

# An observer's identification guide: New Zealand's protected corals

Revised 2025



**Aotearoa New Zealand's marine realm and its geologically varied seafloor supports abundant and diverse coral fauna.**

Corals and their associated communities are vulnerable to several threats including fishing (bottom trawl and bottom longline), mineral exploration, and climate change.

Most corals in Aotearoa's waters are protected under the provisions of the Wildlife Act 1953. There are over 300 protected coral species.

This quick reference guide includes corals most at risk of being bycaught in fisheries.



Scleractinian stony coral *Oculina virgosa* Credit: NIWA DTIS

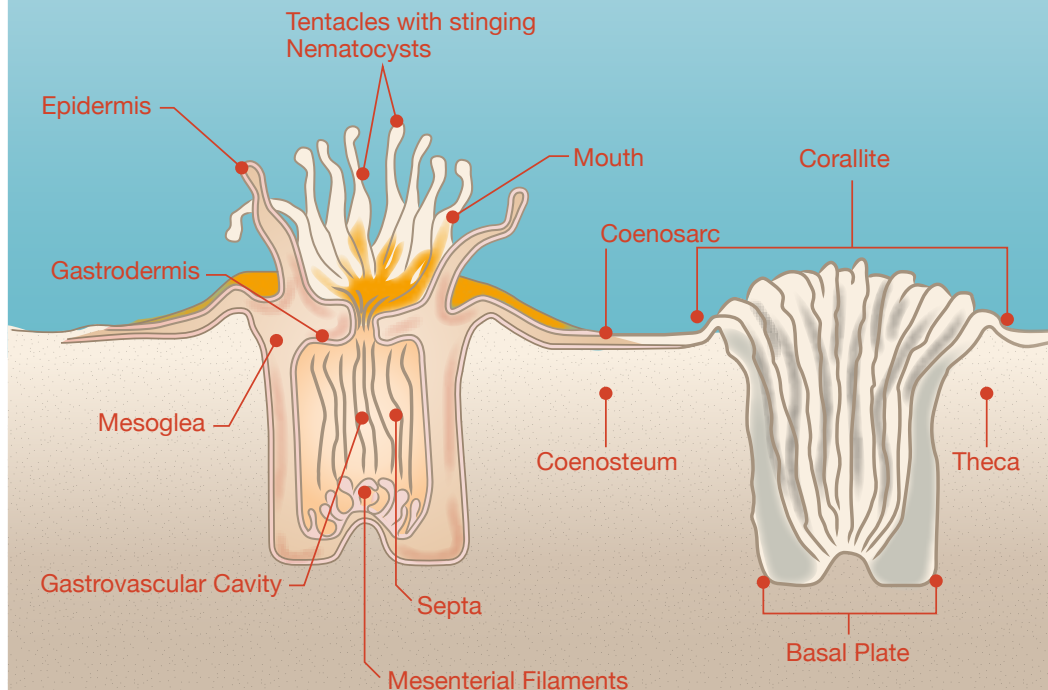
# Contents

This guide includes descriptions and images of key protected corals that fishers and fisheries observers may encounter at sea. The corals are organised into 4 main groups, and there are descriptions of other marine fauna that may be confused with each of the groups. Reporting codes and sampling instructions for observers are also included, as are resources where additional information can be found.

<b>What is a coral?</b> .....	<b>3</b>	<b>Hydrocorals COR</b> .....	<b>26</b>
		Groups that can be confused with hydrocorals.....	27
<b>Taxonomy of major coral groups</b> .....	<b>4</b>	<b>Soft corals SOC</b> .....	<b>28</b>
<b>List of corals found in this guide</b> .....	<b>5-6</b>	<b>Sea pens PTU</b> .....	<b>30</b>
<b>Stony corals SIA</b> .....	<b>7</b>	<b>Zoanthids ZAH</b> .....	<b>31</b>
Groups that can be confused with stony corals.....	10	<b>Instructions for observers</b> .....	<b>32</b>
<b>Black corals COB</b> .....	<b>11</b>	<b>Further resources</b> .....	<b>34</b>
Groups that can be confused with black corals.....	14		
<b>Gorgonian corals GOC</b> .....	<b>15</b>		
Groups that can be confused with gorgonian corals.....	25		

# What is a coral?

“Coral” is a general term used to describe several different groups of animals in the Phylum Cnidaria. A coral consists of a skeleton base and living polyps with tentacles. The diagram below shows generalised coral morphology.



## Some terminology in this guide:

**Polyp** – the tentacled living tissue part of a coral, multiple polyps make up a **colony**.

**Calyx** (plural, calyces) – cup that contains the polyp, in an octocoral.

**Corallite** – skeletal cup in stony corals; polyp is housed within it (and extends/contracts from it).

**Corallum** – a whole colony (or solitary cup).

**Cup** – easy terminology for where each individual coral polyp sits.

**Septum** (plural, septa) - radiating vertical plates lying within the corallite wall.

**Stolon** – tissue interconnecting individual polyps.

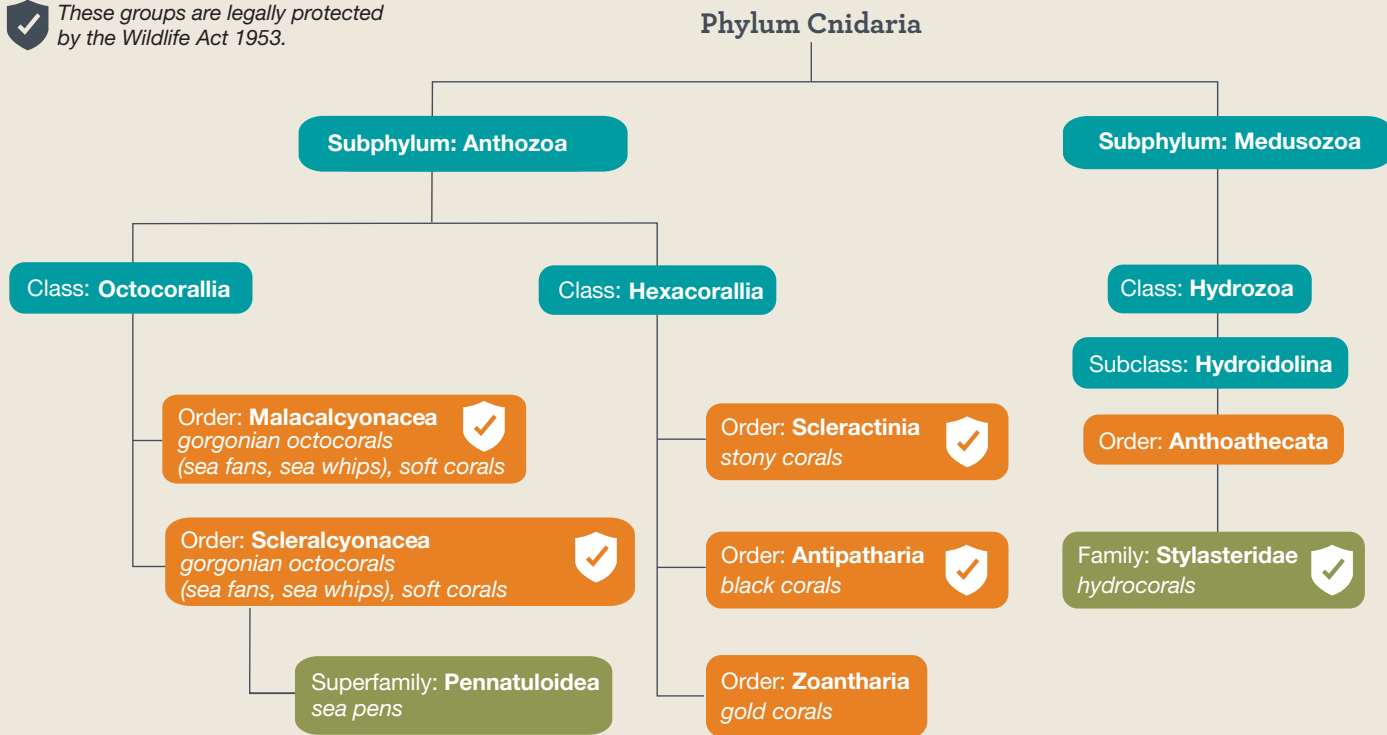
**Pinnules** – symmetrically arranged branches of nearly-equal length on black coral stem and branches.

*For more information on corals, refer to resources on P34.*

# Taxonomy of major coral groups

This guide provides a summary of taxonomic features for the key coral groups we find in the New Zealand region, and covers primarily deep-sea species representative of each group likely to be encountered in trawl fisheries.

✓ These groups are legally protected  
by the Wildlife Act 1953.



# List of corals found in this guide

As there are very few common names for deep sea corals, many descriptions and corresponding reporting codes are at the **genus level** or species level. There are over 300 protected coral species in New Zealand waters; this guide covers the main deep sea species. Not all taxa have their own code (so should be reported at the next level up). This list includes the 3-letter reporting codes observers need to use when reporting coral bycatch.\*

## Stony Corals SIA

### Branching thicket-forming corals CBR.....p.7

*Solenosmilia variabilis* SVA  
*Madrepora oculata* MOC  
*Enallopsammia rostrata* ERO

*Goniocorella dumosa* GDU  
*Eguchipsammia japonica* EJA  
*Dendrophyllia* DDB  
*Oculina virgosa* OVI  
*Culicia rubeola* CUR

### Solitary or cup corals CUP.....p.9

*Flabellum* COF  
*Flabellum apertum* FAP  
*Fungiacyathus* FUG

### *Caryophyllia* CAY

*Caryophyllia ambrosia* CMB  
*Desmophyllum dianthus* DDI  
*Stephanocyathus platypus* STP  
*Stephanocyathus spiniger* STP

## Black corals COB

### Whip black corals...p.11

*Stichopathes* STI  
*Cirripathes* CIR  
*Stylopathes* SLP

### Bushy black corals .....p.12

*Antipathes* ATP  
*Antipathella* AHL  
*Triadopathes* TDP  
*Tylopathes* TYL

### *Leiopathes* LEI

*Trissopathes* TPT

### Sea fan-like black corals

.....p.13  
*Dendrobathypathes* DEN

### *Dendropathes* DDP

*Lillipathes* LIL  
*Parantipathes* PTP  
*Bathypathes* BTP  
*Telopathes* TEO

## Gorgonian corals GOC

### Bamboo corals ISI.....p.15

*Keratoisididae*  
*Keratoisis* BOO  
*Isidella* ISP  
*Acanella* ACN

### *Jasonis* JAS

*Mopseidae*  
*Primnoisis*  
*Primnoisis antarctica* PAN  
*Minuisis* MIN

### Bubblegum corals....p.17

*Paragorgiidae* PAB  
*Paragorgia* PAB  
*Paragorgia arborea* PAB

### Precious corals .....p.17

*Corallidae* CLL  
*Hemicorallium*  
*Corallium* CLL

\*Some coral genera do not have a 3-letter code, observers should use the **family code** or **group code**.

## List of corals found in this guide (continued)

**Alcyoniidae ALY &  
Victorgorgiidae VIC**  
.....p.18

*Iciligorgia* ICI  
*Anthothela* ANB  
*Victorgorgia* VCT

**Sea Fans GOC** .....p.19

**Primnoidae PRI** ...p.19

*Primnoella* PML  
*Parastenella* PLD  
*Thouarella* THO  
*Metafannyella* MEF  
*Tokoprymno* TOK  
*Primnoa* PMN

*Callogorgia* CLG  
*Calyptraphora* CTP  
*Narella* NAR

**Plexauridae PLE**  
.....p.22  
*Swiftia* SWI

**Acanthogorgiidae PLE**...p.22

*Muriceides* MRI  
*Paracis* PRF  
*Bebryce* PLE  
*Villogorgia* VIL *Paramuricea*  
PRG *Acanthogorgia* ACC

**Golden corals** ....p.24

*Chrysogorgia* CHR  
*Pseudochrysogorgia*

*Metallogorgia* MTL  
*Iridogorgia* IRI

*Radicipes* RAD

**Hydrocorals COR** p.26

*Errina* ERR  
*Stylaster* STL  
*Lepidotheca* LPT  
*Calyptopora reticulata* CRE

*Conopora* COO  
*Crypthelia* CRY

**Soft corals SOC** ....p.28

*Bathyalcyon robustum* ARO  
*Clavularia* SOC  
*Rhodelinda gardineri* RGA  
*Telestula* TLA

*Heteropolypus* SOC  
*Anthomastus* SOC  
*Telesto* TLO  
*Chironephthya* SOC

**Sea pens PTU** .....p.30

*Funiculina* FQU  
*Kophobelemnion* KST

*Distichoptilum* DGR  
*Umbellula* UMB

*Gyrophyllum sibogae* GYS  
*Pennatula* PNN

*Balticina* HWL

**Zoanthids ZAH** .....p.31

*Epizoanthus paguriphilus* EPZ

*Parazoanthus elongatus* ZAH

*Kulamanamana* ZAH

*Savalia* ZAH

Subphylum: Anthozoa  
Subclass: Hexacorallia  
Order: Scleractinia

## Stony corals SIA

*Solenosmilia variabilis*, *Madrepora oculata*, *Enallopsammia rostrata*

7



Stony corals are hard, calcareous corals that form 3D matrix structures, dense clumps of individual colonies, OR occur as a solitary cup. This group is widespread and abundant in New Zealand waters. They have prominent polyp calices (the top opening of a **corallite**, or **cup**) in which the polyp is situated.

### Branching stony corals CBR

Branching reef / thicket-forming colonies that produce large, fragile, habitat-forming 3D matrices of continuous and semi-continuous patches of live and dead coral. When live, these corals are pink, bright red to orange, yellow, brown, and purple.

They can be told apart by their branching pattern:

- ***Solenosmilia variabilis* SVA** The calice divides in two; branching in a 'v' shape:

Branching occurs below the calice:

- ***Madrepora oculata* MOC** Many small circular calices that can alternate on each side of thick branches in a flute-like orientation.
- ***Enallopsammia rostrata* ERO** Has main branches, then large calices on one side of the plane of the colony.

Please use the **CBR** code if you are unsure of the identification as these branching forms are difficult to distinguish to genus level.



Subphylum: Anthozoa  
Subclass: Hexacorallia  
Order: Scleractinia

## Stony corals SIA

*Goniocorella dumosa*, *Eguchipsammia japonica*,  
*Dendrophyllia*, *Oculina virgosa*, *Culicia rubeola*

8



### Branching stony corals CBR continued

Branches extend away from the calices, at 90 degrees:

- ***Goniocorella dumosa* GDU** A 3D network of thin branches (note the bridges between branches); polyps branch at right angles
- ***Eguchipsammia japonica* EJA** Only a few large calices develop as elongated branches. Also present as a clumping form
- ***Dendrophyllia* DDB** Colonies with zig-zag branching, corallites on alternating sides of the branches; corallites small and branches minutely porous; rough to the touch

Irregularly branched:

- ***Oculina virgosa* OVI** Sparsely and irregularly branched, thin branches; regularly arranged large circular cups with a diameter of 2.5 to 4.5 mm, pinkish red with white skeleton when alive; in shallow waters within diving depths, down to > 1000 m
- ***Culicia rubeola* CUR** Cups aggregate to form clumps on hard substrates, including rock, mussel shell, and other corals; corallites are usually at different developmental stages; shallow water.

Please use the **CBR** code if you are unsure of the identification as these branching forms are difficult to distinguish to genus level.

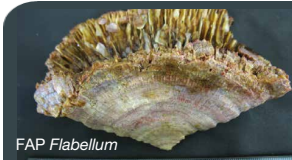


**Subphylum:** Anthozoa  
**Subclass:** Hexacorallia  
**Order:** Scleractinia

## Stony corals SIA

*Flabellum*, *Flabellum apertum*, *Fungiacyathus*, *Desmophyllum dianthus*, *Caryophyllia*, *Caryophyllia ambrosia*, *Stephanocyathus platypus*, *Stephanocyathus spiniger*

9



FAP *Flabellum*



FAP *Flabellum apertum*



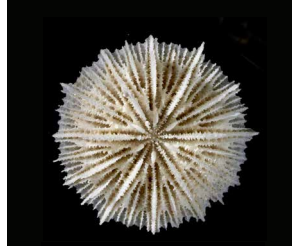
FAP *Flabellum apertum*



DDI *Desmophyllum dianthus*



DDI *Desmophyllum dianthus*



FUG *Fungiacyathus* sp.



CMB *Caryophyllia ambrosia*



CAY *Caryophyllia ambrosia*



CAY *Caryophyllia* sp.



STP *Stephanocyathus platypus*



STP *Stephanocyathus spiniger*

### Solitary or cup corals CUP

These stony corals occur as solitary individuals or can clump, are found attached to hard substrate or live in areas of soft sediment. They can be distinguished by their shape:

Compressed, unattached:

- ***Flabellum* COF** Common genus comprising many species.
- ***Flabellum (Ulocyathus) apertum* FAP** Distinguished by the frilled and pointed shape of the cup.

Flat bottomed, unattached base:

- ***Fungiacyathus* FUG** Cup-like (conical base)
- ***Desmophyllum dianthus* DDI** Radial structures (septa) form from centre to edges.
- ***Caryophyllia* CAY** Common genus; displays several cycles of progressively smaller septa.
- ***Caryophyllia ambrosia* CMB** Distinctive cup coral with curved horn shape pedicel (stem) that ends in a point.
- ***Stephanocyathus* STP; *S. platypus* STP** Bowl-shaped; unattached (no conical base), ***S. spiniger* STP** Has distinctive elongated 'costal spines' that keeps the cup coral off the seafloor and helps anchor it.

# Groups that can be confused with stony branching corals



## Precious corals

- **Corallium CLL and Hemicorallium**  
Have fleshy bump-like polyps and a white skeleton with tissue that can easily be scraped away.

## Other corals

- **Stylasterids COR hydrocorals** Hydrocoral main branches are obviously thicker than the side branches, their fragile side branches break easily, and they have pore-like apertures instead of calices, and no soft fleshy tissue on the surface.

## Bryozoans

When broken or worn, the hollow core of bryozoan stems could be confused with some stony corals, such as the stony coral **Culicia rubeola CUR**. Other bryozoans have similar textures or branching forms to stony corals, such as **Cellaria**, **Hornera HFO** and **Cinctipora elegans CEL**, or microscopic pores e.g., **Tetrocycloecia neozelanica TNE**.

## Sponges

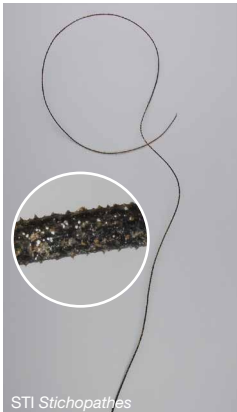
Some sponges can also be confused with stony corals, e.g., hard stalks of glass sponge **Caulophacus CLC**. These are often dead, brown in colour and missing most of the body when caught.

**Subphylum:** Anthozoa  
**Subclass:** Hexacorallia  
**Order:** Antipatharia

## Black corals COB

**Key genera:** *Stichopathes*, *Cirrhopathes*, *Stylopathes*

11



### Black corals – Antipatharia COB

Black corals have skeletons of protein and chitin that are flexible and covered with microscopic spines. These spines are barely visible but can be felt by touch – this is the easiest way to distinguish them from smooth-surfaced gorgonians. Black coral skeletons are typically black or dark brown, with living tissue being white, reddish or orange. They have diverse shapes including tree-like, fan-shaped, bushy, bottlebrush, unbranched or branched, and even a single stem or corkscrew shape. Black corals have pinnules; symmetrically arranged branches of nearly-equal length on their stem and branches. They are distinguished primarily by branching patterns and pinnule arrangement.

### Whip-like black corals COB

Colonies usually have an unbranched, single stem or are sparsely branched.

- ***Stichopathes* STI** Thin unbranched; lower part straight, upper part may be coiled. Polyps in single row.
- ***Cirrhopathes* CIR** Unbranched; straight, irregularly coiled, or spiral. Polyps in multiple rows.
- ***Stylopathes* SLP** Simple bottlebrush colonies, usually one stem with very sparse branching. Pinnules extend out in all planes or in whorls of 3 or 4. Often with a 'worm run' which modifies pinnules to form a 'tunnel' along the main stem.



Subphylum: Anthozoa  
Subclass: Hexacorallia  
Order: Antipatharia

## Black corals COB

Key genera: *Antipathes*, *Antipathella*, *Triadopathes*,  
*Tylopathes*, *Leiopathes*, *Trissopathes*

12



ATP *Antipathes*



AHL *Antipathella*



TDP *Triadopathes*



TYL *Tylopathes*



LEI *Leiopathes secunda*



TDP *Triadopathes*



TYL *Tylopathes*

### Bushy black corals COB

Colonies are densely branched, without distinct pinnules, and can be distinguished by their branching pattern.

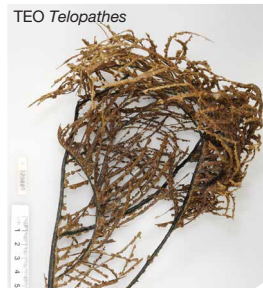
- ***Antipathes* ATP** Colonies fan-shaped or bramble-like; numerous, irregular branches and typically elongated, but somewhat alternately arranged on opposite sides of larger branches.
- ***Antipathella* AHL** Bushy colonies; thin, straight or curved small branchlets arranged bilaterally or irregularly on both sides of branch; polyps often white; often host brittlestars.
- ***Triadopathes* TDP** Bushy, planar with upright (typically vertical) bottle-brush branches; stem and branches often fused together near base. Can be confused with ***Tylopathes*** but generally not as fan shaped.
- ***Tylopathes* TYL** Mostly planar fan-shaped colonies but some bushy with dense irregular bilateral short branching, with fusing in places. Branchlets brown with worm runs present on main stem. Can be confused with ***Triadopathes***.
- ***Leiopathes* LEI** Small to large colonies loosely spreading and tree-like with crooked smooth, shiny branches; smaller branches may be curved; usually has orange/red polyps.
- ***Trissopathes* TPT** Colonies have 4 rows of pinnules; 2 opposite rows of long, unbranched pinnules and 2 rows of shorter, branched pinnules; colonies often very slimy.

Subphylum: Anthozoa  
Subclass: Hexacorallia  
Order: Antipatharia

## Black corals COB

Key genera: *Dendrobathypathes*, *Dendropathes*,  
*Lillipathes*, *Parantipathes*, *Bathypathes*, *Telopathes*

13



### Sea fan-like black corals COB

Colonies usually have sparse branching and have pinnules on the stem and branches.

- ***Dendrobathypathes* DEN** Colonies branched and alternately pinnulated in 2 rows; primary pinnules may have short sub-pinnules on just one side.
- ***Dendropathes* DDP** Branched and pinnulate colonies; stem and branches with short pinnules in 4 irregular rows in a bottlebrush pattern.
- ***Lillipathes* LIL** Sparsely arranged pinnules in 4 rows, 2 on each side in pairs; branches appear feather-like arranged in alternating semi spiral groups; up to several metres tall.
- ***Parantipathes* PTP** Distinct bottlebrush colony arrangement with 6 or more rows of unbranched pinnules in bilateral semi spiral groups; smaller colonies usually a long-stemmed single bottlebrush.
- ***Bathypathes* BTP** Single stalk colonies with simple pinnules in 2 rows arranged in a symmetrical sub-opposite pattern around the stem; feather like appearance with prominent orange polyps. Larger colonies may be further branched and easily confused with *Telopathes*.
- ***Telopathes* TEO** Sparsely branched colony with simple branching in two regular sub-opposite rows. Can be confused with *Bathypathes*, which generally has no branching.

# Groups that can be confused with black corals



## Hydroids HDF

These are less robust than black corals, with a 'woody' and flexible skeleton made of chitin, and very thin end branches. They don't have a hard axis, and have microscopic cups to house polyps.

- ***Cryptolaria* spp. CRT** Branched, fan-shaped with a thick main stem; multiple stiff branches all in one plane; dark yellow, greenish-brown, brown.
- ***Nemertesia* spp. and *Plumularia* spp. HDF** Stem, or stems, arise from a compact bundle of tubes that anchor it to substrate; can be large, or single delicate and feathery; dark brown, yellowish brown, light yellow to white.

## Gorgonians GOC (see next page)

'Naked' gorgonian axes (no tissue) can be easily distinguished from black corals by the absence of skeletal spines on gorgonians. Tissue is generally much thicker and can be scraped off gorgonian axes.

Primnoid gorgonians can be easily distinguished from black corals by their metallic lustre or colour and armoured bud-like polyps (e.g. *Thouarella* THO), (black coral polyps are always fleshy).

## Algae SEO

***Perithalia capillaris***, an endemic, large, and robust brown algae with a horse-hair like texture; often hosts other small red epiphytic algae; easily confused with the black coral *Antipathes*.

## Zoanthids ZAH (the skeleton forming species)

*Kulamanamana* and *Savalia* that produce their own skeleton made up of structural proteins. *Kulamanamana* produces a lustrous golden skeleton, however, *Savalia* usually produces a blackish skeleton. They have vibrant golden-yellow tissue and polyps.



Subphylum: Anthozoa  
Class: Octocorallia  
Order: Scleractyonacea

## Gorgonian corals GOC

Key families: Keratoisididae, Mopseidae

15



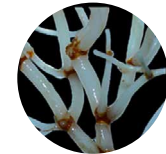
BOO *Keratoisid*



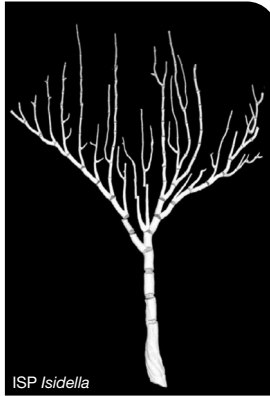
BOO *Keratoisid*



LLE *Lepidisis*



ACN *Acanella*



ISP *Isidella*



JAS *Jasonisis*

### Gorgonian corals GOC

In addition to the fleshy soft corals, the order Alcyonacea also contains gorgonians, an abundant, diverse and colorful group whose tiny eight-tentacled polyps form bushy, bottlebrush, tree-like, sea fan, or sea whip colonies, which can be large and flexible.

### Bamboo corals ISI

Bamboo corals have an articulated skeleton composed of calcareous segments alternating with short proteinaceous segments, giving them their bamboo-like appearance.

### Family Keratoisididae

Medium to large with thick branches and large brownish / black nodes; colonies are unbranched ("whip-like") or branched, with branches originating at the nodes, or from the internodes; some colonies have an unusual candelabra form.

Branching bamboo corals can be distinguished by where the branches come from:

- **Keratoisid BOO** Unbranched or branching from the white calcareous internodes, often just above the node.

Subphylum: Anthozoa  
Class: Octocorallia  
Order: Scleractyonacea

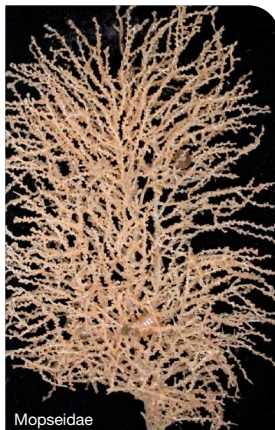
## Gorgonian corals GOC

Key families: Keratoisididae, Mopseidae

16



ISI (bamboo coral)



Mopseidae



MIN *Minuisis* sp.



Mopseidae



PAN *Primnois antarctica*

### Family Keratoisididae *continued*

- ***Isidella* ISP** Branched from the proteinaceous nodes, the white internodes are noticeably long with wide tubes in younger corals.
- ***Acanella* ACN** Branched from the brown/orange nodes with several branches in a whorl at each branching point.

Several other genera are uncommon in New Zealand e.g., ***Jasonis* JAS** has curved branches that are shaped like a lyre (lyrate), and are covered in thick tissue with erect, elongate polyps.

### Family Mopseidae

Small, bushy, with fine delicate branches and short nodes of various colours (visible if you look closely). These are distinguished by their branching shape:

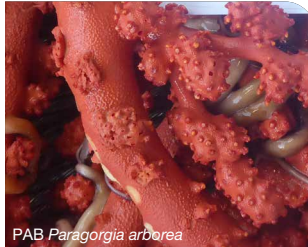
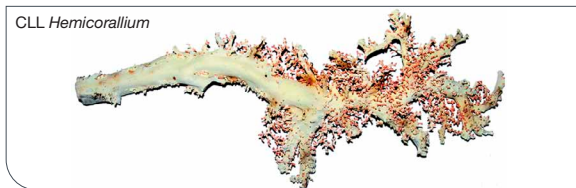
- ***Primnois* (P. antarctica) PAN** Bottle-brush shape, white.
- ***Minuisis* MIN** Irregular branching, usually with some flat or tubular branches, white.
- Other Mopseidae are mostly planar, with colony and axis white/brown/orange.

Subphylum: Anthozoa  
Class: Octocorallia  
Order: Scleractyonacea

## Gorgonian corals GOC

Key genera: *Paragorgia*, *Corallium*, *Hemicorallium*

17



### Family Coralliidae

Large, thick branches with a lumpy surface that, together with pink or orange colour, gives them their 'bubblegum' appearance. Branches are somewhat flexible but lack a protein (gorgonin axis, being composed of clay-like sclerites instead. Bubblegum corals can reach enormous sizes (> 2m in height).

### Bubblegum corals PAB

Large iconic gorgonian. Central axis is soft and easily crushed. Colonies are orange to pink (rarely white with thick, lumpy branches).

- *Paragorgia*, *P. arborea* PAB axis is pink and red.

### Precious corals CLL

Central axis is solid and extremely hard (not wire like): similar to the hydrocoral *Errina* but Coralliidae lack pores on their skeleton, do not have small side branches, and surface tissue can be scraped off.

- *Hemicorallium* (use CLL) Has erect, elongate polyps.
- *Corallium* CLL Has flat or bump-like polyps.



**Subphylum:** Anthozoa  
**Class:** Octocorallia  
**Order:** Malacalcyonacea

## Gorgonian corals GOC

**Key genera:** *Iciligorgia*, *Anthothela*, *Victorgorgia*

18



### **Alcyoniidae ALY and Victorgorgiidae VIC gorgonians**

These gorgonians have a soft and friable central axis, and mesh-like branches that fuse together. The easiest way to tell them apart is by colour:

- ***Iciligorgia* ICI** Dark brown or black (fan-like).
- ***Anthothela* ANB** Pale beige to white.
- ***Victorgorgia* VCT** Purple or violet.



**Subphylum:** Anthozoa  
**Class:** Octocorallia  
**Order:** Scleractyonacea

## Gorgonian corals GOC

Family Primnoidae PRI Key genera: *Primnoella*, *Thouarella*

19



Primnoids are similar in form, which makes the descriptions difficult to follow at sea.  
Use the higher-level code **PRI** when in doubt.

### Family Primnoidae PRI

This diverse family of gorgonians has a central wire-like, often brittle axis, and a black or brown, bronze to golden skeleton, often with orange, white, yellow, pink large and small polyps. Often polyps are hard. A layer of semi-soft tissue (coenenchyme) covers the tissue.

### Primnoid sea fans, sea whips

- **Primnoella PML** Colonies usually unbranched and whip-like; slightly curved but never coiled; polyps in whorls.
- **Thouarella THO** Common, abundantly branched bottlebrush coral, but can also be uni-planar pinnate, or dichotomous branching (the branching pattern is repeating), and numerous. Often branchlets are arranged close to the main stem. Polyps are isolated and arranged randomly. A common species is *T. variabilis*, where large colonies have commensal marine worms that form tubes on main branches.

**Subphylum:** Anthozoa  
**Class:** Octocorallia  
**Order:** Scleractyonacea

## Gorgonian corals GOC

Family Primnoidae PRI Key genera: *Parastenella*, *Metafannyella*, *Tokoprymno*

20



MEF *Metafannyella ventilabrum*



MEF *Metafannyella chathamensis*



MEF *Metafannyella moseleyi*



TOK *Tokoprymno*

### Primnoid sea fans, sea whips continued

- ***Parastenella* PLD** (image on page 19) Colonies uni-planar to slightly bushy. Polyps stand perpendicular to branch, arranged independently or in pairs. Not common.
- ***Metafannyella* MEF** Branching sea fan coral colony, mostly uniplanar, some can lyrate or bottlebush (e.g., *M. chathamensis*, the species that has commensal worms); polyps facing upwards arranged in whorls or in random order.
- ***Tokoprymno* TOK** Branching bushy coral. Small sea fan often with fat pregnant polyps. Calyces arranged in two rows or series (biserially), projecting perpendicularly from opposite edges of each branch.



TOK *Tokoprymno*



**Subphylum:** Anthozoa  
**Class:** Octocorallia  
**Order:** Scleractyonacea

## Gorgonian corals GOC

Family Primnoidae PRI Key genera: *Primnoa*, *Callogorgia*, *Calyptrophora*, *Narella*

21



PMN *Primnoa*



CLG *Callogorgia*



CTP *Calyptrophora*



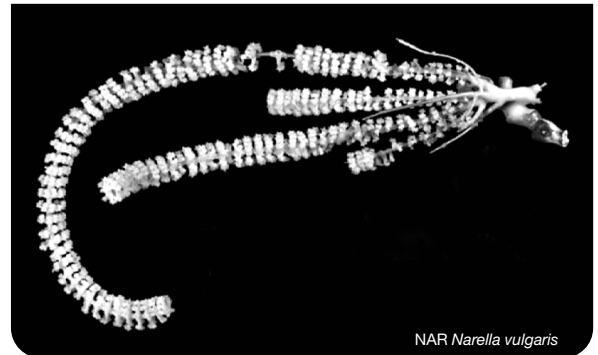
CTP *Calyptrophora*



NAR *Narella*

### Primnoid sea fans, sea whips *continued*

- ***Primnoa* PMN** Large bushy to fan-like with robust branches and scales or plates on the knobbly orange polyps. *P. notialis* common in the region.
- ***Callogorgia* CLG** Branching sea fan coral colony, uni-planar OR pinnately (opposite or alternate) branched; polyps face upwards.
- ***Calyptrophora* CTP** Uniplanar to slightly bushy colonies with many forms, including lyrate and un-branched colonies.
- ***Narella* NAR** Can be unbranched or branched; polyp arrangement in whorls, 'dreadlock-like'. Some specimens with a robust calcified base.



NAR *Narella vulgaris*

**Subphylum:** Anthozoa  
**Class:** Octocorallia  
**Order:** Malacalcyonacea

## Gorgonian corals GOC

Family Acanthogorgiidae (PLE) Key genera: *Swiftia*, *Muriceides*, *Paracis*

22



MRI *Muriceides*



SWI *Swiftia*



SWI *Swiftia*



PRF *Paracis*

Acanthogorgiids are morphologically similar, which makes them difficult to describe at sea. Use the higher-level code **PLE** when in doubt.

### Family Plexauridae PLE

- **Swiftia SWI** Thin/wiry colonies, polyps on opposite sides of branches, branch tips wedge-shaped with 2 mounds at each tip. May be coloured red/crimson. Branch surface not rough/spiny. Polyp mounds often pyramid-shaped/tall cones.

### Family Acanthogorgiidae (use PLE)

Branching gorgonians that are woody, flexible, and usually beige to dark brown. The surface tissue is red, pink, purple, tan or brown with surface polyp bumps on the branch surface.

- **Muriceides MRI** Straggly colonies with thicker branches arising at right-angles and alternating on each side of stem. Branches have interspersed conical mounds arranged on opposite edges of branches but sometimes on all sides, from which the polyps protrude.
- **Paracis PRF** Highly branched colonies with surface covered by rice-grain-like scales. Polyp mounds usually obvious but variable in shape from porous to short cylinders to small cones, but often with a jagged edge.

Subphylum: Anthozoa  
Class: Octocorallia  
Order: Malacalcyonacea

## Gorgonian corals GOC

Family Acanthogorgiidae continued (PLE)

Key genera: *Bebryce*, *Villogorgia*, *Paramuricea*, *Acanthogorgia*

23



PLE *Bebryce*



PRG *Paramuricea*



VIL *Villogorgia*



ACC *Acanthogorgia*

### Family Acanthogorgiidae continued

- ***Bebryce* PLE** Thin, irregular branches giving straggly appearance; grey/dull brown with wart-like polyp mounds that are taller than thickness of the branch; mounds may be on sides of branches in places but found on all sides in others.
- ***Villogorgia* VIL** Highly branched in single plane ('sea-fans'), often reddish-pink (also tan), with thin branches, polyps opposite on sides of branches and polyp mounds conical to tubular, with pale 'cap'.
- ***Paramuricea* PRG** Highly branched in single plane. Pale orange to white. Polyp mounds tall and crater-like with a serrated margin. Polyps may protrude from mounds as a 'cap'. Mounds closely spaced and on all sides of branches but more concentrated on opposite edges.
- ***Acanthogorgia* ACC** Small (less than 20cm), highly branched sea fans immediately recognisable by the long, protruding polyps whose surface is continuous with the branch surface (no distinct polyp mound). Polyps often look like match-sticks and cannot retract, colonies are sometimes multicoloured.



**Subphylum:** Anthozoa  
**Class:** Octocorallia  
**Order:** Scleractyonacea

## Gorgonian corals GOC

**Key genera:** *Chrysogorgia*, *Pseudochrysogorgia*, *Metallogorgia*, *Iridogorgia*, *Radicipes*

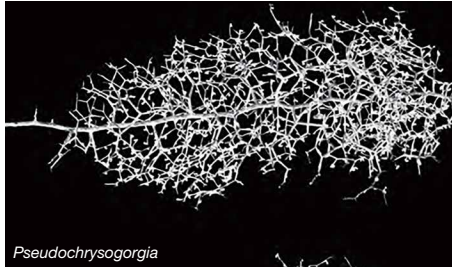
24



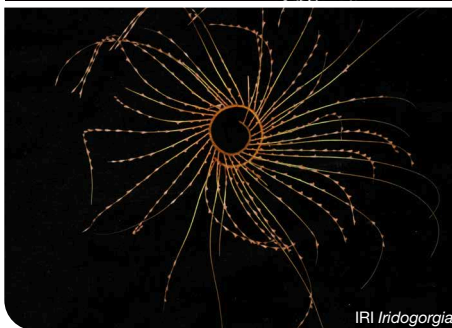
CHR *Chrysogorgia*



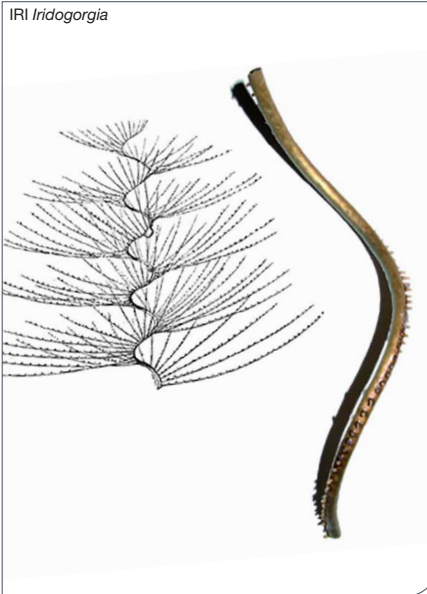
MTL *Metallogorgia*



*Pseudochrysogorgia*



IRI *Iridogorgia*

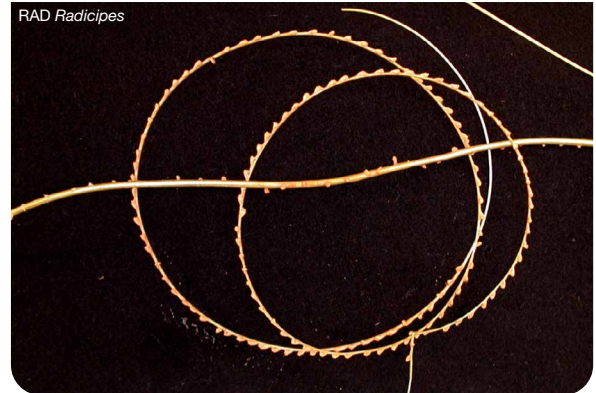


IRI *Iridogorgia*

### Golden corals Family Chrysogorgiidae

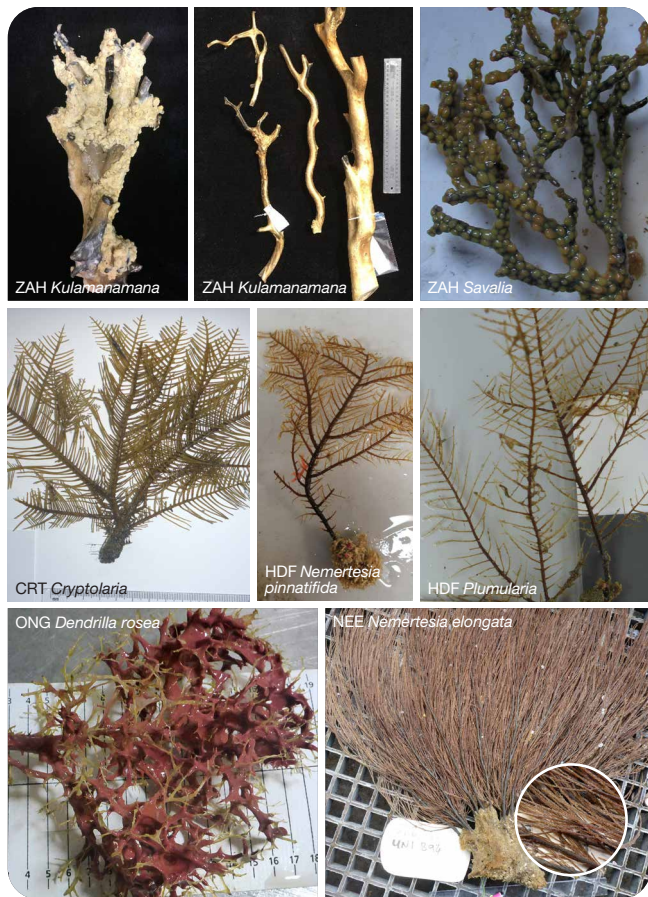
Stems of golden corals have a distinctive metallic lustre, they can appear as black/green as well as golden. These can be separated based upon their shape:

- ***Chrysogorgia* CHR** and ***Pseudochrysogorgia*** - delicate bottle-brush.
- ***Metallogorgia* MTL** Long stalk ending in a network of branches.
- ***Iridogorgia* IRI** Twisted/spiral.
- ***Radicipes* RAD** Whip-like with polyps arranged on one side only of the stem.



RAD *Radicipes*

## Groups that can be confused with gorgonian corals



### Other corals

**Black corals COB** Can be morphologically similar to many octocorals, but black corals have tiny spines on their stems and feel rougher to the touch. Black coral skeletons are also darker, and have thinner, less obvious, transparent tissue.

### Zoanthids ZAH (the skeleton forming species)

**Kulamanamana** and **Savalia** that produce their own skeleton made up of structural proteins. **Kulamanamana** produces a lustrous golden skeleton, **Savalia** usually produces a blackish skeleton. They have vibrant golden-yellow tissue and polyps.

### Hydroids HDF

**Hydroids HDF** Have very thin ended branches and never have a hard axis, instead they have a chitinous axis that is less robust. Check gorgonians to ensure they also have a layer of semi-soft tissue covering the skeleton, otherwise they can be hydroids;

- **Cryptolaria spp. CRT** Branched, fan-shaped hydroids. Thick, polysiphonic (several bundled stems) main stem, stiff branches regularly and pinnately arranged, subopposite, and all in one plane. Dark yellow, greenish-brown, light to dark brown in colour.
- **Plumulariidae; Nemertesia spp. NEE** and **Plumularia spp. HDF** Hydroids with an erect stem, or stems, arising from a compact bundle of tubes used to anchor it in sediment or attach it to firm substrate. Can be large, or single delicate and feathery. Dark brown, yellowish brown, light yellow to white in colour.

### Sponges ONG

Some sponges could also be confused with certain gorgonian corals, e.g., the demosponge **Dendrilla rosea**, which is brightly coloured and branched.

**Class:** Hydrozoa  
**Subclass:** Hydroidolina  
**Order:** Anthoathecata

## Hydrocorals COR

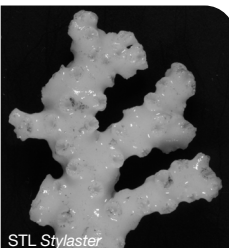
Hydrocorals (lace corals) Family: Stylasteridae COR



ERR *Errina*



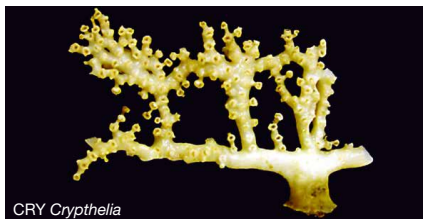
ERR *Errina*



STL *Stylaster*



COO *Conopora*



CRY *Cryptella*



LPT *Lepidotheca*



CRE *Calyptopora reticulata*

Most stylasterids other than some *Errina* ERR species form similar colonies and require a microscope to reliably tell them apart. If unsure, use the generic code **COR**. Note: some non-*Errina* species are also pink / orange.

### Hydrocorals COR

Hydrocorals can be recognised by their main branches usually being obviously thicker than the side branches, having side branches that break easily, and pore-like apertures. The surface of branches is hard and calcareous, without a layer of soft fleshy tissue.

- ***Errina* ERR** White or pink to red, short spines, thick branches. The surface of *Errina* species are covered in spines.
- ***Stylaster* STL** White, has cyclosystems on the surface (a circular arrangement of gastric structures).
- ***Lepidotheca* LPT** White, colony surface has a series of long spines.
- ***Calyptopora reticulata* CRE** White, thin intricate side branches, lacy. Very similar to some *Stylaster* species.
- ***Conopora* COO** White, some species have quite distinctive branching forms with cyclosystems (feeding pores) only on branch edges, not on front or rear face of the colony e.g., *C. candelabrum*.
- ***Cryptella* CRY** White, species of this genus usually exhibit large cyclosystems (feeding pores) with a lid extending over them.



# Groups that can be confused with hydrocorals



## Other corals

### Precious red corals

- **Hemicorallium** and **Corallium CLL**

Large white colonies of the precious coral *Corallium* can be confused with stylasterids but *Corallium* lacks pores of any kind on its skeleton, and does not have the small side branches of *C. reticulata*. Surface tissue can be scraped off precious corals.

### Stony corals SIA

e.g., *Dendrophyllia* which can appear similar to white hydrocorals, but should have a thin veneer of soft tissue on the branch surfaces and tentacles in the polyps.

### Hydroids HDF

These are less robust than hydrocorals, with a 'woody' and flexible skeleton made of chitin, and very thin end branches. They never have a hard skeleton and have microscopic cups to house polyps.

### Bryozoans COZ

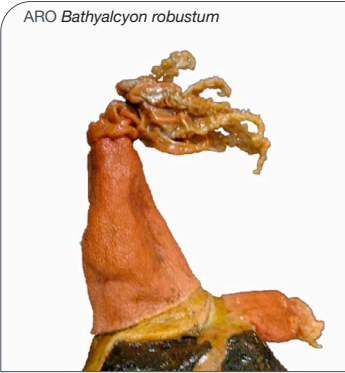
Some branching bryozoans can have similar shapes but are somewhat crystalline, have thinner branches, and are without robust main branches. The branches when broken appear to comprise a matrix of calcareous walled canals.

**Subphylum:** Anthozoa  
**Class:** Octocorallia  
**Orders:** Scleralcyonacea  
& Malacalcyonacea

## Soft corals SOC

28

ARO *Bathyalcyon robustum*



RGA *Rhodelinda gardineri*



SOC *Clavularia*



TLA *Telestula*

### Soft corals SOC

Soft corals do not produce stony skeletons and are fleshy, soft and flexible. They may be brightly coloured, often red, orange, pink or purple.

### Soft corals SOC

#### How many polyps do they have?

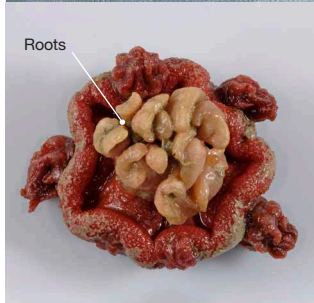
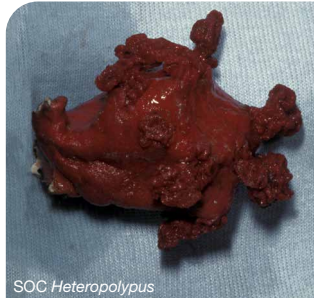
If they have one or a few polyps, connected by stolons (tissue that connects polyps), unbranched:

- ***Bathyalcyon robustum* ARO:** Gigantic polyp.
- ***Clavularia* SOC:** Single cream or greyish- orange polyp tubes joined by runners.
- ***Rhodelinda gardineri* RGA:** Single long, red or white tubes joined by runners. Rhodelinda tubes can be easily snapped, and resemble an inverted cone.
- ***Telestula* TLA:** Very tall and thin white polyp tubes joined by runners.

**Subphylum:** Anthozoa  
**Class:** Octocorallia  
**Orders:** Scleralcyonacea  
& Malacalcyonacea

## Soft corals SOC

29



### Soft corals SOC

#### What is the colony shape?

Colonies are mushroom-shaped:

- **Heteropolypus SOC** thick stalk with a low domed shape head, large polyps around rim of head.
- **Anthomastus SOC** thick stalk with a rounded rounded 'hemispherical head' with polyps distributed all over head.

### Branching

- **Telesto TLO**: thin tubular branches that are generally red.
- **Chironephthya SOC**: hard with prickly branches at the top, hollow stem.

**Subphylum:** Anthozoa  
**Class:** Octocorallia  
**Order:** Scleractyonacea

## Sea pens PTU

**Key genera:** *Funiculina*, *Distichoptilum*, *Kophobelemnion*, *Umbellula*, *Gyrophyllum sibogae*, *Pennatula*, *Balticina*

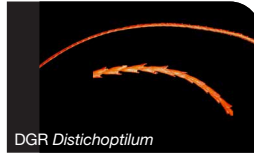
30



FQU *Funiculina*



KST *Kophobelemnion*



DGR *Distichoptilum*



UMB *Umbellula*



HWL *Balticina*



GYS *Gyrophyllum sibogae*



PNN *Pennatula*



PNN *Pennatula*

### Sea pens PTU

Sea pens are colonial animals that resemble quill pens (hence the name). They have a central stalk that has a lower part, the peduncle, which anchors the colony in mud or sand, and an upper part, the rachis, which bears polyps or branches bearing several polyps. Sea pens are usually only found on soft, muddy bottoms, except for 'rockpens' that attach to deep-sea rocky outcrops.

#### Whip-like (small polyps)

**What type of axis does it have?**

- *Funiculina* FQU: square in section.
- *Kophobelemnion* KST and *Distichoptilum* DGR: cylindrical.

#### Fleshy

- *Kophobelemnion* KST: flower-like polyps arranged along stem.
- *Umbellula* UMB: long stalk with a terminal bump of large flower-like polyps.
- *Gyrophyllum sibogae* GYS: short with large fleshy 'leaves'.

#### Pen-like

- *Pennatula* PNN: purple, looks like a soaked feather.
- *Balticina* HWL the polyps appear in oblique rows and each have a calyx that has two conspicuous, broad teeth.



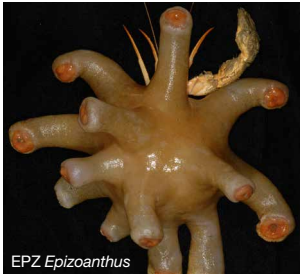
Subphylum: Anthozoa  
Class: Hexacorallia  
Order: Zoantharia

## Zoanthids ZAH

31



EPZ *Epizoanthus paguriphilus*



EPZ *Epizoanthus*



EPZ *Epizoanthus paguriphilus*



ZAH *Bulla gummi zoanthus*



ZAH *Parazoanthus elongatus*



ZAH *Parazoanthus elongatus*



ZAH *Savalia*



ZAH *Kulamanamana*



ZAH *Kulamanamana*

### Zoanthids ZAH

Zoanthids are colonial “sea anemones” with squarish shaped polyps with two rows of tentacles. Often associated with and growing on other benthic organisms such as hermit crabs, sponges, gastropods, and corals like primnoids, bubblegum corals, bamboo corals and black corals. Polyps are usually incrusting with mineral particles. Usually no skeleton, however some do produce their own skeleton – these species can be confused with black corals and some gorgonian corals.

- ***Epizoanthus paguriphilus* EPZ** lives in a symbiotic relationship with a hermit crab.
- ***Parazoanthus elongatus*** can be often found growing over sponges or coralline algae.
- ***Kulamanamana*** and ***Savalia*** can secrete a scleroproteic skeleton (uniquely they produce their own skeleton made up of structural proteins). *Kulamanamana* produces a lustrous golden skeleton, *Savalia* usually produces a blackish skeleton. Most commonly they colonise dead octocorals e.g., bamboo corals.

# Instructions for observers

## **Sort - record - label - photograph - subsample**

Use this guide to identify as best you can all coral bycatch per event to species, genus, or family level, and include the correct code on photograph and specimen labels, and in your reporting. This guide should be used in conjunction with the most recent MPI Fisheries Observer Manual and Observer Briefing Notes, where reporting instructions are included.

*It is a legal requirement to report protected coral bycatch.*



2	4	6	8	10	12	14
Species code:				Sample no.:		
Trip:				Tow/Set:		

**Use the benthic photo card**

## Photographing

***Make sure to include a legible photo label in each image with trip and station number.***

1. Photographs should be taken of all coral bycatch.
2. Separate the corals into groups /species, and photograph each type.
3. Make sure to include the benthic photo label (opposite) and make sure it is legible. You **MUST** include at least trip number, tow/set number, and the 3 letter species code, and sample number, so that the specimen and photo can be matched later.
4. Take one image of the whole specimen, and capture close-ups of part of the specimen to provide more detail.
5. If it's a particularly large coral, take several photos to show the whole colony and zoom into the label.
6. Capture things in good light, use a plain grey background if possible and ensure a size scale is included. Check images are in focus.
7. Record all images in the photo log.

## Use the benthic photo card

1. Write down the information required **MUST include tow and trip number.**
2. Put this card next to the specimen.
3. Take photos with both the specimen and this card in the same frame.



# Instructions for observers

33

## Sub-sampling corals

1. You must take a sub-sample for expert ID and research back on land, take a small clipping (5-10 cm) of **each type of coral**. Try to ensure it has tissue (not just skeleton).
2. If multiple individuals of the same species occur in the same fishing event, it isn't necessary to sample all of them (but DO record their total weight AND sample weights and count individuals if applicable).
3. Retain whole large, rare, or intact colonies at your discretion and with permission of the crew.
4. Dead coral and coral rubble sub-samples can also be retained to confirm identification.
5. Place the sample or the sub-sample in a plastic bag with a waterproof label facing outwards, **filled out in pencil** (2B preferred) to include:

<b>Observer:</b> <i>(your name)</i>	<b>AREA:</b> (e.g., stat area, FMA)
<b>TRIP:</b>	<b>Tow/Set:</b>
<b>Observer Benthic Materials Form:</b>	
<b>FNZ Sample ID:</b>	<b>FNZ Species Code:</b> <i>(the lowest taxonomic level you are confident with - using this guide)</i>
<b>COMMENTS:</b> <i>(useful context, including if this is a subsample / whole specimen, and estimated <b>total</b> weight)</i>	

6. Freeze immediately. If delicate place in a bag of sea-water and freeze.

# Resources and Further Reading



Department of  
Conservation  
*Te Papa Atawhai*

34



## Further information

This guide is a revision of the 2014 DOC Coral Identification Guide (Tracey et al. 2014) and is designed for fisheries observers in the New Zealand region, and complements:

- Antipatharia Black Corals for the New Zealand Region (Opresko et al. 2014, New Zealand Aquatic Environment and Biodiversity Report No. 131)
- Pennatulacea (Sea Pens) Descriptions for the New Zealand Region. (Williams et al. 2014, New Zealand Aquatic Environment and Biodiversity Report No. 132)
- Guide to Common Deepsea Invertebrates in New Zealand Waters (Tracey et al. 2011, New Zealand Aquatic Environment and Biodiversity Report No. 86)

Further information on New Zealand corals can be found in: Tracey, DM & F. Hjørvarsdóttir (eds, comps) (2019). The state of knowledge of deep-sea corals in the New Zealand region. NIWA Science and Technology Series Number 84. 140 pp.

*This and other identification guides published by DOC can be found at: <https://www.doc.govt.nz/our-work/conservation-services-programme/csp-resources-for-fishers/protected-species-identification-guides/>*

Technical input for these guides has been provided by Di Tracey, Diana Macpherson, Rob Stewart, Jaret Bilewitch, and Peter Marriott, (all NIWA Taihoro Nukurangi, NZ), Stephen Cairns and Dennis Opresko, (Smithsonian Institution, Washington, USA), Phil Alderslade (Hobart, Australia), Frederic Sinniger (University of the Ryukyus, Japan) and Marcelo Kitahara (University of São Paulo, Brazil). This version scientific content reviewed by Diana Macpherson, Jaret Bilewitch, and Lyndsey Holland (DOC).

Edited and formatted by Lyndsey Holland, Hollie McGovern & Erin Hewetson, Department of Conservation. Designed by Port Group Ltd. Photographs thanks to NIWA and MPI fisheries observers.

Prepared for the **Conservation Services Programme**, Department of Conservation  
— Te Papa Atawhai. Project POP2020-02.