

Identification of Protected Corals

DRAFT Final Report

Prepared for the Conservation Services Programme, Department of Conservation

RFP: 4650 INT2015-03 IDENTIFICATION AND STORAGE OF COLD-WATER CORALS



July 2017

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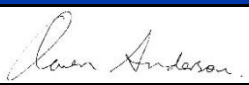


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NIWA CLIENT REPORT No: 2017349WN
Report date: July 2017
NIWA Project: DOC16307

Quality Assurance Statement		
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	Approved for release by:	Dr Julie Hall

Cover image: At-sea digital image taken by MPI Observer of black coral (COB). Identified by expert Rob Stewart (NIWA) as *Dendropathes* spp. (DDP), Family Schizopathidae.

This report should be referenced as follows:

Tracey, D., Mills S., Macpherson, D., Thomas, H. (2017). Identification and storage of cold-water coral bycatch specimens. Final Report prepared by NIWA for the Conservation Services Programme, Department of Conservation. INT2015-03. NIWA Client Report 2017349WN. 38 p.

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Executive summary

The Conservation Services Programme, within the Marine Species and Threats team, Department of Conservation, recognise that Government Fisheries Observers on commercial fishing vessels are not always able to identify protected cold-water corals at sea with high precision (especially down to the species level), with the confirmation of bycaught species requiring identification from a coral taxonomist in the majority of cases.

Building on the description of the protected coral specimens identified and presented in the April and July 2017 Progress Reports, this Final Report summarises the sample identifications for the year ending 31 October 2017, and includes coral identifications made by visiting gorgonian octocoral expert Dr Phil Alderslade (CSIRO). A total of 169 specimens were identified to finest taxonomic level possible and appropriate updates made to the Centralised Observer Database (*COD*). Sample processing is on going and the number of coral tissue samples held in storage for future genetic studies now numbers 26.

The identification of protected corals from digital images provided by Observers are also described. There were 163 images identified and 112 protected coral images geo-referenced. Efforts were made to use trip number and image properties (date, time), to help populate the data poor images with georeferenced information. The instructions to Government Observers on methods to capture images at-sea will be stressed via the MPI Observer Programme.

Interactions between corals collected and fishing gear are summarised. Several protected coral samples have been returned from both within the New Zealand Exclusive Economic Zone as well as the High Seas Fisheries Management Areas. Of the samples received, and digital images processed, bottom trawling in all regions has contributed to the highest counts of coral mortality. Coral by-catch samples were also returned from long line tows but in lower numbers.

Recommendations are made in this report to help improve the at-sea image data labelling and to automate the image geo-referencing workflow. Potentially the process of geo-referencing could be made more robust by adding business rules for metadata validation. We also highlight the numbers of protected corals that have been identified from the High Seas regions.

1 Background

The 2010 amendment of Schedule 7A of the Wildlife Act 1953 protects all hard corals, including: black corals (all species in the order Antipatharia); gorgonian octocorals in the order Alcyonacea (previously known as Order Gorgonacea); stony corals (all species in the order Scleractinia); and hydrocorals (all species in the family Stylasteridae). These groups all have ecological significance in the New Zealand region and the various forms, including reef-like scleractinian or stony corals, are important bioengineers that provide refuge and structural habitat for a diverse species community. These corals are vulnerable to human pressures such as fishing (Clark & Rowden 2009; Clark et al 2010; Williams et al 2010), mineral extraction, ocean acidification, and global warming.

Identifying coral bycatch that was unable to be fully identified by Observers is seen as a priority for conservation managers as it provides:

- vital baseline information that can help to better inform research and marine protection such as predictive modelling (Anderson et al 2014), benthic risk assessments (Clark et al 2014), and management of benthic marine protected species
- information on the interaction between commercial fishing vessels and protected cold-water corals in New Zealand waters (Tracey et al 2011), and
- allows for a more comprehensive mitigation framework to be implemented in future in order to protect cold-water corals in New Zealand waters.

An additional benefit of the collection, identification and storage of bycaught cold-water corals is an increase in the number of protected cold-water coral species samples housed in the NIWA Invertebrate Collection (NIC), one of New Zealand's National taxonomic collections. This allows for more robust studies on cold-water corals in future such as those to support morphological and molecular descriptions, and for biological research to investigate for example age and growth, and age validation to assess recovery (e.g., see *POP2017-07: The age and growth of New Zealand protected corals at high risk*).

Progress for the service requirements were summarised in Tracey et al (2017a; b). Methods were prepared and presented, and instructions were provided to Observers on deep-sea commercial fishing vessels for when cold-water coral specimens are bycaught in commercial fishery operations – i.e., the required data recording, sub-sampling or image collection of the corals. Also presented were the number of protected coral samples provided, the number identified, and the number of coral tissue samples that have been taken and held in storage for future genetic studies. The Contract states that no more than 200 protected coral samples and no more than 200 specimen images are to be identified per annum.

This Final Report presents the interactions between corals collected and fishing gear by summarising the coral count by Observer Fisheries Management Area (FMA) as well as presenting the number of trawl and long line tows that have taken corals as by-catch, hence contributing to coral mortality. An update of the numbers of protected corals identified to lowest taxonomic level is provided – for both returned specimens and digital images. The updated numbers include the additional sample identifications made by visiting gorgonian octocoral expert taxonomist Dr Phil Alderslade (CSIRO), who visited the NIC in May 2017, a *gratis* black coral identification provided in September 2017 from Dennis Opresko (Smithsonian Institution), and identifications of fauna in 163 observer collected

digital images. Where possible, the identified protected coral images were georeferenced to show provenance.

2 Methods

2.1 Specific Objectives

2.1.1 Service Requirements

The specific objectives of the Conservation Services Programme requirements are:

1. Identify cold-water coral bycatch that cannot be identified by Government fisheries observers to the finest taxonomic level (assign codes to coral specimens to the species level wherever possible; when this is not possible, identify specimens to genus or family level).

To the extent possible, the contractor will identify potential interactions between corals collected and fishing gear, and identify factors that may have contributed to coral mortality. Data will be reported by fishery stratum (fishing method, fishery area, and where possible, target species)

2. Record all identified coral specimens and store in an appropriate taxonomic collection.
3. Ensure a sub-sample of each specimen is taken for future genetic analysis.
4. Bring international cold-water coral taxonomic expertise to New Zealand for identification of specific coral groups.

2.1.2 Specific objectives

In Schedule 1 the specific objectives in Contract INT2015-03 are:

1. To determine, through examination of returned cold-water coral specimens and photos, the taxon, and where possible the provenance of cold-water corals killed in New Zealand fisheries (for returned dead specimens).
2. To collect sub-samples of all protected cold-water coral specimens for genetic analysis in future.

2.2 Objective 1: To determine, through examination of returned cold-water coral specimens and photos, the taxon, and where possible the provenance of cold-water corals killed in New Zealand fisheries (for returned dead specimens).

A presentation of the Methods for this project was provided to the CSP Technical Working Group on the 16th of November, 2016 (Tracey et al 2016), and subsequently accepted. The presentation included a description of methods to instruct Observers on the at-sea recording and collection of deep-sea corals, details of the planned expert examination of specimens and images returned by Observers, and an update of progress in loading of identified coral catch data into NIWA and Ministry

for Primary Industries (MPI) databases (Objective 1). Also included were details on methods for collection of sub-samples of returned cold-water coral specimens for genetic analysis in the future, (Objective 2).

Progress for the service requirements were summarised in Tracey et al (2017a; b). Methods for the key activities to meet the final stages of this project are provided below and include:

- the identification of gorgonian octocorals
- loading data into the MPI Observer database *COD*, and
- digital photo processing.

Since the July 2017 reporting (Tracey et al 2017b), the focus has been on sorting and processing Observer protected coral samples, collecting tissue samples for molecular analyses, processing the digital images, and arranging the coral taxonomic expert's visit for March, 2018 (Drs Stephen Cairns, (Smithsonian Institution) and Marcelo Kitahara (Universidade Federal de São Paulo)). During their visit next year, the experts will focus on the identification of scleractinian stony corals, stylasterid hydrocorals, and Primnoid octocorals, primarily of the genus *Thouarella* spp.

2.2.1 Identification of corals returned to NIWA

The cold-water coral bycatch that could not be identified by Observers at-sea were returned to NIWA (whole specimens or sub-samples of the specimens) for identification to the finest taxonomic level. A similar method used to process by-catch collected by Government fisheries observers under MPI Project DAE2015-05, (Tracey & Mills, 2016a), was followed. Experts identified all corals to the species level wherever possible and when this was not possible, to genus or family level.

The corals were thawed, sorted into main groups and initially identified to coarse taxonomic level (mostly to order and family level). The tasks of fixing and preserving samples, providing containment, documenting samples (station numbering, labelling), sorting (dividing samples into major or minor taxonomic groups – 'taxa' – in the laboratory), were all carried out under the MPI data management project DAT2016-01E. Data were entered into the web-interfaced NIWA Observer Samples Database (*OSD*), then returned to frozen storage, fixed in ethanol, or dried where appropriate.

A catalogue of all samples/specimens received in NIWA was provided to the NIWA Invertebrate Collection (NIC) Manager. Data from *OSD* were uploaded into the NIC database *Specify* and the specimens were curated and examined at NIWA to determine their taxonomic identification.

The identification methods followed NIWA procedures for identifying fauna and biological specimens housed in the NIC. NIWA currently manages specimens according to the: "Guidelines for the care of natural history collections". NIWA also has its own collection policy document: "NIWA Marine Invertebrate Collection Policy and Procedures", which also guided the process. Specimens retained are held in stewardship for DOC.

To meet the Final Report requirements, NIWA coral experts and Dr Phil Alderslade (CSIRO) carried out the identifications of gorgonian octocorals, and the updated species names and counts were entered into *Specify* database. Identifications by Dr Alderslade included corals in the families Chrysogorgiidae, Corallidae, Isididae, Paragorgiidae, and Plexauridae.

A second priority for the project was to identify research trawl-collected protected corals. Four protected corals have been returned to date from trawl surveys carried out since July 31 2016, and

these along with an additional historical specimen from a 1995 research trawl survey, were identified for this project.

2.2.2 Loading data into COD

To help identify potential interactions between corals collected and fishing gear, and identify factors that may have contributed to coral mortality, the loading of identified coral catch data into NIWA and MPI databases took place toward the end of the reporting period.

Sample information for 160 observer records extracted from *Specify* were provided to the COD database manager for loading. Updating catch records took place following that described in Tracey & Sanders (2010). Sample data are loaded into a COD database 'load' table, *z_invertebrate_samples*. The data is then used to update catch records in the stage and report tables, *y_benthic*, *y_trw_new_observer_greenweight*, *y_lfs_catch*, *y_ctn_catch* and *x_fishing_event_catch*.

High Seas samples were not able to be differentiated from within zone samples at the time of arrival at NIWA for processing. Trip data are provided on sacks of frozen material but no information on general location is given. As such, High Seas samples were processed as part of this project.

2.2.3 Photographing corals at-sea

The at-sea instructions to Observers document (Tracey & Mills, 2016b) was prepared and provided to CSP and, following their approval, forwarded to the Observer Services Unit of the MPI Observer Programme in early 2017. The section on the digital collection of photographic images at-sea instructions were emphasised and expanded for this project. Specifically, the instructions state that images are to be captured in good light using a plain grey background if possible and a size scale, with the specimen label showing trip and tow numbers included in the image. The name of the Observer taking the image was to be retained as this is important to include in the geo-referencing particularly for acknowledgements, feedback to the observer, training, or if the images are used for other purposes, e.g., guide production.

2.2.4 Digital photo processing

The digital photo images and associated details collected by Observers were obtained from a CSP Group representative from the MPI Observer Programme and uploaded to NIWA's FTP site in April 2017. There were 456 image files provided to NIWA late April, 2017, and 163 were processed to meet the July 2017 reporting period (Tracey et al 2017b). In January 2018, the on-going processing of the digital images will be reported on.

The identification of protected corals in the photos was carried out by various experts (Phil Alderslade (CSIRO), Di Tracey, Rob Stewart, Diana Macpherson, and Peter Marriott (NIWA)), and the images were then georeferenced to show provenance (where possible). The image metadata is provided via a handwritten label which the Observer includes in the photograph. Data were collated manually. The process of geo-referencing the images was to add information to the metadata file for each image – e.g., the species name to the finest taxon possible (species, genus or family level), trip and tow number, three-letter MPI species code, keywords relevant to the subject of the image, NIC catalogue number (where applicable), image rating (1-5; 1=best of, 5=adequate), and the observer name. Using the ACDSee Pro 3 (version 3.0) software the metadata information for each image was added manually into the relevant field or by assigning a value from a drop down 'picklist', and then embedded in the image file. A descriptive data output and summary output table was then produced

with appended location data and other required information sourced from *COD* - e.g., position, depth, along with target species, Observer Fisheries Management Area.

2.3 Objective 2: To collect sub-samples of all protected cold-water coral specimens for genetic analysis in the future.

Tissue samples were taken from all protected coral samples provided to NIWA by observers in 2017 and stored with a unique label in standard vials in 99% high grade absolute ethanol. The Progress Reports (Tracey et al 2017a; b) summarised the collection method and numbers of accumulated issue samples for genetic analyses. There are now 26 samples held in storage in readiness for molecular studies, and collection is on-going.

3 Results

The specific objectives of the Conservation Services Programme requirements have been followed. Specimens and images of cold-water protected coral bycatch that could not be identified by Government fisheries observers were returned to NIWA for expert identification. The identified samples have been collected opportunistically from commercial fishing activity and help to highlight interactions between fishing and protected corals. Details of the coral bycatch, hence mortality, by fishery stratum (fishing method, fishery area and where possible target species) are provided.

All identified coral specimens have been stored in the NIWA Invertebrate Collection (NIC). Sub-samples of each specimen continue to be taken for future genetic analysis and these too are in storage in the NIC. Dr Phil Alderslade visited NIWA for a period of 10 days in May 2017 to identify specimens in his specific coral group – gorgonian octocorals.

All specific objectives have been completed for the final reporting period, 2016/17 year. Dr Phil Alderslade was funded from this project along with additional support for identification, database, and administration costs from the NIWA 'Enhancing Collections' budget provided. In the reporting year, up to October 2017, all coral identifications and associated data were loaded into the MPI database *COD*, images provided by DOC from the Observers were examined and geo-referenced.

3.1 Objective 1: Identification of corals

A summary of the number of corals identified by protected coral group is presented in Table 3-1. Between March 2016 and October 2017 only 46 samples were collected and returned to NIWA for identification possibly due to the emphasis on collecting digital images for identification purposes. The remaining samples in this table (n= 130) are historical, collected between 2009 and 2015, and held in storage at NIWA awaiting identification.

Appendix A presents in spreadsheet form a list of species identified, with associated details extracted from *Specify*. The column headings include:

- Trip_code
- Station_no
- NIC catalogue number

- OSD Number if available
- Observer ID label if available
- Phylum
- Order
- Family
- Genus
- Species
- Determiner - Expert identifiers name (most recent expert ID)
- Determined date
- Count
- Collection Date
- Latitude (truncated to 1 d.p.)
- Longitude (truncated to 1 d.p.)
- Depth start
- Depth finish

Experts have identified to date 23 black corals, 74 gorgonian octocorals, 11 hydrocorals, and 59 scleractinian stony corals (Table 3-1). Rob Tilney of Clement & Associates Ltd provided two stony coral and one black coral samples to Di Tracey, NIWA for identification (Industry Voyage, Chatham Rise). The gorgonian octocorals identified by Dr Alderslade (N= 72 specimen lots), included some new and intriguing species and genera. Among these were the first confirmation of the plexaurid sea fan coral *Clematissa* in the New Zealand region; a new species of *Rosgorgia* which is a recently described Antarctic genus of the Family Subergorgiidae, better known from the tropical Indo-West Pacific; and two new species of the bubblegum coral *Paragorgia*, confirming how species-rich this particular genus is in our region (14 species are already known, 6 of which are likely endemic). Other species identification highlights were:

- A new genus that is related to *Helicogorgia*, currently classified as being in the family Chrysogorgiidae, was identified. This family designation of this genus may be incorrect, and the new material will help clarify this.
- A species of *Narella* that is additional to those described from the NIWA collections by Dr Stephen Cairns (Smithsonian Institution).
- the first record of plexaurid sea fan genus *Anthomuricea*.

An identification update for an Observer collected black coral, *Lillipathes cf. ritamariae*, was provided by Dr. Dennis Opresko (Smithsonian Institution) in September 2017, (see Appendix A), as part of a project he is independently working on to determine the presence, morphology and genetics of the antipatharian genus *Telopathes* in New Zealand waters. The identification update for this black coral will be included in the next COD update.

Tracey et al (2017a) summarised the protected coral species identified up to April 2017. These included gorgonian octocorals (genus *Corallium*) commonly confused with the pink stylasterid hydrocoral *Errina*, black corals *Leiopathes* and *Bathypathes*, and a diverse range of Hydrocorals: several genera of the white forms - *Conopora*, *Crypthelia*, *Lepidopora*, *Stylaster*, and *Errina*. The scleractinian corals comprised both the branching and cup forms, the most common being the branching corals *Solenosmilia variabilis*, *Enallopsammia rostrata*, and *Madrepora oculata*. The cup coral samples included two species of *Caryophyllia* (*C. lamellifera* and *C. profunda*), *Desmophyllum dianthus*, and *Flabellum knoxi*.

Table 3-1: Sample summary of the number of specimens identified by experts (all NIWA except for Phil Alderslade (CSIRO)) for each of the Protected Coral Groups along with a count of samples selected for genetic analyses. See Appendix A for a detailed species list.

Protected Coral Group	Number of identified samples	Determiner	Number of genetic subsamples
Black corals (all species in the order Antipatharia)	23	Rob Stewart/Dennis Opresko	10
Gorgonian corals (all species in the order Alcyonacea previously known as Order Gorgonacea)	74	Phil Alderslade/Peter Marriott/Sadie Mills	6
Hydrocorals (all species in the family Stylasteridae)	11	Peter Marriott	4
Stony corals (all species in the order Scleractinia)	61	Di Tracey	6
Total number of samples	169		26

3.1.1 Loading into COD

The species identifications and all associated data from the Specify extract (Appendix A) were loaded into the MPI database *COD*. The data loading process is described in previous reports (Tracey & Mills 2016a). An extract of the samples loaded into *COD* is appended (Appendix B), and includes information such as corresponding fishing method, fishery area, and where possible, target species data field. This information helps identify potential interactions between the corals collected and fishing gear, and identify factors that may have contributed to coral mortality.

COD database record updates and additions are summarised below:

- 67 records where the initial identification matched a catch species and the expert identification differed were updated.
- In several instances there was more than one identified species for one UNI record, in these cases the first record was updated. Some tows had greater than one UNI/UNX records, records were updated for the matching number of expert identifications available.
- 42 records in *COD* catch did not require updating as the MPI species code recorded was the same as the expert identification MPI code.
- 47 new records were added to (insert into) the catch tables. New records occur when no data was entered by the observer and this usually occurs with the historical samples or when more than one species is associated with a coral record (e.g., a coral associate)
- 4 samples could not be used due to missing or invalid trip number/tow numbers or lack of available catch effort data recorded in *COD*.

Data summaries are provided below and include a count by Observer Area code and Observer Fisheries Management Areas (FMAs) (Table 3-2), and a count of tows by gear method and target

species (Table 3-3). There were 166 samples taken from the FMAs inside the EEZ and 56 samples taken from the various High Seas (ET) regions. For the High Seas sample counts, four samples could not be linked to the CE data and so were omitted. Sample counts represent samples collected in 2016-17 as well as the historical samples.

Table 3-2: Protected coral count by Observer Fisheries Management Area. High Seas (ET) samples came from areas HOWE, CET, WANB, LOUR – see table description.

<u>Area</u>	<u>Description</u>	<u>Count of Samples</u>
SOE	South-East (FMA4)	31
SUB	Sub-Antarctic (FMA6)	22
HOWE	Lord Howe Rise (ET)	18
AKE	Auckland East (FMA1)	18
CET	Challenger Plateau (ET)	15
SEC	South-East Coast (FMA3)	11
WANB	Wanganella Bank (ET)	10
SOU	Southland (FMA5)	7
TMAR	Tasmanian Ridge (ET)	7
LOUR	Louisville Ridge (ET)	6
AKW	Auckland West (FMA9)	6
SOI	Southern Offshore Islands (FMA6A)	3
CEE	Central East (FMA2)	2

Of the samples received, the highest counts of coral mortality have been identified from bottom trawls. Some bottom long-line fisheries also impacted corals, specifically those vessels targeting bass groper and bluenose (n=12). Bottom trawls targeting the deepsea species orange roughy, smooth oreo, black oreo, and oreo unspecified, had the highest counts of protected corals as by-catch (n=102).

Table 3-3: Count of tows by target fishery and fishing gear method where protected corals were sampled.

<u>Target Fishery (common name)</u>	<u>MPI code</u>	<u>Fishing method</u>	<u>Count of tows</u>
Orange roughy	ORH	Trawl	65
Smooth oreo	SSO	Trawl	20
Black oreo	BOE	Trawl	12
Alfonsino	BYS	Trawl	11
Bass groper	BAS	Bottom Lining	10
Hoki	HOK	Trawl	5
Oreos	OEO	Trawl	5
Scampi	SCI	Trawl	5
White warehou	WWA	Trawl	4
Hapuku & bass	HPB	Trawl	4
Arrow squid	SQU	Trawl	3
Bluenose	BNS	Bottom Lining	2
Tarakihi	TAR	Trawl	2
Alfonsino & long-finned beryx	BYX	Trawl	2
Ling	LIN	Trawl	2
Silver warehou	SWA	Trawl	1
Bluenose	BNS	Trawl	1
Trevally	TRE	Trawl	1
Hake	HAK	Trawl	1

3.1.2 Digital photos

The digital photo images and associated details collected by Observers were obtained from a CSP Group representative from the MPI Observer Programme and uploaded to NIWA's FTP site. There were 456 image files provided and 163 able processed up to end of July 2017. The images processed subsequently will be reported on as required, in January 2018. Of the 163 images, 119 were protected coral images and were identified to the finest taxon level possible, and 112 of these were georeferenced to show provenance. Seven coral images and one non-coral image could not be attributed to a fishing event due to missing/invalid station number or incomplete MPI photographic logs/'Benthic Materials' form data, and therefore were not georeferenced. The remaining images were of non-protected coral taxa, e.g., bryozoans, sponges, and hydroids (n=44). We note that some of these groups can be easily confused with protected corals.

Many of the images were of excellent standard of impressive coral specimens, and included a label in the image with all required data. However, while the instructions to Observers include statements such as "the image is to include the specimen label showing trip and tow numbers", we noted that in several of the images provided to NIWA, some included non-corals and several lacked tow data

information. Examples are shown in Figure 3.1 of both the digital images of correctly labelled and un-labelled photos. Efforts were made to use information such as the TRIP number and the date and the time stamp of image capture, (extracted from the digital image properties), to help obtain tow details from the COD database in order to populate the image database. Although this was a time-consuming task, we were mostly successful in obtaining the required geo-reference information from the COD database. The image data are currently held in spreadsheet form (Appendix C), and in a secure drive at NIWA. A potential repository for these images is the NIWA official repository image database Atlas [<https://atlas.niwa.co.nzpublic.jsp/>]. Further discussion with the Client will take place to progress the final destination of the stored images. Some approvals will be required from MPI as part of this process.

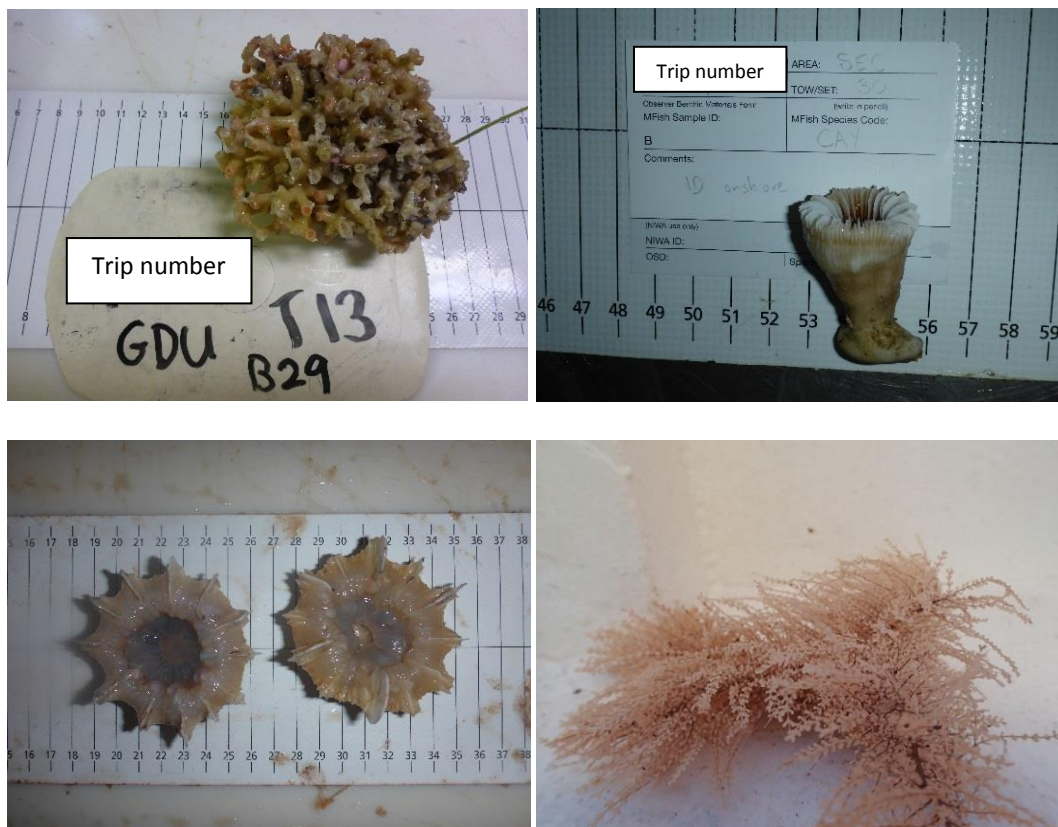


Figure 3-1: Digital images of protected corals taken at-sea and showing correctly labelled (top) as well as un-labelled (bottom) specimen photos.

Data summaries for the images are provided below and include a count by Fisheries Management Areas (Table 3-4) and a count of tows by target species (Table 3-5). There were 56 samples photographed from the High Seas (ET) areas (LOUR, HOWE, and CET). Many of the bottom trawls targeting orange roughy collected digital images of protected corals (n=64). Other trawl fisheries causing reasonably high coral mortality included those targeting arrow squid (n=16), the two alfonsino species (n=13), jack mackerel (n=12), and hake (n=10). Bottom long lining targeting ling, snapper, and bluenose took corals as by-catch.

Table 3-4: Count of images by Observer and Fisheries Management Area.

<u>Area</u>	<u>Description</u>	<u>Count of Samples</u>
LOUR	Louisville Ridge (ET)	37
SOU	Southland (FMA5)	24
CET	Challenger Plateau (ET)	16
AKW	Auckland West (FMA9)	15
CHA	Challenger (FMA7)	12
SOE	South-East (FMA4)	12
SUB	Sub-Antarctic (FMA6)	11
CEW	Central West (FMA8)	9
AKE	Auckland East (FMA1)	7
SEC	South-East Coast (FMA3)	5
SOI	Southern Offshore Islands (FMA6A)	4
HOWE	Lord Howe Rise (ET)	3

Table 3-5: Count of tows from which images were taken, by fishing gear method and target fishery.

<u>Target Fishery (common name)</u>	<u>MPI code</u>	<u>Fishing method</u>	<u>Count of tows</u>
Orange roughy	ORH	Trawl	64
Arrow squid	SQU	Trawl	16
Alfonsino & long-finned beryx	BYX	Trawl	13
Jack mackerel	JMA	Trawl	12
Hake	HAK	Trawl	10
Ling	LIN	Bottom Lining	8
Snapper	SNA	Bottom Lining	7
White warehou	WWA	Trawl	7
Hapuku & bass	HPB	Trawl	7
Hoki	HOK	Trawl	4
Ling	LIN	Trawl	3
Silver warehou	SWA	Trawl	2
Bluenose	BNS	Bottom Lining	1
Scampi	SCI	Trawl	1

3.2 Specific objective 2: Sub-samples of protected coral specimens for genetic analysis

Tissue sub-samples taken during the sample sorting process is on-going with the number of tissue samples processed and stored currently at 26.

4 Summary conclusions

The objective to identify the protected coral specimen samples was met, and the process was reasonably efficient as the methods have been on-going and standardised for several years. More than 160 specimen lots were received and examined between October 2016 to 2017, and these included some taxonomic highlights, such as new species and genera.

The identified samples have been collected opportunistically from commercial fishing activity and received by NIWA when Observers are uncertain of their identification of the coral specimen, the specimen has been caught outside the given depth range or distribution, or was rare or unusual. The data can be used to highlight interactions between fishing and protected corals and factors such as bottom trawling have been identified as impacting corals and causing mortality (Clark & Rowden 2009; Clark et al 2010; Williams et al 2010).

Of the samples received, there were 102 bottom trawls targeting three key deepsea species that recorded protected corals as by-catch and bottom long-line activity also caught corals. The accuracy of the Observer identifications at sea have not been analysed in detail but there were 42 records that did not require an update of the original observer identification in *COD* and we note that several samples identified by experts were from historical samples stored in the NIC. The information will be used to help better inform research and marine protection and is intended to allow for a more comprehensive mitigation framework to be implemented in future in order to protect cold-water corals in New Zealand waters. These identifications also contribute significantly to our understanding of this important coral group, expand our New Zealand's biodiversity science data, and fill knowledge gaps.

A large number of Observer-collected digital photographs were processed to identify the images to finest level possible, even though the task was reasonably labour intensive due to the factors outlined below. Despite this, we were able to process 163 images up until the end of July. Where image station data were missing because of the specimen image having no label, considerable effort was made to trace the trip, image date and time details back to information stored in the *COD* database in order to obtain the required meta-data for geo-referencing. There were also instances where a number of non-protected corals images were provided (e.g., of sponges, bryozoans, wood, hydroids, soft corals, sea pens), and as all images had to be examined, these non-protected coral images added to the processing time. Samples and or duplicates of the protected coral sample images were often provided. Duplications can easily be dealt with and it is useful for the experts carrying out the identifications to have a close up image provided along with the overall colony image, but when an overall deck shot, a colony image, and a zoomed in image of the same colony is provided, it is time consuming to analyse and annotate all three images. An update of the numbers of images processed will be given in January 2018. Given the required image metadata is provided via a handwritten label which the observer includes in the photograph, collating these data will be a manual process for the foreseeable future unless GPS referenced cameras are to become standard.

We propose some changes to the workflow that we hope will be considered. Processing the images could be largely automated to both simplify the work, and potentially make the process more robust by adding business rules for metadata validation. The output from a user working through the photographs will be a spreadsheet (CSV text file) containing the basic image metadata (with one row per image), including: trip code; station; date etc. NIWA can develop a script which reads this file, row by row, and for each row interrogates the *COD* database for the tow times, positions, depths, etc for that tow. The script can also include checks are carried out for inconsistencies e.g., matching the date/time data from the image with the tow data, and the depth can be cross checked against a NIWA bathymetry model to help ensure depth data accuracy. This script would output a CSV file suitable for an Atlas database bulk upload, so the user could use this file for an upload of all the images in a single transaction. MPI approval is needed for the user running the script to access the *COD* database. We note that this is being carried out by proxy at present, in a manual operation, so this recommended approach is not inherently any less secure than the current approach.

5 Recommendations

- **Briefings:** We suggest direct liaison with CSP Group, DOC and the Observer Services Unit, MPI take place early in the second year of the project to ensure that the at-sea instructions on photographing specimens are followed more closely by Observers.
- **Image database storage:** We suggest an improved image database storage system for the Observer collected digital images and we have outlined the processing methods applied by NIWA and what is required to load the data into NIWA's Atlas database. Some approvals will be required from MPI as part of this process.
- **High Seas samples:** The High Seas outside the NZ EEZ coral samples were processed as part of this project even though CSP do not currently fund their identification. Samples have been identified primarily due to labelling issues when samples are received at NIWA for processing. TRIP data are provided on sacks of frozen material but no information on general location is given, and hence the subsequent difficulty in sorting the High Seas samples from those returned to NIWA from inside the zone. We suggest a variation to future contracts to cover the costs of the High Seas (South Pacific Regional Fisheries Management Organisation (SPRFMO) samples. This also applies to processing the digital image data, several (n=56) came from High Seas areas.
- **The backlog of unidentified protected coral samples** was reduced this year (n=130) due to a decreasing number of observer sample specimens returned to identify (possibly because of an increase in digital images being collected), and few research trawl survey samples. While decreasing in number, some historical research trawl and observer samples held at NIWA remain unidentified. We recommend that this backlog continues to be addressed.

6 Acknowledgements

Thanks are extended to the Observers for sample collection. We thank CSP Group for funding this Project INT2015-03 (NIWA Project Code DOC16307), particularly Ian Angus, Kris Ramm, and Freydis Hjorvarasdottir. We also thank the NIWA experts for their identifications, Rob Stewart and Peter Marriott, along with Dr Phil Alderslade (CSIRO). We thank MPI staff including Rory Kyle, Observer Services Unit, Richard Ford, Fisheries Management, for their support of this project, and Kimon George, MPI Data Management Manager, for the DAT2016-01E project funding that supports the initial sample sorting stage of the corals. A special thanks to Dean Stotter and Mark Fenwick (NIWA) who process all Observer returned samples under the DAT2016-01E project. Thanks also to NIWA staff Brent Wood, who has suggested a way forward for DOC and MPI in improving the digital image processing procedures, and Owen Anderson and Julie Hall for their internal review of this Final Report.

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Appendix A Specify database summary of sample data provided by species for the observer collected data

NIWA Cat. No.	OSD No.	Phylum	Class	Order	Family	Genus	Species	Determiner	Determined Date	Sample Count	Date	Latitude	Longitude	Depth 1	Depth 2
44360		Cnidaria	Anthozoa	Alcyonacea	Acanthogorgiidae	<i>Acanthogorgia</i>		Phil Alderslade	17/05/2017	1	11/10/2007	-46.7	170.5	855	940
42486	92	Cnidaria	Anthozoa	Alcyonacea	Acanthogorgiidae	<i>Acanthogorgia</i>		Phil Alderslade	17/05/2017	1	17/07/2008	-49.9	175.6	900	
88639	2703	Cnidaria	Anthozoa	Alcyonacea	Acanthogorgiidae	<i>Acanthogorgia</i>		Phil Alderslade	18/05/2017	1	9/11/2013	-32.5	167.5	104	94
62915		Cnidaria	Anthozoa	Alcyonacea	Anthothelidae	<i>?Anthothela</i>		Phil Alderslade	16/05/2017	1	12/11/2008	-44.5	-178.6	785	880
65905	1058	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	<i>Chrysogorgia</i>		Phil Alderslade	22/05/2017	1	10/07/2010	-34.4	174.2	918	1077
69540	1264	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	<i>Chrysogorgia</i>		Phil Alderslade	22/05/2017	1	5/12/2010	-42.9	177.6	465	437
69533	1257	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	<i>Chrysogorgia</i>		Phil Alderslade	22/05/2017	1	29/12/2010	-34	168.1	912	997
95226	3267	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	<i>Chrysogorgia</i>		Phil Alderslade	16/05/2017	1	14/12/2015	-35.9	165.6	686	1090
121481	1273	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	<i>Chrysogorgia</i>	<i>?curvata</i>	Phil Alderslade	22/05/2017	1	24/12/2010	-33.6	167.8	1104	959
69549	1273	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	<i>Chrysogorgia</i>	<i>?tetrasticha</i>	Phil Alderslade	22/05/2017	1	24/12/2010	-33.6	167.8	1104	959
106525	3501	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	<i>Metallogorgia</i>	<i>macrospina</i>	Phil Alderslade	16/05/2017	1	21/10/2016	-34.1	162.5	493	864
69550	1274	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	<i>Metallogorgia</i>	<i>melanotrichos</i>	Phil Alderslade	22/05/2017	1	31/12/2010	-35.6	166	851	1141
65904	1057	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	<i>Pseudochrysogorgia</i>	n. sp.	Phil Alderslade	22/05/2017	1	10/07/2010	-34.4	174.2	918	1077
121413	116	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	<i>Radicipes</i>		Phil Alderslade	24/05/2017	4	6/12/2016	-51.9	173.1	612	621
95179	3201	Cnidaria	Anthozoa	Alcyonacea	Coralliidae	<i>Corallium</i>		Peter Marriott	23/03/2017	1	30/07/2015	-48.8	166.4	503	
14394		Cnidaria	Anthozoa	Alcyonacea	Isididae			Phil Alderslade	17/05/2017	1	15/08/1998	-47.2	148.7	936	
14396		Cnidaria	Anthozoa	Alcyonacea	Isididae			Phil Alderslade	17/05/2017	1	7/08/1998	-47.5	148.9	1031	
14397		Cnidaria	Anthozoa	Alcyonacea	Isididae			Phil Alderslade	17/05/2017	1	15/08/1998	-47.2	148.7	936	
14392		Cnidaria	Anthozoa	Alcyonacea	Isididae			Phil Alderslade	17/05/2017	1	4/09/1998	-47.5	148.9	1086	
14393		Cnidaria	Anthozoa	Alcyonacea	Isididae			Phil Alderslade	17/05/2017	1	6/09/1998	-47.5	148.8	890	
14389		Cnidaria	Anthozoa	Alcyonacea	Isididae			Phil Alderslade	17/05/2017	1	9/10/1998	-47.2	148.7	1022	
14412		Cnidaria	Anthozoa	Alcyonacea	Isididae			Phil Alderslade	17/05/2017	1	11/10/1998	-47.5	148.8	911	
14390		Cnidaria	Anthozoa	Alcyonacea	Isididae			Phil Alderslade	17/05/2017	1	11/12/1998	-48.6	165	1056	
14400		Cnidaria	Anthozoa	Alcyonacea	Isididae			Phil Alderslade	17/05/2017	1	11/12/1998	-48.6	165	1056	
14403		Cnidaria	Anthozoa	Alcyonacea	Isididae			Phil Alderslade	17/05/2017	1	28/03/1999	-34.8	171.7	1007	

NIWA Cat. No.	OSD No.	Phylum	Class	Order	Family	Genus	Species	Determiner	Determined Date	Sample Count	Date	Latitude	Longitude	Depth 1	Depth 2
14405		Cnidaria	Anthozoa	Alcyonacea	Isididae			Phil Alderslade	17/05/2017	1	28/03/1999	-34.8	171.7	1007	
14414		Cnidaria	Anthozoa	Alcyonacea	Isididae			Phil Alderslade	17/05/2017	1	28/03/1999	-34.8	171.7	1007	
121552		Cnidaria	Anthozoa	Alcyonacea	Isididae			Phil Alderslade	26/05/2017	1	2/10/2003	-34.7	171.8	1204	
66241	34	Cnidaria	Anthozoa	Alcyonacea	Isididae			Phil Alderslade	18/05/2017	1	13/07/2009	-37.3	167.4	782	782
66246	358	Cnidaria	Anthozoa	Alcyonacea	Isididae			Phil Alderslade	18/05/2017	1	12/09/2009	-45.3	171.8	883	1074
66312	386	Cnidaria	Anthozoa	Alcyonacea	Isididae			Phil Alderslade	18/05/2017	1	23/11/2009	-48.7	175.3	836	822
65918	1071	Cnidaria	Anthozoa	Alcyonacea	Isididae		<i>?Isidella</i>	Phil Alderslade	19/05/2017	1	10/11/2008	-46.4	171.2	1050	1151
66214	539	Cnidaria	Anthozoa	Alcyonacea	Isididae		<i>?Isidella</i>	Phil Alderslade	19/05/2017	1	9/01/2010	-44.5	-178.7	670	920
69519	1238	Cnidaria	Anthozoa	Alcyonacea	Isididae		<i>?Keratoisis</i>	Phil Alderslade	19/05/2017	1	2/11/2010	-37.4	176.4	370	
65993	1209	Cnidaria	Anthozoa	Alcyonacea	Isididae		<i>?Keratoisis</i>	Phil Alderslade	18/05/2017	1	5/11/2010	-45	174.2	1024	1030
88593	2603	Cnidaria	Anthozoa	Alcyonacea	Isididae		<i>?Keratoisis</i>	Phil Alderslade	19/05/2017	1	16/07/2013	-47	165.7	484	721
95183	3205	Cnidaria	Anthozoa	Alcyonacea	Isididae		<i>?Keratoisis</i>	Phil Alderslade	16/05/2017	1	16/07/2015	-38.4	-168.1	263	298
95129	3118	Cnidaria	Anthozoa	Alcyonacea	Isididae		<i>Acanella</i>	Phil Alderslade	16/05/2017	1					
95240	3281	Cnidaria	Anthozoa	Alcyonacea	Isididae		<i>Acanella</i>	Phil Alderslade	16/05/2017	1	16/11/2015	-37.4	169	1046	1039
14399		Cnidaria	Anthozoa	Alcyonacea	Isididae		<i>Keratoisis</i>	Phil Alderslade	17/05/2017	1	30/11/1998	-48.6	165	940	1180
66201	441	Cnidaria	Anthozoa	Alcyonacea	Isididae		<i>Keratoisis</i>	Phil Alderslade	17/05/2017	1	25/09/2009	-53.5	140	1274	998
66212	537	Cnidaria	Anthozoa	Alcyonacea	Isididae		<i>Keratoisis</i>	Phil Alderslade	19/05/2017	1	24/12/2009	-48.7	164.8	431	363
66213	538	Cnidaria	Anthozoa	Alcyonacea	Isididae		<i>Keratoisis</i>	Phil Alderslade	19/05/2017	1	23/12/2009	-46.8	170.6		
88588	2598	Cnidaria	Anthozoa	Alcyonacea	Isididae		<i>Keratoisis</i>	Phil Alderslade	19/05/2017	1	15/06/2010	-34	167.5	746	938
69552	1276	Cnidaria	Anthozoa	Alcyonacea	Isididae		<i>Keratoisis</i>	Phil Alderslade	19/05/2017	1	27/12/2010	-34.2	162.6	431	645
69580	1311	Cnidaria	Anthozoa	Alcyonacea	Isididae		<i>Keratoisis</i>	Phil Alderslade	19/05/2017	1	30/12/2010	-33.6	167.8	841	1049
95223	3264	Cnidaria	Anthozoa	Alcyonacea	Isididae		<i>Keratoisis</i>	Phil Alderslade	16/05/2017	1	14/12/2015	-35.9	165.6	686	1090
106530	3509	Cnidaria	Anthozoa	Alcyonacea	Isididae		<i>Keratoisis</i>	Phil Alderslade	16/05/2017	1	10/10/2016	-47.3	178.8	787	
121403	37	Cnidaria	Anthozoa	Alcyonacea	Isididae		<i>Keratoisis hikurangiensis</i>	Phil Alderslade	24/05/2017	1	16/08/2016	-41.9	169.8	965	963
65903	1056	Cnidaria	Anthozoa	Alcyonacea	Isididae		<i>Lepidisis solitaria</i>	Phil Alderslade	19/05/2017	1	10/07/2010	-34.4	174.2	918	1077
65917	1070	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae		<i>Paragorgia alisonae</i>	Phil Alderslade	18/05/2017	1	16/11/2008	-50	175	884	970
65926	1079	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae		<i>Paragorgia alisonae</i>	Phil Alderslade	17/05/2017	1	16/11/2008	-50	175.1		916
65926	1079	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae		<i>Paragorgia alisonae</i>	Phil Alderslade	17/05/2017	1	16/11/2008	-50	175.1		916

NIWA Cat. No.	OSD No.	Phylum	Class	Order	Family	Genus	Species	Determiner	Determined Date	Sample Count	Date	Latitude	Longitude	Depth 1	Depth 2
66270	477	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	<i>Paragorgia</i>	<i>arborea</i>	Phil Alderslade	17/05/2017	1	24/11/2009	-44.6	-177.6	996	
65991	1207	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	<i>Paragorgia</i>	<i>arborea</i>	Phil Alderslade	19/05/2017	1	18/11/2010	-44.3	179.3	1036	
106531	3510	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	<i>Paragorgia</i>	<i>cf. alisonae</i>	Phil Alderslade	16/05/2017	1	15/10/2016	-47.4	178.8	930	918
65896	1049	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	<i>Paragorgia</i>	<i>coralloides</i>	Phil Alderslade	18/05/2017	1	29/06/2010	-34	168.2	836	955
65949	1124	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	<i>Paragorgia</i>	<i>coralloides</i>	Phil Alderslade	18/05/2017	1	1/09/2010	-34.1	162.7	541	596
69538	1262	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	<i>Paragorgia</i>	n. sp. α	Phil Alderslade	19/05/2017	1	30/12/2010	-33.6	167.8	776	998
88589	2599	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	<i>Paragorgia</i>	n. sp. β	Phil Alderslade	18/05/2017	1	15/06/2010	-34	167.5	746	938
95221	3262	Cnidaria	Anthozoa	Alcyonacea	Plexauridae	<i>Anthomuricea</i>		Phil Alderslade	16/05/2017	1	14/12/2015	-35.9	165.6	686	1090
95184	3206	Cnidaria	Anthozoa	Alcyonacea	Plexauridae	<i>Clematissa</i>	sp. A	Phil Alderslade	16/05/2017	1	16/07/2015	-38.4	-168.1	263	298
69602	1335	Cnidaria	Anthozoa	Alcyonacea	Plexauridae	<i>Clematissa</i>	sp. B	Phil Alderslade	17/05/2017	1	17/12/2010	-32.7	167.6	354	385
11305		Cnidaria	Anthozoa	Alcyonacea	Primnoidae			Phil Alderslade	17/05/2017	1	1/08/1997	-37	176.7	976	
67863		Cnidaria	Anthozoa	Alcyonacea	Primnoidae	<i>?Paranarella</i>		Phil Alderslade	19/05/2017	1	14/11/2006	-49.3	176.3	1192	1300
65916	1069	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	<i>?Thouarella</i>		Phil Alderslade	24/05/2017	1	14/11/2008	-49.5	175.7	702	1060
95235	3276	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	<i>Calyptrophora</i>	<i>inornata</i>	Phil Alderslade	16/05/2017	1	27/11/2015	-37.4	167.5	730	946
113999		Cnidaria	Anthozoa	Alcyonacea	Primnoidae	<i>Dasystenella</i>	<i>acanthina</i>	Phil Alderslade	23/05/2017	2	8/10/1995	-44.7	174.9	818	800
106505	3493	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	<i>Narella</i>		Phil Alderslade	23/05/2017	1	21/10/2016	-34	162.6	504	703
106527	3503	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	<i>Narella</i>		Phil Alderslade	23/05/2017	1	19/10/2016	-34	162.6	505	743
67863		Cnidaria	Anthozoa	Alcyonacea	Primnoidae	<i>?Paranarella</i>		Phil Alderslade	19/05/2017	1	14/11/2006	-49.3	176.3	1192	1300
106532	3511	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	<i>Primnoa</i>	<i>notialis</i>	Phil Alderslade	23/05/2017	1	11/10/2016	-47.3	178.9	911	
65921	1074	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	<i>Thouarella</i>		Phil Alderslade	24/05/2017	1	13/11/2008	-49.3	176.3	1300	1278
66318	457	Cnidaria	Anthozoa	Alcyonacea	Subergorgiidae	<i>Rosgorgia</i>		Phil Alderslade	22/05/2017	1	28/09/2009	-50.1	174.9	996	1011
106524	3500	Cnidaria	Anthozoa	Antipatharia	Leiopathidae	<i>Leiopathes</i>		Rob Stewart	15/03/2017	1	19/10/2016	-34	162.6	503	726
95182	3204	Cnidaria	Anthozoa	Antipatharia	Leiopathidae	<i>Leiopathes</i>	<i>acanthophara</i>	Rob Stewart	20/03/2017	1	16/07/2015	-38.4	-168.1	263	298
95231	3272	Cnidaria	Anthozoa	Antipatharia	Leiopathidae	<i>Leiopathes</i>	<i>acanthophara</i>	Rob Stewart	20/03/2017	1	27/11/2015	-37.4	167.5	730	946
95239	3280	Cnidaria	Anthozoa	Antipatharia	Leiopathidae	<i>Leiopathes</i>	<i>cf. bullosa</i>	Rob Stewart	20/03/2017	1	16/11/2015	-37.4	169	1046	1039
69596	1329	Cnidaria	Anthozoa	Antipatharia	Myriopathidae	<i>Antipathella</i>		Rob Stewart	27/03/2017	1	15/12/2010	-32.5	166.8	367	356
106533	3514	Cnidaria	Anthozoa	Antipatharia	Myriopathidae	<i>Antipathella</i>		Rob Stewart	15/03/2017	1					
106520	3496	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	<i>?Bathypathes</i>		Rob Stewart	15/03/2017	1	19/10/2016	-34	162.6	503	726

NIWA Cat. No.	OSD No.	Phylum	Class	Order	Family	Genus	Species	Determiner	Determined Date	Sample Count	Date	Latitude	Longitude	Depth 1	Depth 2
88591	2601	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	<i>Bathypathes</i>		Rob Stewart	27/03/2017	1	24/05/2010	-37.5	169.3	987	
95181	3203	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	<i>Bathypathes</i>		Rob Stewart	20/03/2017	1	16/07/2015	-38.4	-168.1	263	298
95232	3273	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	<i>Bathypathes</i>		Rob Stewart	20/03/2017	1	27/11/2015	-37.4	167.5	730	946
106519	3495	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	<i>Bathypathes</i>		Rob Stewart	15/03/2017	1	7/10/2016	-37.6	169.6	959	1066
106521	3497	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	<i>Bathypathes</i>		Rob Stewart	15/03/2017	1	20/10/2016	-34.2	162.7	420	772
106522	3498	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	<i>Bathypathes</i>		Rob Stewart	15/03/2017	1	19/10/2016	-34	162.6	499	733
106523	3499	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	<i>Bathypathes</i>		Rob Stewart	15/03/2017	1	21/10/2016	-34	162.6	504	703
106518	3494	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	<i>Bathypathes</i>	<i>cf. alternata</i>	Rob Stewart	15/03/2017	1	20/10/2016	-34.2	162.6	419	770
88592	2602	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	<i>Lillipathes</i>		Rob Stewart	27/03/2017	1					
88617	2665	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	<i>Lillipathes</i>	<i>cf. ritamariae</i>	Dennis Opresko	26/09/2017	1	20/10/2013	-34.2	162.7	478	685
69647	1431	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	<i>Parantipathes</i>		Rob Stewart	27/03/2017	1	10/01/2009	-42.7	-177.5	1251	1265
95234	3275	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	<i>Parantipathes</i>		Rob Stewart	20/03/2017	1	27/11/2015	-37.4	167.5	730	946
88612	2611	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	<i>Stauropathes</i>		Rob Stewart	27/03/2017	1	11/07/2013	-35.4	165.3	931	935
95177	3194	Cnidaria	Anthozoa	Antipatharia	Stylopathidae	? <i>Tylopathes</i>		Rob Stewart	20/03/2017	1	11/08/2015	-34.6	169	566	419
95227	3268	Cnidaria	Anthozoa	Antipatharia	Stylopathidae	<i>Triadopathes</i>		Rob Stewart	20/03/2017	1	14/12/2015	-35.9	165.6	686	1090
95237	3278	Cnidaria	Anthozoa	Antipatharia	Stylopathidae	<i>Triadopathes</i>		Rob Stewart	20/03/2017	1	27/11/2015	-37.4	167.5	730	946
61979	653	Cnidaria	Anthozoa	Scleractinia				Di Tracey	1/05/2017	1	22/02/2010	-49.2	164.3	820	1107
66445	272	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	<i>Caryophyllia</i>		Di Tracey	1/05/2017	1	8/10/2009	-44.5	-174.9	1006	1081
106534	3519	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	<i>Caryophyllia</i>		Di Tracey	7/03/2017	1	28/01/2017	-35.6	175.8		
95153	3150	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	<i>Caryophyllia</i>	<i>lamellifera</i>	Di Tracey	1/05/2017	6	4/05/2015	-37	176.2		
119690	3525	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	<i>Caryophyllia</i>	<i>lamellifera</i>	Di Tracey	1/05/2017	1	28/01/2017	-35.6	175.8		
95152	3149	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	<i>Caryophyllia</i>	<i>profunda</i>	Di Tracey	1/05/2017	1	26/04/2015	-37.7	176.9		
106482	3401	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	<i>Caryophyllia</i>	<i>profunda</i>	Di Tracey	1/05/2017	1	14/06/2016	-44.1	175.9	210	215
66439	32	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	<i>Desmophyllum</i>	<i>dianthus</i>	Di Tracey	May-17	1	29/07/2009	-33.7	167.1	633	836
66443	230	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	<i>Desmophyllum</i>	<i>dianthus</i>	Di Tracey	May-17	5	19/10/2009	-44.5	-178.6	730	936
66444	264	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	<i>Desmophyllum</i>	<i>dianthus</i>	Di Tracey	1/05/2017	1	8/10/2009	-44.5	-174.9	1040	1048
66446	288	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	<i>Desmophyllum</i>	<i>dianthus</i>	Di Tracey	1/05/2017	1	24/08/2009	-43.4	176.1	374	389
66448	353	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	<i>Desmophyllum</i>	<i>dianthus</i>	Di Tracey	1/05/2017	1	24/10/2009	-44.3	-174.6	1263	1316

NIWA Cat. No.	OSD No.	Phylum	Class	Order	Family	Genus	Species	Determiner	Determined Date	Sample Count	Date	Latitude	Longitude	Depth 1	Depth 2
66451	545	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Desmophyllum</i>	<i>dianthus</i>	Di Tracey	May-17	3	10/01/2010	-44.5	-178.6		944
66452	546	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Desmophyllum</i>	<i>dianthus</i>	Di Tracey	Apr-17	3	10/01/2010	-44.5	-178.7	660	940
95180	3202	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Desmophyllum</i>	<i>dianthus</i>	Di Tracey	1/05/2017	6	30/07/2015	-48.8	166.4	503	
95186	3208	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Desmophyllum</i>	<i>dianthus</i>	Di Tracey	1/05/2017	1	12/07/2015	-41.9	-163.7	909	883
106502	3490	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Desmophyllum</i>	<i>dianthus</i>	Di Tracey	7/03/2017	4	18/10/2016	-49	166.6	560	558
106541	3532	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Desmophyllum</i>	<i>dianthus</i>	Di Tracey	1/05/2017	1					
106555	3557	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Desmophyllum</i>	<i>dianthus</i>	Di Tracey	18/05/2017	1					
113819		Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Goniocorella</i>	<i>dumosa</i>	Di Tracey	3/08/2016	1	21/06/2016	-42.8	-176.9	745	920
113821		Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Goniocorella</i>	<i>dumosa</i>	Di Tracey	30/06/2016	1	30/06/2016	-42.6	-179.9	1043	1230
69625	1395	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Goniocorella</i>	<i>dumosa</i>	Di Tracey	1/05/2017	1	2/11/2010	-37.4	176.4	370	
66377	232	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Solenosmilia</i>	<i>variabilis</i>	Di Tracey	Apr-17	1	22/10/2009	-44.7	-175.4	1090	1303
66387	354	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Solenosmilia</i>	<i>variabilis</i>	Di Tracey	Apr-17	1	24/10/2009	-44.3	-174.6	1263	1316
66391	368	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Solenosmilia</i>	<i>variabilis</i>	Di Tracey	Apr-17	1	9/10/2009	-44.2	-174.5	745	1197
65596	374	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Solenosmilia</i>	<i>variabilis</i>	Di Tracey	1/05/2017	1					
66394	400	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Solenosmilia</i>	<i>variabilis</i>	Di Tracey	Apr-17	1	17/11/2009	-50.1	163.5	1075	1210
66397	501	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Solenosmilia</i>	<i>variabilis</i>	Di Tracey	Apr-17	1	30/11/2009	-44.6	-175.1	1007	
66398	518	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Solenosmilia</i>	<i>variabilis</i>	Di Tracey	Apr-17	1	28/12/2009	-50.2	165.8	695	
66399	519	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Solenosmilia</i>	<i>variabilis</i>	Di Tracey	Apr-17	1	27/12/2009	-50.2	163.7	1000	
66400	520	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Solenosmilia</i>	<i>variabilis</i>	Di Tracey	1/05/2017	1	27/12/2009	-50.3	163.6	617	
66401	521	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Solenosmilia</i>	<i>variabilis</i>	Di Tracey	Apr-17	1	16/01/2010	-44.2	-174.5	1220	1400
66402	524	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Solenosmilia</i>	<i>variabilis</i>	Di Tracey	Apr-17	1	27/12/2009	-50	163.7	930	1123
65996	1214	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Solenosmilia</i>	<i>variabilis</i>	Di Tracey	Apr-17	1	28/09/2010	-40.6	176.9		
69508	1227	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Solenosmilia</i>	<i>variabilis</i>	Di Tracey	Apr-17	1	27/11/2010	-37.7	179.3	1064	1201
95185	3207	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Solenosmilia</i>	<i>variabilis</i>	Di Tracey	1/05/2017	1	12/07/2015	-41.9	-163.7	909	883
106526	3502	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	<i>Stephanocyathus</i>		Di Tracey	7/03/2017	1	10/10/2016	-37.2	167.2	1027	985
65470	262	Cnidaria	Anthozoa	Scleractinia	Dendrophylliidae	<i>Enallopsammia</i>	<i>rostrata</i>	Di Tracey	Apr-17	1	23/10/2009	-44.5	-174.9	1020	1091
65473	352	Cnidaria	Anthozoa	Scleractinia	Dendrophylliidae	<i>Enallopsammia</i>	<i>rostrata</i>	Di Tracey	Apr-17	1	24/10/2009	-44.3	-174.6	1263	1316
120561	488	Cnidaria	Anthozoa	Scleractinia	Dendrophylliidae	<i>Enallopsammia</i>	<i>rostrata</i>	Di Tracey	1/05/2017	1	24/11/2009	-44.5	-178.6	710	

NIWA Cat. No.	OSD No.	Phylum	Class	Order	Family	Genus	Species	Determiner	Determined Date	Sample Count	Date	Latitude	Longitude	Depth 1	Depth 2
61900	552	Cnidaria	Anthozoa	Scleractinia	Dendrophylliidae	<i>Enallopsammia</i>	<i>rostrata</i>	Di Tracey	Apr-17	1	12/02/2010	-37.3	168.1		922
65657	1015	Cnidaria	Anthozoa	Scleractinia	Dendrophylliidae	<i>Enallopsammia</i>	<i>rostrata</i>	Di Tracey	Apr-17	1	25/11/2008	-47.5	177.9	606	942
65986	1202	Cnidaria	Anthozoa	Scleractinia	Dendrophylliidae	<i>Enallopsammia</i>	<i>rostrata</i>	Di Tracey	1/05/2017	1	23/11/2010	-38.3	168.4	293	303
106528	3504	Cnidaria	Anthozoa	Scleractinia	Dendrophylliidae	<i>Enallopsammia</i>	<i>rostrata</i>	Di Tracey	7/03/2017	1	20/10/2016	-34.2	162.7	420	772
106529	3505	Cnidaria	Anthozoa	Scleractinia	Dendrophylliidae	<i>Enallopsammia</i>	<i>rostrata</i>	Di Tracey	7/03/2017	1	9/10/2016	-37.1	167	960	1114
106504	3492	Cnidaria	Anthozoa	Scleractinia	Flabellidae	<i>Flabellum</i>		Di Tracey	7/03/2017	1	19/10/2016	-50.9	167.7		
95112	3069	Cnidaria	Anthozoa	Scleractinia	Flabellidae	<i>Flabellum</i>	<i>knoxii</i>	Di Tracey	1/05/2017	1	8/12/2014	-44.2	173.5	300	292
106475	3392	Cnidaria	Anthozoa	Scleractinia	Flabellidae	<i>Flabellum</i>	<i>knoxii</i>	Di Tracey	1/05/2017	1	14/05/2016	-43.3	174.2	580	570
106476	3395	Cnidaria	Anthozoa	Scleractinia	Flabellidae	<i>Flabellum</i>	<i>knoxii</i>	Di Tracey	1/05/2017	5	15/06/2016	-44.6	172.7	323	110
106542	3533	Cnidaria	Anthozoa	Scleractinia	Flabellidae	<i>Flabellum</i>	<i>knoxii</i>	Di Tracey	1/05/2017	1					
65494	212	Cnidaria	Anthozoa	Scleractinia	Oculinidae	<i>Madrepora</i>	<i>oculata</i>	Di Tracey	Apr-17	2	26/10/2009	-44.5	178.6	730	913
65495	216	Cnidaria	Anthozoa	Scleractinia	Oculinidae	<i>Madrepora</i>	<i>oculata</i>	Di Tracey	Apr-17	1	23/10/2009	-44.3	-174.6	1067	1067
65498	276	Cnidaria	Anthozoa	Scleractinia	Oculinidae	<i>Madrepora</i>	<i>oculata</i>	Di Tracey	Apr-17	1	26/10/2009	-44.5	178.6	730	913
65499	301	Cnidaria	Anthozoa	Scleractinia	Oculinidae	<i>Madrepora</i>	<i>oculata</i>	Di Tracey	Apr-17	1	21/09/2009	-47.3	178.8	770	870
65501	363	Cnidaria	Anthozoa	Scleractinia	Oculinidae	<i>Madrepora</i>	<i>oculata</i>	Di Tracey	Apr-17	1	18/09/2009	-44.6	173.3	746	740
65502	488	Cnidaria	Anthozoa	Scleractinia	Oculinidae	<i>Madrepora</i>	<i>oculata</i>	Di Tracey	1/05/2017	1	24/11/2009	-44.5	-178.6	710	
65505	517	Cnidaria	Anthozoa	Scleractinia	Oculinidae	<i>Madrepora</i>	<i>oculata</i>	Di Tracey	Apr-17	1	14/01/2010	-43.8	-174.3	800	1062
65507	526	Cnidaria	Anthozoa	Scleractinia	Oculinidae	<i>Madrepora</i>	<i>oculata</i>	Di Tracey	1/05/2017	1	10/01/2010	-44.5	-178.7	660	940
65648	1024	Cnidaria	Anthozoa	Scleractinia	Oculinidae	<i>Madrepora</i>	<i>oculata</i>	Di Tracey	1/05/2017	1	23/11/2008	-47.6	177.9	981	969
65994	1210	Cnidaria	Anthozoa	Scleractinia	Oculinidae	<i>Madrepora</i>	<i>oculata</i>	Di Tracey	Apr-17	1	5/11/2010	-44.8	172.5	929	1008
69541	1265	Cnidaria	Anthozoa	Scleractinia	Oculinidae	<i>Madrepora</i>	<i>oculata</i>	Di Tracey	Apr-17	1	30/11/2010	-42.9	178.4	481	479
95243	3290	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	<i>Conopora</i>	<i>laevis</i>	Peter Marriott	20/03/2017	1	25/12/2015	-49.1	166.6	570	
106503	3491	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	<i>Conopora</i>	<i>verrucosa</i>	Peter Marriott	4/04/2017	1	18/10/2016	-49	166.6	560	558
106536	3521	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	<i>Crypthelia</i>	<i>polypoma</i>	Peter Marriott	17/03/2017	1	28/01/2017	-35.6	175.8		
119714	3525	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	<i>Crypthelia</i>	<i>polypoma</i>	Peter Marriott	4/04/2017	1	28/01/2017	-35.6	175.8		
106535	3520	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	<i>Errina</i>	<i>chathamensis</i>	Peter Marriott	17/03/2017	1	28/01/2017	-35.6	175.8		
65562	268	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	<i>Errina</i>	<i>cheilopora</i>	Peter Marriott	17/03/2017	3	8/10/2009	-44.5	-174.9	1006	1081
95252	3322	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	<i>Errina</i>	<i>laevigata</i>	Peter Marriott	23/03/2017	1	8/03/2016	-49.9	166.2	202	

NIWA Cat. No.	OSD No.	Phylum	Class	Order	Family	Genus	Species	Determiner	Determined Date	Sample Count	Date	Latitude	Longitude	Depth 1	Depth 2
119713	3525	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	<i>Errina</i>	<i>novaezelandiae</i>	Peter Marriott	4/04/2017	1	28/01/2017	-35.6	175.8		
106537	3525	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	<i>Lepidopora</i>	<i>polystichopora</i>	Peter Marriott	4/04/2017	1	28/01/2017	-35.6	175.8		
106538	3529	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	<i>Stylaster</i>	<i>eguchii</i>	Peter Marriott	17/03/2017	1	28/01/2017	-35.6	175.8		
119712	3525	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	<i>Stylaster</i>	<i>horologium</i>	Peter Marriott	4/04/2017	1	28/01/2017	-35.6	175.8		

Appendix B COD extract spreadsheet produced after data loading

NIWA Cat. no.	MPI species Code	Target species	FMA	Phylum	Class	Order	Family	Genus	Species	Determiner	Sample count	Event End Date
11305	PRI	ORH	AKE	Cnidaria	Anthozoa	Alcyonacea	Primnoidae indet.			Phil Alderslade	1	
14396	ISI	ORH	TMAR	Cnidaria	Anthozoa	Alcyonacea	Isididae indet.			Phil Alderslade	1	
14394	ISI	ORH	TMAR	Cnidaria	Anthozoa	Alcyonacea	Isididae indet.			Phil Alderslade	1	
14397	ISI	ORH	TMAR	Cnidaria	Anthozoa	Alcyonacea	Isididae indet.			Phil Alderslade	1	
14392	ISI	ORH	TMAR	Cnidaria	Anthozoa	Alcyonacea	Isididae indet.			Phil Alderslade	1	
14393	ISI	ORH	TMAR	Cnidaria	Anthozoa	Alcyonacea	Isididae indet.			Phil Alderslade	1	
14389	ISI	SSO	TMAR	Cnidaria	Anthozoa	Alcyonacea	Isididae indet.			Phil Alderslade	1	
14412	ISI	ORH	TMAR	Cnidaria	Anthozoa	Alcyonacea	Isididae indet.			Phil Alderslade	1	
14399	BOO	OEO	SOU	Cnidaria	Anthozoa	Alcyonacea	Isididae	Keratoisis		Phil Alderslade	1	
14390	ISI	OEO	SOU	Cnidaria	Anthozoa	Alcyonacea	Isididae indet.			Phil Alderslade	1	
14400	ISI	OEO	SOU	Cnidaria	Anthozoa	Alcyonacea	Isididae indet.			Phil Alderslade	1	
14414	ISI	ORH	AKW	Cnidaria	Anthozoa	Alcyonacea	Isididae indet.			Phil Alderslade	1	
14403	ISI	ORH	AKW	Cnidaria	Anthozoa	Alcyonacea	Isididae indet.			Phil Alderslade	1	
14405	ISI	ORH	AKW	Cnidaria	Anthozoa	Alcyonacea	Isididae indet.			Phil Alderslade	1	
121552	ISI			Cnidaria	Anthozoa	Alcyonacea	Isididae indet.			Phil Alderslade	1	
67863	PRI	OEO	SUB	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	Paranarella		Phil Alderslade	1	
44360	SOC	SSO	SEC	Cnidaria	Anthozoa	Alcyonacea	Acanthogorgiidae	Acanthogorgia		Phil Alderslade	1	11/10/2007
42486	SOC	BOE	SUB	Cnidaria	Anthozoa	Alcyonacea	Acanthogorgiidae	Acanthogorgia		Phil Alderslade	1	17/07/2008
62915	SOC	ORH	SOE	Cnidaria	Anthozoa	Alcyonacea	Anthothelidae	Anthothela		Phil Alderslade	1	12/11/2008
65918	ISI	SSO	SEC	Cnidaria	Anthozoa	Alcyonacea	Isididae	Isidella		Phil Alderslade	1	10/11/2008
65921	THO	BOE	SUB	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	Thouarella		Phil Alderslade	1	13/11/2008
65916	THO	BOE	SUB	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	Thouarella		Phil Alderslade	1	14/11/2008
65926	PAB	BOE	SUB	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	Paragorgia	alisonae	Phil Alderslade	1	16/11/2008
65917	PAB	BOE	SUB	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	Paragorgia	alisonae	Phil Alderslade	1	16/11/2008
65648	MOC	SSO	SUB	Cnidaria	Anthozoa	Scleractinia	Oculinidae	Madrepora	oculata	Di Tracey	1	23/11/2008

NIWA Cat. no.	MPI species Code	Target species	FMA	Phylum	Class	Order	Family	Genus	Species	Determiner	Sample count	Event End Date
65657	ERO	SSO	SUB	Cnidaria	Anthozoa	Scleractinia	Dendrophylliidae	Enallopsammia	rostrata	Di Tracey	1	25/11/2008
69647	PTP	ORH	SOE	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	Parantipathes		Rob Stewart	1	10/01/2009
66241	ISI	ORH	CET	Cnidaria	Anthozoa	Alcyonacea	Isididae indet.			Phil Alderslade	1	13/07/2009
66439	DDI	ORH	WANB	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Desmophyllum	dianthus	Di Tracey	1	29/07/2009
66246	ISI	SSO	SEC	Cnidaria	Anthozoa	Alcyonacea	Isididae indet.			Phil Alderslade	1	12/09/2009
65501	MOC	BOE	SEC	Cnidaria	Anthozoa	Scleractinia	Oculinidae	Madrepora	oculata	Di Tracey	1	18/09/2009
65499	MOC	SSO	SUB	Cnidaria	Anthozoa	Scleractinia	Oculinidae	Madrepora	oculata	Di Tracey	1	21/09/2009
66318	SOC	BOE	SUB	Cnidaria	Anthozoa	Alcyonacea	Subergorgiidae	Rosgorgia		Phil Alderslade	1	28/09/2009
66446	DDI	SCI	SOE	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Desmophyllum	dianthus	Di Tracey	1	24/08/2009
65596	SVA			Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	1	
66201	BOO			Cnidaria	Anthozoa	Alcyonacea	Isididae	Keratoisis		Phil Alderslade	1	
66445	CAY	ORH	SOE	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Caryophyllia		Di Tracey	1	8/10/2009
65562	ERR	ORH	SOE	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	Errina	cheilopora	Peter Marriott	3	8/10/2009
66444	DDI	ORH	SOE	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Desmophyllum	dianthus	Di Tracey	1	8/10/2009
66391	SVA	ORH	SOE	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	1	9/10/2009
66443	DDI	SSO	SOE	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Desmophyllum	dianthus	Di Tracey	5	19/10/2009
66377	SVA	ORH	SOE	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	1	22/10/2009
65470	ERO	ORH	SOE	Cnidaria	Anthozoa	Scleractinia	Dendrophylliidae	Enallopsammia	rostrata	Di Tracey	1	23/10/2009
65495	MOC	ORH	SOE	Cnidaria	Anthozoa	Scleractinia	Oculinidae	Madrepora	oculata	Di Tracey	1	23/10/2009
66448	DDI	ORH	SOE	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Desmophyllum	dianthus	Di Tracey	1	24/10/2009
65473	ERO	ORH	SOE	Cnidaria	Anthozoa	Scleractinia	Dendrophylliidae	Enallopsammia	rostrata	Di Tracey	1	24/10/2009
66387	SVA	ORH	SOE	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	1	24/10/2009
65494	MOC	SSO	SOE	Cnidaria	Anthozoa	Scleractinia	Oculinidae	Madrepora	oculata	Di Tracey	2	26/10/2009
65498	MOC	SSO	SOE	Cnidaria	Anthozoa	Scleractinia	Oculinidae	Madrepora	oculata	Di Tracey	1	26/10/2009
66394	SVA	OEO	SUB	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	1	17/11/2009
66312	ISI	ORH	SUB	Cnidaria	Anthozoa	Alcyonacea	Isididae indet.			Phil Alderslade	1	23/11/2009
120561	ERO	ORH	SOE	Cnidaria	Anthozoa	Scleractinia	Dendrophylliidae	Enallopsammia	rostrata	Di Tracey	1	24/11/2009
65502	MOC	ORH	SOE	Cnidaria	Anthozoa	Scleractinia	Oculinidae	Madrepora	oculata	Di Tracey	1	24/11/2009

NIWA Cat. no.	MPI species Code	Target species	FMA	Phylum	Class	Order	Family	Genus	Species	Determiner	Sample count	Event End Date
66270	PAB	SSO	SOE	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	Paragorgia	arborea	Phil Alderslade	1	24/11/2009
66397	SVA	ORH	SOE	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	1	30/11/2009
66213	BOO	SSO	SEC	Cnidaria	Anthozoa	Alcyonacea	Isididae	Keratoisis		Phil Alderslade	1	23/12/2009
66212	BOO	WWA	SOU	Cnidaria	Anthozoa	Alcyonacea	Isididae	Keratoisis		Phil Alderslade	1	24/12/2009
66402	SVA	SSO	SUB	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	1	27/12/2009
66399	SVA	SSO	SUB	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	1	27/12/2009
66400	SVA	SSO	SUB	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	1	27/12/2009
66398	SVA	SSO	SOI	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	1	28/12/2009
66214	ISI	BOE	SOE	Cnidaria	Anthozoa	Alcyonacea	Isididae	Isidella		Phil Alderslade	1	9/01/2010
66451	DDI	ORH	SOE	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Desmophyllum	dianthus	Di Tracey	3	10/01/2010
66452	DDI	BOE	SOE	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Desmophyllum	dianthus	Di Tracey	3	10/01/2010
65507	MOC	BOE	SOE	Cnidaria	Anthozoa	Scleractinia	Oculinidae	Madrepora	oculata	Di Tracey	1	10/01/2010
65505	MOC	ORH	SOE	Cnidaria	Anthozoa	Scleractinia	Oculinidae	Madrepora	oculata	Di Tracey	1	14/01/2010
66401	SVA	ORH	SOE	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	1	16/01/2010
61900	ERO	ORH	CET	Cnidaria	Anthozoa	Scleractinia	Dendrophylliidae	Enallopsammia	rostrata	Di Tracey	1	12/02/2010
61979	SIA	BOE	SUB	Cnidaria	Anthozoa	Scleractinia				Di Tracey	1	22/02/2010
88591	BTP	ORH	CET	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	Bathypathes		Rob Stewart	1	24/05/2010
88588	BOO	ORH	WANB	Cnidaria	Anthozoa	Alcyonacea	Isididae	Keratoisis		Phil Alderslade	1	15/06/2010
88589	PAB	ORH	WANB	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	Paragorgia	n. sp. B	Phil Alderslade	1	15/06/2010
65896	PAB	ORH	AKW	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	Paragorgia	coralloides	Phil Alderslade	1	29/06/2010
65905	CHR	ORH	AKE	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	Chrysogorgia		Phil Alderslade	1	10/07/2010
65903	LLE	ORH	AKE	Cnidaria	Anthozoa	Alcyonacea	Isididae	Lepidisis	solitaria	Phil Alderslade	1	10/07/2010
65904	SOC	ORH	AKE	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	Pseudochrysogorgia	n. sp.	Phil Alderslade	1	10/07/2010
88592	LIL			Cnidaria	Anthozoa	Antipatharia	Schizopathidae	Lillipathes		Rob Stewart	1	
65949	PAB	BYX	HOWE	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	Paragorgia	coralloides	Phil Alderslade	1	1/09/2010
65996	SVA	SCI	CEE	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	1	28/09/2010
69519	BOO	SCI	AKE	Cnidaria	Anthozoa	Alcyonacea	Isididae	Keratoisis		Phil Alderslade	1	2/11/2010
69625	GDU	SCI	AKE	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Goniocorella	dumosa	Di Tracey	1	2/11/2010

NIWA Cat. no.	MPI species Code	Target species	FMA	Phylum	Class	Order	Family	Genus	Species	Determiner	Sample count	Event End Date
65994	MOC	SSO	SEC	Cnidaria	Anthozoa	Scleractinia	Oculinidae	Madrepora	oculata	Di Tracey	1	5/11/2010
65993	BOO	BOE	SEC	Cnidaria	Anthozoa	Alcyonacea	Isididae	Keratoisis		Phil Alderslade	1	5/11/2010
65991	PAB	SSO	SOE	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	Paragorgia	arborea	Phil Alderslade	1	18/11/2010
69541	MOC	HOK	SOE	Cnidaria	Anthozoa	Scleractinia	Oculinidae	Madrepora	oculata	Di Tracey	1	30/11/2010
69540	CHR	HOK	SOE	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	Chrysogorgia		Phil Alderslade	1	6/12/2010
69508	SVA	ORH	CEE	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	Solenosmilia	variabilis	Di Tracey	1	27/11/2010
65986	ERO	BNS	CET	Cnidaria	Anthozoa	Scleractinia	Dendrophyllidae	Enallopsammia	rostrata	Di Tracey	1	24/11/2010
121481	CHR	ORH	WANB	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	Chrysogorgia	curvata	Phil Alderslade	1	24/12/2010
69549	CHR	ORH	WANB	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	Chrysogorgia	tetrasticha	Phil Alderslade	1	24/12/2010
69552	BOO	BYS	HOWE	Cnidaria	Anthozoa	Alcyonacea	Isididae	Keratoisis		Phil Alderslade	1	27/12/2010
69550	MTL	ORH	HOWE	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	Metallogorgia	melanotrichos	Phil Alderslade	1	31/12/2010
69596	AHL	BNS	WANB	Cnidaria	Anthozoa	Antipatharia	Myriopathidae	Antipathella		Rob Stewart	1	15/12/2010
69602	PLE	BNS	WANB	Cnidaria	Anthozoa	Alcyonacea	Plexauridae	Clematissa	sp. B	Phil Alderslade	1	17/12/2010
69533	CHR	ORH	AKW	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	Chrysogorgia		Phil Alderslade	1	29/12/2010
69580	BOO	ORH	WANB	Cnidaria	Anthozoa	Alcyonacea	Isididae	Keratoisis		Phil Alderslade	1	30/12/2010
69538	PAB	ORH	WANB	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	Paragorgia	n. sp.	Phil Alderslade	1	30/12/2010
88593	BOO	WWA	SOU	Cnidaria	Anthozoa	Alcyonacea	Isididae	Keratoisis		Phil Alderslade	1	16/07/2013
88612	COB	ORH	HOWE	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	Stauropathes		Rob Stewart	1	11/07/2013
88639	SOC	BAS	WANB	Cnidaria	Anthozoa	Alcyonacea	Acanthogorgiidae	Acanthogorgia		Phil Alderslade	1	9/11/2013
95112	COF	SWA	SEC	Cnidaria	Anthozoa	Scleractinia	Flabellidae	Flabellum	knoxii	Di Tracey	1	9/12/2014
95152	CAY	TAR	AKE	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	Caryophyllia	profunda	Di Tracey	1	26/04/2015
95153	CAY	TAR	AKE	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	Caryophyllia	lamellifera	Di Tracey	6	4/05/2015
95129	ACN	ORH	CET	Cnidaria	Anthozoa	Alcyonacea	Isididae	Acanella		Phil Alderslade	1	10/04/2015
95186	DDI	ORH	LOUR	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	Desmophyllum	dianthus	Di Tracey	1	12/07/2015
95185	SVA	ORH	LOUR	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	Solenosmilia	variabilis	Di Tracey	1	12/07/2015
95183	BOO	HPB	LOUR	Cnidaria	Anthozoa	Alcyonacea	Isididae	Keratoisis		Phil Alderslade	1	16/07/2015
95181	BTP	HPB	LOUR	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	Bathypathes		Rob Stewart	1	16/07/2015
95182	LEI	HPB	LOUR	Cnidaria	Anthozoa	Antipatharia	Leiopathidae	Leiopathes	acanthophora	Rob Stewart	1	16/07/2015

NIWA Cat. no.	MPI species Code	Target species	FMA	Phylum	Class	Order	Family	Genus	Species	Determiner	Sample count	Event End Date
95184	PLE	HPB	LOUR	Cnidaria	Anthozoa	Alcyonacea	Plexauridae	Clematissa	sp. A	Phil Alderslade	1	16/07/2015
95179	CLL	WWA	SOU	Cnidaria	Anthozoa	Alcyonacea	Coralliidae	Corallium		Peter Marriott	1	30/07/2015
95180	DDI	WWA	SOU	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Desmophyllum	dianthus	Di Tracey	6	30/07/2015
95177	COB	BYX	AKW	Cnidaria	Anthozoa	Antipatharia	Stylopathidae	Tylopathes		Rob Stewart	1	11/08/2015
95240	ACN	ORH	CET	Cnidaria	Anthozoa	Alcyonacea	Isididae	Acanella		Phil Alderslade	1	16/11/2015
95239	LEI	ORH	CET	Cnidaria	Anthozoa	Antipatharia	Leiopathidae	Leiopathes	cf. bullosa	Rob Stewart	1	16/11/2015
95232	BTP	ORH	CET	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	Bathypathes		Rob Stewart	1	27/11/2015
95235	CTP	ORH	CET	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	Calyptrophora	inornata	Phil Alderslade	1	27/11/2015
95231	LEI	ORH	CET	Cnidaria	Anthozoa	Antipatharia	Leiopathidae	Leiopathes	acanthophora	Rob Stewart	1	27/11/2015
95234	PTP	ORH	CET	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	Parantipathes		Rob Stewart	1	27/11/2015
95237	TDP	ORH	CET	Cnidaria	Anthozoa	Antipatharia	Stylopathidae	Triadopathes		Rob Stewart	1	27/11/2015
95223	BOO	ORH	HOWE	Cnidaria	Anthozoa	Alcyonacea	Isididae	Keratoisis		Phil Alderslade	1	14/12/2015
95226	CHR	ORH	HOWE	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	Chrysogorgia		Phil Alderslade	1	14/12/2015
95221	PLE	ORH	HOWE	Cnidaria	Anthozoa	Alcyonacea	Plexauridae	Anthomuricea		Phil Alderslade	1	14/12/2015
95227	TDP	ORH	HOWE	Cnidaria	Anthozoa	Antipatharia	Stylopathidae	Triadopathes		Rob Stewart	1	14/12/2015
95243	COO	HAK	SUB	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	Conopora	laevis	Peter Marriott	1	25/12/2015
95252	ERR	SQU	SOI	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	Errina	laevigata	Peter Marriott	1	8/03/2016
106475	COF	HOK	SEC	Cnidaria	Anthozoa	Scleractinia	Flabellidae	Flabellum	knoxii	Di Tracey	1	15/05/2016
106482	CAY	SQU	SEC	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Caryophyllia	profunda	Di Tracey	1	14/06/2016
106476	COF	SQU	SEC	Cnidaria	Anthozoa	Scleractinia	Flabellidae	Flabellum	knoxii	Di Tracey	5	15/06/2016
106530	BOO	ORH	SUB	Cnidaria	Anthozoa	Alcyonacea	Isididae	Keratoisis		Phil Alderslade	1	10/10/2016
106532	PMN	SSO	SUB	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	Primnoa	notialis	Phil Alderslade	1	11/10/2016
106531	PAB	SSO	SUB	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	Paragorgia	cf. alisonae	Phil Alderslade	1	15/10/2016
106504	COF	SCI	SOI	Cnidaria	Anthozoa	Scleractinia	Flabellidae	Flabellum		Di Tracey	1	19/10/2016
106519	BTP	ORH	CET	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	Bathypathes		Rob Stewart	1	7/10/2016
106529	ERO	ORH	CET	Cnidaria	Anthozoa	Scleractinia	Dendrophylliidae	Enallopsammia	rostrata	Di Tracey	1	9/10/2016
106526	SIA	ORH	CET	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Stephanocyathus		Di Tracey	1	10/10/2016
106527	NAR	BYS	HOWE	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	Narella		Phil Alderslade	1	19/10/2016

NIWA Cat. no.	MPI species Code	Target species	FMA	Phylum	Class	Order	Family	Genus	Species	Determiner	Sample count	Event End Date
106520	BTP	BYS	HOWE	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	Bathypathes		Rob Stewart	1	19/10/2016
106524	LEI	BYS	HOWE	Cnidaria	Anthozoa	Antipatharia	Leiopathidae	Leiopathes		Rob Stewart	1	19/10/2016
106522	BTP	BYS	HOWE	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	Bathypathes		Rob Stewart	1	19/10/2016
106521	BTP	BYS	HOWE	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	Bathypathes		Rob Stewart	1	20/10/2016
106528	ERO	BYS	HOWE	Cnidaria	Anthozoa	Scleractinia	Dendrophyllidae	Enallopsammia	rostrata	Di Tracey	1	20/10/2016
106518	BTP	BYS	HOWE	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	Bathypathes	cf. alternata	Rob Stewart	1	21/10/2016
106525	MTL	BYS	HOWE	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	Metallogorgia	macrospina	Phil Alderslade	1	21/10/2016
106523	BTP	BYS	HOWE	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	Bathypathes		Rob Stewart	1	21/10/2016
106505	NAR	BYS	HOWE	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	Narella		Phil Alderslade	1	21/10/2016
106503	COO	LIN	SUB	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	Conopora	verrucosa	Peter Marriott	1	19/10/2016
106502	DDI	LIN	SUB	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	Desmophyllum	dianthus	Di Tracey	4	19/10/2016
106533	AHL	TRE	AKE	Cnidaria	Anthozoa	Antipatharia	Myriopathidae	Antipathella		Rob Stewart	1	20/02/2017
106534	CAY	BAS	AKE	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	Caryophyllia		Di Tracey	1	29/01/2017
119690	CAY	BAS	AKE	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	Caryophyllia	lamelifera	Di Tracey	1	29/01/2017
106536	CRY	BAS	AKE	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	Crypthelia	polypoma	Peter Marriott	1	29/01/2017
119714	CRY	BAS	AKE	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	Crypthelia	polypoma	Peter Marriott	1	29/01/2017
119713	ERR	BAS	AKE	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	Errina	novaezelandiae	Peter Marriott	1	29/01/2017
106535	ERR	BAS	AKE	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	Errina	chathamensis	Peter Marriott	1	29/01/2017
106537	LPP	BAS	AKE	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	Lepidopora	polystichopora	Peter Marriott	1	29/01/2017
119712	STL	BAS	AKE	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	Stylaster	horologium	Peter Marriott	1	29/01/2017
106538	STL	BAS	AKE	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	Stylaster	eguchii	Peter Marriott	1	29/01/2017
106542	COF	HOK	SOE	Cnidaria	Anthozoa	Scleractinia	Flabellidae	Flabellum	knoxii	Di Tracey	1	20/02/2017
106541	DDI	HOK	SOE	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	Desmophyllum	dianthus	Di Tracey	1	24/02/2017

Appendix C Spreadsheet summary of digital images processed to date

NWA Cat. No.	OSD No.	Target species	FMA	Fishing method	Phylum	Class	Order	Family	Genus	Species	Determiner	Determined Date	Event end	Latitude	Longitude	Depth 1	Depth 2	Image timestamp	Image rating
		ORH	SOE	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	16/05/2017	15/06/2015 11:11	-42.7	182.7	911	1045	15/06/2015 11:46	1
		ORH	LOUR	TWL	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	Thouarella		Phil Alderslade	16/05/2017	4/07/2015 14:10	-40.7	194.6	670	1080	4/07/2015 15:06	3
		ORH	LOUR	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	16/05/2017	4/07/2015 14:10	-40.7	194.6	670	1080	4/07/2015 15:08	3
		ORH	LOUR	TWL	Cnidaria	Anthozoa	Scleractinia				Di Tracey	16/05/2017	9/07/2015 20:42	-41.4	195.7	778	790	9/07/2015 21:32	4
		HOK	CHA	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Caryophyllia		Di Tracey	16/05/2017	6/07/2015 5:30	-41.9	170.2	696	631	6/07/2015 6:53	2
		HOK	CHA	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Caryophyllia		Di Tracey	16/05/2017	11/07/2015 11:55	-41.1	170.8	488	488	11/07/2015 16:05	2
		HOK	CHA	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Stephanocyathus		Di Tracey	16/05/2017	8/07/2015 5:29	-41.7	170.2	719	682	8/07/2015 8:32	1
		ORH	SOU	TWL	Cnidaria	Anthozoa	Alcyonacea	Primnoidae			Phil Alderslade	16/05/2017	7/07/2015 2:46	-47.3	165.8			7/07/2015 6:08	4
		ORH	SOU	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	16/05/2017	7/07/2015 2:46	-47.3	165.8			7/07/2015 6:06	4
		ORH	SOU	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	16/05/2017	7/07/2015 2:46	-47.3	165.8			7/07/2015 6:06	3
		ORH	SOU	TWL	Cnidaria	Anthozoa	Scleractinia	Dendrophylliidae	Dendrophyllia		Di Tracey	16/05/2017	7/07/2015 2:46	-47.3	165.8			7/07/2015 6:07	3
		ORH	SOU	TWL	Cnidaria	Anthozoa	Alcyonacea	Isididae			Phil Alderslade	16/05/2017	7/07/2015 5:28	-47.3	165.8			9/07/2015 14:25	4
		ORH	SOU	TWL	Cnidaria	Anthozoa	Alcyonacea	Plexauridae			Phil Alderslade	16/05/2017	7/07/2015 5:28	-47.3	165.8			9/07/2015 14:25	4
		ORH	SOU	TWL	Cnidaria	Anthozoa	Alcyonacea	Primnoidae			Phil Alderslade	16/05/2017	8/07/2015 21:33	-47.3	165.8			9/07/2015 14:41	4
		ORH	SOE	TWL	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	Thouarella		Phil Alderslade	16/05/2017	21/07/2015 9:06	-42.8	182.1		1044	21/07/2015 17:37	3
		ORH	SOE	TWL	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	Thouarella		Phil Alderslade	16/05/2017	21/07/2015 9:06	-42.8	182.1		1044	21/07/2015 17:37	3
		LIN	CHA	BLL	Cnidaria	Anthozoa	Alcyonacea	Plexauridae			Phil Alderslade	16/05/2017	11/07/2015 13:03	-40.7	171.4	286	336	11/07/2015 13:38	3
		LIN	CHA	BLL	Cnidaria	Anthozoa	Alcyonacea	Plexauridae			Phil Alderslade	16/05/2017	11/07/2015 13:03	-40.7	171.4	286	336	11/07/2015 13:38	3
		LIN	CHA	BLL	Cnidaria	Anthozoa	Alcyonacea	Primnoidae			Phil Alderslade	16/05/2017	11/07/2015 13:03	-40.7	171.4	286	336	11/07/2015 13:38	3
		LIN	CHA	BLL	Cnidaria	Anthozoa	Alcyonacea	Primnoidae			Phil Alderslade	16/05/2017	11/07/2015 13:03	-40.7	171.4	286	336	11/07/2015 13:38	3
		ORH	LOUR	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	16/05/2017	13/07/2015 9:39	-41.8	196.2			13/07/2015 10:28	3
		ORH	LOUR	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Goniocorella	dumosa	Di Tracey	16/05/2017	16/07/2015 9:40	-40.8	194.8			16/07/2015 10:42	1
		ORH	LOUR	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	16/05/2017	16/07/2015 14:29	-40.8	194.9	867	907	16/07/2015 15:12	1
		ORH	LOUR	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Desmophyllum	dianthus	Di Tracey	16/05/2017	17/07/2015 6:16	-40.7	194.6	976	846	17/07/2015 7:30	3
		ORH	LOUR	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	16/05/2017	7/07/2015 6:48	-41.4	195.7	840	1240	7/07/2015 8:34	2
		ORH	LOUR	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	16/05/2017	7/07/2015 6:48	-41.4	195.7	840	1240	7/07/2015 8:32	2
		ORH	LOUR	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	16/05/2017	8/07/2015 18:02	-41.4	195.7	815	1043	8/07/2015 19:23	2
		ORH	LOUR	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	16/05/2017	9/07/2015 17:14	-41.8	196.3	1006		9/07/2015 22:57	2
		ORH	LOUR	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	16/05/2017	9/07/2015 22:02	-41.8	196.3			9/07/2015 22:58	2
		ORH	LOUR	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	16/05/2017	10/07/2015 22:49	-41.8	196.3			10/07/2015 23:50	2
95186	3208	ORH	LOUR	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Desmophyllum	dianthus	Di Tracey	1/05/2017	12/07/2015 19:15	-41.8	196.3	878	874	12/07/2015 20:29	2
95185	3207	ORH	LOUR	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	1/05/2017	12/07/2015 19:15	-41.8	196.3	878	874	12/07/2015 20:29	2
		ORH	LOUR	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	16/05/2017	12/07/2015 19:15	-41.8	196.3	878	874	12/07/2015 20:55	3
		ORH	LOUR	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	16/05/2017	15/07/2015 15:44	-37.9	191.7	1060		15/07/2015 16:41	2
		ORH	LOUR	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	16/05/2017	15/07/2015 22:17	-38.4	192.3			15/07/2015 23:08	3
		ORH	LOUR	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	16/05/2017	15/07/2015 22:17	-38.4	192.3			15/07/2015 23:07	3
		ORH	LOUR	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	16/05/2017	16/07/2015 1:53	-38.4	192.3	1287		16/07/2015 3:20	3
		ORH	LOUR	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Solenosmilia	variabilis	Di Tracey	16/05/2017	16/07/2015 1:53	-38.4	192.3	1287		16/07/2015 3:21	2
95183	3205	HPB	LOUR	TWL	Cnidaria	Anthozoa	Alcyonacea	Isididae	? Keratoisis		Phil Alderslade	16/05/2017	16/07/2015 7:35	-38.4	191.9			16/07/2015 9:14	2
95184	3206	HPB	LOUR	TWL	Cnidaria	Anthozoa	Alcyonacea	Plexauridae	Clematissa	sp. A	Phil Alderslade	16/05/2017	16/07/2015 7:35	-38.4	191.9			16/07/2015 9:22	4
95184	3206	HPB	LOUR	TWL	Cnidaria	Anthozoa	Alcyonacea	Plexauridae	Clematissa	sp. A	Phil Alderslade	16/05/2017	16/07/2015 7:35	-38.4	191.9			16/07/2015 9:17	1
95182	3204	HPB	LOUR	TWL	Cnidaria	Anthozoa	Antipatharia	Leiopathidae	Leiopathes	acanthophora	Rob Stewart	20/03/2017	16/07/2015 7:35	-38.4	191.9			16/07/2015 9:11	3
		HPB	LOUR	TWL	Cnidaria	Anthozoa	Antipatharia	Leiopathidae	Leiopathes		Di Tracey	16/05/2017	16/07/2015 7:35	-38.4	191.9			16/07/2015 9:11	1

NWA Cat. No.	OSD No.	Target species	FMA	Fishing method	Phylum	Class	Order	Family	Genus	Species	Determiner	Determined Date	Event end	Latitude	Longitude	Depth 1	Depth 2	Image timestamp	Image rating
95181	3203	HPB	LOUR	TWL	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	Bathypathes		Rob Stewart	20/03/2017	16/07/2015 7:35	-38.4	191.9			16/07/2015 9:08	3
95181	3203	HPB	LOUR	TWL	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	Bathypathes		Rob Stewart	20/03/2017	16/07/2015 7:35	-38.4	191.9			16/07/2015 9:07	1
		ORH	LOUR	TWL	Cnidaria	Anthozoa	Alcyonacea	Isididae			Phil Alderslade	16/05/2017	27/07/2015 14:05	-45.4	202.3			27/07/2015 15:20	2
		ORH	LOUR	TWL	Cnidaria	Anthozoa	Alcyonacea	Plexauridae			Phil Alderslade	16/05/2017	31/07/2015 16:59	-46.1	205.6		682	31/07/2015 17:49	1
		SCI	SOE	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	Goniocorella	dumosa	Di Tracey	16/05/2017	9/08/2015 12:58	-43.2	176.3	350	350	9/08/2015 14:55	3
95179	3201	WWA	SOU	TWL	Cnidaria	Anthozoa	Alcyonacea	Coralliidae	Corallium		Peter (Chazz) Marriott	23/03/2017	30/07/2015 19:10	-48.7	166.4	503		30/07/2015 20:53	3
95179	3201	WWA	SOU	TWL	Cnidaria	Anthozoa	Alcyonacea	Coralliidae	Corallium		Peter (Chazz) Marriott	23/03/2017	30/07/2015 19:10	-48.7	166.4	503		30/07/2015 20:35	3
95180	3202	WWA	SOU	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	Desmophyllum	dianthus	Di Tracey	1/05/2017	30/07/2015 19:10	-48.7	166.4	503		30/07/2015 20:53	3
95180	3202	WWA	SOU	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	Desmophyllum	dianthus	Di Tracey	1/05/2017	30/07/2015 19:10	-48.7	166.4	503		30/07/2015 20:35	3
		ORH	AKW	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	Stephanocyathus		Di Tracey	16/05/2017	28/07/2015 19:18	-36	172.9	1051	991	28/07/2015 20:12	3
		BYX	AKW	TWL	Cnidaria	Anthozoa	Alcyonacea	Isididae	Keratoisis		Phil Alderslade	16/05/2017	9/08/2015 16:15	-34.6	168.9	561	705	9/08/2015 17:54	3
		BYX	AKW	TWL	Cnidaria	Anthozoa	Alcyonacea	Isididae	Acanella		Phil Alderslade	16/05/2017	9/08/2015 18:47	-34.6	168.9	566	710	9/08/2015 20:16	3
		BYX	AKW	TWL	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	Thouarella		Phil Alderslade	16/05/2017	10/08/2015 10:20	-34.6	168.9	588	941	10/08/2015 12:13	3
		BYX	AKW	TWL	Cnidaria	Anthozoa	Alcyonacea	Primnoidae			Phil Alderslade	16/05/2017	10/08/2015 10:20	-34.6	168.9	588	941	10/08/2015 12:13	3
		BYX	AKW	TWL	Cnidaria	Anthozoa	Alcyonacea	Primnoidae			Phil Alderslade	16/05/2017	10/08/2015 10:20	-34.6	168.9	588	941	10/08/2015 12:13	3
		BYX	AKW	TWL	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae			Di Tracey	16/05/2017	10/08/2015 13:22	-34.6	168.9	587	782	10/08/2015 14:15	3
		BYX	AKW	TWL	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae			Phil Alderslade	16/05/2017	10/08/2015 17:45	-34.6	168.9	605	870	10/08/2015 18:37	3
		BYX	AKW	TWL	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae			Phil Alderslade	16/05/2017	10/08/2015 17:45	-34.6	168.9	605	870	10/08/2015 19:14	3
		BYX	AKW	TWL	Cnidaria	Anthozoa	Alcyonacea	Primnoidae			Phil Alderslade	16/05/2017	10/08/2015 17:45	-34.6	168.9	605	870	10/08/2015 18:39	3
		LIN	SOE	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	Goniocorella	dumosa	Di Tracey	16/05/2017	22/09/2015 9:33	-43.4	181.8	378	374	22/09/2015 10:39	3
		LIN	SOE	BLL	Cnidaria	Anthozoa	Alcyonacea	Isididae	Isidella		Phil Alderslade	16/05/2017	16/10/2015 5:59	-43.4	180.7	454	386	16/10/2015 7:49	1
		LIN	SOE	BLL	Cnidaria	Anthozoa	Alcyonacea	Isididae	Isidella		Phil Alderslade	16/05/2017	16/10/2015 10:52	-43.5	180.7	480	433	16/10/2015 11:30	3
		LIN	SOE	BLL	Cnidaria	Anthozoa	Alcyonacea	Isididae	Isidella		Phil Alderslade	16/05/2017	16/10/2015 10:52	-43.5	180.7	480	433	16/10/2015 11:29	2
		LIN	SOE	BLL	Cnidaria	Anthozoa	Alcyonacea	Isididae	Keratoisis		Phil Alderslade	16/05/2017	16/10/2015 10:52	-43.5	180.7	480	433	16/10/2015 11:25	2
		ORH	CET	TWL	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	Thouarella		Phil Alderslade	16/05/2017	9/10/2015 15:57	-37.2	167.2	650		9/10/2015 17:43	4
		ORH	CET	TWL	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	Thouarella		Phil Alderslade	16/05/2017	9/10/2015 15:57	-37.2	167.2	650		9/10/2015 17:43	3
		BNS	CET	BLL	Cnidaria	Anthozoa	Alcyonacea	Plexauridae			Phil Alderslade	16/05/2017	9/10/2015 14:30	-38.2	168.4	437	484	9/10/2015 16:57	3
		ORH	SOE	TWL	Cnidaria	Anthozoa	Alcyonacea	Coralliidae	Corallium		Di Tracey	16/05/2017	10/01/2016 7:03	-44.6	184.7	860		10/01/2016 8:26	1
		ORH	SOE	TWL	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	Paragorgia		Phil Alderslade	16/05/2017	18/01/2016 13:53	-44.4	185.3	1387		18/01/2016 16:54	1
		LIN	SOU	TWL	Cnidaria	Anthozoa	Alcyonacea	Coralliidae	Corallium		Di Tracey	16/05/2017	19/11/2015 18:30	-46.9	165.6	580		19/11/2015 19:36	3
		LIN	SOU	TWL	Cnidaria	Anthozoa	Alcyonacea	Coralliidae	Corallium		Di Tracey	16/05/2017	19/11/2015 18:30	-46.9	165.6	580		19/11/2015 19:36	3
95240	3281	ORH	CET	TWL	Cnidaria	Anthozoa	Alcyonacea	Isididae	Acanella		Phil Alderslade	16/05/2017	16/11/2015 12:07	-37.3	169	1045		16/11/2015 17:47	3
95240	3281	ORH	CET	TWL	Cnidaria	Anthozoa	Alcyonacea	Isididae	Acanella		Phil Alderslade	16/05/2017	16/11/2015 12:07	-37.3	169	1045		16/11/2015 17:47	3
95239	3280	ORH	CET	TWL	Cnidaria	Anthozoa	Antipatharia	Leiopathidae	Leiopathes	cf. bullosa	Rob Stewart	20/03/2017	16/11/2015 12:07	-37.3	169	1045		16/11/2015 17:43	3
95239	3280	ORH	CET	TWL	Cnidaria	Anthozoa	Antipatharia	Leiopathidae	Leiopathes	cf. bullosa	Rob Stewart	20/03/2017	16/11/2015 12:07	-37.3	169	1045		16/11/2015 17:43	3
95235	3276	ORH	CET	TWL	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	Calyptrophora	inornata	Phil Alderslade	16/05/2017	27/11/2015 6:42	-37.4	167.4	963	925	27/11/2015 7:59	3
95231	3272	ORH	CET	TWL	Cnidaria	Anthozoa	Antipatharia	Leiopathidae	Leiopathes	acanthophora	Rob Stewart	20/03/2017	27/11/2015 6:42	-37.4	167.4	963	925	27/11/2015 8:05	4
95231	3272	ORH	CET	TWL	Cnidaria	Anthozoa	Antipatharia	Leiopathidae	Leiopathes	acanthophora	Rob Stewart	20/03/2017	27/11/2015 6:42	-37.4	167.4	963	925	27/11/2015 8:03	4
95226	3267	ORH	HOWE	TWL	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	Chrysogorgia		Phil Alderslade	16/05/2017	14/12/2015 18:37	-35.9	165.5	1109	1063	14/12/2015 20:23	1
95223	3264	ORH	HOWE	TWL	Cnidaria	Anthozoa	Alcyonacea	Isididae	Keratoisis		Phil Alderslade	16/05/2017	14/12/2015 18:37	-35.9	165.5	1109	1063	14/12/2015 19:18	3
95221	3262	ORH	HOWE	TWL	Cnidaria	Anthozoa	Alcyonacea	Plexauridae	Anthomuricea		Phil Alderslade	16/05/2017	14/12/2015 18:37	-35.9	165.5	1109	1063	14/12/2015 20:25	1
		ORH	CET	TWL	Cnidaria	Anthozoa	Alcyonacea	Plexauridae			Phil Alderslade	16/05/2017	17/12/2015 0:14	-37.3	168.7	1055	1027	17/12/2015 1:34	3
		ORH	LOUR	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	Solenosmilia	variabilis	Di Tracey	16/05/2017	2/01/2016 21:00	-38.4	192.3	1142	1102	2/01/2016 22:07	2
					Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	Solenosmilia	variabilis	Di Tracey	16/05/2017						6/01/2016 9:44	3
		HAK	SOU	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophyllidae	Desmophyllum	dianthus	Di Tracey	16/05/2017	11/12/2015 18:47	-48.9	166.5	520	446	11/12/2015 20:16	1

NWA Cat. No.	OSD No.	Target species	FMA	Fishing method	Phylum	Class	Order	Family	Genus	Species	Determiner	Determined Date	Event end	Latitude	Longitude	Depth 1	Depth 2	Image timestamp	Image rating
		HAK	SOU	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Goniocorella	dumosa	Di Tracey	16/05/2017	11/12/2015 18:47	-48.9	166.5	520	446	11/12/2015 20:17	1
		HAK	SUB	TWL	Cnidaria	Anthozoa	Scleractinia	Flabellidae	Flabellum		Di Tracey	16/05/2017	12/12/2015 16:25	-49	166.7	459	570	12/12/2015 17:37	1
		WWA	SUB	TWL	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	Thouarella		Phil Alderslade	16/05/2017	18/12/2015 20:00	-49	166.8	462	498	18/12/2015 21:19	1
		WWA	SUB	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Desmophyllum	dianthus	Di Tracey	16/05/2017	18/12/2015 20:00	-49	166.8	462	498	18/12/2015 21:11	1
		WWA	SUB	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Desmophyllum	dianthus	Di Tracey	16/05/2017	18/12/2015 20:00	-49	166.8	462	498	18/12/2015 21:08	1
		WWA	SUB	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Goniocorella	dumosa	Di Tracey	16/05/2017	18/12/2015 20:00	-49	166.8	462	498	18/12/2015 21:08	1
		WWA	SUB	TWL	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	Lepidotheca		Di Tracey	16/05/2017	18/12/2015 20:00	-49	166.8	462	498	18/12/2015 21:18	1
		JMA	CEW	TWL	Cnidaria	Anthozoa	Antipatharia	Leiopathidae	Leiopathes		Di Tracey	16/05/2017	15/01/2016 4:00	-39.7	173.3	102		1/01/2016 18:10	3
		JMA	CEW	TWL	Cnidaria	Anthozoa	Antipatharia	Leiopathidae	Leiopathes		Di Tracey	16/05/2017	15/01/2016 4:00	-39.7	173.3	102		1/01/2016 18:09	2
		HAK	SUB	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Desmophyllum	dianthus	Di Tracey	16/05/2017	18/01/2016 15:25	-49	166.7	480	479	18/01/2016 16:38	2
		SWA	SOU	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Desmophyllum	dianthus	Di Tracey	16/05/2017	29/01/2016 20:10	-48.9	166.7	450	273	29/01/2016 22:48	3
		ORH	SOE	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Goniocorella	dumosa	Di Tracey	16/05/2017	19/01/2016 15:09	-43.1	186.1			19/01/2016 16:26	1
					Cnidaria	Anthozoa	Alcyonacea	Primnoidae			Phil Alderslade	16/05/2017						17/01/2016 11:05	3
					Cnidaria	Anthozoa	Alcyonacea	Primnoidae			Phil Alderslade	16/05/2017						24/01/2016 1:05	3
					Cnidaria	Anthozoa	Antipatharia	Leiopathidae	Leiopathes		Di Tracey	16/05/2017						20/01/2016 8:34	3
					Cnidaria	Anthozoa	Antipatharia	Schizopathidae	Bathypathes		Di Tracey	16/05/2017						11/01/2016 7:51	3
					Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Stephanocyathus		Di Tracey	16/05/2017						24/01/2016 1:00	3
		HAK	SUB	TWL	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	Thouarella		Phil Alderslade	16/05/2017	7/02/2016 15:50	-49	166.7	554		7/02/2016 20:23	3
		HAK	SUB	TWL	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	Thouarella		Phil Alderslade	16/05/2017	12/02/2016 20:45	-49	166.7	475	493	12/02/2016 21:27	3
		HAK	SUB	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Desmophyllum	dianthus	Di Tracey	16/05/2017	19/02/2016 20:31	-49	166.7	457	449	19/02/2016 22:03	3
		HAK	SUB	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Desmophyllum	dianthus	Di Tracey	16/05/2017	19/02/2016 20:31	-49	166.7	457	449	19/02/2016 22:03	3
		SWA	SOU	TWL	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	Thouarella		Phil Alderslade	16/05/2017	1/03/2016 12:25	-48.8	166.4	450	345	1/03/2016 13:10	3
		HAK	SUB	TWL	Cnidaria	Anthozoa	Scleractinia	Flabellidae	Flabellum		Di Tracey	16/05/2017	1/03/2016 20:15	-49	166.7	480	465	1/03/2016 21:34	3
		ORH	CHA	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Stephanocyathus		Di Tracey	16/05/2017	18/04/2016 10:28	-40	167.9	890	927	18/04/2016 11:56	2
		ORH	CHA	TWL	Cnidaria	Anthozoa	Alcyonacea	Isididae			Phil Alderslade	16/05/2017	19/04/2016 19:07	-39.8	168.2	929	1007	19/04/2016 21:54	2
		ORH	CET	TWL	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae			Phil Alderslade	16/05/2017	20/04/2016 18:45	-39.7	167.2	1100	1050	20/04/2016 20:11	2
		ORH	CET	TWL	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae			Phil Alderslade	16/05/2017	20/04/2016 18:45	-39.7	167.2	1100	1050	20/04/2016 20:10	2
		ORH	CET	TWL	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	Thouarella		Phil Alderslade	16/05/2017	20/04/2016 18:45	-39.7	167.2	1100	1050	20/04/2016 20:00	2
		ORH	CET	TWL	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	Thouarella		Phil Alderslade	16/05/2017	20/04/2016 18:45	-39.7	167.2	1100	1050	20/04/2016 19:58	2
		HOK	SEC	TWL	Cnidaria	Anthozoa	Scleractinia	Flabellidae	Flabellum		Di Tracey	16/05/2017	13/05/2016 14:00	-42.9	173.7		477	13/05/2016 19:43	2
					Cnidaria	Anthozoa	Alcyonacea	Primnoidae	Thouarella		Phil Alderslade	16/05/2017						20/05/2016 20:46	3
		WWA	SEC	TWL	Cnidaria	Anthozoa	Alcyonacea	Isididae	Isidella		Phil Alderslade	16/05/2017	26/06/2016 5:40	-43.5	174.6	395	377	26/06/2016 13:27	3
		SQU	SEC	TWL	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae			Di Tracey	16/05/2017	13/06/2016 17:49	-44.2	175.8	222	214	13/06/2016 20:51	1
106482	3401	SQU	SEC	TWL	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	Caryophyllia	profunda	Di Tracey	1/05/2017	14/06/2016 17:48	-44.1	175.8	210	203	14/06/2016 19:36	1
106476	3395	SQU	SEC	TWL	Cnidaria	Anthozoa	Scleractinia	Flabellidae	Flabellum	knoxii	Di Tracey	1/05/2017	15/06/2016 18:09	-44.6	172.6	323	338	15/06/2016 21:32	1
		SNA	AKE	BLL	Annelida	Polychaeta	Sabellida	Serpulidae			Di Tracey	16/05/2017	14/01/2016 5:58	-36.1	174.9	50	50	14/01/2016 8:00	3
		SNA	AKE	BLL	Annelida	Polychaeta	Sabellida	Serpulidae			Di Tracey	16/05/2017	14/01/2016 5:58	-36.1	174.9	50	50	14/01/2016 8:00	3
		SNA	AKE	BLL	Annelida	Polychaeta	Sabellida	Serpulidae			Di Tracey	16/05/2017	14/01/2016 5:58	-36.1	174.9	50	50	14/01/2016 8:00	3
		SNA	AKE	BLL	Annelida	Polychaeta	Sabellida	Serpulidae			Di Tracey	16/05/2017	14/01/2016 5:58	-36.1	174.9	50	50	14/01/2016 7:59	1
		BYX	AKW	TWL	Arthropoda	Maxillopoda					Di Tracey	16/05/2017	10/08/2015 13:22	-34.6	168.9	587	782	10/08/2015 14:16	3
		SNA	AKE	BLL	Bryozoa						Di Tracey	16/05/2017	17/12/2012 5:35	-36.4	174.9	33	33	17/12/2015 9:17	3
		SNA	AKE	BLL	Bryozoa						Di Tracey	16/05/2017	17/12/2012 5:35	-36.4	174.9	33	33	17/12/2015 9:17	2
		SNA	AKE	BLL	Bryozoa						Di Tracey	16/05/2017	17/12/2012 5:35	-36.4	174.9	33	33	17/12/2015 9:17	2
		SQU	SOU	TWL	Bryozoa						Di Tracey	16/05/2017	22/01/2016 20:00	-48.2	168.2	150	146	22/01/2016 21:39	3
		SQU	SOU	TWL	Bryozoa						Di Tracey	16/05/2017	22/01/2016 20:00	-48.2	168.2	150	146	22/01/2016 21:39	3

NIWA Cat. No.	OSD No.	Target species	FMA	Fishing method	Phylum	Class	Order	Family	Genus	Species	Determiner	Determined Date	Event end	Latitude	Longitude	Depth 1	Depth 2	Image timestamp	Image rating
		SQU	SOU	TWL	Bryozoa						Di Tracey	16/05/2017	18/02/2016 14:40	-48.8	167.3	266	137	19/02/2016 17:51	1
		SQU	SOI	TWL	Bryozoa						Di Tracey	16/05/2017	7/04/2016 17:09	-50.4	167.5	162	151	7/04/2016 17:51	3
		HAK	CHA	TWL	Cnidaria	Anthozoa	Pennatulacea				Di Tracey	16/05/2017	6/07/2015 17:22	-41	170.4	643	628	6/07/2015 21:02	4
		JMA	CEW	TWL	Cnidaria	Hydrozoa	Leptothecata	Aglaopheniidae			Diana Macpherson	17/07/2017	26/11/2015 10:34	-39.8	173.5	83	77	26/11/2015 14:49	3
		JMA	CEW	TWL	Cnidaria	Hydrozoa	Leptothecata	Aglaopheniidae			Diana Macpherson	17/07/2017	26/11/2015 10:34	-39.8	173.5	83	77	26/11/2015 14:46	3
		JMA	CEW	TWL	Cnidaria	Hydrozoa	Leptothecata	Aglaopheniidae			Diana Macpherson	17/07/2017	26/11/2015 10:34	-39.8	173.5	83	77	26/11/2015 14:44	3
		JMA	CEW	TWL	Cnidaria	Hydrozoa	Leptothecata	Aglaopheniidae			Diana Macpherson	17/07/2017	26/11/2015 10:34	-39.8	173.5	83	77	26/11/2015 14:43	2
		JMA	CEW	TWL	Cnidaria	Hydrozoa	Leptothecata	Aglaopheniidae			Diana Macpherson	17/07/2017	19/12/2015 10:10	-38.6	173.8	109	94	19/12/2015 11:56	3
		JMA	CEW	TWL	Cnidaria	Hydrozoa	Leptothecata	Aglaopheniidae			Diana Macpherson	17/07/2017	19/12/2015 10:10	-38.6	173.8	109	94	19/12/2015 11:55	3
		JMA	AKW	TWL	Cnidaria	Hydrozoa	Leptothecata	Aglaopheniidae			Diana Macpherson	17/07/2017	21/12/2015 18:50	-38.2	173.9	116	116	21/12/2015 19:45	3
		JMA	CEW	TWL	Cnidaria	Hydrozoa	Leptothecata	Aglaopheniidae			Diana Macpherson	17/07/2017	18/12/2015 14:40	-39.7	173.5	74	77	18/02/2016 19:29	3
		JMA	CHA	TWL	Cnidaria	Hydrozoa	Leptothecata	Aglaopheniidae			Diana Macpherson	17/07/2017	17/01/2016 14:45	-40.2	173.9	113	93	17/01/2016 17:48	1
		SQU	SOU	TWL	Cnidaria	Hydrozoa	Leptothecata	Aglaopheniidae			Diana Macpherson	17/07/2017	26/01/2016 20:01	-48.8	167.2	190	184	26/01/2016 21:50	3
		SQU	SOU	TWL	Cnidaria	Hydrozoa	Leptothecata	Aglaopheniidae			Diana Macpherson	17/07/2017	26/01/2016 20:01	-48.8	167.2	190	184	26/01/2016 21:49	1
		SQU	SOU	TWL	Cnidaria	Hydrozoa	Leptothecata	Aglaopheniidae			Diana Macpherson	17/07/2017	30/01/2016 19:53	-48.8	167	189	165	30/01/2016 21:21	3
		SQU	SOU	TWL	Cnidaria	Hydrozoa	Leptothecata	Aglaopheniidae			Diana Macpherson	17/07/2017	30/01/2016 19:53	-48.8	167	189	165	30/01/2016 21:20	1
		SQU	SOU	TWL	Cnidaria	Hydrozoa	Leptothecata	Aglaopheniidae			Diana Macpherson	17/07/2017	31/01/2016 10:59	-48.8	166.8	213	218	31/01/2016 12:47	3
		SQU	SOU	TWL	Cnidaria	Hydrozoa	Leptothecata	Aglaopheniidae			Diana Macpherson	17/07/2017	31/01/2016 10:59	-48.8	166.8	213	218	31/01/2016 12:46	1
					Echinodermata	Crinoidea					Di Tracey	16/05/2017					24/01/2016 1:01	3	
95175	3192	BYX	AKW	TWL	Echinodermata	Echinoidea	Cidaroida	Histicaridae	Histicaridaris		Owen Anderson	5/05/2016	9/08/2015 16:15	-34.6	168.9	561	705	9/08/2015 17:54	2
95255	3326	SQU	SOI	TWL	Porifera						Di Tracey	16/05/2017	24/02/2016 12:58	-50.9	166.5	171	249	24/02/2016 17:23	3
95255	3326	SQU	SOI	TWL	Porifera						Di Tracey	16/05/2017	24/02/2016 12:58	-50.9	166.5	171	249	24/02/2016 17:23	3
95253	3323	SQU	SOI	TWL	Porifera						Di Tracey	16/05/2017	19/03/2016 8:23	-50	166.2	191	182	19/03/2016 16:21	3
		JMA	CHA	TWL	Porifera	Demospongiae					Di Tracey	16/05/2017	12/01/2016 12:00	-40.4	173.9	97	95	12/01/2016 17:13	1
95236	3277	ORH	CET	TWL	Porifera	Hexactinellida	Hexactinosida	Tretodictyidae	Hexactinella	simplex	Michelle Kelly	1/06/2016	27/11/2015 6:42	-37.4	167.4	963	925	27/11/2015 7:59	3
95176	3193	BYX	AKW	TWL	Porifera	Hexactinellida	Lyssacosida	Rossellidae	Caulophacus	incertae sedis	Henry Reiswig	15/09/2015	11/08/2015 8:43	-34.6	168.9	566	981	11/08/2015 8:03	3
		BYX	AKW	TWL	Porifera	Hexactinellida	Lyssacosida	Rossellidae	Caulophacus		Di Tracey	16/05/2017	11/08/2015 8:43	-34.6	168.9	566	981	11/08/2015 8:04	3
		ORH	LOUR	TWL	Porifera						Di Tracey	16/05/2017	4/07/2015 14:10	-40.7	194.6	670	1080	4/07/2015 15:07	3
		ORH	LOUR	TWL	Porifera						Di Tracey	16/05/2017	4/07/2015 14:10	-40.7	194.6	670	1080	4/07/2015 15:07	3
		ORH	LOUR	TWL	Porifera						Di Tracey	16/05/2017	10/07/2015 22:49	-41.8	196.3			10/07/2015 23:53	3
		ORH	LOUR	TWL	Porifera						Di Tracey	16/05/2017	10/07/2015 22:49	-41.8	196.3			10/07/2015 23:51	2
		ORH	LOUR	TWL	Porifera						Di Tracey	16/05/2017	11/07/2015 19:57	-41.4	195.7	807	1038	11/07/2015 21:12	3
		ORH	LOUR	TWL	Porifera						Di Tracey	16/05/2017	11/07/2015 19:57	-41.4	195.7	807	1038	11/07/2015 21:11	2
		ORH	LOUR	TWL	Porifera						Di Tracey	16/05/2017	4/01/2016 9:32	-40.7	194.6	935	953	4/01/2016 10:08	2