Antarctic Scleractinia. In: *Synopses of the Arctic Benthos Vol 1*, eds JW Wägele & J Sieg. Publisher Koenigstein, Koeltz Scientific Books
- CORNELIUS PFS 1975. A revision of the species of Lafoeidae and Haleciidae (Coelenterata: Hydroida) recorded from Britain and nearby seas. *Bull. Br. Mus. nat. Hist. (Zool.)* 28: 375-426
- COUGHTREY M 1875. Critical notes on the New Zealand Hydroidea. *Trans. Proc. N.Z. Inst.* 7: 281-293
- COUGHTREY M 1876. Notes on the New Zealand Hydroida, Suborder Thecophora. *Ann. Mag. nat. Hist.* (4)17: 22-32
- DENNANT J 1906. Madreporaria from the Australian and New Zealand coasts. *Trans. R. Soc. S. Aust.* 30: 151-165
- DUNCAN PM 1873. A description of the Madreporaria dredged up during the expedition of the H.M.S. *Porcupine* in 1869 and 1970. Part 1. *Trans. Zool. Soc. Lond.* 8(5): 303-344
- FLEMING F 1820. Observations on the natural history of the *Sertularia gelatinosa* of Pallas. *Eding. phil. J.* 2: 82-89
- GARDINER JS 1939. Madreporarian corals, with an account of variation in *Cariophyllia*. *Discovery Rep.* 18: 323-338
- GOHAR HAF 1940. A revision of some genera of the Stolonifera (with an emended system of classification and the description of two new species). *Publ. Mar. Biol. Sta. Ghardaqa* 3: 1-25
- GRASSHOFF M 1979. Zur bipolaren Verbreitung der Oktokoralle *Paragorgia arborea* (Cnidaria: Anthozoa Acleraxonia). *Senckenbergiana marit.* 11(3/6): 115-137
- HARTLAUB C 1904. Hydroiden. *Result. Voyage S. Y. Belgica*: 1-19
- HARTLAUB C 1905. Die Hydroiden der magalhaensischen Region und chilenischen Küste. *Xool. Jb. Suppl.* 6(3): 497-714
- HICKSON SJ & GRAVELY FH 1907. Coelenterata II Hydroid zoophytes. *Nat. Antarct. Exped. nat. Hist.* 3: 1-34
- HINCKS T 1861. A catalogue of the zoophytes of South Devon and South Cornwall. *Ann. Mag. nat. Hist.* (3)8: 251-262
- JÄDERHOLM E 1905. Hydroiden aus antarktischen und subantarktischen Meeren gesammelt von der schwedischen Südpolarexpedition. *Wiss. Ergebn. schwed. Südpolarexped.* 5: 1-41
- JÄDERHOLM E 1917. Hydroids from the south seas. *Redog. Norrkopings Laroverk Lasaret* 1916-1917: 1-23
- KIRCHENPAUER GH. 1884. Nordische Gattungen und Arten von Sertulariden. *Abh. Geb. Naturw. Hamburg* 8(3): 1-54
- KÜKENTHAL W 1906. Alcyonacea. *Wissensch. Ergbn. Deutschen Tiefsee-Expedition 'Valdivia'* 13(1) Lieferung 1: 1-111
- KÜKENTHAL W 1910a. Pennatuliden der Deutschen Tiefsee-Expedition. *Zool. Anzeiger* 36(2/3): 51-58
- KÜKENTHAL W 1910b. Zur Kenntnis der Gattung

- Anthomastus* Verr. In: Doflein F (Ed.) *Beiträge zur Naturgeschichte Ostasiens. Abhandlungen der math.-phys. Klasse der K. Bayer. Akademie der Wissenschaften* I Suppl. -Bd. (9): 1-16
- KÜKENTHAL W 1912. Die Alcyonaria der Deutschen Südpolar-Expedition 1901-1903. In: Drygalski E von (Ed.), *Deutsche Südpolar-Expedition 1901-1903*, 13 Band Zoologie 5(3): 289-349
- KÜKENTHAL W 1915. Pennatularia. *Das Tierreich* 43: 1-132. Berlin; Verlag von R. Friedländer.
- KÜKENTHAL W & BROCH H 1911. Pennatulacea. *Wissensch. Ergbn. Deutschen Tiefsee-Expedition 'Valdivia'* 13(1) Lieferung 2: 113-576
- LINNAEUS C 1758. *Systema naturae*. Ed. 10 Holmiae; Laurentiae Salvii
- MILLARD NAH 1971. Hydrozoa. In: *Marion and Prince Edward Islands*, Eds EM van Zinderen Bakker, JM Winterbottom & R A Dyer. AA Balkema, Cape Town. pp. 396-408
- MILLARD NAH 1975. Monograph on the Hydrozoa of southern Africa. *Ann. S. Afr. Mus.* 68: 1-513
- MILLARD NAH 1977. Hydroids from the Kerguelen and Crozet shelves, collected by the cruise MD.03 of the *Marion-Dufresne*. *Ann. S. Afr. Mus.* 73: 1-47
- MILNE EDWARDS H & HAIME J 1848. Recherches sur les polypiers. *Mém. 2. Monographie des turbinolides. Ann. Sci. Nat., Ser 3*, 9: 211-344
- MOSELEY HN 1876. Preliminary report by Professor Wyville Thomson on the true corals dredged by the HMS *Challenger* in deep water between the dates Dec. 30th, 1870, and August 31st, 1875. *Proc. R. Soc.* 24: 544-569
- MOSELEY HN 1881. Report on certain hydroid, alcyonarian and madreporarian corals procured during the voyage of the HMS *Challenger* in the years 1873-1876. Part 3, On the deep-sea Madreporaria. *Rep. Sci. Res. Challenger Zool.* 2: 127-208
- NAUMOV DV & STEPHANIANTS SD 1962. Hydrozoa (Thecophora) collected by the Soviet Antarctic Expedition during cruises of the M/V 'Ob', in antarctic and subantarctic waters. *Biol. Rep. Soviet Antarct. Exped. (1955-1958)*, I. Studies of marine fauna 1(9): 69-104 (In Russian; translated by Israel Program of Scientific Translations, 1966)
- PALLAS PS 1766. *Elenchus zoophytorum*. Haag: Van Cleef
- QUOY JR & GAIMARD JP 1927. Observation zoologiques faites á bord de l'Astrolabe, en Mai 1826, dans le détroit de Gibraltar. *Annl. Sci. nat.* 10: 1-21, 171-193, 225-239
- RALPH PM 1957. New Zealand thecate hydroids. Part I. Campanulariidae and Campanulinidae. *Trans. R. Soc. N.Z.* 84: 811-854
- RALPH PM 1958. New Zealand thecate hydroids. Part II. Families Lafoeidae, Lineolariidae, Haleciidae and Syntheciidae. *Trans. R. Soc. N.Z.* 85: 301-356
- RALPH PM 1961. New Zealand thecate hydroids. Part III Family Sertulariidae. *Trans. R. Soc. N.Z.* 88: 749-838
- SARS M 1851. Beretning om en i sommeren 1849 foretagen zologisk reise i Lofoten og Finmarken. *Nyt. Mag. Naturvid.* 6: 121-211
- STUDER T 1879. Übersicht der Anthozoa Alcyonaria, welche während der Reise SMS *Gazelle* um die Erde gesammelt wurden. *Monatsbericht der Königlich Preussischen Akademie der Wissenschaften zu Berlin* 1878: 632-688.
- TOTTON AK 1930. Coelenterata. Part V. Hydrozoa. *Nat. Hist. Rep. Br. Antarct. Terra Nova Exped.* 5: 131-252
- VANHÖFFEN E 1910. Die Hydroiden der deutschen Südpolar-Expedition 1901-1903. *Dt. Südpol.-Exped.* 11: 269-340
- VERVOORT W 1972a. Hydroids from the 'Theta', 'Vema' and 'Yelcho' cruises of the Lamont-Doherty Geological Observatory. *Zool. Verh., Leiden* 120: 1-247
- VERVOORT W 1972b. Hydroids from submarine cliffs near Arthur Harbour, Palmer Archipelago, Antarctica. *Zool. Meded.* 47: 337-357
- WILLIAMS GC 1990. The Pennatulacea of southern Africa (Coelenterata, Anthozoa). *Ann. S. Afr. Mus.* 99(4): 31-119
- WRIGHT EP & STUDER T 1889. Report on the Alcyonaria collected by HMS *Challenger* during the years 1873-1876. *Rep. Sci. Res. Challenger Zool.* 31: 1-314
- ZIBROWIUS H 1980. Les sclérectiniaux de la Méditerranée et de L'Atlantique nord-oriental. *Mémoires de L'Institut Océanographique, Monaco* 11: 1-284