

Coral Identification Guide



Department of Conservation
Te Papa Atawhai



Educational material prepared as part of the DOC08309 Project (Objective 3) for Government observers on the identification of protected corals known to be caught incidental to fishing. This guide complements:

- *Ministry of Fisheries Guide to Common Deepsea Invertebrates in New Zealand Waters* (Tracey et al 2007)
- Ministry of Fisheries instructions for the Observer Benthic Materials Form for corals
- CSP Observer Programme Specification Collection of Corals for Identification

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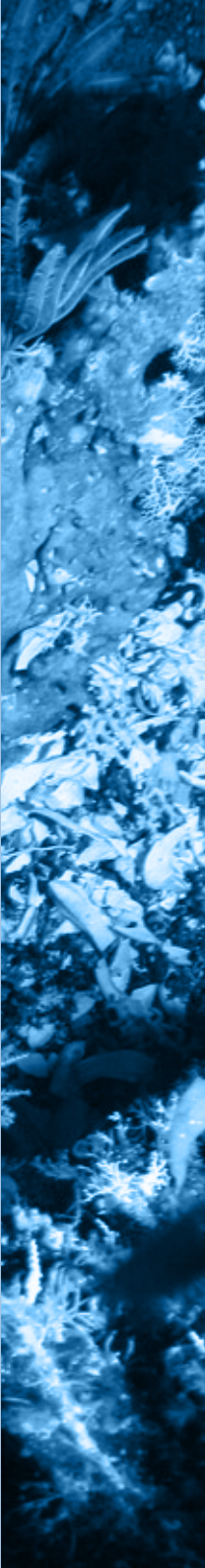
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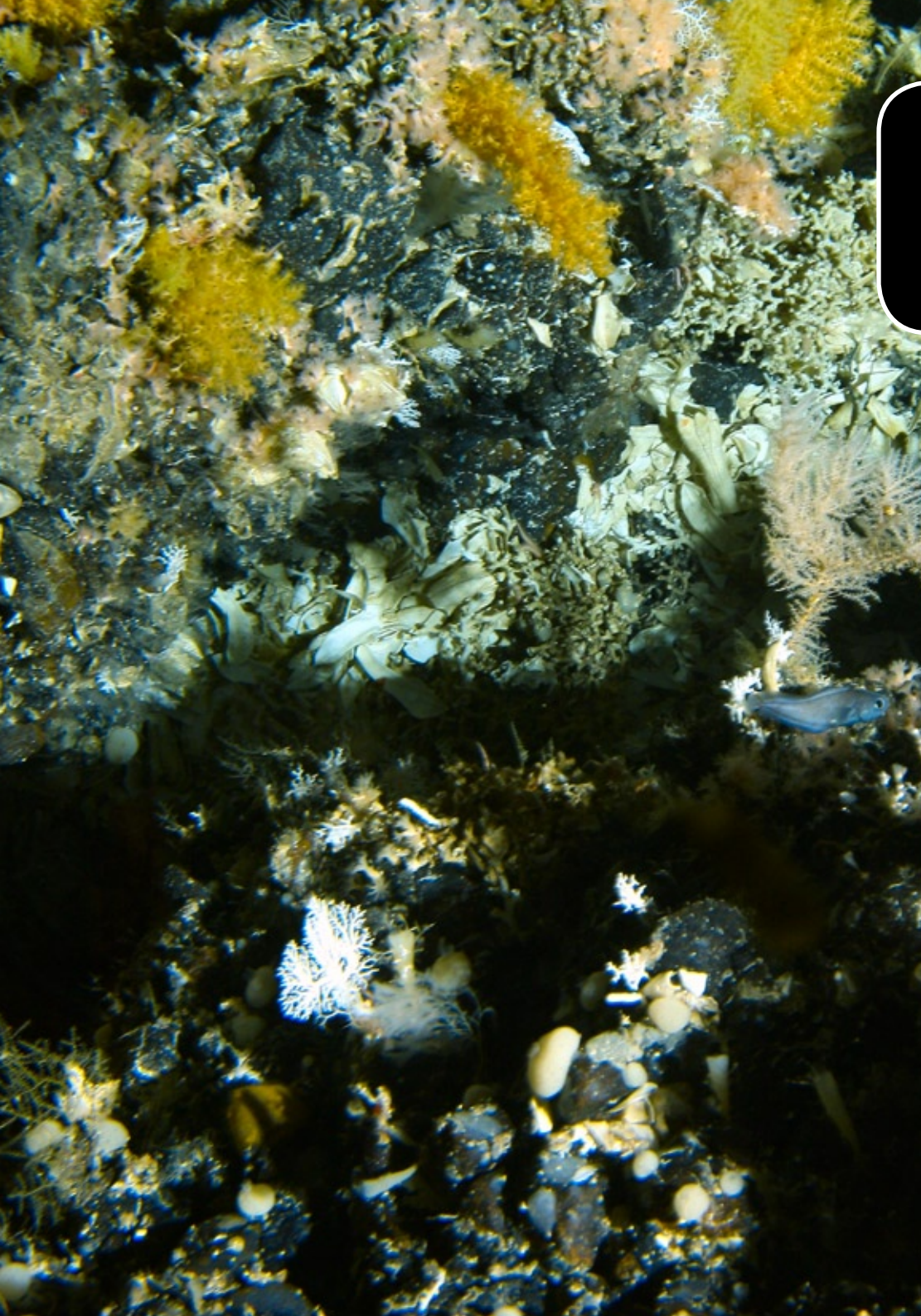
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Taxonomy of major coral groups

“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 2007)

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 – true soft corals, stoloniferans

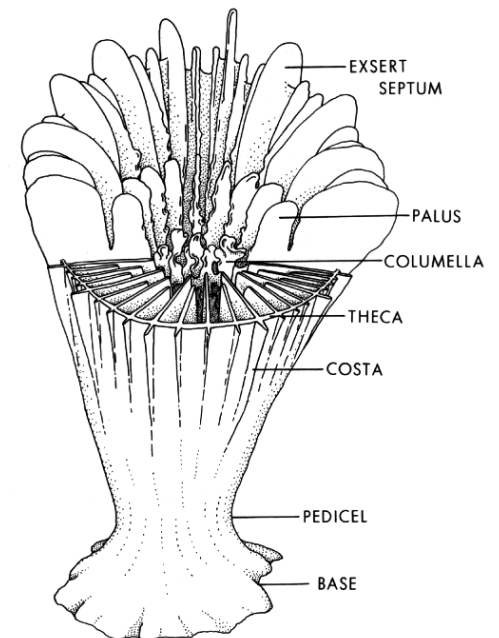
Order Gorgonacea – sea fans, sea whips

Order Pennatulacea – sea pens

Class Hydrozoa

Order Anthoathecatae – stylasterid corals

Glossary of terms for stony corals



Stony corals SIA

Branching thicket-forming corals CBR

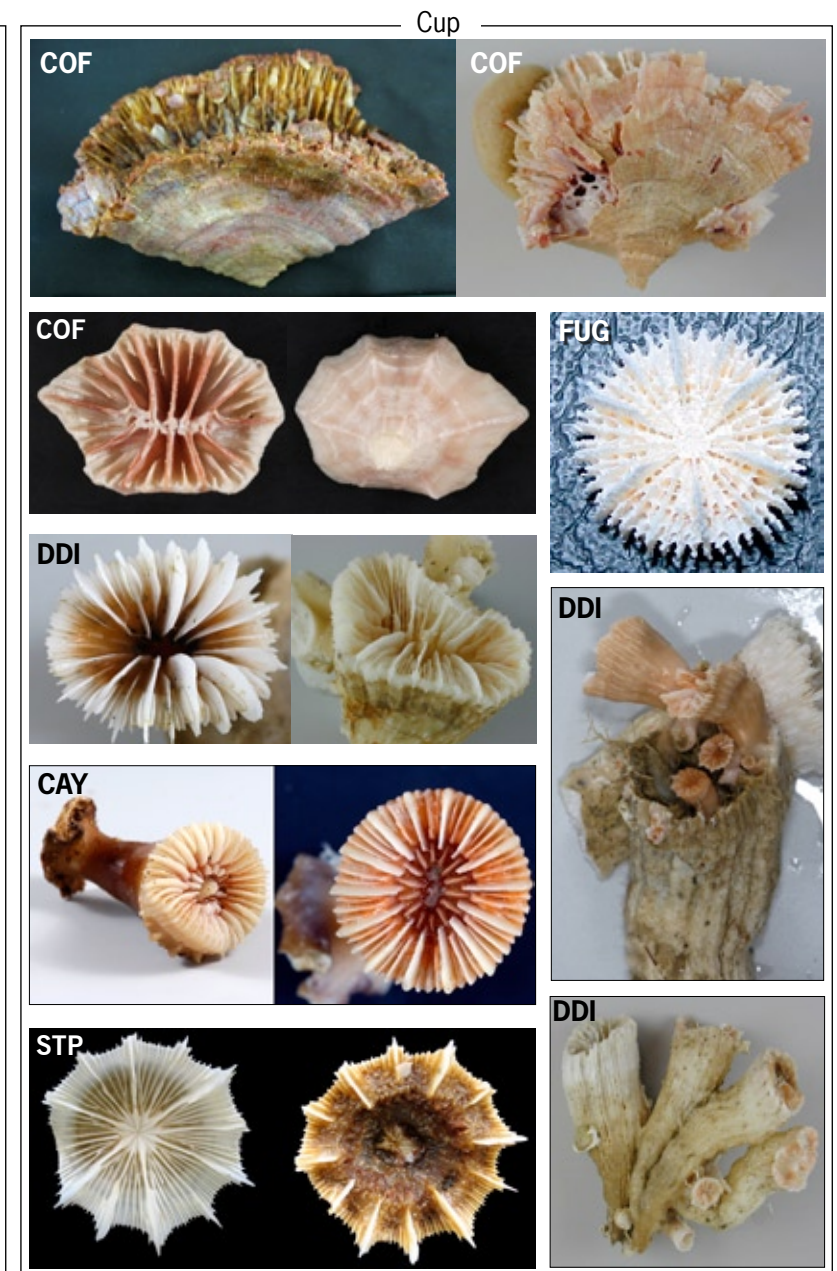
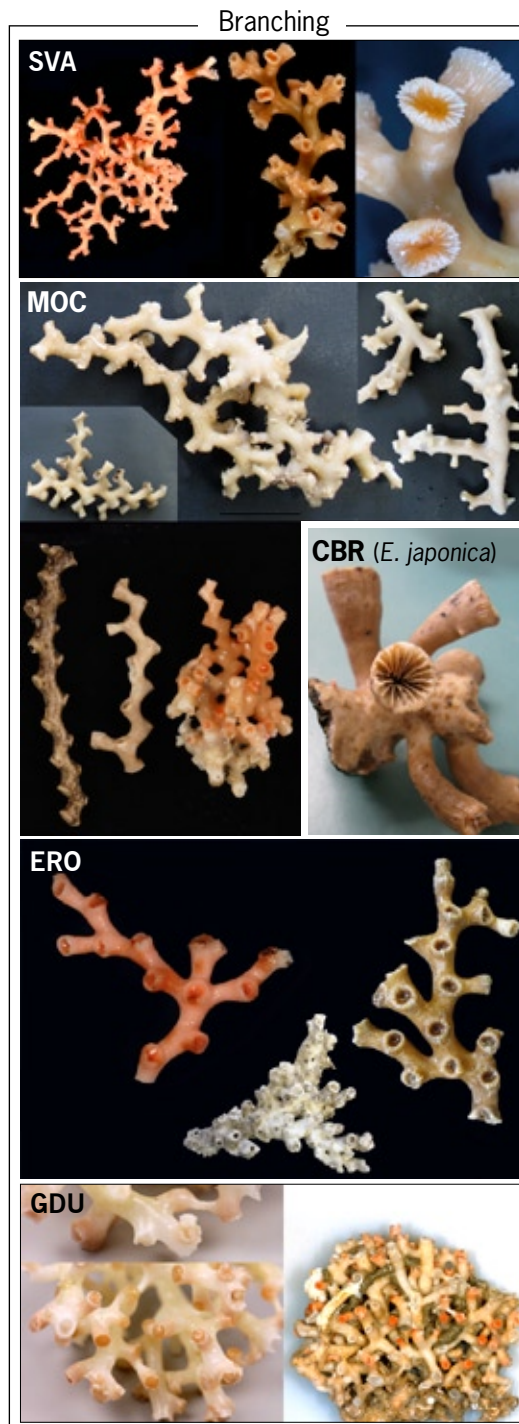
How does branching occur?

- The polyp calyx divides in two; branching in a 'v' shape:
 - ***Solenosmilia variabilis* SVA** (p 75)
- Branching occurs below the calyx:
 - Branches just below the calyx:
 - ***Madrepora oculata* MOC** (p 78)
 - Has main branches, then large calyces on one side of the plane of the colony:
 - ***Enallopsammia rostrata* ERO** (p 76)
- Branches apart from any calyx, 90 degrees:
 - Only a few large calyces develop as branches:
 - ***Euguchipsammia japonica***. (Default **CBR**)
 - A 3D network of thin branches (note the bridges between branches); polyps branch at right angles:
 - ***Goniocorella dumosa* GDU** (p 74)

Solitary or cup corals CUP

What is the shape of the solitary coral?

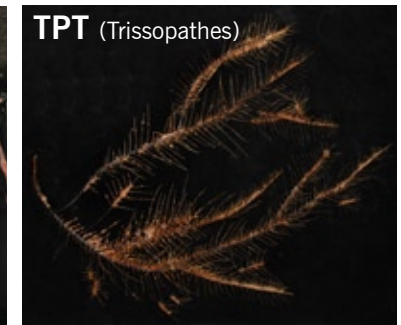
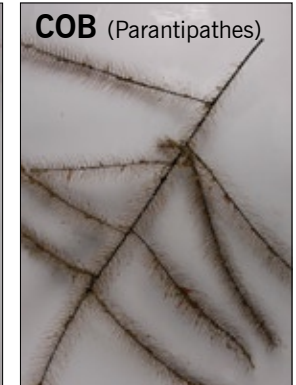
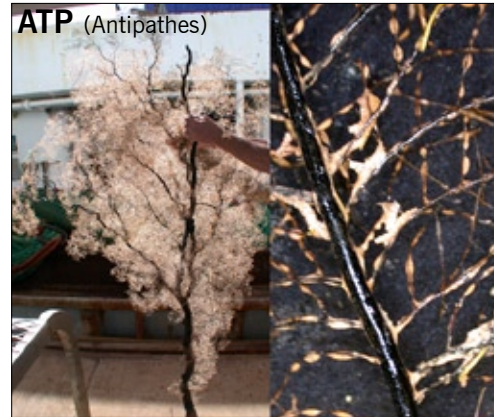
- Compressed: ***Flabellum* spp. COF** (p 77)
- Flat bottomed: ***Fungiacyathus* spp. FUG**
- Cup-like (conical base):
 - Radial structures (septa) form from center to edges: ***Desmophyllum dianthus* DDI** (pg 73)
 - Displays several cycles of progressively smaller (less wide) septa: ***Caryophyllia* spp. CAY** (p 72) and allies.
 - Bowl-like (no conical base):
 - ***Stephanocyathus* and allies. *S. platypus* STP** (p 71).



Black corals COB

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 CIR**
- 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 COB**
- 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** (*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 pg 57)

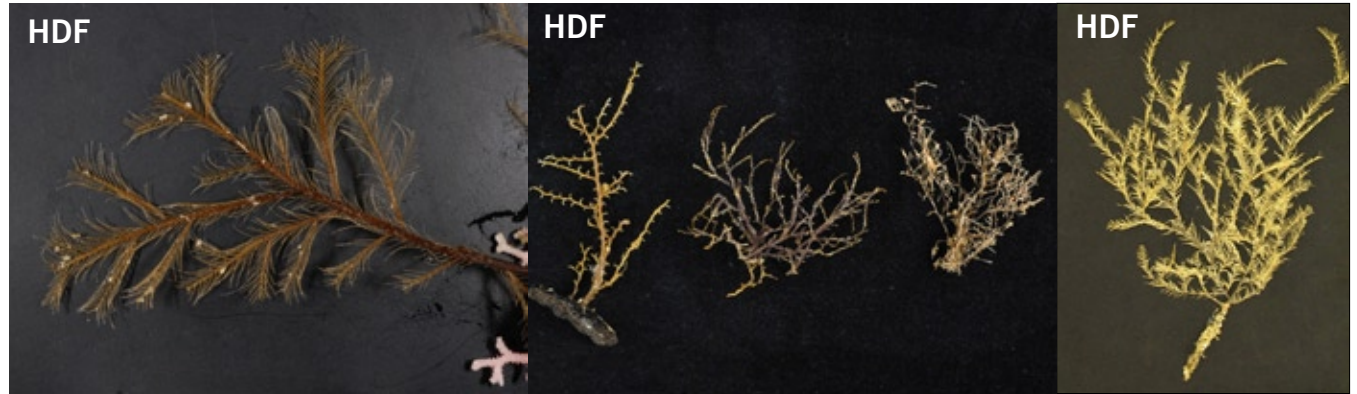


Groups that can be confused with black corals COB

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 can be scraped off gorgonian axes.

Gorgonian corals e.g., Primnoidae colonies 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).



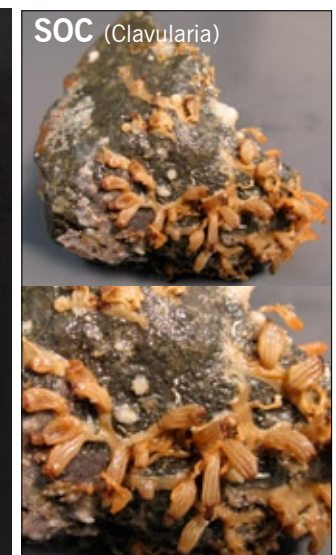
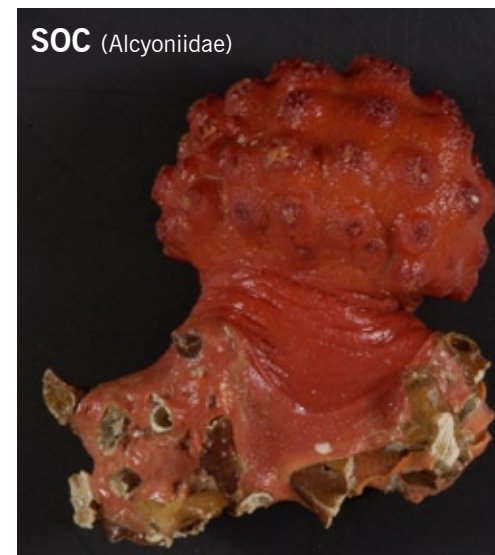
Soft corals SOC

How many polyps do they have?

- One or a few connected by stolons:
 - Gigantic polyp: ***Anthomastus robustus* ARO** (p 55)
 - Small and robust, usually white: ***Clavularia* spp. SOC**
 - Thin and long, e.g. ***Telestula* spp. TLA**: yellow/white, single stem, doesn't branch
- Many polyps:

What is the colony shape?:

- Mushroom-like:
 - Distinctive hemispheric head; paler-coloured base, large polyps stay outside after collection: ***Anthomastus* spp.** (e.g. *A. zealandicus*) **SOC**, key feature is the brain-like stalk on the underside
- Amorphous though usually rounded: **Alcyoniidae family SOC**
- Branching:
 - Thin tubular branches: ***Telesto* spp. TLO** (p 56)
 - Single tubes: Runner-like with pink/white polyps, ***Clavularia* spp. SOC**
 - Red single tubes: ***Rhodelinda* spp.**
 - Fleshy and thick branches with spikes: ***Chironnephya* spp.**



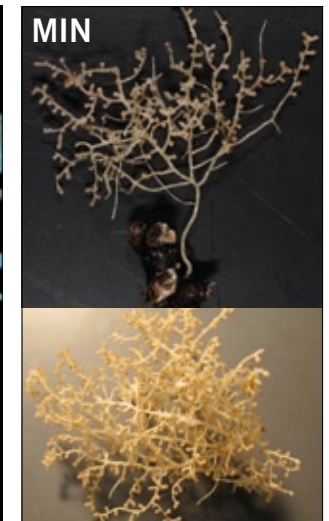
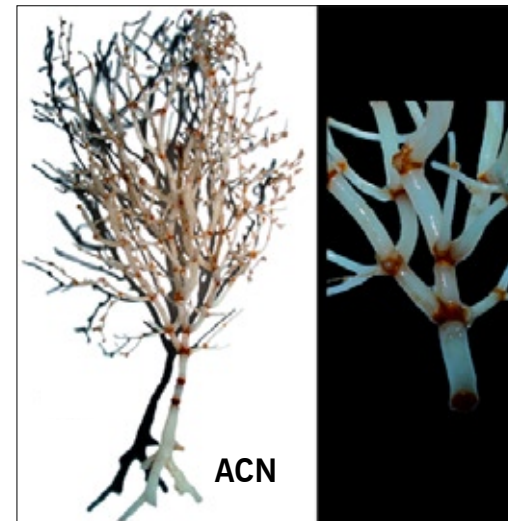
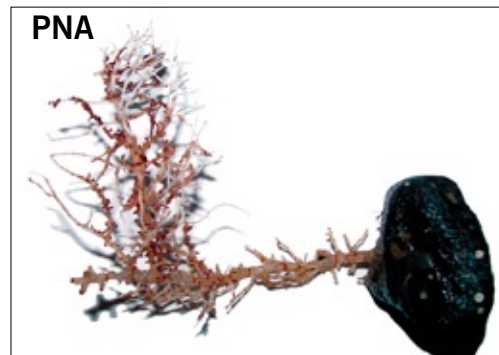
Gorgonian corals GOC

Bamboo corals ISI (p 64)

How big are the brown nodes?

- Tiny (need a closer look to spot): **Mopseinae**
 - What shape do they have?
 - Bottle-brush: **Primnois** spp. (**P. antarctica** PNA)
 - One main branch and often less than bottle-brush: **Minuisis** spp. **MIN**
 - Forked branching and others: many genera of **Mopseinae**
- Long and visible (>1 cm): **Keratoisidinae**
 - Where do the branches come from?
 - No branches: **Lepidisis** spp. **LLE** (p 63)
 - From the white internodes: **Keratois** spp. **BOO** (p 62). Keratois taxonomy is under review, some have unusual candelabra form.
 - From the brown node (usually 2–3 branches from one branching point): **Acanella** spp. **ACN**
 - Several other genera exist but they are uncommon in New Zealand.

Both *Keratois* and *Lepidisis* are under revision and might be the same genus.



Bubblegum corals

What colors?

- Pink and red:
Paragorgia spp. ***P. arborea*** PAB (p 60)
- White or beige:
Sibogagorgia spp.

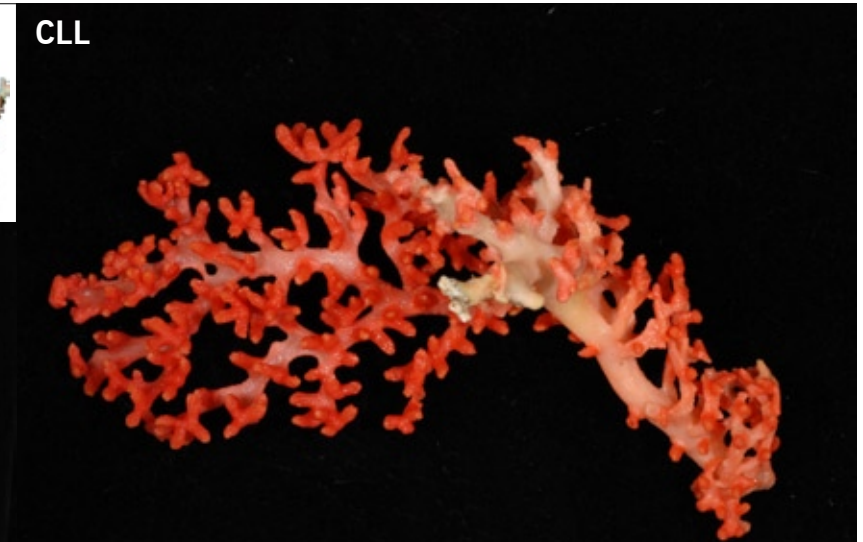
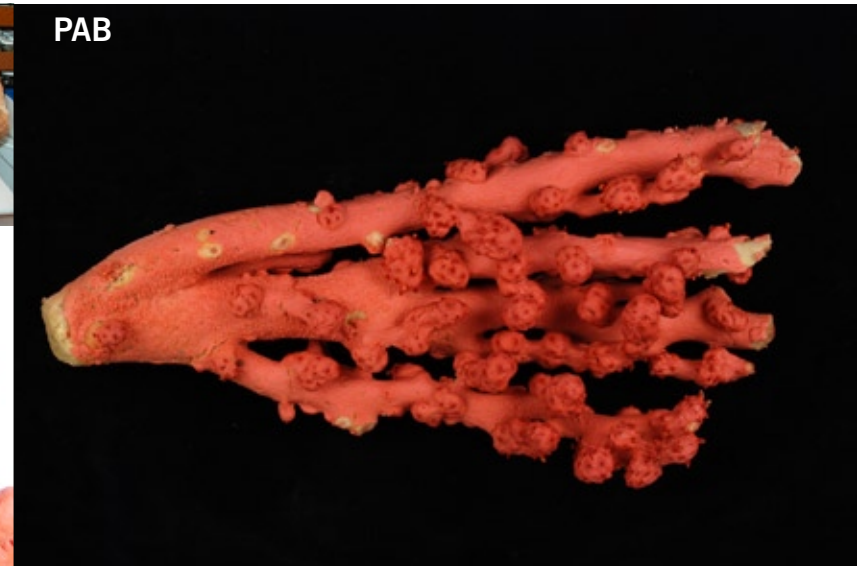
Precious corals

Corallium CLL (p 59) 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.

False gorgonians

What colour are they?

- Brown or black (fan-like): ***Iciligorgia*** spp.
- Red: ***Sarcodyction*** spp.
- Beige to white: ***Anthothela*** spp.

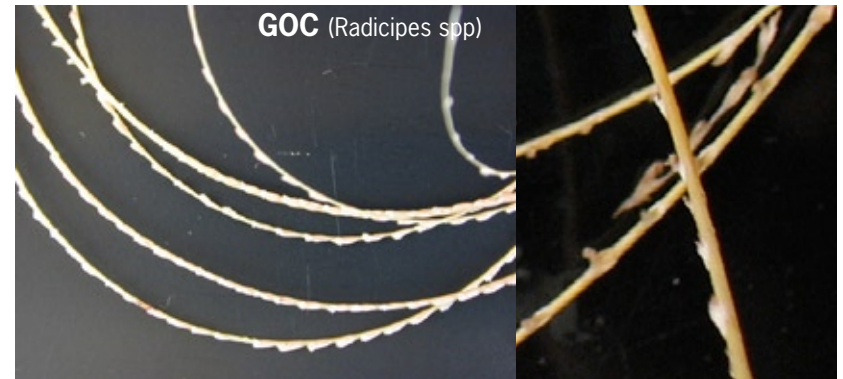
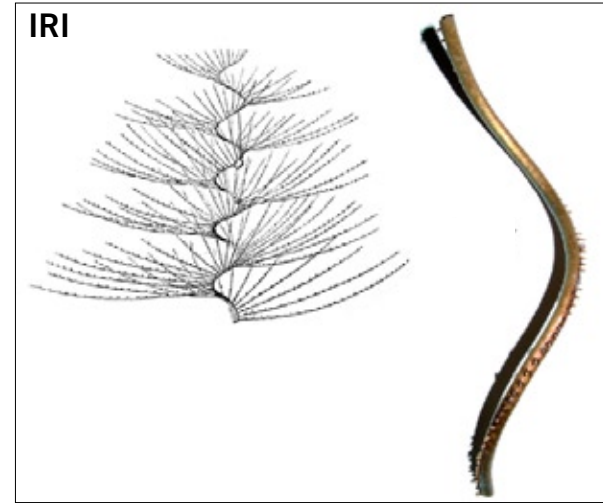
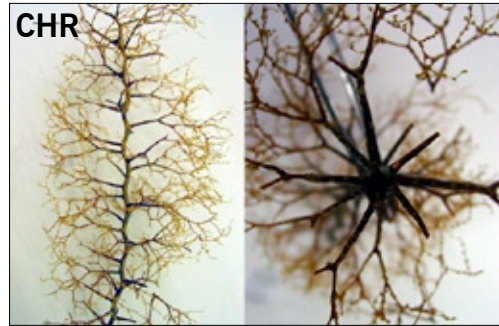


Golden corals

What is the overall shape?

- Delicate bottle-brush: ***Chrysogorgia*** spp. **CHR** (p 61)
- Long stalk ending in a network of branches: ***Metallogorgia*** spp. **MTL**
- Twisted: ***Iridigorgia*** spp. **IRI**
- Whip-like: ***Radicipes*** spp. **GOC**

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



Sea Fans GOC

Do they have a dark axial skeleton?

- Yes which is often brown or black.
(check to ensure they have also a cortex 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 and harder skeleton with a soft cortex of tissue could be a black coral).

What is the appearance of the covering cortex tissue?

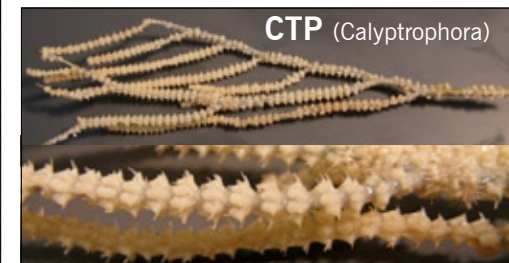
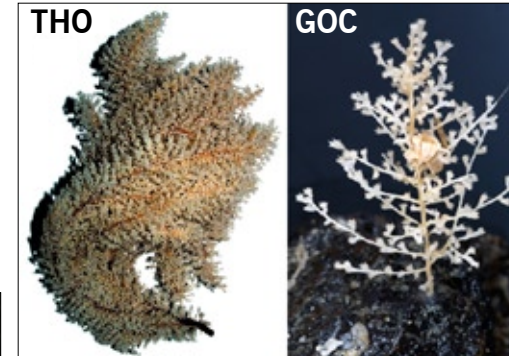
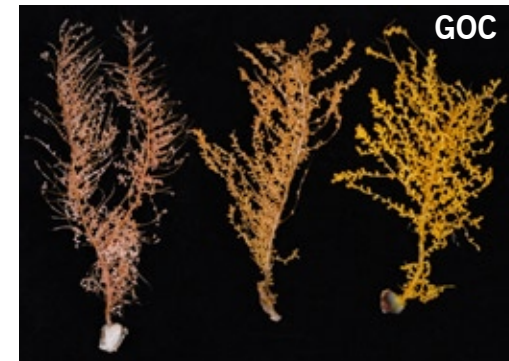
- Uniform colour, usually beige to dark brown, bumpy: Plexauridae (many genera indistinguishable by the naked eye such as **Placogorgia**, **Paramuricea**, **Dentomuricea**, etc.)
- Long and spiny polyp calyces: **Acanthogorgia**.

Golden branches often with orange, white, yellow, pink large and small polyps and usually hard polyp calyces:

Primnoidae PRI

What is the overall shape?

- Bottlebrush: supercommon **Thouarella** spp. **THO** (p 65)
- Whip-like: **Primnoella** spp. **PML**
- Bushy to fan-like and large with robust branches and scales or plates on knobby polyps: **Primnoa** spp. **PMN** (Common Primnoidae)
- Fan-like and flat thin branches: **Callogorgia** and others.
- Thick branches with very elaborated calyces in girdles:
 - Calyx composed of two pair of fused body wall sclerites (scale-like structure): **Calyptrophora** spp.
 - Calyx composed of 3 pairs of unfused body wall sclerites: **Narella** spp. **NAR**
 - No dark axial skeleton, breaks easily: False gorgonians (see bubblegum coral, page 11).



Sea pens PTU

(N.B. sea pens are found only on soft muddy bottoms)

Whip-like (small polyps):

Type of axis?

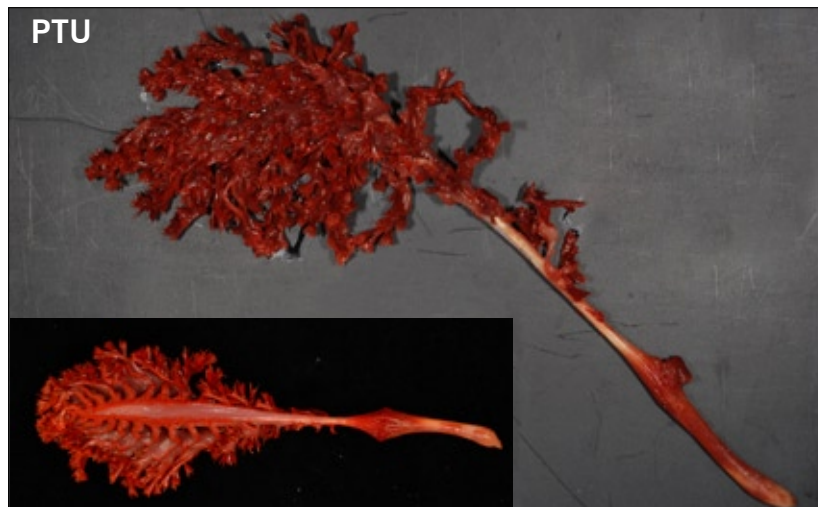
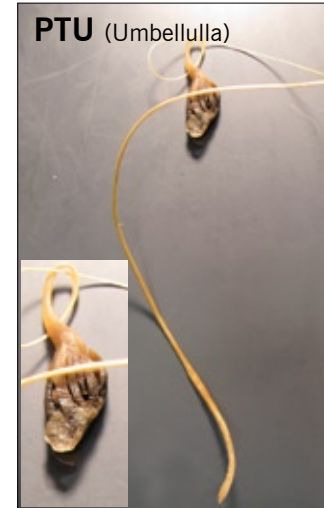
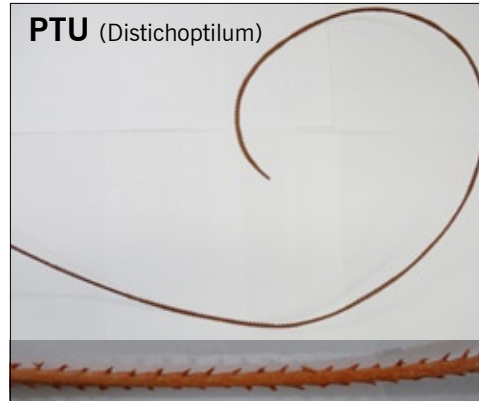
- Cross-like in section: **Funiculina**.
- Cylindrical:
Red color: **Distichoptilum PTU**

Fleshy:

- Long stalk with a terminal bump of large flower-like polyps: **Umbellula PTU**
- Flower-like polyps arranged along stem: **Kophobelemnon PTU**
- Short with large fleshy 'leaves': **Gyrophyllum sibogae GYS** (p 69)

Pen-like:

- Purple and looking like a soaked feather: **Pennatula PNN** (p 70)
- Very long, rows of hard and short spirals of polyps (bluish fluorescence when touched): **Halipteris PTU** (Stylatula is similar but not very common in New Zealand).



Hydrocorals (stylasterid hydroids) HDR

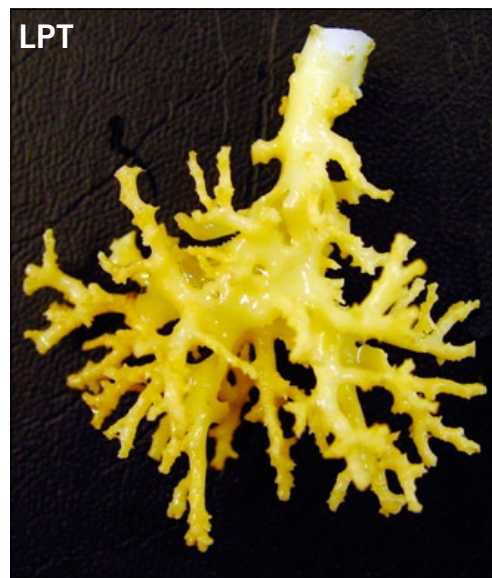
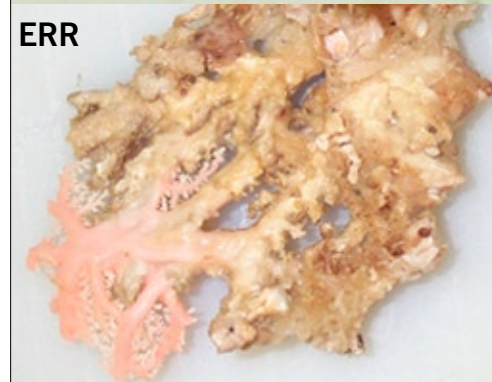
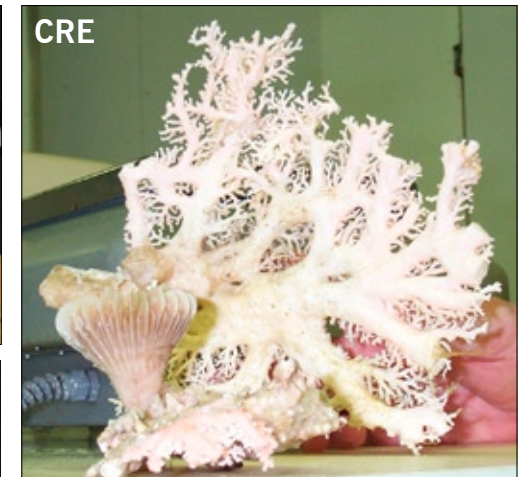
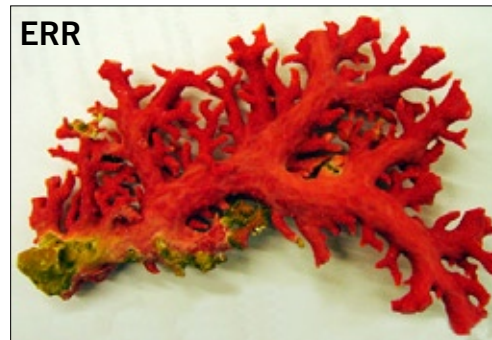
Recognising hydrocorals COR

- 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**.
- White colonies: **Stylaster** **STL**, **Conopora** **COO**, **Lepidotheca** **LPT** (p 68), **Stenohelia**, and **Cryptothelia** **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 66) 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 **Calyptopora 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 that have a thin layer of tissue usually of a different color than the hard part

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

