

# Identification of protected corals

Project: DOC09305 / INT2008-02

Di Tracey



# Corals - Cnidaria

Shallow warm water corals of Kermadec  
Islands & Great Barrier Reef



# Corals - Cnidaria

## Deepsea corals in NZ region



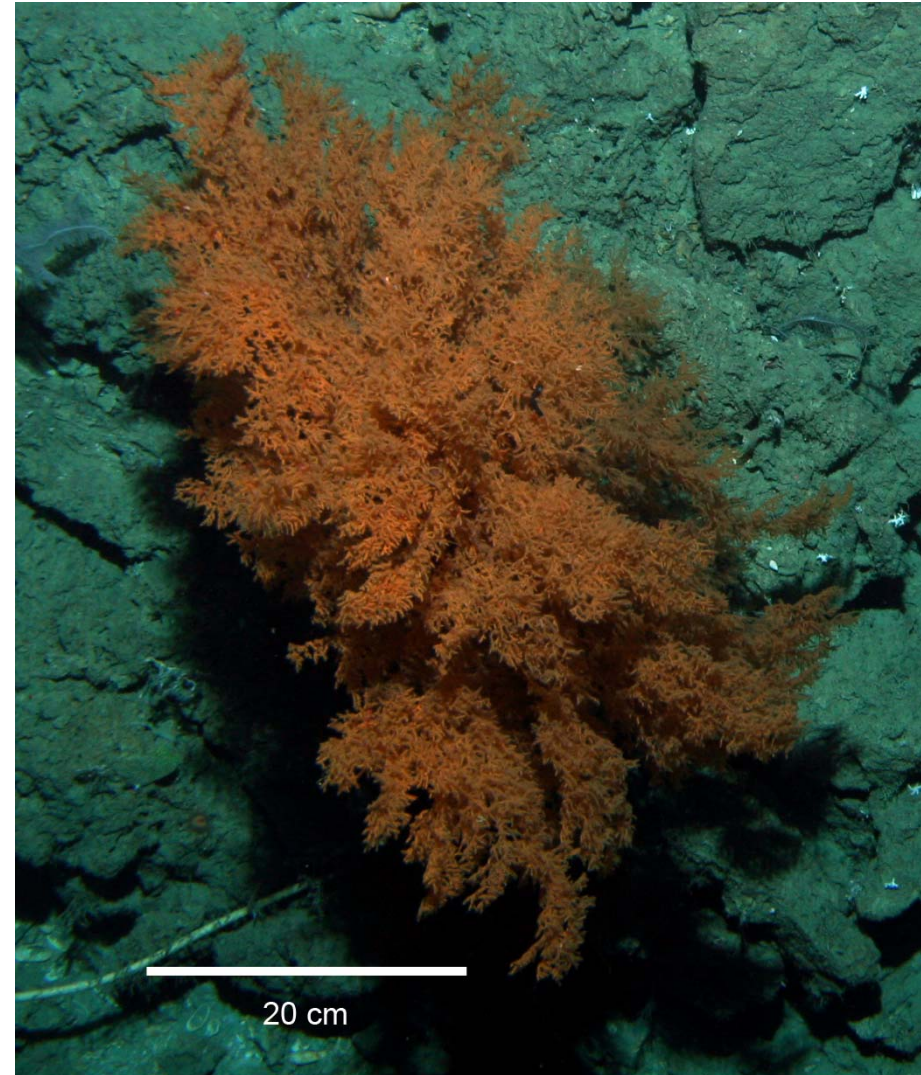
# Cnidaria

## – Actinostolidae: deepsea anemone



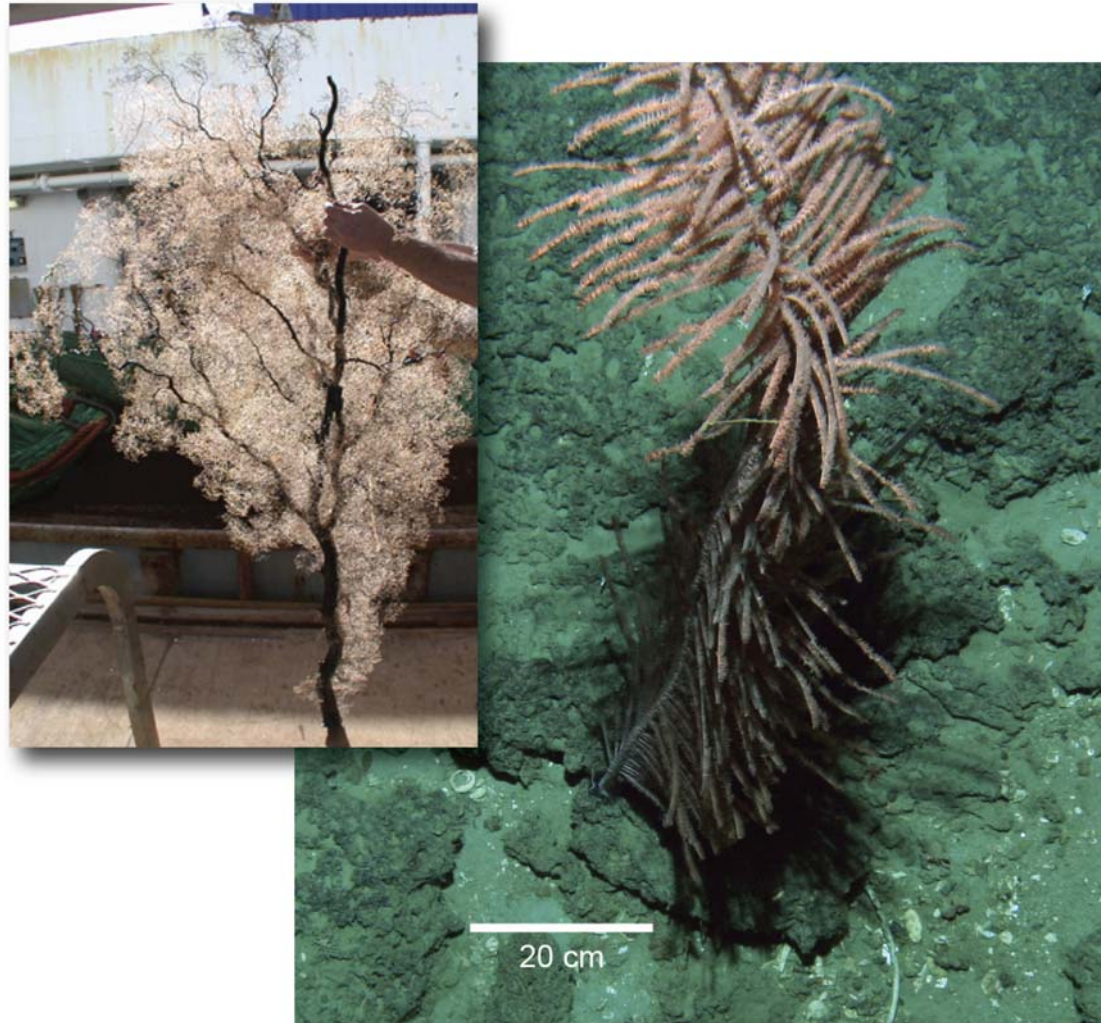
# Cnidaria

## – Antipatharia: black corals



# Cnidaria

## – Antipatharia: black corals

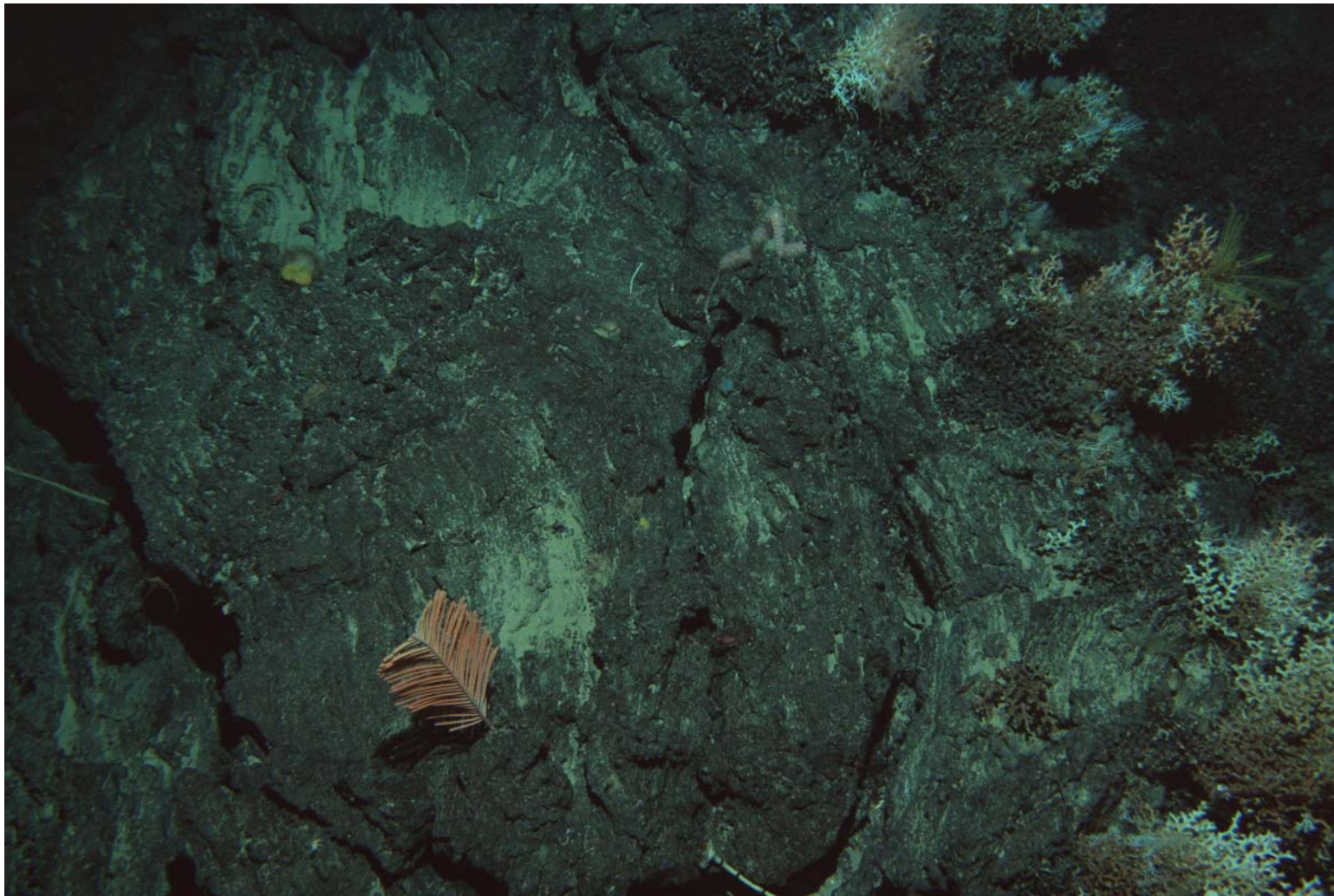


# Association: Crustacea

– **Chirostylidae: squat lobsters**  
on black coral. Crinoids in foreground



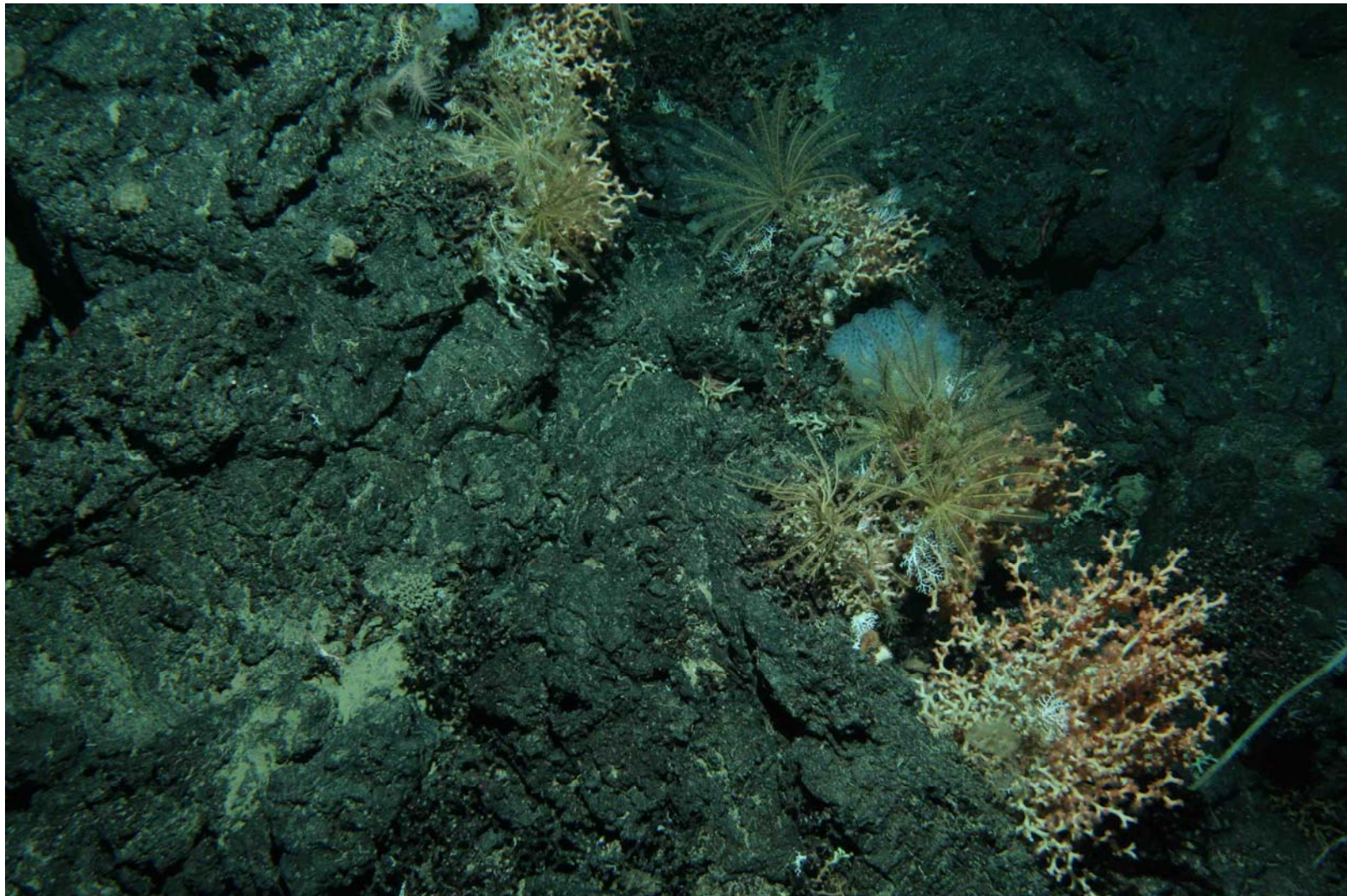
***Solenosmilia*, *Keratoisis* sp.,  
*Bathypathes* sp.**





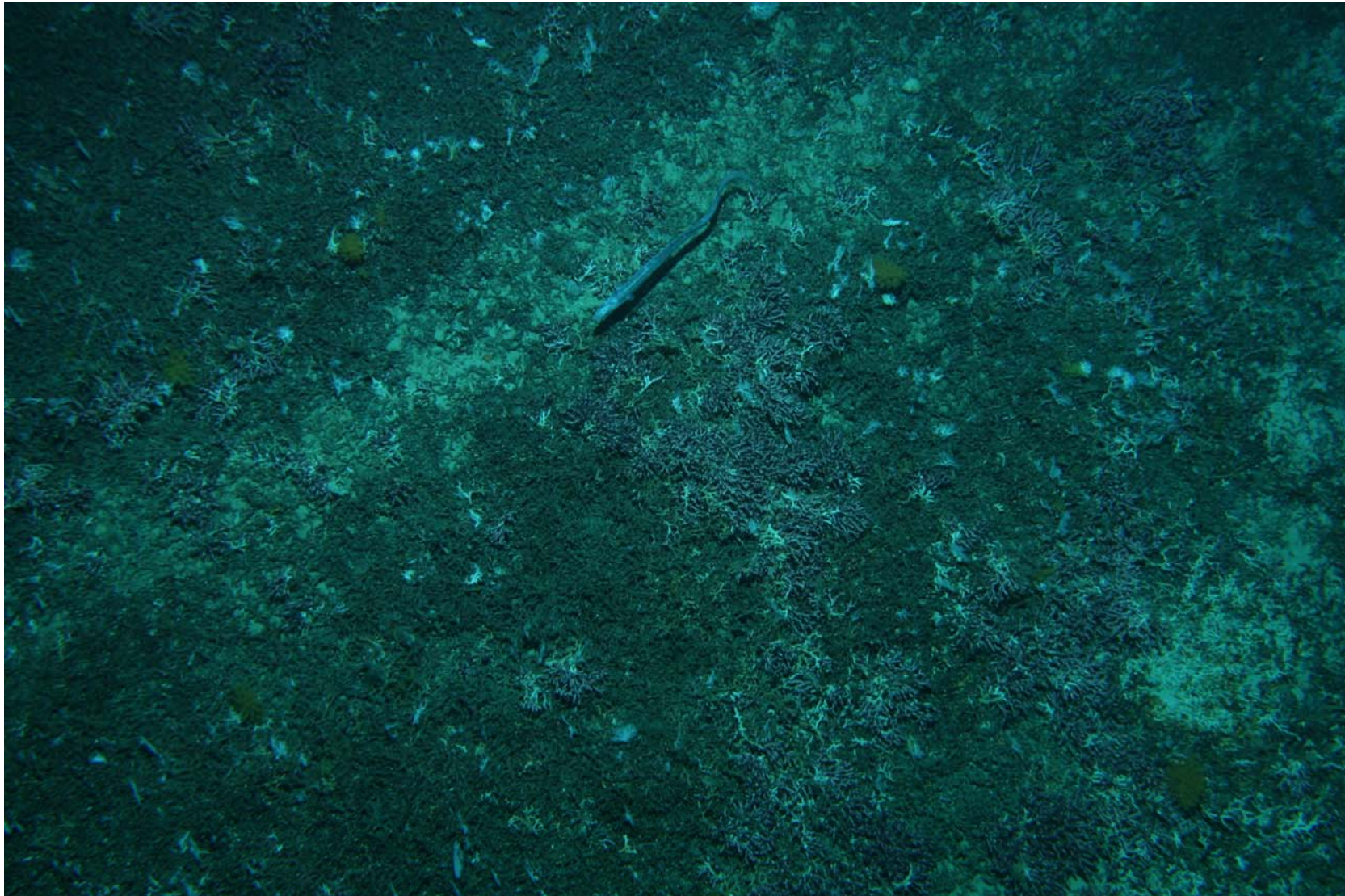
# Cnidaria

– Scleractinia: *Solenosmilia variabilis*  
branching stony coral



# Cnidaria

- Scleractinia:  
branching stony coral rubble



# Association: Echinodermata



– *Dermechinus horridus* Deepsea urchin



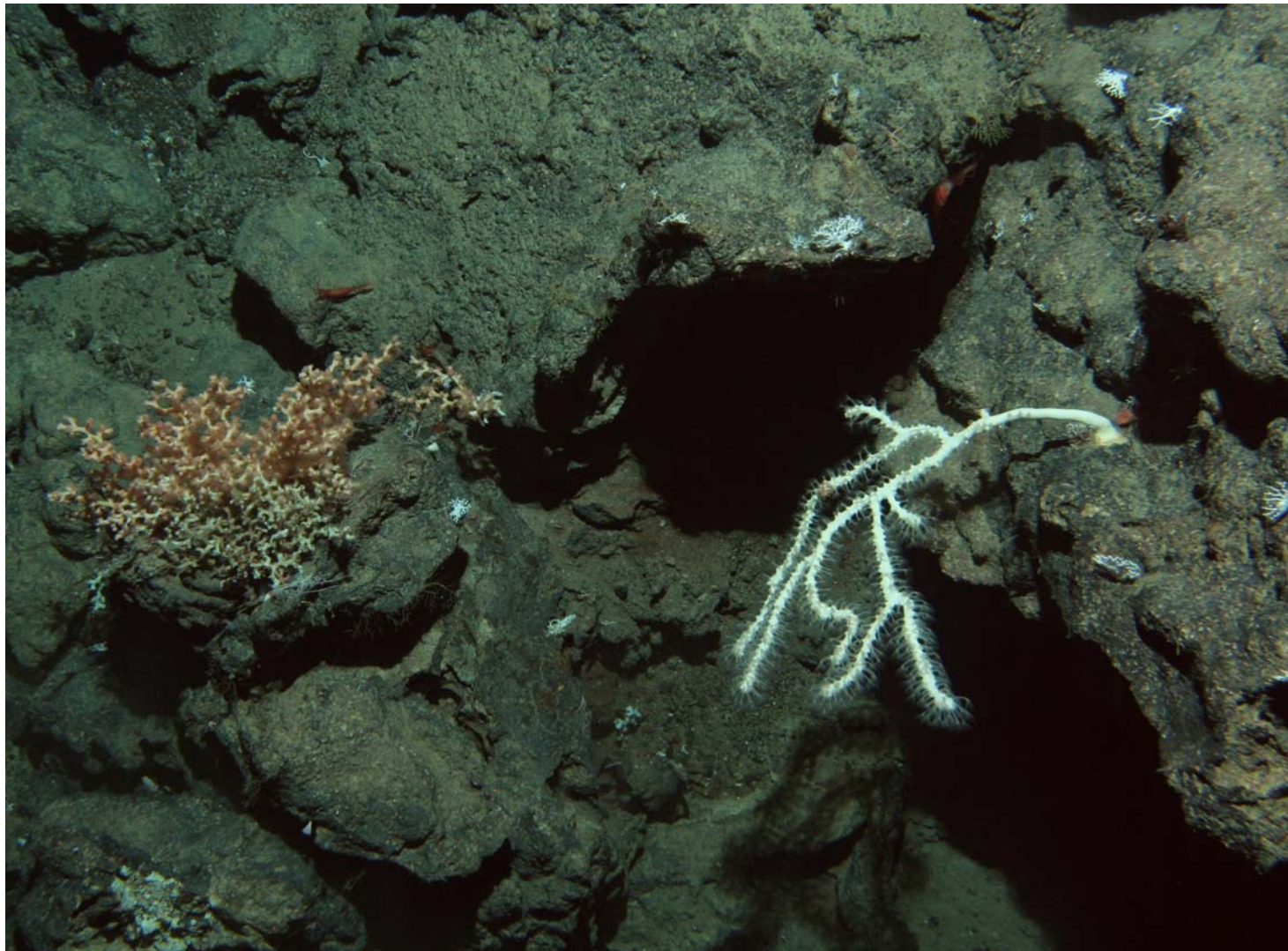
# Association: Porifera

- Hexactinellida: sponge
- Echinodermata: crinoids
- Cnidaria: cup coral



# Cnidaria

## - Octocorals: Isididae Bamboo coral



# Cnidaria

– Octocorals: *Keratoisis sp.* bamboo coral



# Cnidaria

- Octocorals ?bamboo coral colonised by zoanthid gold coral (?*Savalia*)

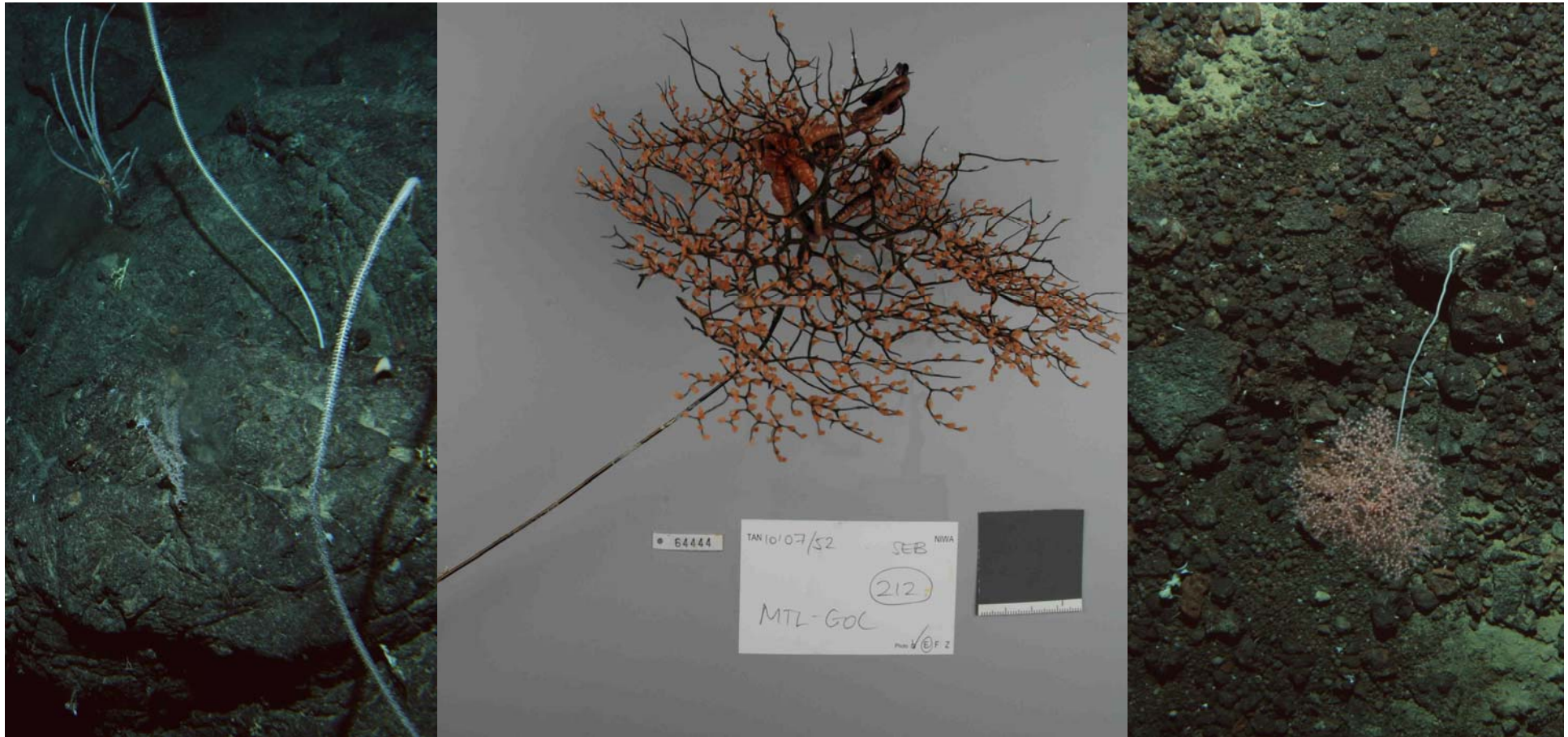


Sample from North Hill off Mahia (officially known as Pantin Hill)

# Cnidaria



- Octocorals: *Keratoisis* sp. bamboo coral & *Metallogorgia* sp. golden coral





# Cnidaria

– Octocorals: Primnoidae & Pleaxuridae  
sea fans



# Cnidaria

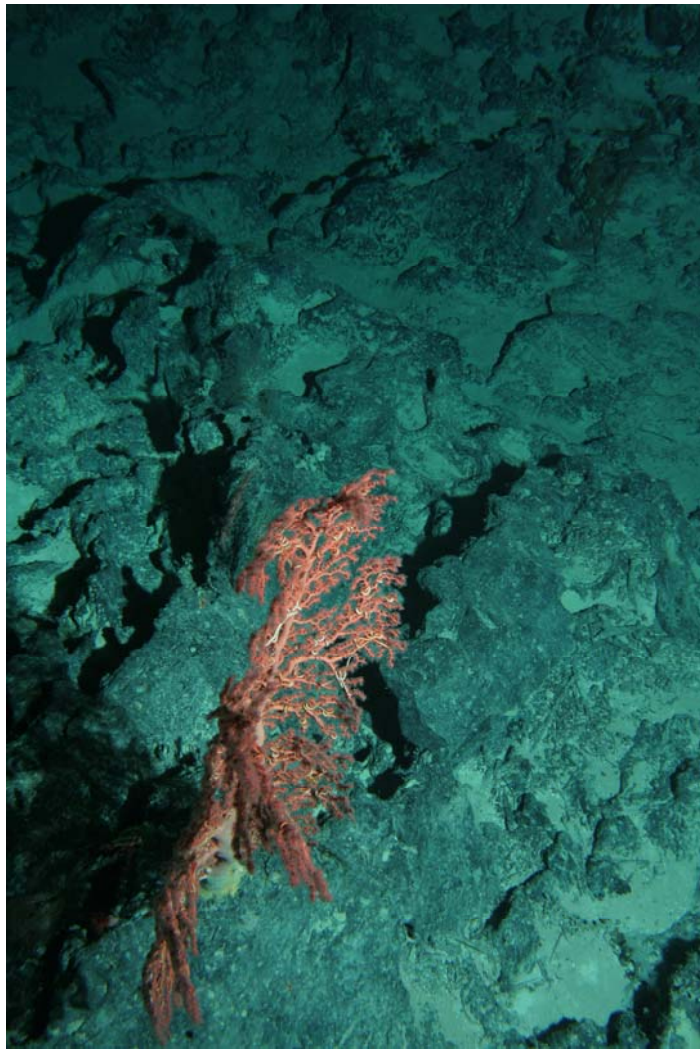
– Octocorals: Primnoidae & Pleaxuridae  
sea fans

Association Echinodermata: ophiuroids



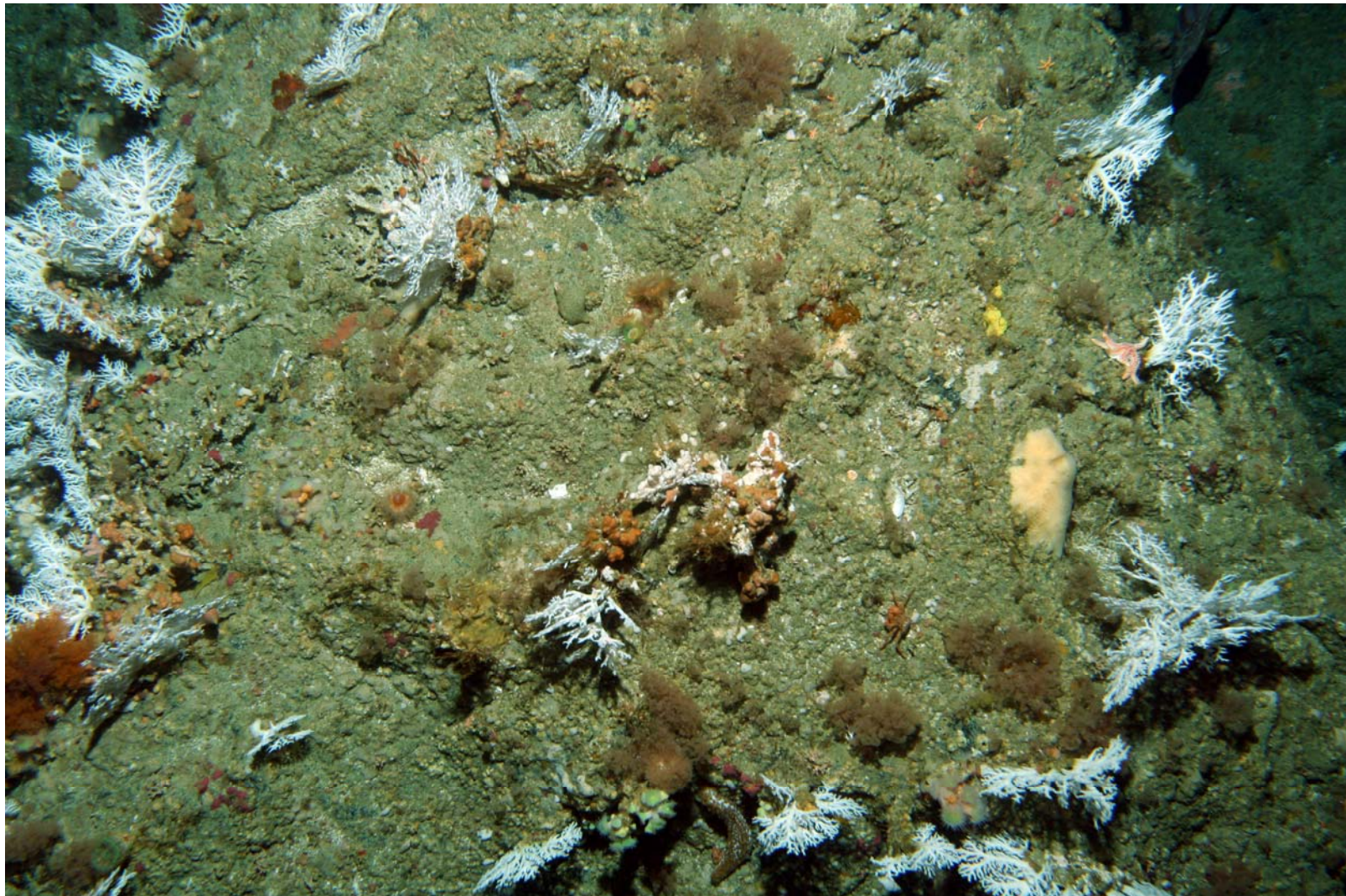
# Cnidaria

– Octocorals: *Paragorgia spp.*  
bubble gum coral



# Cnidaria

## – Stylasteridae: hydrocorals



## Overall Objective

To identify samples of corals returned through the CSP observer programme during the 2008/09 fishing year (1 October 2008 – 30 September 2009)

### Specific Objectives:

- 1) Samples of corals returned by observers to be identified to lower taxa (families, genera, species)  
(completed 1 Oct 2009)
- 2) Update the Ministry of Fisheries Centralised Observer Database (*COD*) as necessary with correct species identifications  
(completed Dec 2009)

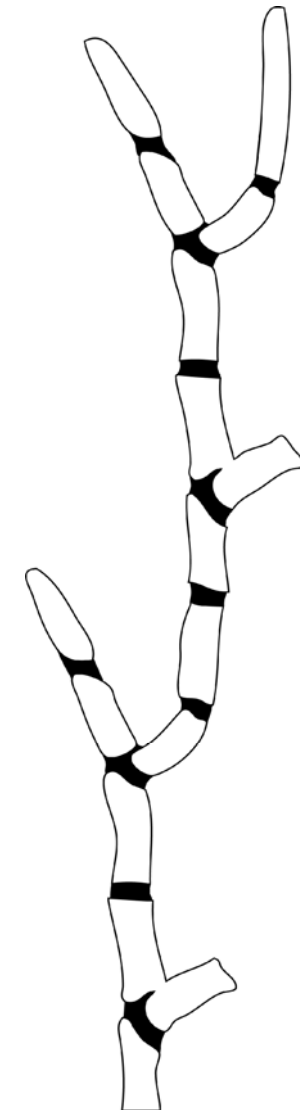


## Specific Objective 1

5 main tasks:

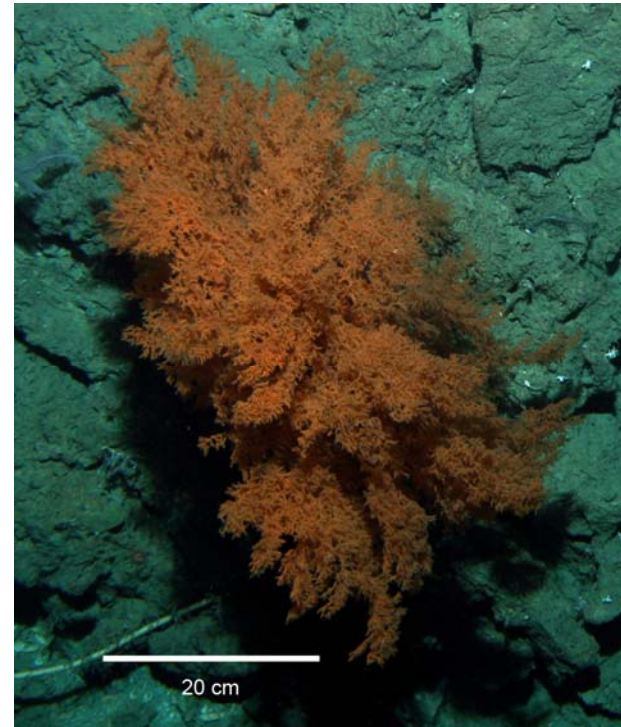
- providing input into MFish observer briefing process
- sorting frozen samples to putative identification level
- entering data into NIWA 'Observer Samples Database' (OSD)
- taxonomists confirm identification \*
- OSD data exported into NIWA Invertebrate Collection (NIC) *Specify* database, the database that manages data for all invertebrate specimens held at NIWA

\* 4th ISDC visitors (opportunistic) & Juan Sanchez funded visit (DOC Grant)



302 records including  
species names, codes,  
weights, & sample  
numbers entered  
into OSD

Species represented  
all Cnidaria Groups



# List of Cnidaria species returned by Observers 1 Oct 2008 – 30 Sep 2009



Cnidaria	MFish code	Species	Common name
Generic code	COU		Coral (Unspecified)
Anemones	ANT HMT	Anthozoa (Class) Hormathiidae (Family)	Anemones Warty deepsea anemone
Zoanthids	EPZ	<i>Epizoanthus sp.</i>	Zoanthid
Black coral	COB BTP LSE LEI LSE PTP	Antipatharia (Order) <i>Bathypathes</i> spp. <i>Leiopathes secunda</i> <i>Leiopathes</i> spp. <i>Leiopathes secunda</i> <i>Parantipathes</i> spp.	Black coral Black coral Black coral Black coral Black coral Black coral
Stony corals	SIA CBR GDU ERO MOC SVA CUP DDI COF STP	Scleractinia (Order) Several Families <i>Goniocorella dumosa</i> <i>Enallopsammia rostrata</i> <i>Madrepora oculata</i> <i>Solenosmilia variabilis</i> Several Families <i>Desmophyllum dianthus</i> <i>Flabellum</i> spp. <i>Stephanocyathus platypus</i>	Scleractinia Stony branching corals Bushy hard coral Deepwater branching coral Deepwater branching coral Deepwater branching coral Stony cup corals <i>Desmophyllum</i> cup coral <i>Flabellum</i> cup coral Solitary bowl coral
Gorgonian corals (sea fans)	GOC ISI BOO LLE PAB PRI THO IRI MTL CLG CHR	Gorgonacea (Order) Isididae (Family) <i>Keratoisis</i> spp. <i>Lepidisis</i> spp. <i>Paragorgia arborea</i> Primnoidae <i>Thouarella</i> spp. <i>Iridogorgia</i> spp. <i>Metallogorgia</i> spp. <i>Callogorgia</i> spp. <i>Chrysogorgia</i> spp.	Gorgonian coral Bamboo corals Bamboo coral Bamboo coral Bubblegum coral Sea fan Bottlebrush coral Iridescent coral Metallic coral <i>Callogorgia</i> spp. Golden coral
Sea pens	PTU GYS	Pennatulacea (Order) <i>Gyrophyllum sibogae</i>	Sea pens Sea pen
Soft corals	SOC	Alcyonacea (Order)	Soft coral
Stylasterid hydrocorals	HDR ERR CRE	Hydrozoa (Class) <i>Errina</i> spp. <i>Calyptopora reticulate</i>	Stylasterid hydroids Red hydrocoral White hydrocoral
	HDF	Several Orders / Families	Feathery hydroids



# Identification - easily confused species

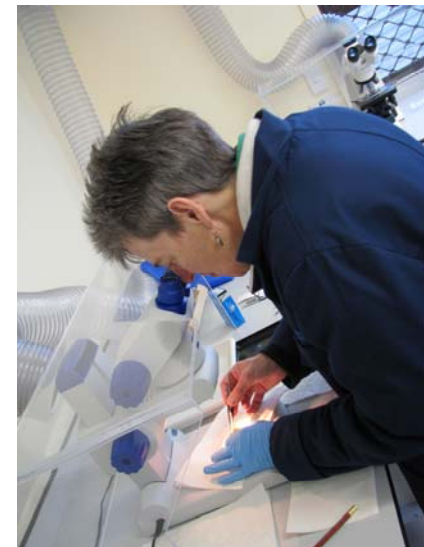
- stony branching corals
- black corals
- some hydrocorals
- gorgonian corals (e.g. Primnoidae)



## Identification cont'd

Vouchers of tissue samples collected by experts to confirm identifications to lower taxonomic level

to revise species descriptions,  
for molecular studies  
(e.g., black corals,  
bamboo corals (Isididae),  
precious corals (Corallidae),  
bubblegum corals (Paragorgiidae)



## Specify database outputs

Cruise/Station No

Station

Latitude

Longitude

Start depth

Phylum/TaxonName

Class/TaxonName

Subclass/TaxonName

Order/TaxonName

Family/TaxonName

Genus/TaxonName

Species/TaxonName (species name e.g. *Madrepora oculata*)

Determination

Lot number (NIC Specify database Catalogue number)

No of specimens

Identified by (e.g. Sanchez, Juan; Cairns, Stephen; Opresko, Dennis; Molodtsova, Tina))

Date last modified

Remarks (Molodtsova Sub-sampled from oversized *Bathypathes* B (orange) from freezer for genetics; Dead or Live status)



# Specific Objective 2

## Data loading

All data were entered into *COD* using the common link of trip\_number & station\_number





## ***COD* summaries**

target species and position data relating to the coral samples were extracted from *COD* by linking 'trip' and 'station'

target fisheries from which coral by-catch data were retained are primarily from deepsea fishing vessels targeting orange roughy, black oreo, and smooth oreo



# **COD database outputs**



Trip No.

Station No.

target\_species

start\_seabed\_depth

end\_seabed\_depth

event\_start\_date

start\_obs\_fma (e.g. SOE Chatham Rise (FMA 4))

end\_obs\_fma

trunc\_start\_latitude

trunc\_start\_longitude

trunc\_end\_latitude

trunc\_end\_longitude

Vessel Name

## **as well as coral data:**

Vitality (specimen 'live or dead' status)

MFish Sample No.

Obs. Species ID (MFish code; often not provided)

NIWA Species ID (by NIWA experts)

NIWA Species Sci. Name

NIWA Species Com. Name

NIWA Species Family Sci. Name

Taxonomist Name (overseas expert's species identification - groundtruthing)

Weight (estimated weight in kg obtained when sorting)

No. of Specimens

# Target fisheries & no. of trips (n=302 samples)

MFish code	Species	No. of trips for each species
BYS	Alfonsino	2
HOK	Hoki	2
JMA	Jack mackerel	4
LIN	Ling	1
ORH	Orange roughy	13
SBW	Southern blue whiting	1
SOR	Spiky oreo	1
SSO	Smooth oreo	5





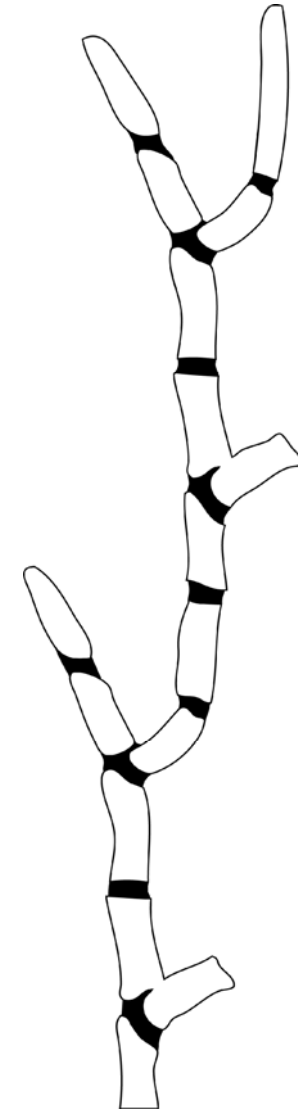
# DOC Grant (Project DOC09310)

## Overall Objective

To identify coral samples returned through the CSP Observer Programme

## Specific Objectives:

1. Support the visit(s) of expert coral taxonomists
2. Ground-truth corals identified by Te Papa



# Summary - Te Papa samples

- 144 historical coral samples processed for Te Papa by W. Blom, Marine Department, Auckland War Memorial Museum
- Coral identifications confirmed by expert (Juan Sanchez) = 54 of Blom's samples + 5 corals associated with a sample (n= 59) 60 coral specimens not sighted
- 132 additional Te Papa coral samples identified (additional historical scientific observer trips, early MFish research trawl surveys), also identified by Sanchez
- Corals assigned MFish species codes, all data loaded, *COD* updated
- Non-coral invertebrates also identified by Blom (n=271) were allocated MFish codes & loaded into *COD*



# July 2010 COD update

Sanchez confirmed ID's- November 2008 - July 2010  
(15 target fisheries; n= 514)



<b>Target species code</b>	<b>Common name</b>	<b>Number of coral samples</b>
ORH	Orange roughy	<b>366</b>
SOR	Spiky oreo	1
NOS	Squid	1
BOE	Black oreo	<b>79</b>
SSO	Smooth oreo	<b>133</b>
SCI	Scampi	2
JMA	Jack mackerel	2
BYS	Alfonsino	3
SBW	Southern blue whiting	1
HOK	Hoki	6
OEO	Oreo	<b>25</b>
WWA	White warehou	1
HAK	Hake	1
BAR	Barracouta	2
LIN	Ling	1

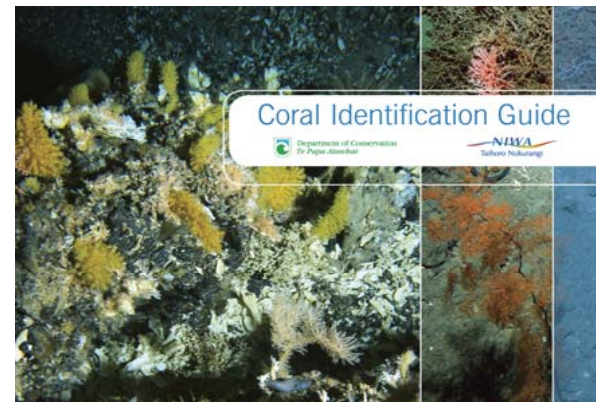
# Recommendations



- Updates to Coral Identification Guide (Tracey et. al. 2008) would benefit data collection by observers and researchers
- Electronic version of the guide has had a number of new MFish codes added and an updated version forwarded to CSP Unit, DOC

<http://www.doc.govt.nz/publications/conservation/marine-and-coastal/marine-conservation-services/other-publications/coral-identification-guide/>

- Input to Observer briefings would improve species identification



# Acknowledgments

Thanks to:

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& Stephanie Rowe

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Les Watling, Scott France, Asako Matsumoto, Daphne Fautin,  
Frederic Sinniger

Rick Webber (Te Papa)



Department of Conservation  
*Te Papa Atawhai*



MINISTRY OF FISHERIES  
Te Tautiaki i nga tini a Tangaroa