

Department of Conservation
Te Papa Atawhai



Coral Identification Guide

2nd version 2014

Updated educational material prepared for Government observers on the identification of protected corals known to be caught incidental to fishing.

This guide is a revision of the DOC Coral Identification Guide (Tracey et al. 2008) and complements:

- Guide to Common Deepsea Invertebrates in New Zealand Waters (Tracey et al. 2011)
- Pennatulacea (Sea Pens) Descriptions for the New Zealand Region. (Williams et al. 2014)
- Antipatharia Black Corals for the New Zealand Region (Opresko et al. 2014)
- Ministry for Primary Industries — *Manatu Ahu Matua* (MPI) instructions for the Observer Benthic Materials Form

The protected coral groups listed in both the Wildlife Act (1953) and Wildlife Act amendment (2010), are highlighted.

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Photographs were supplied by the authors' organisations (NIWA, Smithsonian Institute, CAS, CSIRO), as well as by Dr Marcelo Kitahara (Universidade Federal de São Paulo, Brasil), and Government observers.

Acknowledgement: We acknowledge Ian Angus and William Arlidge (Marine Species and Threats, DOC) for their funding support and encouragement.

Prepared for: **Marine Species and Threats**, Department of Conservation — Te Papa Atawhai, Wellington as part of the DOC14305 Project for Government.

Citation: Tracey, D.; Mackay, E.; Gordon, D.; Cairns, S.; Alderslade, P.; Sanchez, J.; Williams, G. 2014. *Coral Identification Guide – 2nd version*. Department of Conservation Report, Wellington. 16 p

June 2014

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Taxonomy of major coral groups

“Coral” is a general term used to describe several different groups of animals in the Phylum Cnidaria. This guide provides a summary of taxonomic features for the key coral groups we find in the New Zealand region.

Page numbers in the text refer to ID sheets (Tracey et al 2011)

PHYLUM CNIDARIA

Class Anthozoa – corals, sea anemones, sea pens

Subclass Hexacorallia (Zoantharia)

Order Scleractinia – stony corals

Order Antipatharia – black corals

Subclass Octocorallia (Alcyonaria)

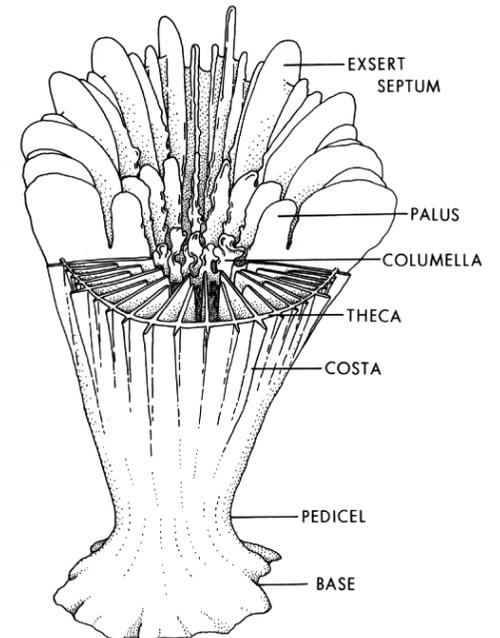
Order Alcyonacea – soft corals, sea fans, sea whips

Order Pennatulacea – sea pens

Class Hydrozoa

Order Anthoathecatae – stylasterid corals

Glossary of terms for stony corals



Stony corals SIA

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Branching thicket-forming corals CBR

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

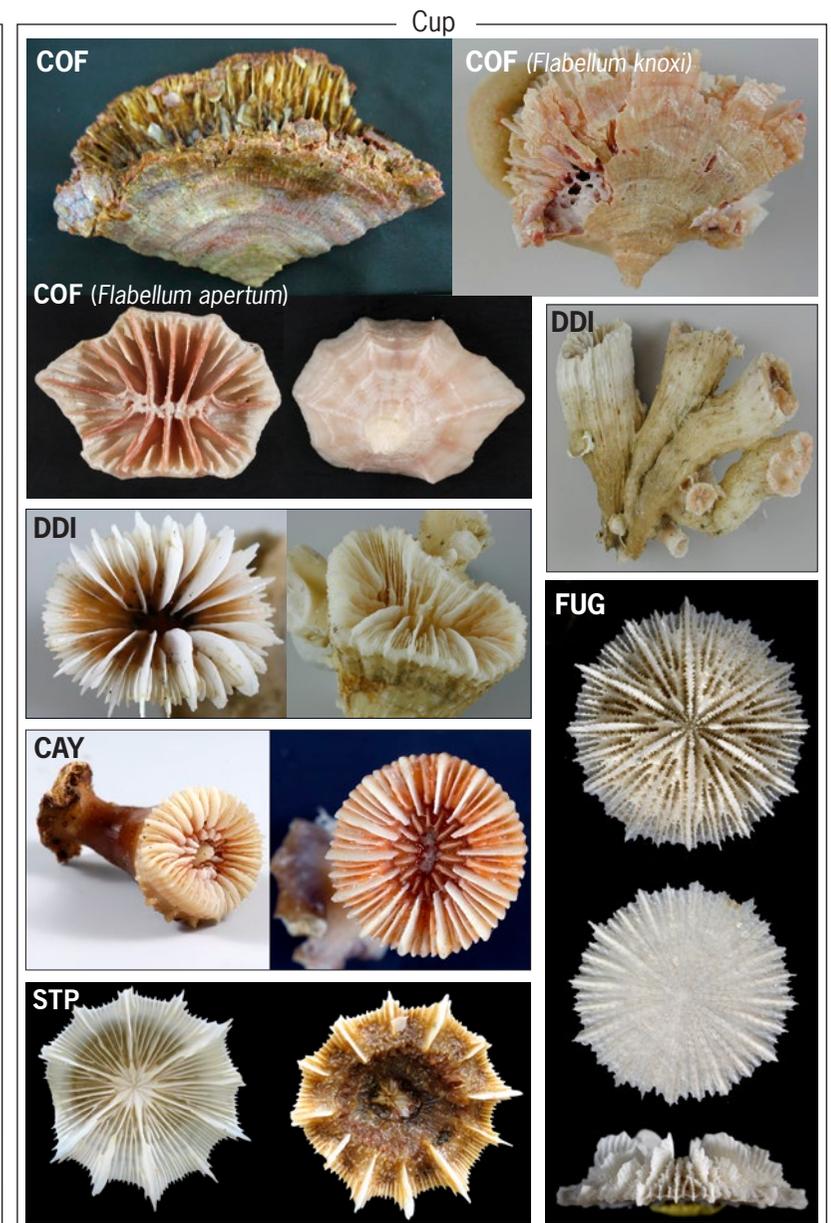
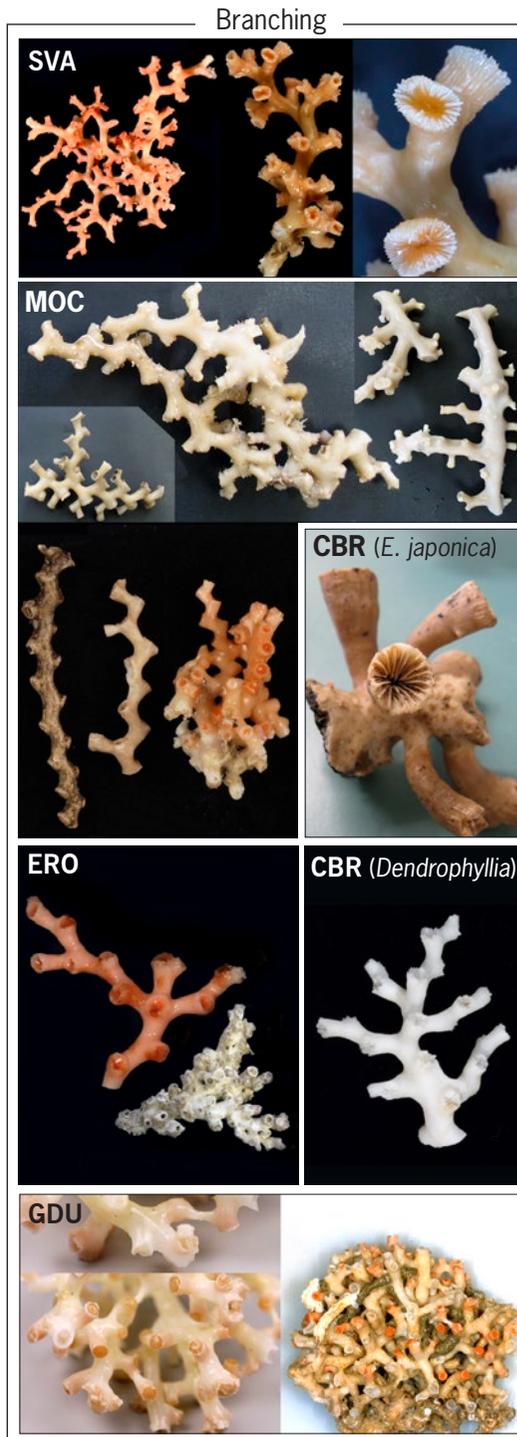
How does branching occur?

- The polyp calice divides in two; branching in a 'v' shape: **Solenosmilia variabilis SVA** (p 88)
- Branching occurs below the calice:
 - Branches just below the calice: **Madrepora oculata MOC** (p 92)
 - Has main branches, then large calices on one side of the plane of the colony: **Enallopsammia rostrata ERO** (p 90)
- Branches apart from any calice, 90 degrees:
 - Only a few large calices develop as branches: **Eguchipsammia japonica**. (Default **CBR**)
 - A 3D network of thin branches (note the bridges between branches); polyps branch at right angles: **Goniocorella dumosa GDU** (p 87)
 - **Dendrophyllia** (Default **CBR**): Small branching form. Colonies with zig-zag branching, corallites (individual polyp) on alternating sides of the branches. Corallites and branches, minutely porous, rough to the touch.

Solitary or cup corals CUP

What is the shape of the solitary coral?

- Compressed, unattached: **Flabellum** spp. **COF** (p 91)
- Flat bottomed, unattached base: **Fungiacyathus** spp. **FUG**
- Cup-like (conical base):
 - Radial structures (septa) form from center to edges: **Desmophyllum dianthus DDI** (p 86)
 - Displays several cycles of progressively smaller (less wide) septa: **Caryophyllia** spp. **CAY** (p 85) and allies.
 - Bowl-shaped, unattached (no conical base): **Stephanocyathus** and allies. **S.platypus STP** (p 89).



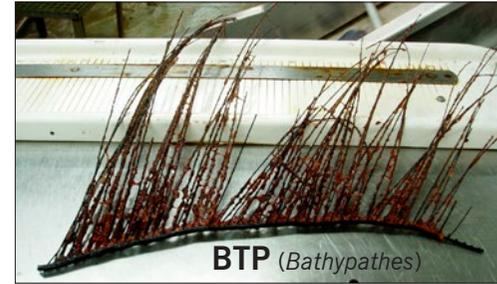
Black corals COB

(p 65) Also see the recently published Black Coral Guide (Opresko et al. 2014).

All have spines on the smallest branches and very small polyps (< 1 cm in diameter).

- Colonies unbranched and unpinnulated; straight, curved, whip-like or spirally coiled:
 - One row of polyps only: **Stichopathes STI**
 - Polyps all around stem or sometimes one side free of polyps: **Cirripathes CIP whip coral**
- Colonies unbranched but with pinnules (terminal branchlets of nearly equal size) arranged in a symmetrical pattern on stem:
 - Feather-like colonies with upright or curved stem with 2 rows of straight or curved pinnules (rows sometimes close together on one side of stem): **Bathypathes BTP**
- Colonies usually with sparse branching and with pinnules on stem and branches:
 - 2 rows of alternately arranged pinnules, one row on either side; some pinnules with small secondary pinnules: **Dendrobathypathes DEN**
 - 4 rows of long unbranched pinnules, 2 on each side of branch (grouped in pairs); branches appear feather-like: **Lillipathes LIL**
 - 4 rows of pinnules; 2 lateral (opposite) rows of long, unbranched pinnules and two anterior rows of shorter, branched pinnules; colonies often very slimy: **Trissopathes TPT**
 - 6 or more rows of unbranched pinnules, equal number on either side of stem and branches (bottlebrush appearance); small colonies often unbranched with long stem: **Parantipathes PTP**
- Colonies densely branched, without distinct pinnules (smallest branchlets not of uniform size or arrangement, but sometimes restricted to sides of branches in fan-shaped colonies):
 - Colonies fan-shaped, densely branched with multiple orders of branches; smallest branches numerous, irregular, but somewhat alternately arranged on opposite sides of larger branches: **Antipathes ATP** (*Antipathes cf. speciosa*)
 - Colonies loosely spreading, with multiple orders of branches; thicker branches usually smooth and polished; small branches often curved, with branchlets of the next higher order appearing on the convex side: **Leiopathes LEI** (**L. secunda LSE** p 66)

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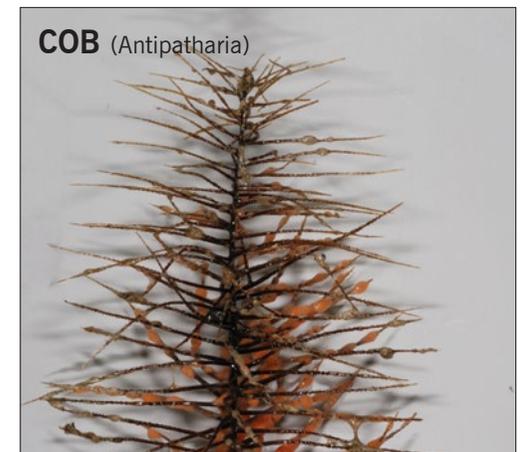


Groups that can be confused with black corals COB

Hydroids HDF – less robust than black corals, with a 'woody' and flexible skeleton, the axis being chitinous.

Gorgonians GOC – naked gorgonian axes can be confused with black coral axes but can be easily distinguished by absence of skeletal spines. Tissue generally much thicker and can be scraped off gorgonian axes, leaving them naked.

Primnoidae colonies, for example can be easily distinguished from black coral colonies (*Parantipathes* and others) by the lustre (metallic) or colour of the axis (orange, brown, green), and armoured bud-like polyps (black coral polyps are always fleshy).



Soft corals SOC

How many polyps do they have?

- One or a few connected by stolons, unbranched:
 - Gigantic polyp: **Anthomastus robustus** ARO (p 63)
 - Single cream or greyish- orange polyp tubes joined by runners: **Cornulariella** spp. SOC
 - Single long, red or white tubes joined by runners: **Rhodelinda** spp. SOC

Rhodelinda tubes can be easily snapped, and resemble an inverted cone

- Very tall and thin white polyp tubes joined by runners: Telestidae, unnamed genus. TLA

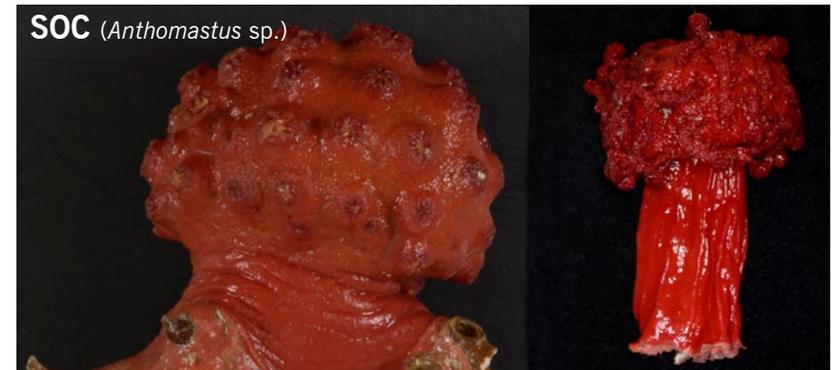
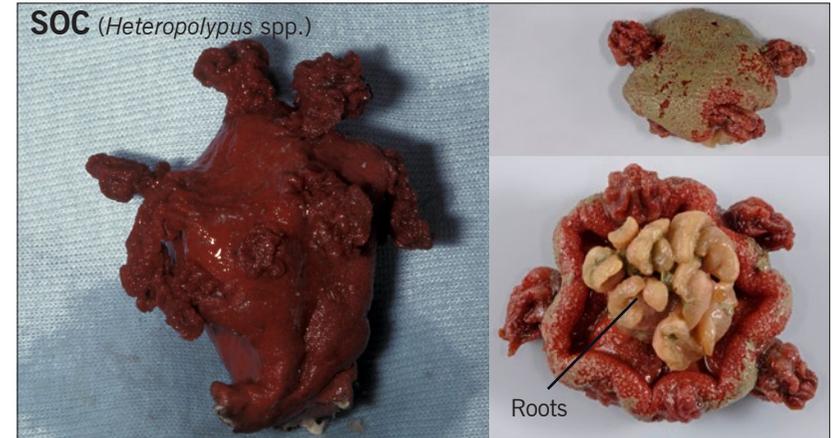
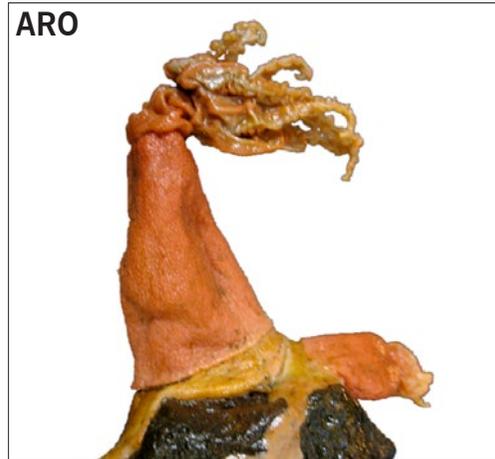
- Many polyps, colonies fleshy or branched:

What is the colony shape?:

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

Branching:

- Thin tubular branches: **Telesto** spp. TLO (p 64), are generally red
- Hard with prickly branches at the top, hollow stem: **Chironephthya** spp. SOC



Gorgonian corals GOC

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Bamboo corals ISI (p 70)

How robust are they?

Small with fine delicate branches and short brownish nodes (need a closer look to spot): **Mopseinae**

What shape do they have?

- Branched
 - Bottle-brush: **Primnosis** spp. (**P. antarctica** PNA)
 - Branching irregular usually with some flat or tubular branches: **Minuisis** spp. **MIN** (p 74)
 - Bushy or other forms with white/brown/orange branches or polyps: **Mopseinae** spp.

Medium to large with thick branches and large brownish/black nodes: **Keratoisidinae**.

Some have unusual candelabra form.

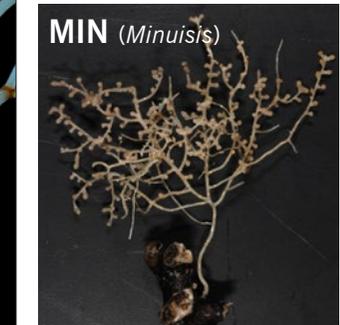
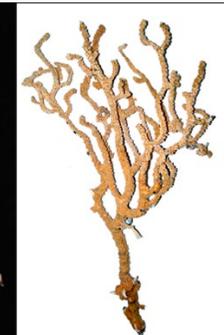
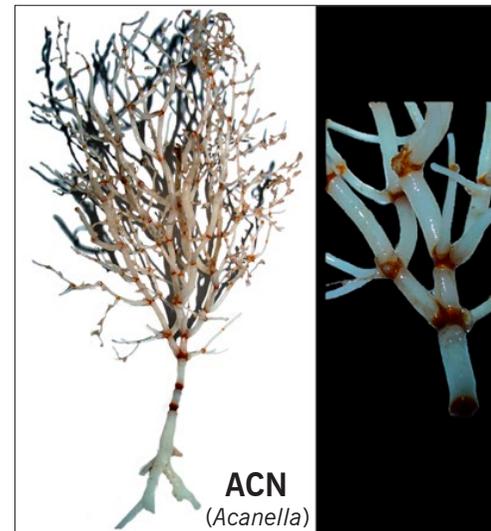
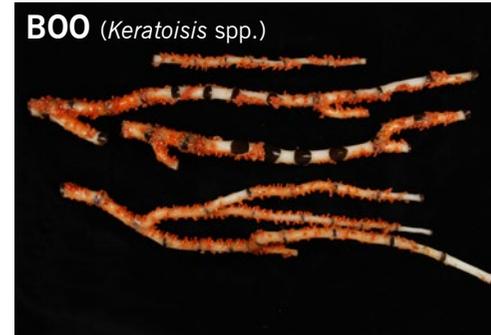
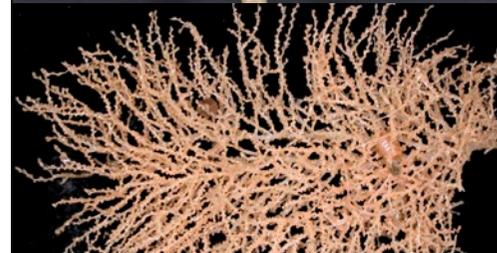
- No branches: **Lepidisis** spp. **LLE** (p 73), there are scales on the polyps

Where do the branches come from?

- From the white internodes: **Keratoisis** spp. **BOO** (p 72)
- From the nodes, the white internodes long: **Isidella** spp.
- From the brown node with several branches from each branching point: **Acanella** spp. **ACN** (p 71)

Several other genera exist but they are uncommon in New Zealand e.g., **Jasonisis**.

The taxonomy for **Lepidisis**, **Keratoisis** and **Isidella** is still being reconciled.



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Central axis not wire-like, is easily crushed and is not surrounded by a ring of canals.

Bubblegum corals

What colors?

- Pink and red:
Paragorgia spp. **P. arborea** PAB (p 75)
- White or beige:
Sibogagorgia spp.

Anthothelid corals

What colour are they?

- Brown or black (fan-like): **Iciligorgia** spp.
- Beige to white: **Anthothela** spp.
- White to red, axis tubular in places: **Solenocaulon**
- Purple: **Victorgorgia** spp.

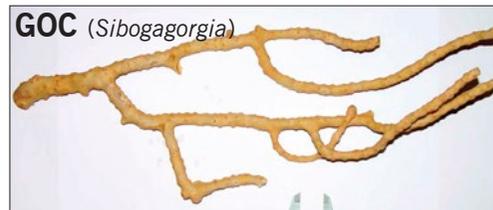
Central axis not wire-like but solid and extremely hard:

Precious corals

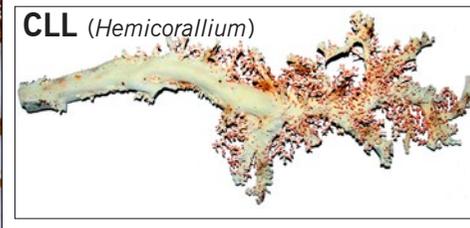
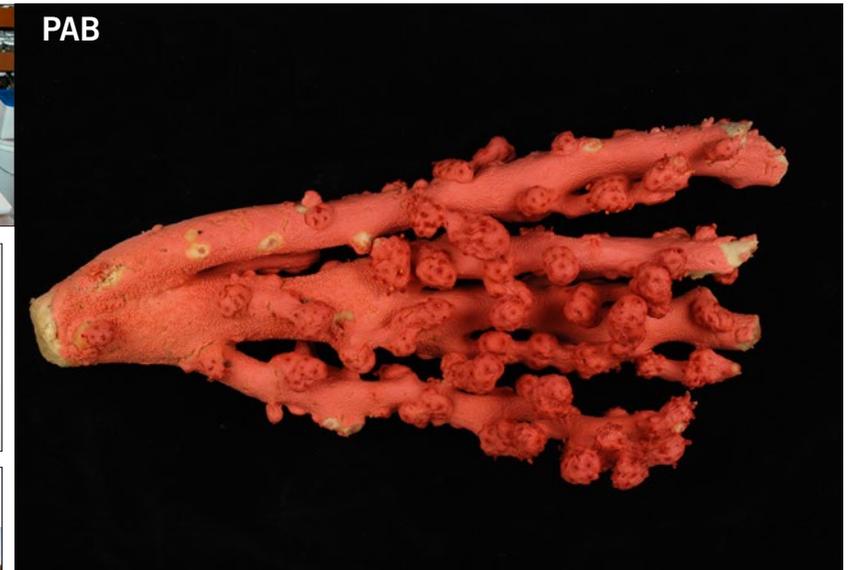
Hemicorallium and **Corallium** CLL (p 68) *Hemicorallium* has erect, elongate polyps, *Corallium* has flat or bump-like polyps.

See hydrocoral section to help differentiate them from the precious corals.

Indistinguishable with the naked eye from **Paracorallium**, though the latter is less likely to be found in New Zealand waters, see hydrocoral section to help differentiate them from the precious corals.



Silmilar gorgonians



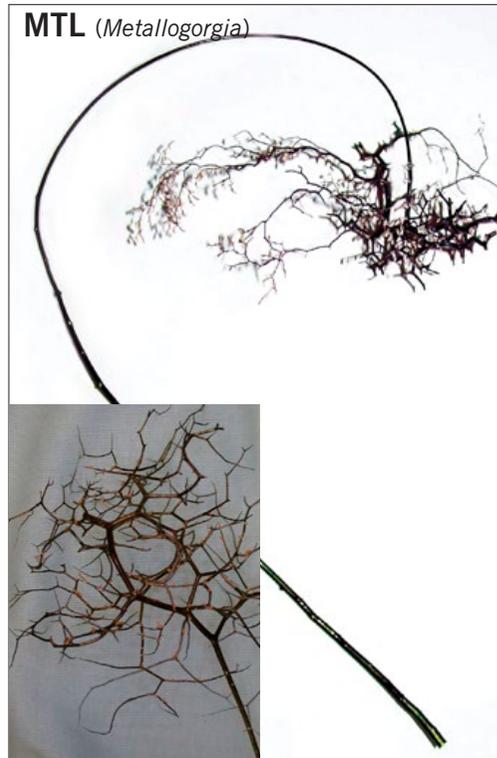
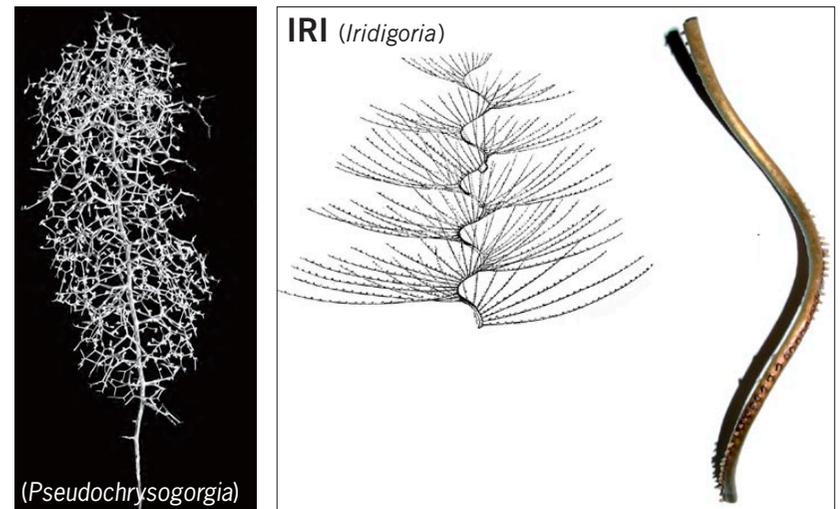
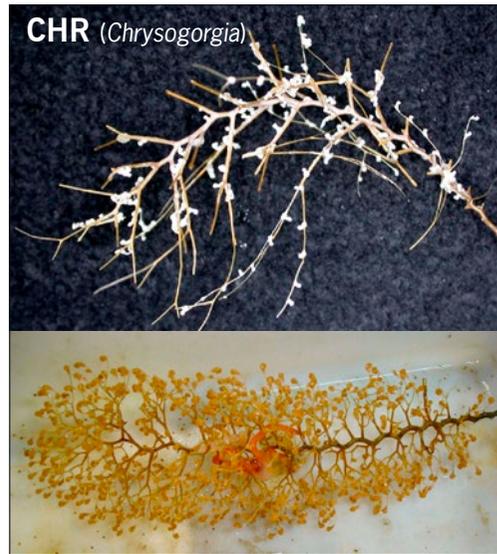
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Golden corals

What is the overall shape?

- Delicate bottle-brush: **Chrysogorgia** spp. **CHR** (p 69) and the recently described **Pseudochrysogorgia**
- Long stalk ending in a network of branches: **Metallogorgia** spp. **MTL**
- Twisted: **Iridigorgia** spp. **IRI**
- Whip-like: **Radicipes** spp.

Axes of golden corals have a metallic lustre, they can appear as black/green as well as golden sheen.



Sea Fans GOC

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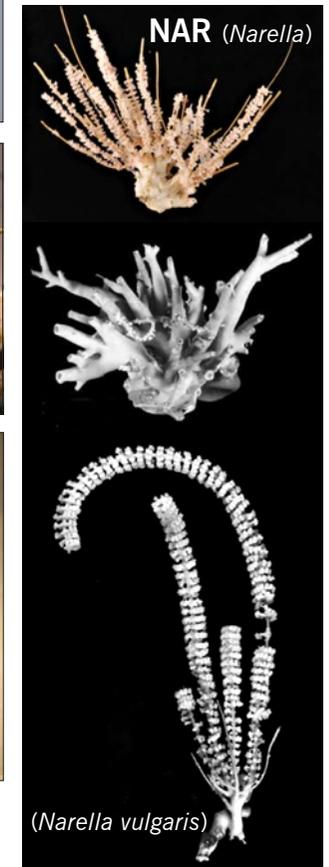
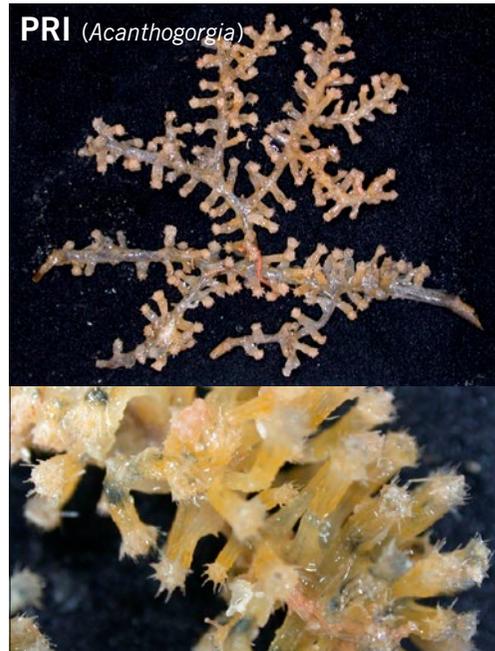
Central axis a wire-like, black or brown skeleton?

- Check to ensure they have also a layer of semi-soft tissue covering the skeleton, otherwise they can be hydroids; note that hydroids have very thin end branches and they never have a hard axis; a darker skeleton with a very thin layer of tissue could be a black coral.
- Uniform colour, usually beige to dark brown, red, pink or purple with surface polyp bumps: **plexaurid** sea fans **PLE** (p 76) (many genera indistinguishable by the naked eye such as **Placogorgia**, **Paramuricea**, **Dentomuricea**, etc.)
- Long and spiny polyps, colonies sometimes multicoloured: **Acanthogorgia spp.**

Central axis a wire-like golden skeleton often with orange, white, yellow, pink large and small polyps and often hard polyps: **Primnoidae PRI** (page 77)

What is the overall shape?

- Bottlebrush: supercommon **Thouarella** spp. **THO** (p 79) can be confused with **Tokoprymno**
- Whip-like: **Primnoella** spp.
- Bushy to fan-like and large with robust branches and scales or plates on knobby polyps: **Primnoa** spp. **PMN** (page 78) (Common Primnoidae)
- Fan-like and thin branches: **Callogorgia CLG** and others.
- Thick branches with very elaborated calyces in girdles:
 - Calyx composed of two pairs of fused body wall sclerites (scale-like structure): **Calyptrophora CPT** spp.
 - Calyx composed of 3 pairs of unfused body wall sclerites: **Narella NAR** spp.
 - Axial skeleton, not wiry or solid and easily crushed: bubblegum corals and similar forms (page 11).



Sea pens PTU

Also see the recently published *Sea Pen Guide* (Williams et al. 2014).

(N.B. Sea pens are found only on soft muddy bottoms with the exception of “rockpens” that attach to deep-sea rocky outcrops by a sucker-like modification of the base of the peduncle.)

Whip-like (small polyps):

Type of axis?

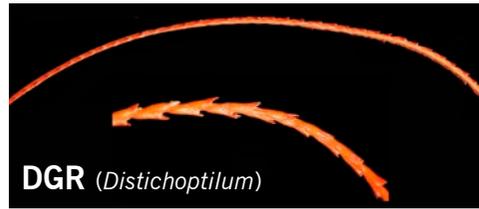
- Square in section: **Funiculina FQU**
- Cylindrical: **Kophobelemnon KST** and **Distichoptilum DGR**

Fleshy:

- Flower-like polyps arranged along stem: **Kophobelemnon KST**
- Long stalk with a terminal bump of large flower-like polyps: **Umbellula UMB**
- Short with large fleshy 'leaves': **Gyrophylum sibogae GYS** (p 83)

Pen-like:

- Purple and looking like a soaked feather: **Pennatula PNN** (p 84)
- The polyps appear in oblique rows and each have a calyx that has two conspicuous, broad teeth: **Halipterus HWL** (*Stylatula* is similar but not very common in New Zealand).



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Hydrocorals (stylasterid hydroids) HDR

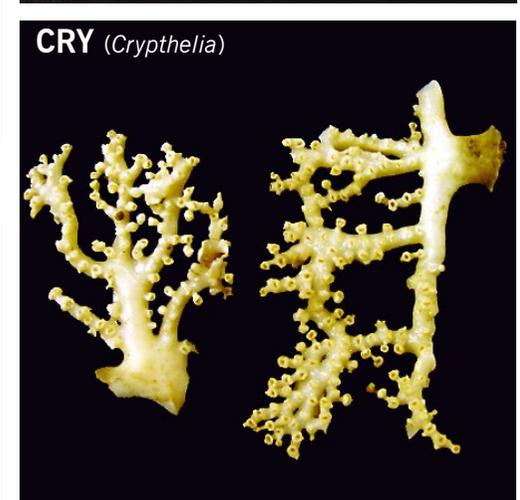
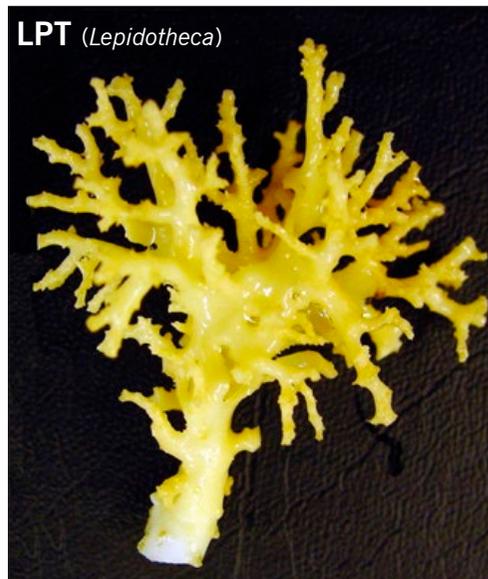
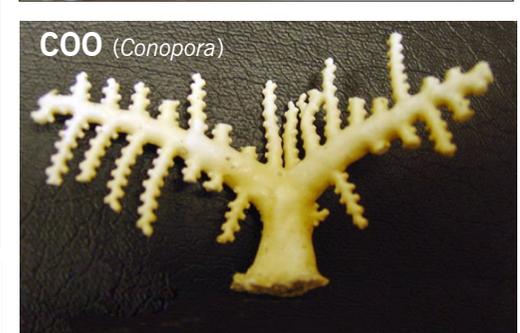
Recognising hydrocorals COR

- Growths with main branches usually obviously thicker than the side branches.
- Side branches break easily.
- Pore-like apertures, with tiny radii on the circular rim. (i.e. cyclosystems).

Groups of hydrocorals

- Pink to red (some species white, however), short spines, thick branches: **Errina** spp **ERR** (p 81).
- White colonies: **Stylaster** **STL**, **Conopora** **COO**, **Lepidotheca** **LPT** (p 82), **Stenohelia**, and **Crypthelia** **CRY** (among others). All groups form very similar colonies and are easy to tell apart with a microscope.

Most stylasterids other than some **Errina** **ERR** (p 67) species are similar and difficult to tell apart with the naked eye. **Calyptopora reticulata** **CRE** (p 80) is very similar to **Stylaster** **STL** species; but the latter have visible bump-like reproductive ampullae towards one side of the colony, not present in **Calyptopora**. Some large white colonies of the precious coral **Corallium** can be confused with stylasterids but **Corallium** differs in lacking pores of any kind on its corallum (skeleton). **Corallium** does not have the small side branches of **C. reticulata**. Some branching bryozoans can have similar shapes but are somewhat crystalline, have thinner branches, and are without robust main branches.



Recognizing Hydroids **HDF**

- Non calcified and generally small, soft and feathery with a 'woody' and flexible skeleton, the axis being chitinous. Hydroids have diminutive coral-like open branched or reticulate lace-like growths with microscopic openings

Groups that can be confused with hydrocorals

Hydroids HDF

Bryozoans COZ – stout, very hard growths or hydroid-like and flexible.

Precious red corals (**Hemicorallium** and **Corallium CLL**).

