INT2019-04 Identification and storage of cold-water coral bycatch specimens (1 July 2021–30 June 2022)

Milestone 11. Final Annual Report

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Climate, Freshwater & Ocean Science

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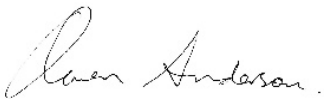	Reviewed by:	Owen Anderson
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At sea digital image of gorgonian coral Primnoa spp. caught by bottom trawl targeting orange roughy on the Challenger Plateau (TRIP6567). [Observer, FNZ].

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Executive summary

Many protected coral species occur as bycatch in commercial fisheries around New Zealand. The Conservation Services Programme (CSP) of the Department of Conservation (DOC) recognise that Government Fisheries Observers on commercial fishing vessels are not always able to identify this bycatch at sea with high precision (especially to species level), with the confirmation of species requiring identification from a coral taxonomist in many cases. For this reason, a research project "Identification and storage of cold-water coral bycatch specimens" was initiated in 2016 (previously INT201503 - DOC16307, currently INT201904 - DOC20303), to determine, through the examination of returned coral specimens and specimen images, the taxon and the provenance of corals bycaught in New Zealand fisheries.

This report, for the third and final year of the Project (2022/23), summarises the sample and image identifications of all observed coral bycatch collected under the project during the period 1 July 2021 to 30 June 2022. A total of 54 physical specimens in 48 samples were collected by Observers and returned for identification during the reporting period. Sub-samples from each live specimen were taken for future genetic studies (n=32) not all specimens had sufficient live tissue for subsampling. Additionally, there were four historical physical samples (five specimens) collected by Observers with revised higher-level identifications made during the reporting period. A total of four research trawl-collected specimens in four samples are also reported here. Corrected identifications (where the Observer identification is revised by a coral expert), have been made where necessary in the COD database, with both the original and amended identifications retained. All raw data extracts are provided in the Appendices and as separate excel files.

There were 290 specimens identified from digital images of catch reported as coral during the reporting period; 170 were protected coral taxa, and while Observers provided a label showing trip and tow number information for only 88 of the 273 processed images, all images were able to be georeferenced. The remaining 120 specimens were of non-protected corals or other non-coral taxa.

Data summaries of protected coral by-catch occurring in New Zealand region fisheries are presented by Fisheries Management Areas (FMA), fishing method, and target fishery. The greatest number of protected coral specimen counts by images came from the South-East (SOE, FMA4) and South-East Coast (SEC, FMA3) regions. Most were taken by bottom trawl operations targeting the deep-sea species orange roughy and hoki. Similarly, most protected corals identified from physical specimens came from Auckland West (AKW, FMA9) bottom trawl operations targeting orange roughy.

While no formal analyses of accuracy have been carried out during this reporting period, between Observer and NIWA expert identifications, brief non-statistical summaries of accuracy are provided to help inform Observers.

We have continued to provide information to brief Observers and give input into coral guide resources, including the updated and revised Deepsea Coral Guide, to help improve overall accuracy of protected coral species identification at-sea. As in previous reports, we stress in our recommendations to Observers the use of labels when images are taken, and consistency in specimen label and benthic form recording processes.

1 Background

Deep-sea protected coral samples taken as bycatch in commercial fishery operations are collected by government Observers on commercial fishing vessels. Over time, NIWA has received these coral bycatch samples and has been contracted to provide identifications. All such corals are identified by experts to the lowest feasible taxonomic level, counted, and the information reported in the relevant databases. Since 2016, this information, along with associated fishing data including fishing method, fishery area, and target species, have been presented in reports. All raw data have also been provided to CSP in spreadsheet form.

Data from this research helps to better characterise interactions between protected corals and commercial fishing activities (Tracey et al. 2011; Clark et al. 2019). It provides vital baseline information that can help to better inform research underpinning marine protection planning including habitat suitability modelling (e.g., Anderson et al. 2014; Rowden et al. 2017; Georgian et al. 2019), benthic risk assessments (Clark et al. 2014), and management of benthic marine protected species. It also helps to pave the way forward towards a more comprehensive mitigation framework to be implemented to protect cold-water corals in New Zealand waters.

The research has had a similar focus to earlier CSP Projects and to Fisheries New Zealand (FNZ) Projects DAE201804 and BEN202103 *Identification of benthic invertebrate samples from research trawls and observer trips*, (Mills et al. 2020; Schnabel et al. 2021), all of which provide the identification and enumeration of benthic invertebrate bycatch in New Zealand waters.

For this three-year contract for CSP NIWA has, along with carrying out the identification of specimens, also provided:

- the identification and georeferenced labelling of images and the digital storage there-of, and
- the sub-sampling of protected coral tissue material for genetic studies (see Bilewitch, 2022 and Bilewitch & Tracey 2020a, 2020b).

The contract provides for up to 200 protected coral samples (physical specimens) and 200 specimen images to be identified per annum. For this project, where time allowed, a backlog of historical coral samples collected by Observers were identified, but priority was first given to recent Observer collected samples from within New Zealand's Exclusive Economic Zone (EEZ), for the current year and historical, followed by research trawl survey samples, then high-sea samples. The number of physical coral specimens identified has often exceeded 200 in the past because of historic samples and/or research trawl survey samples being identified in addition to recently collected Observer samples, or occasions when international coral taxonomists have visited the NIWA Invertebrate Collection (NIC) – as part of or separate to this project.

This project does not report on coral specimens by images photographed from the high-seas.

With similar objectives the project is continuing for the next three-years to identify fisheries collections of protected corals bycatch (INT2022-03 – DOC23303 *Identification, storage and genetics of cold-water coral bycatch specimens*). The purpose is to continually improve information on the nature of coral bycatch reported and collected through the Observer Services Programme.

2 Objectives

The overall objective set by the Conservation Services Programme (CSP) service requirements is as follows: to determine which protected cold-water coral species are captured in commercial fisheries, and the mode of their capture, while also building on the New Zealand cold-water coral collection sample size for use in future research.

The specific objectives for this project (INT201904 - DOC20303) are:

1. To determine, through examination of returned protected cold-water coral specimens and images, 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.
3. To assist with Observer training and the development/improvement of Observer training resources.

There are several milestones for this project and Milestones 1–10 have now been completed (e.g., see Macpherson et al. 2021, 2022 and Mills et al. 2022). Here we report on Milestone 11: Final Annual Report for the 2022/2023 reporting year detailing all corals identified by specimens and images bycaught during the period 1 July 2021 – 30 June 2022.

3 Methods

3.1 Objective 1

Determine, through examination of returned protected cold-water coral specimens and images, the taxon, and where possible the provenance of cold-water corals killed in New Zealand fisheries (for returned dead specimens).

There are three key activities for specific objective 1:

3.1.1 Identification of returned protected coral specimens

The deep-sea coral bycatch that could not be identified by Observers at sea were retained (whole specimens or sub-samples of the specimens) and delivered to NIWA for identification. A similar method used to process bycatch of invertebrates (excluding protected corals) collected by Observers under a Fisheries New Zealand (FNZ) project (*DAE2018-04,* now *BEN202103)* (Mills et al. 2020; Schnabel et al. 2021), was followed and is summarised.

The corals were thawed, sorted into main groups and initially identified to coarse taxonomic level (mostly to order and family level), then returned to frozen storage, fixed in ethanol, or dried where appropriate. The tasks of fixing and preserving samples, providing containment (jar or pail storage), documenting samples (station numbering, labelling) and high level sorting (dividing samples into major or minor taxonomic groups in the laboratory), were all carried out under the FNZ Data Custodianship Services project DAT2016-01P. Sample data were entered into the web-interfaced NIWA Observer Samples Database (version 2.3.1; 2020).

High-seas samples were not differentiated from within-EEZ 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 at this stage. Once the frozen sacks have thawed it is most efficient to process all of their contents rather than separating and refreezing high-seas samples. As such, high-seas samples are partially processed within this project. The high-seas samples are a very useful contribution to habitat suitability modelling exercises in the high-seas (e.g., see Georgian et al. 2019).

A catalogue of all samples/specimens received by NIWA was provided to the NIWA Invertebrate Collection (NIC) Manager. Data from OSD were uploaded into the NIC Specify database *niwainvert* and the specimens were curated for formal taxonomic identification.

Experts then identified all corals to the species level wherever possible and when this was not possible, to genus or family level, and assigned the most appropriate three-letter Ministry for Primary Industries (MPI) code (noting that coral codes have not yet been allocated for all coral taxa recognised by experts). Specimen handling followed NIWA procedures for identifying specimens housed in the NIC. NIWA currently manages specimens according to the "Guidelines for the care of natural history collections" (Committee on Common Philosophies and Objectives, 2010). NIWA also has its own collection policy document: "NIWA Marine Invertebrate Collection Policy and Procedures", which also guided the process. Specimens retained in the NIC are held in stewardship for DOC.

Expert identification of the samples was carried out and updated species names and counts were entered into *niwainvert*. See Table 3-1 for the list of experts that carried out identifications.

Table 3-1: Experts, their affiliation and their speciality.

Expert	Affiliation	Taxon Group
Di Tracey	NIWA	Scleractinia, gorgonian octocorals
Peter Marriott	NIWA	Stylasteridae, Coralliidae
Rob Stewart	NIWA	Antipatharia
Jaret Bilewitch	NIWA	Plexauridae, Acanthogorgiidae, other gorgonian octocoral groups
Gustav Kessel	Independent	Soft corals and related gorgonian groups
Diana Macpherson	NIWA	Hydrozoa (excluding Stylasteridae)
Dennis Gordon	NIWA	Bryozoa
Sadie Mills	NIWA	Ophiuroidea
Dr Stephen Cairns	Smithsonian Institution, USA	Primnoidae
Dr Marcelo Kitahara	Universidade Federal de São Paulo, Brazil	Scleractinia
Dennis Opresko	Smithsonian Institution, USA	Antipatharia
Dr Phil Alderslade	Previously CSIRO, Hobart, Australia	Keratoisididae

3.1.2 Updating species identifications of physical specimens in the FNZ Centralised Observer Database (COD)

Sample information of expert-identified coral specimens collected by Observers for this reporting period were extracted from Specify database *niwainvert* and provided to the COD database manager for loading and table updates. NIWA manages the COD database for FNZ and it is regularly updated with revised identifications when corals are returned from sea (Tracey & Mills 2016). In this process the generic three-letter MPI codes initially used by Observers to record unidentified corals, are

updated with revised codes based on the expert identification. For example, SIA (Scleractinia) to COF (*Flabellum* spp. cup coral). Notes are also added with the expert identification and date added to COD.

These updates made to COD allow for the potential interactions between individual coral taxa and fishing gear to be better quantified, and therefore help to identify factors that may have contributed to coral mortality.

3.1.3 Processing and identification of corals from images

A document prepared for Observers collecting coral data at sea was provided to CSP and, following their approval, forwarded to the Observer Services Unit of the FNZ Observer Programme in early 2017 (*Instructions to observers when carrying out at-sea protected coral data collection* (Tracey & Mills 2016)). Specifically, it was emphasised that images were to be captured in a well-lit area using a plain grey background if possible, and a reference size scale, with a specimen label showing trip, species code, and tow numbers and the Observer's name included in the image. The name of the Observer taking the image was to be retained, as this is important for feedback, training, and acknowledgement.

The digital images and metadata collected by Observers for this reporting period were obtained from the FNZ Observer Programme by a CSP Team programme coordinator and transferred to NIWA, in November 2022, with a further, complete set delivered in March 2023.

Identifications of the specimens and their associates, such as another coral attached to the specimen, shown in the images were carried out by coral and non-coral experts (Table 3-1). Since images are identified in a separately timed process to the identification of physical specimens, all images are identified by experts regardless of whether a physical specimen associated with an image was returned or not.

The location of the specimens captured in the images were determined (where possible), using the trip and tow numbers shown on the label in the image to extract tow coordinates from COD. Specimens in images that were determined to be from outside New Zealand's EEZ (i.e., collected within high-sea Fishery Management Area's: Challenger Plateau (CET) and Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR) management area) were not identified by experts, with the exception of a few images that were identified prior to georeferencing.

Efforts were made to determine tow numbers, if they were not shown on the labels in the Observer images, by using the trip number and the date and time stamp of images (extracted from the digital image properties) together with the FNZ photographic logs and 'Benthic Materials' forms. Location details were extracted for the trip and the likely tow number from the COD database. By applying these methods, we were, with a reasonable degree of confidence, able to assign a tow number to all such images and therefore produce georeferenced images. Metadata for the images, including provenance data, were then assembled manually in a spreadsheet. The following metadata were embedded into each image file where available:

- expert ID in the form of taxonomic name (species, genus or family level);
- trip and tow number;
- initial Observer ID and expert ID in the form of three-letter MPI species code;

- specimen count,
- specimen comments,
- keywords relevant to the subject of the image;
- the NIWA Invertebrate Collection catalogue number (where applicable);
- image rating (where the best rating is 1 (very good quality) and the worst is 5 (very poor quality)).

An image rating classification was developed specifically for this project as there is no universal standard (International Press Telecommunications Council 2019). Image ratings help indicate the quality and usefulness of an image and, as part of the workflow, enable the images to be sorted and filtered at a later point in time. Table 3-2 shows the image rating classification used and outlines the factors taken into consideration when assigning a rating to an image.

Table 3-2: The classification system used to assign a rating to an image.

Image rating	Classification
1	Very good quality. The specimen is in focus and the whole specimen has been photographed. Good lighting and background. The image includes a label with complete data. There may also be a scale present. The specimen weight may also be shown in the image.
2	Good quality. All the specimen, or part of the specimen is in focus. The lighting and background is sufficient. The image includes a label with some or complete data. May include more than one coral specimen. There may also be a scale present. The specimen weight may also be shown in the image.
3	Average quality. All the specimen, or part of the specimen is in focus. The image may include a label with some data, and a specimen weight may be shown. Insufficient lighting and background. May include more than one coral specimen.
4	Bad quality. All the specimen, or part of the specimen may be in focus, or in focus enough to be able to determine what it is. There is no label in the image. It is not photographed against a good background with a scale and good lighting, and/or photographed at an unhelpful angle. The image is of an aggregated group of corals and other specimens, so it is not clear what the subject of the image is. The image is of a non-coral.
5	Very bad quality. The specimen, or part of the specimen is out of focus and is not able to be identified to a sufficient taxonomic level as a result. There is no label in the image. It is not photographed against a good background with a scale and good lighting, and/or photographed at an unhelpful angle. The image is of an aggregated group of corals and other specimens, so it is not clear what the subject of the image is. The image is of a non-coral.

Using the ACDSee Photo Studio Professional 2020 (version 13.0) software to manage the metadata information, data for each image was either added manually into the relevant field or assigned from a drop down 'picklist'. These data were then embedded in the image file.

Finally, trip, tow and fishery data sourced from COD for each specimen by image were added to the spreadsheet. Data included position (the start and end coordinates of the tow that sampled the photographed coral), depth (minimum and maximum depths), along with the collected date, fishing method, target species, and Observer-reported Fisheries Management Area in which the coral was caught (see Figure 4-1).

3.2 Objective 2

Collect sub-samples of all protected cold-water coral specimens for genetic analysis in future.

Tissue sub-samples were taken from all live-collected protected coral samples provided to NIWA by Observers. The sub-samples were stored with their corresponding NIC registration label in standard vials in 99% high grade absolute ethanol. The subsamples are currently stored in the NIC wet collection along with the parent samples.

3.3 Objective 3

Assist with Observer training resources.

To meet this objective, resources such as the Instructions to observers when carrying out at-sea protected coral data collection (Tracey & Mills 2016), and any recommendations which have been highlighted in these reports, are regularly passed on to CSP representatives when requested to assist with Observer training.

Input into the development and improvement of Observer training resources such as revised guide material and expert review of material has also been provided.

4 Results

4.1 Objective 1: Determine, through examination of returned protected cold-water coral specimens and images, the taxon, and where possible the provenance of cold-water corals killed in New Zealand fisheries (for returned dead specimens).

4.1.1 Identification of returned protected coral specimens

During the reporting period 1 July 2021 to 30 June 2022, NIWA received and processed 48 Observer-collected protected coral samples containing 54 specimens, and 4 historical (i.e., collected prior to the current reporting year) samples (5 specimens), identified since delivery of the previous annual report (Macpherson et al. 2022).

A summary of these 52 samples (59 specimens) identified by experts are provided in extracts from the NIWA Invertebrate Collection (NIC) Specify Database *niwainvert* (Appendix A (a–b)). One of the historical samples was a black coral specimen collected in 1998, for which the identification was updated, and two were Anthothelidae specimens collected in 2005 and 2006 determined by Jaret Bilewitch and Gustav Kessel (see Table 3–1) while identifying soft coral samples in the NIWA Invertebrate Collection.

Additionally, identifications were made for 3 research trawl-collected protected coral samples (3 specimens), collected between July 2021 and June 2022, and 1 historical trawl survey sample (1 specimen) collected in 2018. These trawl survey samples were included for identification due to the low number of returned Observer collected specimens as stated in the contract for this project (Attachment 1 – NWA Expanded Methodology, section 1.3: "…priority will always be given to the Observer collected protected corals, then to research trawl samples, then ET samples."). It is time-efficient for the experts to look at the specimens simultaneously. Data for these samples are included in Appendix A(c).

While no formal 'analyses of accuracy' have been carried out between the Observer and NIWA expert identifications, such as those presented in Parker et al. (2009), a non-statistical summary of the accuracy of Observer ID is presented for this period and will be useful for on-going Observer training exercises. Noting that the sample sizes are small, for the current reporting year Observers correctly identified 21 of the 48 samples, with one correctly identified to species level (*Desmophyllum dianthus* - DDI), 13 correctly identified to genus level (*Chrysogorgia* spp. - CHR, *Iridogorgia* spp. - IRI, *Metallogorgia* spp. - MTL, *Keratoisis* spp. - BOO, *Paragorgia* spp. - PAB, *Calyptrophora* spp. - CTP, *Leiopathes* spp. - LEI and *Flabellum* spp. - COF), three to family or family group level (stony cup corals - CUP, Primnoidae – PRI and bamboo corals - ISI), two to order level (Gorgonian corals - GOC) and one to phylum level (unidentified coral code - COU). This indicates a 42% accuracy of Observer code use overall for the physical samples, regardless of the taxonomic level of the ID (see colour coding and final column of Appendix A(a)).

In the 2022 report observer identification accuracy was higher (60% vs 42% this year) but identifications were to only to a high taxonomic level with 7 identified only to phylum level and only 1 to genus or species (Macpherson et al., 2022) compared to the 14 correct at genus and species level and only 1 to phylum level this year.

Twenty-four of the samples were incorrectly identified by Observers, however two of the identifications were within the correct coral class, four in the correct order and seven in the correct family. Three of the codes used were UNF (Unidentifiable) or UNI (Unidentified), i.e., the Observer could not identify the sample.

Three physical specimens returned this year for verification were thecate hydroids, *Cryptolaria prima* that were mistaken for unidentified coral (UNI, one sample) or *Thouarella* coral (THO, 2 samples). The two identified as THO were photographed by observers and are shown in Fig. 4-1.

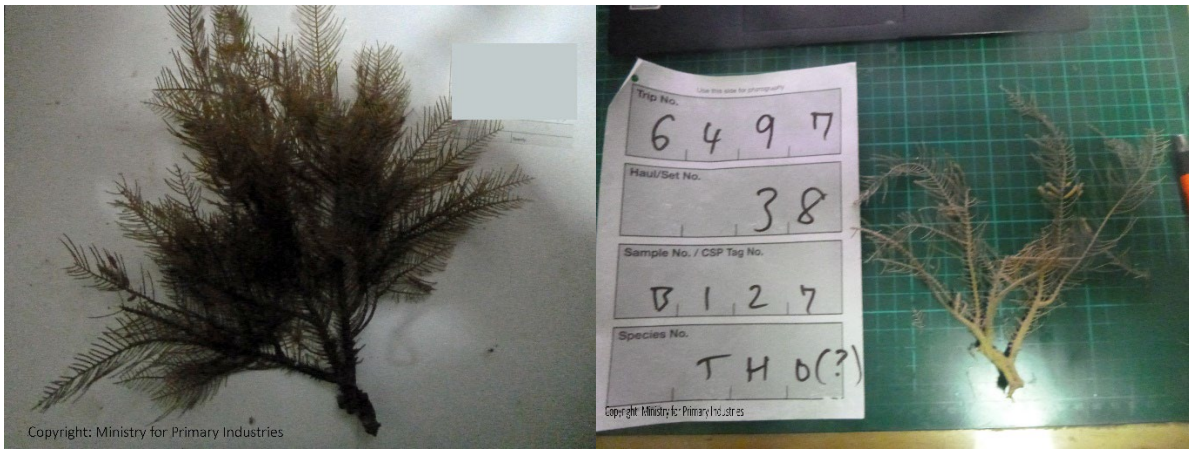

Figure 4-1: Observer images of thecate hydroid *Cryptolaria prima*, easily mistaken for protected coral species, *Thouarella* and related species.

Conversely, one observer has used the code for feathery hydroids (HDF) for a specimen that has now been verified as an *Acanthogorgia* (ACA) coral.

An observer also used a code for Scleractinia (SIA) for a sample of *Conopora verrucosa* in family Stylasteridae (COO).

Observers correctly identified specimens to at least order level 77% of the time (34 samples with correct ID, or incorrect but at least acceptable to order level = 71%); 50% to at least family level (24

samples with correct ID, or incorrect but at least acceptable to family level); 29% to at least genus level (14 samples with ID correct to genus level); and 2% to at least species level (1 sample with ID correct to species level) (Appendix A(a)). It is noted that identification codes are only available to genus level for many coral taxa, so observers are already reporting to the lowest possible resolution for the taxa when genus level codes are used.

For three of the samples an initial ID code was not provided by the Observer. These samples were either sent in with a fish sample so did not receive their own code and were not recorded on the Benthic Materials form (NIWA 147244, *Jasonisis*? sp.), or they were split from a clump of coral with other invertebrates attached so were not assigned an individual code (NIWA 160310, *Caryophyllia* sp. and NIWA 160311, Primnoidae).

4.1.2 Summary of physical specimen data loading processes into COD

The revised identifications from the *niwainvert* database were provided for uploading into COD. The COD extract summary is provided in Appendix B.

Of the 52 rows of Observer-collected physical specimen data (47 current year, 5 historical) provided for uploading into COD:

- 42 rows were able to be matched to the catch record for the specimen and were updated.
  - 37 matches were based on trip number, tow number and initial species ID,
  - One match was based on trip number, tow number and MPI sample number,
  - Four matches were made after reviewing observer comments and catch data on what samples were returned (using codes RET, RDI). Note that in these cases the Observer ID code or MPI sample number differed between the specimen label and the code entered onto the benthic form and in COD. We highlight some of the data inconsistencies here to help provide recommendations to observers:
    1. An improved higher-level identification code was entered into the Benthic Materials form, which differed from what was on the specimen label and Observer Sample Form. However, the observer provided a comment in the Benthic Materials form to say that this code was changed, which made it very easy to make a match upon review of the comments.
    2. In another case (TRIP6333) we suspect an error was made in the data entry of the code, i.e., COR was used instead of COU, which made matching uncertain. The MPI sample number also did not match in this case, but this sample was the only coral collected on this specific tow, no Stylasteridae samples were returned for this trip and this was last photo in a series of photographed corals according to observer comments, so we assumed this match to be correct.
    3. We think that there was a station number error for one of the samples (NIWA 147182, TRIP6557). The observer has written tow 16 on labels and in the Observer sample form, however there were no corals returned from that tow in the COD benthic table. In this case we made a match to a sample from

station 1 based on the initial ID code COF. Unfortunately, no MPI sample number was provided on the specimen label or in the Observer sample form we were not able to use this as to cross check the record.

4. For one trip (TRIP6497) an observer has renumbered all of the MPI sample numbers for specimens returned to NIWA on the Benthic Materials form so that MPI sample numbers on labels and on the Observer sample form do not match the MPI sample numbers in COD's benthic table.

- 10 rows were not able to be matched to the catch record for the specimen and so had to be inserted as new records. Non-matches occurred when:
  - a sample lot had more than one species (sometimes split from a non-coral where it had been encrusting the animal, such as a sponge) so has been split to numerous rows, one of which is the original record,
  - a three-letter code written on the specimen label does not match the code written on the benthic form and/or the MPI sample number was incorrect or not provided, hence the sample and COD record cannot be reconciled,
  - an observer has forgotten to record the returned specimen on the Benthic Materials form,
  - historical samples are more likely not to match and this was the case for three of the historical samples included in this year's identifications. It is noted that sample matching is improving over time.

4.1.3 Data summaries and locality plots for physical sample identifications

Data summaries for the physical specimens identified from Observer collected protected coral samples in the current reporting year (1 July 2021–30 June 2022), are provided below. These include a count by Fisheries Management Area (FMA) (Table 4-1) and a count of tows and specimens by fishing method and target fishery (Table 4-2). Also see Figure 4-1 that illustrates the geographic spread of physical sample coral by-catch in the region. Two of the historical samples were collected in the high-seas region (ET), on Challenger Plateau (Figure 4-1).

Table 4-1: Summary of protected coral samples by Fisheries Management Area (FMA) or from high-seas regions (ET), for Observer collected protected coral samples. Collected during the current reporting year (1 July 2021-30 June 2022)

FMA	Description	Count of samples	No. of specimens
AKW	Auckland West (FMA9)	29	33
SUB	Subantarctic (FMA6)	5	5
CEE	Central East (FMA2)	4	4
SOU	Southland (FMA5)	4	4
SEC	South-East (Coast) (FMA3)	4	6
CHA	Challenger/Central Plateau (FMA7)	2	2
Total	All areas	48	54

(b) Historical samples identified in this reporting period but collected prior to July 2020.

FMA	Description	Count of samples	No. of specimens
SOE	South-East (Chatham Rise) (FMA4)	2	3
CET	Challenger Plateau, beyond the EEZ (ET)	2	2
Total	All areas	4	5

Table 4-2: Count of tows and specimens by fishing method and target fishery for physical specimens. BT = Bottom Trawl, MW = Midwater trawl; Samples collected in the current reporting year (1 July 2021–30 June 2022).

Target Fishery (common name)	FNZ Code	Fishing method	Count of tows	Count of samples	No. of specimens
Orange roughy	ORH	BT	16	32	36
Arrow squid	SQU	BT	4	4	6
Hake	HAK	BT	3	5	5
Alfonsino & long-finned beryx	BYX	BT	2	2	2
Silver warehou	SWA	BT	2	2	2
Hoki	HOK	BT	1	1	1
Rubyfish	RBY	MW	1	1	1
Smooth oreo	SSO	BT	1	1	1
Total			30	48	54

(b) Historical samples identified in this reporting period but collected prior to July 2021

Target Fishery (common name)	FNZ Code	Fishing method	Count of tows	Count of samples	No. of specimens
Orange roughy	ORH	BT	3	3	4
Alfonsino	BYS	BT	1	1	1
Total			4	4	5

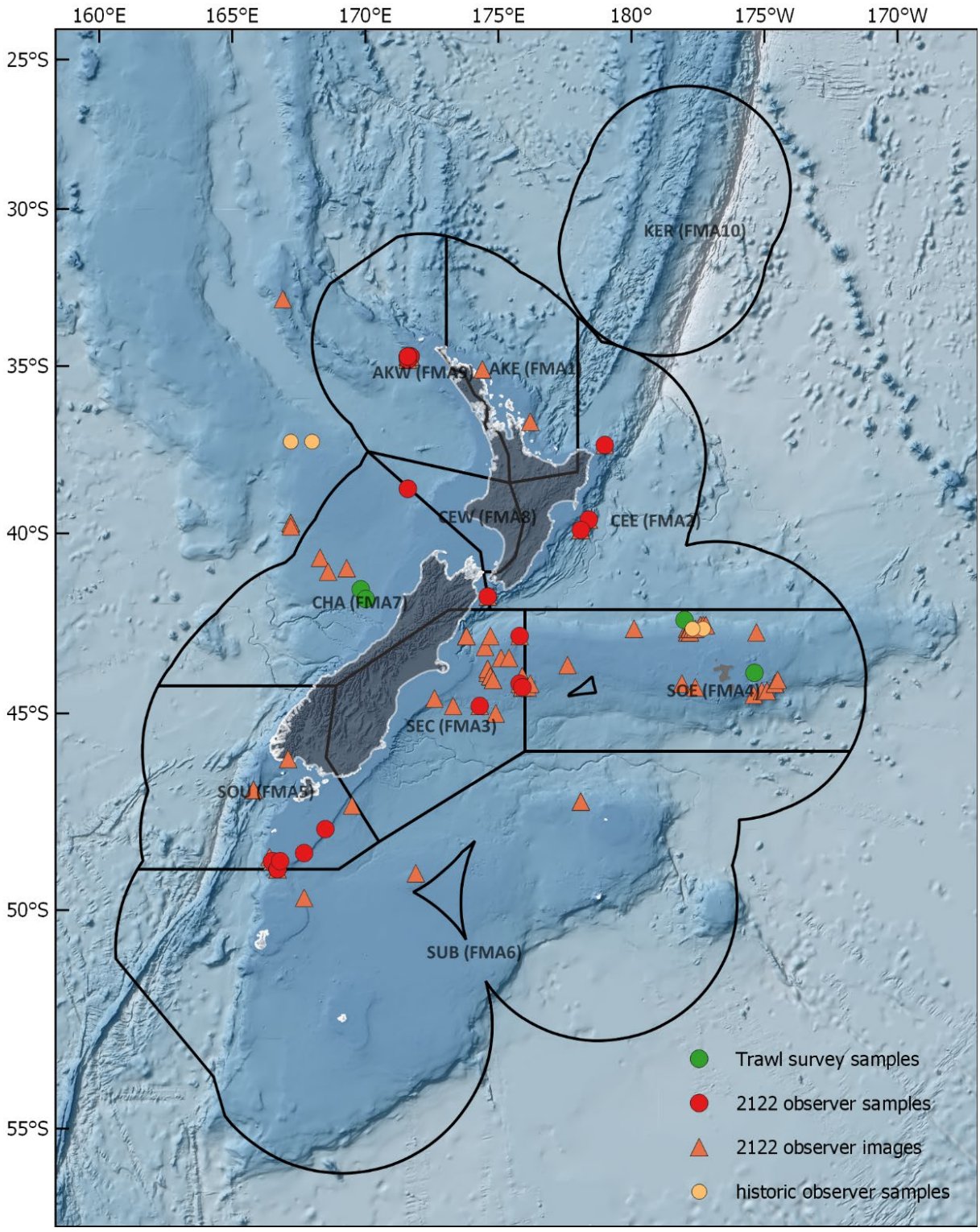

Figure 4-2: Location of identified protected coral samples (63 physical specimens (4 research trawl survey, 54 current year observer samples, 5 historic observer samples); 290 digital image specimens) within Fisheries Management Areas (FMAs). Physical specimens (circles), and images data (triangles). 2122 = current reporting year 1 July 2021–30 June 2022.

4.1.4 Data processing and identification of specimens from digital images

During the reporting period 1 July 2021 to 30 June 2022, NIWA received 382 digital images. All images were reviewed and 273 of these were processed for coral identification. The remaining 109 images were not processed either because they were of non-coral taxa, they were of coral bycatch taken outside of New Zealand's EEZ, or they were taken outside of the reporting period. Note, however, that some images taken outside of NZ's EEZ were mistakenly processed since the image was identified by an expert before it was georeferenced, images returned from the CCAMLR management area have not been included in the analysis.

In total, 290 specimens were identified from the 273 images that were processed. The numbers differ as sometimes there are multiple images of the same specimen and sometimes multiple specimens in one image. Of the 290 specimens, 170 were protected coral taxa, and all of them were able to be georeferenced. The remaining 120 specimens were determined to be non-protected taxa: including non-protected corals, sea-pens, bryozoans, sponges, rocks, hydroids, worm tubes, and ophiuroids (Table 4-4).

Observers provided a label showing trip and tow number information for only 88 of the 273 processed images. Tow numbers for the remaining images were able to be determined to a reasonable degree of accuracy by either:

- using COD database and the image timestamp to cross check the trip tow start and tow end date and time details already entered in COD, in the FNZ photographic logs, and on the 'Benthic Materials' form, or
- by cross checking the images with specimen records already entered in the *niwainvert* database as some specimens that had been photographed were also sent to NIWA by the Observer and they had a label indicating the tow number. This method applied to 29 images.

The highest number of specimens counted from digital images of protected coral species was for cup coral *Flabellum* sp. (33 specimens, 13 of which were *Flabellum knoxi*), followed by the stony coral *Solenosmilia variabilis*, bamboo coral *Keratoisis* spp. and sea fan *Thouarella* spp. (14 specimens each). A range of genera and species from octocoral family Primnoidae (sea fans, sea whips) were well represented in the analysed images. A diverse range of Antipatharia (black corals) and Scleractinia (stony corals) were also present (Table 4-3; Figure 4-3).

Of the 273 images processed for coral identification there were a total of 235 digital images taken of protected coral taxa and 38 digital images taken of non-coral or non-protected coral taxa.

Table 4-3: Count of imaged, protected coral specimens identified by species.

Phylum	Class	Order	Family	Genus	Species	Specimen count
Cnidaria	Anthozoa					1
		Alcyonacea	Acanthogorgiidae	*Acanthogorgia*		6
			Chrysogorgiidae	*Chrysogorgia*		5
				Iridogorgia		3
				Metallogorgia		1
			Isididae			5
			Keratoisididae	*Isidella*		8
				Keratoisis		14
				Lepidisis		2
			Paragorgiidae			1
				Paragorgia		6
			Plexauridae			1
			Primnoidae			1
				Calyptrophora		2
				Metafannyella		2
				Narella		1
				Primnoa		4
				Thouarella		14
				Tokoprymno		1
		Antipatharia				1
			Leiopathidae	*Leiopathes*		1
			Myriopathidae	*Antipathella*		5

Phylum	Class	Order	Family	Genus	Species	Specimen count
			Schizopathidae			4
				Bathypathes		6
				cf. *Dendropathes*		1
				Dendropathes		3
				Lillipathes		1
				Parantipathes		4
				Telopathes	*tasmaniensis*	1
		Scleractinia				1
			Caryophylliidae	*Caryophyllia*		1
				Desmophyllum	*dianthus*	5
				Goniocorella	*dumosa*	5
				Solenosmilia	*variabilis*	14
			Flabellidae			1
				Flabellum		20
				Flabellum	*knoxi*	13
			Oculinidae	*Madrepora*	*oculata*	3
				Oculina	*virgosa*	1
	Hydrozoa	Anthoathecata	Stylasteridae	*Errina*		1
Total						**170**

Table 4-4: Count of imaged, non-protected coral and non-coral specimens identified by species.

Phylum	Class	Order	Family	Genus	Species	Specimen count
Annelida	Polychaeta					5
		Sabellida	Serpulidae	*Salmacina*	*australis*	1
Bryozoa	Stenolaemata	Cyclostomatida	Cerioporidae	*Tetrocycloecia*	*neozelanica*	4
			Horneridae	*Hornera*	*foliacea*	1
Cnidaria	Anthozoa	Alcyonacea	Clavulariidae	*Telesto*		3
		Corallimorpharia				1
		Pennatulacea	Anthoptilidae			73
		Zoantharia				1
	Hydrozoa					3
		Leptothecata	Plumulariidae	*Nemertesia*	*pinnatifida*	1
			Zygophylacidae	*Cryptolaria*		9
					prima	2
Echinodermata	Ophiuroidea	Euryalida	Gorgonocephalidae	*Gorgonocephalus*		1
		Euryalida	Gorgonocephalidae	*Gorgonocephalus*	*chilensis*	1
Porifera						7
	Hexactinellida	Lyssacinosida	Rossellidae	*Hyalascus*		2
		Sceptrulophora	Farreidae	*Farrea*		1
Rock						4
Grand Total						**120**

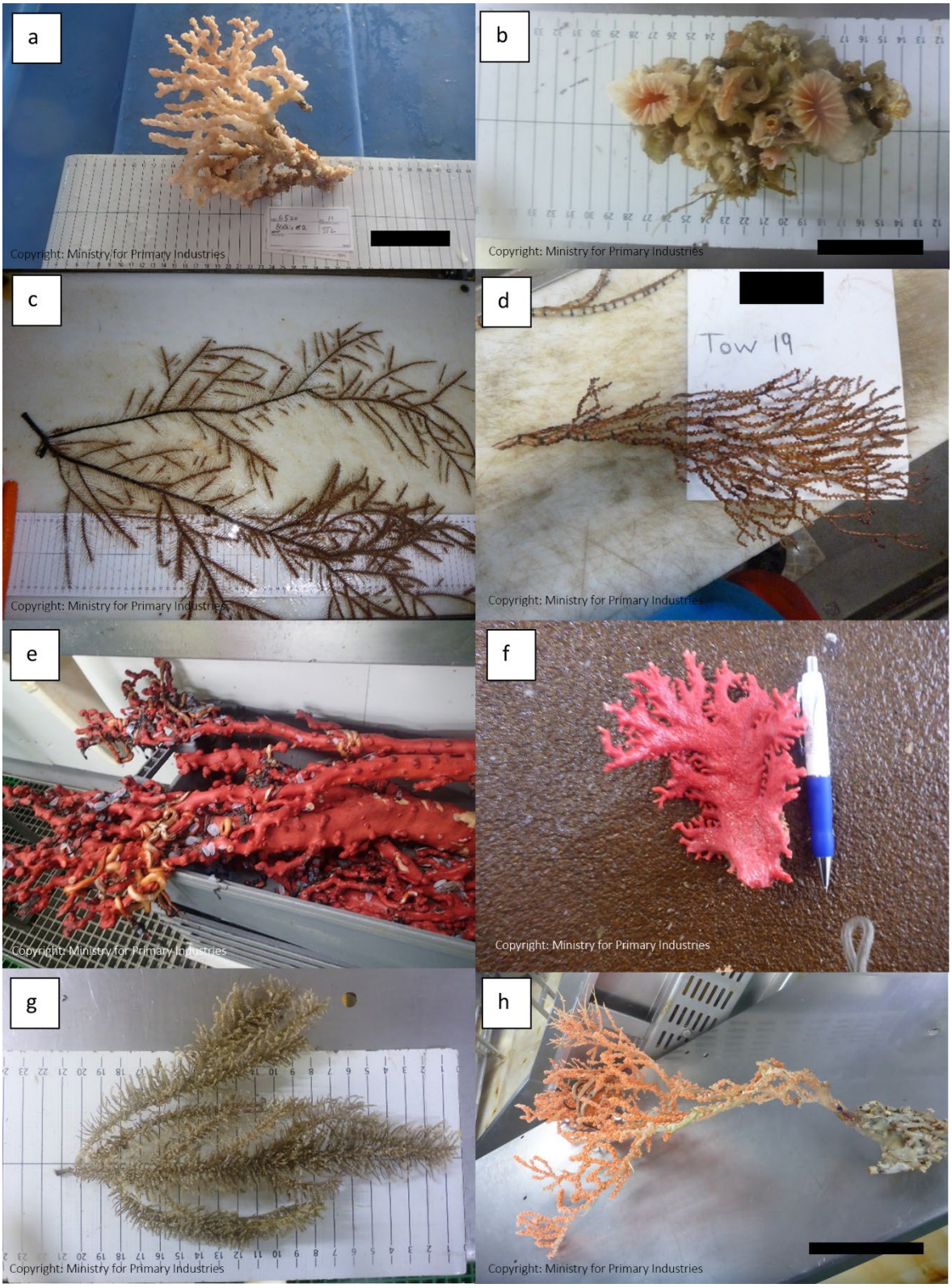

Figure 4-3: A selection of representative protected coral specimen images. a) stony coral *Oculina virgosa;* b) stony cup coral *Desmophyllum dianthus*; c) black coral *Bathypathes*; d) bamboo coral *Isidella;* e) bubblegum coral *Paragorgia*; f) Hydrocoral *Errina* sp.; g) sea fan / bottle brush coral *Thouarella;* h) sea fan coral *Primnoa* attached to stony coral *Solenosmilia variabilis.*

During this reporting period Observers assigned identification codes for 118 images out of the 273 specimen images identified by experts. Observers correctly identified 81 of the specimens to at least Order level (69% accuracy). There were 18 protected coral specimens identified incorrectly by

Observers as either a different protected coral species, hydroid (code HDF & HDR), or coral unspecified (code COU). There was one case where a protected coral was coded as *Gorgonocephalus* (a genus of brittle star, code GOR) however this is assumed to be a coding error, with GOC (the generic code for Gorgonian octocorals) being the intended code.

Data summaries for the protected coral specimens identified from images are provided below and include a count by Observer Fisheries Management Areas (FMA) (Table 4-5) and a count of tows and protected coral specimens by fishing method and target fishery (Table 4-6).

Table 4-5: Summary of imaged, protected coral specimens by Fisheries Management Area (FMA), ranked by specimen count.

Area	Description	Total no. of specimens
SOE	South-East (FMA4)	45
SEC	South-East Coast (FMA3)	43
AKE	Auckland East (FMA1)	19
CEE	Central East (FMA2)	18
SOU	Southland (FMA5)	13
AKW	Auckland West (FMA9)	12
SUB	Subantarctic (FMA6)	9
CET	Challenger Plateau, beyond the EEZ (FMA) (ET)	6
CHA	Challenger (FMA7)	3
ET	Beyond the EEZ (ET)	1
SOI	Southern Offshore Islands – Auckland & Campbell Is. (FMA 6A)	1
Total		170

Table 4-6: Count of tows by fishing method and target fishery for imaged, protected coral specimens. BLL = Bottom Longlining; BT = Bottom Trawl; MW = Midwater Trawl; PRB = Precision Seafood Harvesting Bottom Trawl; SN = Set netting.

Target Fishery (common name)	FNZ code	Fishing Method	Count of Tows	Total no. of specimens	Remarks
Orange roughy	ORH	BT	40	79	
Hoki	HOK	BT	12	32	
Squid	SQU	BT	15	21	
Smooth oreo	SSO	BT	5	9	
Cardinalfish	CDL	BT	4	8	
Alfonsino	BYX	BT	5	6	
Hake	HAK	BT	3	5	
Hoki	HOK	PRB	1	4	
Snapper	SNA	BLL	1	2	
Bass groper	BAS	BLL	1	1	ET FMA
Ruby fish	RBY	MW	1	1	
School shark	SCH	SN	2	1	
Squid	SQU	MW	1	1	
All			**91**	**170**	

The FMAs with the highest number of protected coral bycatch were the SOE South-East (FMA4) and SEC South-East Coast (FMA3) regions. Most were taken by bottom trawl operations targeting orange roughy, hoki and squid.

Currently updated identifications of images are not loaded into final fields in COD. The retroactive loading of expert identification codes from images identified for year one, two and three of this project INT201503-DOC16307 is a task that is yet to be completed. NIWA's Data Manager has requested direction from FNZ on expectation and requirements for updating COD, including consideration for database modifications to adequately store image metadata. The existing COD design is not adequate to capture all metadata about the images and is also not able to store the images.

4.2 Objective 2: Sub-samples of protected coral specimens for genetic analysis

During this reporting period, tissue sub-samples were taken from 32 specimens from all live Observer collected protected coral samples. Not all specimens returned had sufficient live tissue for subsampling. Accumulated protected coral tissue sub-samples retained for future genetic studies now number 156, and CSP funded projects using these samples for molecular studies have been carried out or are underway. Sub-samples of many black coral specimens (under DOC Project POP201806-DOC19306) and octocoral specimens (under DOC Projects INT201905-DOC19304, BCBC202026- DOC21302) have now been analysed and the results are reported in Bilewitch & Tracey (2020a; 2020b) and Bilewitch (2022).

4.3 Objective 3: Assist with Observer training resources

A key activity of this project has been to assist with the development and improvement of Observer training resources such as the Coral Identification Guide (in press, see section 4.3.1), to continue to improve the accuracy of at-sea identification, and thus provide higher-quality data for downstream usage.

Recommendations highlighted in Progress and Final reports to CSP, along with the instructions to Observers document (Tracey & Mills 2016; Tracey et al. 2019) are passed onto Observers via the CSP, assist with Observer training. A reduced and updated version of the Instructions to Observers document was prepared recently for the Coral Identification Guide.

Methods for Observers to use when sampling at sea, including image labelling, are always highlighted at annual CCAMLR Training sessions. Image labelling was also raised at a recent Observer Services Training Review Reflection and Handover workshop organised by Justin Clement, Manager Fisheries Observer & Verification, FNZ (NIWA Attendees Di Tracey and Kareen Schnabel, pers. comm.).

4.3.1 Preparation of DOC Coral Identification Guide

The project team have contributed to the drafting of the revised and updated coral identification guide developed by DOC for fisheries observers and fishers that is now nearing completion (Figure 4-4). The team also added subject matter expertise and advice on observer data collection protocols. The guide is currently awaiting sign off and printing before being disseminated to observers.

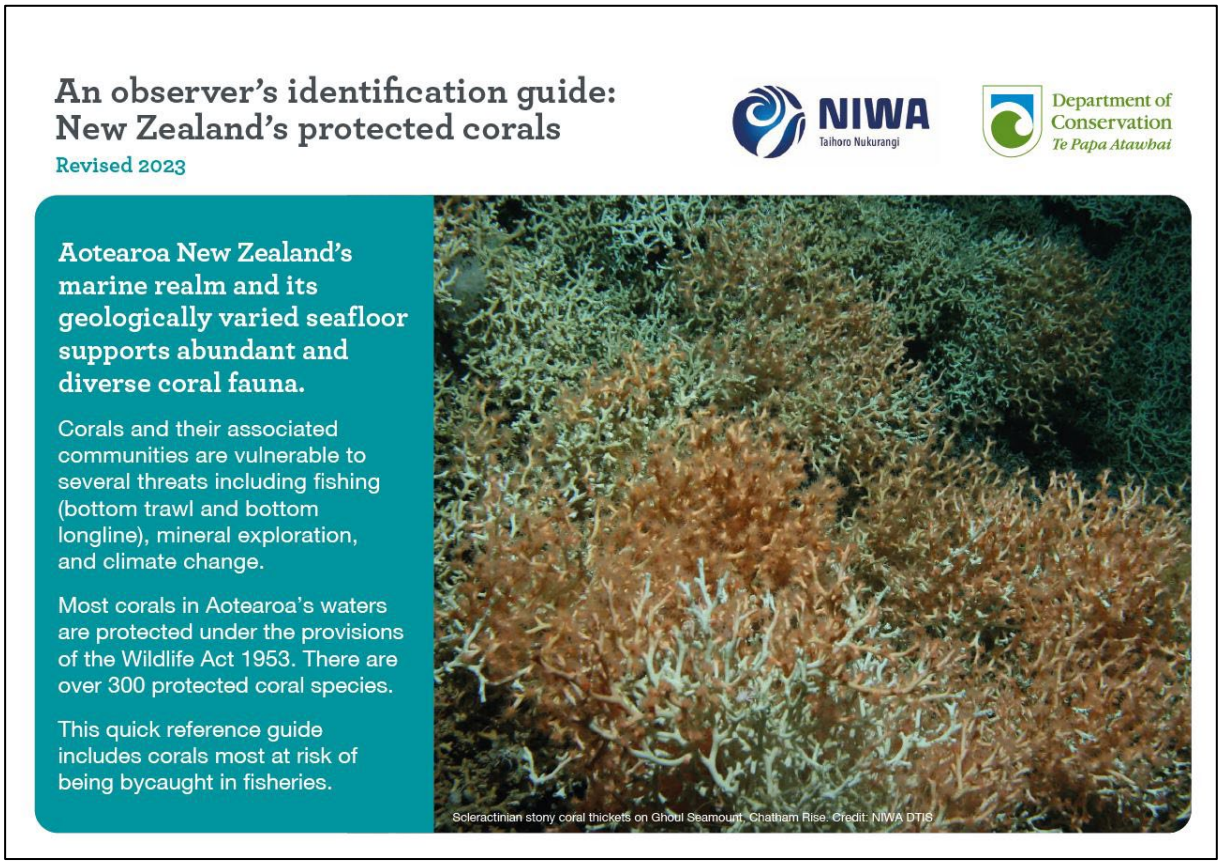

Figure 4-4: Revised DOC Coral identification guide (in preparation, 2023) front cover.

4.3.2 Preparation of Identification sheets – NIWA Fisheries Centre

Funding from the Ministry of Business, Innovation and Employment (MBIE) Strategic Science Investment Fund (SSIF) via NIWA's National Fisheries Centre 2021/22 budget, has supported revisions to the content of the Guide to common deepsea invertebrates (Tracey et al. 2011). With this complementary funding, 16 new or revised identification sheets have been produced for protected corals, or taxa that can be easily confused with corals, with a focus on shallower water species. These sheets are formatted to match those in the black coral identification guide (Opresko et al. 2014) and the Tracey et al. (2011) deepsea invertebrate guide and they have now been made available as a pdf file to MPI Observers (Tracey et al. 2021, Fig. 4-5).

Figure 4-5: Cover sheet of the coral identification sheets (Tracey et al. 2021). Additional sheets for deep-sea prawns are included in the document pdf and sponge species will be added in June 2023.

5 Summary and conclusions

The three years of funding for the curation and identification of fisheries protected coral bycatch has continued to contribute significant information on biodiversity, distribution, and target fisheries bycatch. The accumulation of these data records from this and the earlier protected coral bycatch identification projects contribute to filling knowledge gaps around spatial distribution of species, help describe the overall composition of observed bycatch, and provide opportunity to continue to improve both predictive habitat suitability models and risk assessments, as well as expand knowledge of the region's biodiversity.

The objective for this reporting period to detail all bycaught physical samples and digital images returned by fisheries Observers was met. The process was efficient as the methods have been consistent and standardised over several years. The required database updates have been made. The difficulty in matching some digital images with trip data in the COD database is an ongoing issue but is expected to improve in the following reporting years with the recent efforts by Fisheries New Zealand to address methods of invertebrate image data collection at-sea and with the provision of labels.

Protected corals continue to be taken as by-catch within the region, primarily from bottom trawl fishing methods. The identified samples were photographed and or collected opportunistically from commercial fishing activity when either Observers were uncertain of their identification of the coral specimen, the specimen was caught outside the expected depth range or distribution, or when the specimen was considered rare or unusual. A few Observers have provided their email address on specimen labels seeking direct feedback from experts on the identification of specimens (which has been given). This highlights an encouraging interest in improving their identification skills.

These samples are highly valuable and continue to augment datasets used to highlight interactions between fishing and protected corals, for example in the modelling of species distributions and community classifications. Recognising the importance of these data for enhancing basic understanding of coral distribution and given recent elucidation of unexplored cryptic diversity in some coral groups, Observers are always encouraged to return a specimen or sub-sample of the specimen, whenever they are able to, regardless of how confident they are in their identification. Overall, the accuracy of the Observer identification is good and for some groups can be carried out to family and sometimes genus or species level. While the sample sizes used in the general accuracy summaries are small, it is nevertheless clear certain taxa continue to be confused.

A total of 63 physical specimens, and 170 specimens from digital images were identified or verified to the lowest taxon level possible by experts. All processed images were able to be georeferenced. There were 235 digital images taken of protected coral taxa and 38 digital images taken of non-coral or non-protected coral taxa.

Similar to previous years of this project the number of Observer specimens photographed were high, however physical samples returned for identification from within the EEZ were low (48 physical samples containing 54 actual specimens) for this period. An overall low return of samples by Observers was also noted in Schnabel et al. (2021) (FNZ Project BEN202103, previously DAE201804), where the numbers of physical specimens of invertebrates returned for expert identification have reduced.

6 Recommendations

For some returned physical specimens and images, the processing and identification ashore and database updates is made difficult if labelling protocols and photography instructions are not followed. While we appreciate the workload that is placed on Observers at sea, we provide the following recommendations regarding their at-sea data collection methods.

Digital Images need to be taken with a label that includes trip and station data, and the coral specimen, or a sub-sample of the specimen, the MPI number, and a species code. This information helps experts verify the identification. Over time, standardised easy-to-use pre-printed labels for Observers to include in photographs should improve this process and hence the accuracy of accompanying metadata. Examples of different labelling methods used by Observers are shown by Macpherson et al. (2021). We note the standardised use of pre-printed labels and photocards has recently progressed within FNZ (see section 2.1, Figures 1 and 2 of Schnabel et al. 2021).

As mentioned in previous reports (see Macpherson et al. 2022) the MPI sample number and the initial Observer three-letter identification code are crucial components in the data matching process used for updating the COD database with the expert ID of the physical specimens. We reiterate the recommendation that the initial MPI sample number and three-letter code written on the specimen label corresponds to the sample number and code used on the benthic form. If Observers decide to change their identification code later while filling out electronic or paper catch forms, we ask that they please provide a comment in the benthic form if they are not able to amend the specimen labels to match the benthic forms. The observer comments are extremely valuable where a match cannot be made with sample numbers or codes alone.

It is important that original digital image file names are retained and not over-written or completely changed from what is held on file by Fisheries New Zealand (FNZ). The removal of the original image file name means that the link between the original image and any further expert identification is lost.

7 Acknowledgements

We thank Te Papa Atawhai Department of Conservation, CSP Programme for their ongoing support of protected coral research in New Zealand waters and Marine Species Team members Lyndsey Holland and Hollie McGovern. We also thank FNZ Observers for their efforts at sea. The various coral experts who provided identifications for this reporting period are acknowledged. These include: Di Tracey, Rob Stewart, Jaret Bilewitch, Peter Marriott, and Diana Macpherson (NIWA) along with Gustav Kessel (VUW, Independent), Stephen Cairns and Dennis Opresko (Smithsonian Institution, USA), Marcelo Kitahara (Universidade Federal de São Paulo, Brazil), and Phil Alderslade CSIRO, Australia). Our international experts willingly give their time to verify our identifications and contribute to guide updates and revisions, and this is hugely appreciated.

We acknowledge the NIWA NIC team for providing on-going curatorial support for the specimens. Finally, our thanks to Caroline Wood (NIWA) for updating the COD database and providing data extracts, and to Owen Anderson (NIWA) for his timely turn around in thoroughly reviewing this report, and Darren Parsons (NIWA Fisheries and Ecosystems Programme Leader) and Richard O'Driscoll (NIWA Chief Scientist, Fisheries), for their final comments and sign off on the report.

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Appendix A Summary output from NIWA Invertebrate Collection (NIC) Specify Database *niwainvert*.

This publicly accessible website can be used to search the initial and expert ID species codes: https://marlin.niwa.co.nz/species_codes/ and FMA codes: https://marlin.niwa.co.nz/area_codes/. The fishing method codes are as follows: BT = Bottom Trawl (single).

(a) Revised identifications of 54 bycatch specimens (in 48 sample lots) returned by observers between 1 July 2021 to 30 June 2022. Green highlighted cells indicate the level of matching where three-letter identification codes were correctly used, yellow highlighted cells indicate the level at which the identification is valid where incorrect identification codes were used.

TRIP	tow	NIWA Cat. Nbr.	OSD Nbr.	MPI Sample Nbr.	Initial ID Code	Expert ID code	Phylum	Class	Order	Family	Genus	Species	Specimen count	Date	Latitude1	Longitude1	Depth 1	Depth 2	Code match level
6485	29	147208	6137	5	GOC	ACA	Cnidaria	Anthozoa	Alcyonacea	Acanthogorgiidae	*Acanthogorgia*		1	Dec-21	-37.5	179.0	260	280	Correct order level ID
6497	10	147090	5992	4	HDF	ACA	Cnidaria	Anthozoa	Alcyonacea	Acanthogorgiidae	*Acanthogorgia*		1	Dec-21	-49.0	166.8	445	508	Incorrect ID but ok to phylum
6497	10	147092	5994	3	MTL	ACA	Cnidaria	Anthozoa	Alcyonacea	Acanthogorgiidae	*Acanthogorgia*		1	Dec-21	-49.0	166.8	445	508	Incorrect ID but ok to order
6497	20	147091	5993	9	MTL	ACA	Cnidaria	Anthozoa	Alcyonacea	Acanthogorgiidae	*Acanthogorgia*		1	Jan-22	-49.1	166.7	550	584	Incorrect ID but ok to order
6596	13	160308	6201		CHR	CHR	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	*Chrysogorgia*		1	May-22	-34.7	171.6	980		Correct genus level ID
6543	5	147243	6218	21	IRI	IRI	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	*Iridogorgia*		1	Mar-22	-34.8	171.7	988	1012	Correct genus level ID
6596	17	160307	6200		STI	IRI	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	*Iridogorgia*		1	May-22	-34.7	171.6	990		Incorrect ID but ok to class
6543	15	147248	6223	39	MTL	MTL	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	*Metallogorgia*		1	Mar-22	-34.8	171.7	940	1060	Correct genus level ID
6543	1	147268	6254	5	CHR	RAD	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	*Radicipes*		1	Mar-22	-38.7	171.7	1093	1085	Incorrect ID but ok to family
6543	10	147294	6285	30	CHR	CHR	Cnidaria	Anthozoa	Alcyonacea	Chyrsogorgiidae	*Chrysogorgia*		1	Mar-22	-34.8	171.7	924	990	Correct genus level ID
6596	17	160304	6197		LLE	ISI	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae			1	May-22	-34.7	171.6	990		Incorrect ID but ok to family
6543	2	147276	6256	6	BOO	ACN	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Acanella*		1	Mar-22	-34.8	171.7	885	1035	Incorrect ID but ok to family
6543	18	147246	6221	46	BOO	ISP	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Isidella*		1	Mar-22	-34.8	171.7	900	962	Incorrect ID but ok to family

TRIP	tow	NIWA Cat. Nbr.	OSD Nbr.	MPI Sample Nbr.	Initial ID Code	Expert ID code	Phylum	Class	Order	Family	Genus	Species	Specimen count	Date	Latitude1	Longitude1	Depth 1	Depth 2	Code match level
6596	17	160305	6198		ISI	ISP	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Isidella*?		1	May-22	-34.7	171.6	990		Correct family level ID
6543	5	147290	6281	16	BOO	JAS	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Jasonisis*		1	Mar-22	-34.8	171.7	988	1012	Incorrect ID but ok to family
6543	6	147244	6219	12		JAS	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Jasonisis?*		1	Mar-22	-34.8	171.7	946	949	No initial ID code for this specimen
6543	5	147289	6280	16	BOO	BOO	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*		1	Mar-22	-34.8	171.7	988	1012	Correct genus level ID
6543	7	147247	6222	24	BOO	BOO	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*		1	Mar-22	-34.8	171.7	886	1120	Correct genus level ID
6543	7	147249	6224	24	BOO	BOO	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*		1	Mar-22	-34.8	171.7	886	1120	Correct genus level ID
6596	17	160306	6199		BOO	BOO	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*		1	May-22	-34.7	171.6	990		Correct genus level ID
6543	3	147280	6260	9	BOO	BOO	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*	sp. 11	1	Mar-22	-34.8	171.7	946	996	Correct genus level ID
6543	1	147269	6255	5	CHR	ISI	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae			1	Mar-22	-38.7	171.7	1093	1085	Incorrect ID but ok to order
6580	63	147216	6146	5	PAB	PAB	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	*Paragorgia*		1	Jun-22	-44.9	174.3	915		Correct genus level ID
6543	11	147286	6277	18	UNF	PRI	Cnidaria	Anthozoa	Alcyonacea	Primnoidae			1	Mar-22	-34.8	171.7	936	995	Unidentified code used, no matching ID at any level
6596	35	160311	6204			PRI	Cnidaria	Anthozoa	Alcyonacea	Primnoidae			3	May-23	-34.7	171.6	955		No initial ID code for this specimen
6543	5	147283	6274	22	CHR	CTP	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	?*Calyptrophora*		1	Mar-22	-34.8	171.7	988	1012	Incorrect ID but ok to order
6543	5	147291	6282	19	CTP	CTP	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Calyptrophora*		1	Mar-22	-34.8	171.7	988	1012	Correct genus level ID
6543	10	147282	6273	29	CHR	CTP	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Calyptrophora*		1	Mar-22	-34.8	171.7	924	990	Incorrect ID but ok to order
6567	76	147181	6097	8	PRI	CTP	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Calyptrophora*		1	Apr-22	-39.6	178.4	258		Correct family level ID
6543	5	147292	6283	20	UNF	CTP	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Calyptrophora*	*clinata*	1	Mar-22	-34.8	171.7	988	1012	Unidentified code used, no matching ID at any level
6543	12	147284	6275	34	CHR	CTP	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Calyptrophora*	*clinata*	1	Mar-22	-34.8	171.7	925	960	Incorrect ID but ok to order

TRIP	tow	NIWA Cat. Nbr.	OSD Nbr.	MPI Sample Nbr.	Initial ID Code	Expert ID code	Phylum	Class	Order	Family	Genus	Species	Specimen count	Date	Latitude1	Longitude1	Depth 1	Depth 2	Code match level
6497	10	147080	5979	1	THO	MEF	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Metafannyella*		1	Dec-21	-49.0	166.8	445	508	Incorrect ID but ok to family
6567	37	147183	6102	4	GOC	PMN	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Primnoa*		1	Apr-22	-41.9	174.6	693		Correct order level ID
6543	12	147285	6276	35	CHR	THO	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*		1	Mar-22	-34.8	171.7	925	960	Incorrect ID but ok to order
6567	88	147180	6096	9	COB	THO	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*		1	May-22	-40.0	178.1	494	634	Incorrect ID but ok to class
6543	13	147287	6278	36	LEI	LEI	Cnidaria	Anthozoa	Antipatharia	Leiopathidae	*Leiopathes*		1	Mar-22	-34.8	171.7	928	940	Correct genus level ID
6333	104	146541	5389	7	COU	DDP	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	cf. *Dendropathes*		1	Jul-21	-42.9	175.8	587	682	Correct phylum level ID
6596	35	160310	6203			CAY	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Caryophyllia*		3	May-23	-34.7	171.6	955		No initial ID code for this specimen
6533	48	147199	6118	46	CUP	CAY	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Caryophyllia?*		1	Apr-22	-44.2	175.8	155	278	Correct family level ID
6497	12	147083	5982	7	ERO	DDI	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Desmophyllum*	*dianthus*	1	Dec-21	-49.0	166.7	560	372	Incorrect ID but ok to order
6533	52	147205	6124	68	DDI	DDI	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Desmophyllum*	*dianthus*	3	Apr-22	-44.3	175.9			Correct species level ID
6596	35	160309	6202		GDU	SVA	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Solenosmilia*	*variabilis*	1	May-22	-34.7	171.6	955		Incorrect ID but ok to family
6557	16	147182	6101		COF	COF	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*	*knoxi*	1	Apr-22	-44.3	176.0	210	219	Correct genus level ID
6596	13	160303	6195		HDR	COR	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae indet.			1	May-22	-34.7	171.6	980		Correct class level ID
6543	11	147288	6279	31	SIA	COO	Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	*Conopora*	*verrucosa*	1	Mar-22	-34.8	171.7	936	995	Incorrect ID but ok to phylum
6376	83	146862	5728	19	UNI	CRT	Cnidaria	Hydrozoa	Leptothecata	Lafoeidae	*Cryptolaria*	*prima*	1	Sep-21	-48.9	166.6	347	394	Unidentified code used, no matching ID at any level
6497	38	147075	5974	127	THO	CRT	Cnidaria	Hydrozoa	Leptothecata	Lafoeidae	*Cryptolaria*	*prima*	1	Jan-22	-48.8	166.8	250	343	Incorrect ID but ok to phylum
6497	60	147093	5995	191	THO	CRT	Cnidaria	Hydrozoa	Leptothecata	Lafoeidae	*Cryptolaria*	*prima*	1	Feb-22	-48.7	167.7	140	184	Incorrect ID but ok to phylum

(b) Revised identifications of four historical bycatch specimens returned by observers, identified between 24 March 2022 to 23 March 2023.

TRIP	tow	NIWA Cat. Num.	OSD Num.	MPI Sample Num.	Initial ID Code	Expert ID code	Phylum	Class	Order	Family	Genus	Species	Count	Date	Latitude1	Longitude1	Depth 1	Depth 2
1152	9	24190				BTP	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Bathypathes*	*conferta*	1	Sep-98	-37.3	167.3	800	
2101	143	62979				AND	Cnidaria	Anthozoa	Alcyonacea	Anthothelidae			2	May-05	-42.8	-177.3	918	1040
2253	23	62980				ANB	Cnidaria	Anthozoa	Alcyonacea	Anthothelidae	*Anthothela*		1	May-06	-42.7	-177.7	1166	1092
5220	11	125129			PAB	PAB	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	*Paragorgia*		1	Jan-18	-37.3	168.0		

(c) Revised identifications of physical specimens collected by NIWA staff on fisheries research trawl surveys during the 1 July 2021-30 June 2022 reporting period, and historically collected but identified between 24 March 2022 to 23 March 2023.

Voyage	tow	NIWA Catalogue Number	Lot Number	Initial ID Code	Expert ID code	Class	Order	Family	Genus	Species	Total Lot Weight (g)	Count	Date	Latitude1	Longitude1	Depth 1	Depth 2
TAN2107	54	157765	I390	LLE	ISP	Anthozoa	Alcyonacea	Keratoisididae	*Isidella*		10	1	Aug-21	-41.60	169.83	933	950
TAN2107	49	157820	I322	STP	STP	Anthozoa	Scleractinia	Caryophylliidae	*Stephanocyathus*	*platypus*	50	1	Aug-21	-41.87	170.02	891	880
TAN2201	61	158968	40	DEN	THO	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*		56	1	Jan-22	-43.91	-175.37	242	250
TAN1801	25	126883	54	SOC	ANB	Anthozoa	Alcyonacea	Anthothelidae	*Anthothela*		200	1	Jan-18	-42.45	-178.00	865	893

Appendix B Summary of physical specimen data loaded into COD.

Summary of data loaded into COD including historical and current year samples returned by observers between 1 July 2021 to 30 June 2022. This publicly accessible website can be used to search target species and expert species codes: https://marlin.niwa.co.nz/species_codes/ and FMA codes: https://marlin.niwa.co.nz/area_codes/. The fishing method codes are as follows: BT = Bottom Trawl; MW = Midwater Trawl.

niwa_cat_nbr	trip_number	station_number	target_species	gear_code	event_start_date	start_obs_fma	trunc_start_latitude	trunc_start_longitude	start_seabed_depth	end_seabed_depth	initial_id	expert_species	class_name	order_name	family_name	taxon	sample_count
24190	1152	9	BYS	BT	Sep-98	CET	-37.3	167.2	568	568		BTP	Anthozoa	Antipatharia	Schizopathidae	*Bathypathes conferta*	1
62979	2101	143	ORH	BT	Jun-05	SOE	-42.7	182.7	918	1040		AND	Anthozoa	Alcyonacea	Anthothelidae	*Anthothelidae*	2
62980	2253	23	ORH	BT	May-06	SOE	-42.7	182.3	1166	1092		ANB	Anthozoa	Alcyonacea	Anthothelidae	*Anthothela*	1
125129	5220	11	ORH	BT	Jan-18	CET	-37.3	168	790	920	PAB	PAB	Anthozoa	Alcyonacea	Paragorgiidae	*Paragorgia*	1
146541	6333	104	HOK	BT	Jul-21	SEC	-42.9	175.8	587	682	COU	DDP	Anthozoa	Antipatharia	Schizopathidae	cf. *Dendropathes*	1
146862	6376	83	SWA	BT	Sep-21	SOU	-48.8	166.5	347	394	UNI	CRT	Hydrozoa	Leptothecata	Lafoeidae	*Cryptolaria prima*	1
147208	6485	29	RBY	MW	Dec-21	CEE	-37.4	179	260		GOC	ACA	Anthozoa	Alcyonacea	Acanthogorgiidae	*Acanthogorgia*	1
147090	6497	10	HAK	BT	Dec-21	SUB	-49	166.7	445	508	HDF	ACA	Anthozoa	Alcyonacea	Acanthogorgiidae	*Acanthogorgia*	1
147092	6497	10	HAK	BT	Dec-21	SUB	-49	166.7	445	508	MTL	ACA	Anthozoa	Alcyonacea	Acanthogorgiidae	*Acanthogorgia*	1
147080	6497	10	HAK	BT	Dec-21	SUB	-49	166.7	445	508	THO	MEF	Anthozoa	Alcyonacea	Primnoidae	*Metafannyella*	1
147083	6497	12	HAK	BT	Dec-21	SUB	-49	166.7	560	372	ERO	DDI	Anthozoa	Scleractinia	Caryophylliidae	*Desmophyllum dianthus*	1
147091	6497	20	HAK	BT	Jan-22	SUB	-49	166.7	550	584	MTL	ACA	Anthozoa	Alcyonacea	Acanthogorgiidae	*Acanthogorgia*	1
147075	6497	38	SQU	BT	Jan-22	SOU	-48.8	166.8	250	343	THO	CRT	Hydrozoa	Leptothecata	Lafoeidae	*Cryptolaria prima*	1
147093	6497	60	SWA	BT	Feb-22	SOU	-48.6	167.7	140	184	THO	CRT	Hydrozoa	Leptothecata	Lafoeidae	*Cryptolaria prima*	1
147199	6533	48	SQU	BT	Apr-22	SEC	-44.2	175.8	155	278	CUP	CAY	Anthozoa	Scleractinia	Caryophylliidae	*Caryophyllia*?	1
147205	6533	52	SQU	BT	Apr-22	SEC	-44.3	175.9	260	236	DDI	DDI	Anthozoa	Scleractinia	Caryophylliidae	*Desmophyllum dianthus*	3
147269	6543	1	ORH	BT	Mar-22	CHA	-38.7	171.6	1093	1085	CHR	ISI	Anthozoa	Alcyonacea	Keratoisididae	Keratoisididae	1
147268	6543	1	ORH	BT	Mar-22	CHA	-38.7	171.6	1093	1085	CHR	RAD	Anthozoa	Alcyonacea	Chrysogorgiidae	*Radicipes*	1
147276	6543	2	ORH	BT	Mar-22	AKW	-34.7	171.6	885	1035	BOO	ACN	Anthozoa	Alcyonacea	Keratoisididae	*Acanella*	1

niwa_cat_nbr	trip_number	station_number	target_species	gear_code	event_start_date	start_obs_fma	trunc_start_latitude	trunc_start_longitude	start_seabed_depth	end_seabed_depth	initial_id	expert_species	class_name	order_name	family_name	taxon	sample_count
147280	6543	3	ORH	BT	Mar-22	AKW	-34.8	171.6	946	996	BOO	BOO	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis* sp. 11	1
147283	6543	5	ORH	BT	Mar-22	AKW	-34.7	171.7	988	1012	CHR	CTP	Anthozoa	Alcyonacea	Primnoidae	*Calyptrophora*?	1
147291	6543	5	ORH	BT	Mar-22	AKW	-34.7	171.7	988	1012	CTP	CTP	Anthozoa	Alcyonacea	Primnoidae	*Calyptrophora*	1
147292	6543	5	ORH	BT	Mar-22	AKW	-34.7	171.7	988	1012	UNF	CTP	Anthozoa	Alcyonacea	Primnoidae	*Calyptrophora clinata*	1
147243	6543	5	ORH	BT	Mar-22	AKW	-34.7	171.7	988	1012	IRI	IRI	Anthozoa	Alcyonacea	Chrysogorgiidae	*Iridogorgia*	1
147290	6543	5	ORH	BT	Mar-22	AKW	-34.7	171.7	988	1012	BOO	JAS	Anthozoa	Alcyonacea	Keratoisididae	*Jasonisis*	1
147289	6543	5	ORH	BT	Mar-22	AKW	-34.7	171.7	988	1012	BOO	BOO	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*	1
147244	6543	6	ORH	BT	Mar-22	AKW	-34.8	171.6	946	949		JAS	Anthozoa	Alcyonacea	Keratoisididae	*Jasonisis*?	1
147247	6543	7	ORH	BT	Mar-22	AKW	-34.7	171.6	886	1120	BOO	BOO	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*	1
147249	6543	7	ORH	BT	Mar-22	AKW	-34.7	171.6	886	1120	BOO	BOO	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*	1
147282	6543	10	ORH	BT	Mar-22	AKW	-34.7	171.7	924	990	CHR	CTP	Anthozoa	Alcyonacea	Primnoidae	*Calyptrophora*	1
147294	6543	10	ORH	BT	Mar-22	AKW	-34.7	171.7	924	990	CHR	CHR	Anthozoa	Alcyonacea	Chyrsogorgiidae	*Chrysogorgia*	1
147286	6543	11	ORH	BT	Mar-22	AKW	-34.7	171.6	936	995	UNF	PRI	Anthozoa	Alcyonacea	Primnoidae	*Primnoidae*	1
147288	6543	11	ORH	BT	Mar-22	AKW	-34.7	171.6	936	995	SIA	COO	Hydrozoa	Anthoathecata	Stylasteridae	*Conopora verrucosa*	1
147284	6543	12	ORH	BT	Mar-22	AKW	-34.7	171.6	925	960	CHR	CTP	Anthozoa	Alcyonacea	Primnoidae	*Calyptrophora clinata*	1
147285	6543	12	ORH	BT	Mar-22	AKW	-34.7	171.6	925	960	CHR	THO	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*	1
147287	6543	13	ORH	BT	Mar-22	AKW	-34.7	171.6	928	940	LEI	LEI	Anthozoa	Antipatharia	Leiopathidae	*Leiopathes*	1
147248	6543	15	ORH	BT	Mar-22	AKW	-34.7	171.6	940	1060	MTL	MTL	Anthozoa	Alcyonacea	Chrysogorgiidae	*Metallogorgia*	1
147246	6543	18	ORH	BT	Mar-22	AKW	-34.8	171.6	900	962	BOO	ISP	Anthozoa	Alcyonacea	Keratoisididae	*Isidella*	1
147182	6557	16	SQU	BT	Mar-22	SOU	-48	168.5		140	COF	COF	Anthozoa	Scleractinia	Flabellidae	*Flabellum knoxi*	1
147183	6567	37	ORH	BT	Apr-22	CEE	-41.8	174.6	693		GOC	PMN	Anthozoa	Alcyonacea	Primnoidae	*Primnoa*	1
147181	6567	76	BYX	BT	Apr-22	CEE	-39.6	178.4	258		PRI	CTP	Anthozoa	Alcyonacea	Primnoidae	*Calyptrophora*	1
147180	6567	88	BYX	BT	May-22	CEE	-39.9	178.1	494	634	COB	THO	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*	1
147216	6580	63	SSO	BT	Jun-22	SEC	-44.8	174.3	915		PAB	PAB	Anthozoa	Alcyonacea	Paragorgiidae	*Paragorgia*	1
160308	6596	13	ORH	BT	May-22	AKW	-34.7	171.6	980		CHR	CHR	Anthozoa	Alcyonacea	Chrysogorgiidae	*Chrysogorgia*	1

niwa_cat_nbr	trip_number	station_number	target_species	gear_code	event_start_date	start_obs_fma	trunc_start_latitude	trunc_start_longitude	start_seabed_depth	end_seabed_depth	initial_id	expert_species	class_name	order_name	family_name	taxon	sample_count
160303	6596	13	ORH	BT	May-22	AKW	-34.7	171.6	980		HDR	COR	Hydrozoa	Anthoathecata	Stylasteridae	*Stylasteridae indet.*	1
160307	6596	17	ORH	BT	May-22	AKW	-34.7	171.6	990		STI	IRI	Anthozoa	Alcyonacea	Chrysogorgiidae	*Iridogorgia*	1
160305	6596	17	ORH	BT	May-22	AKW	-34.7	171.6	990		ISI	ISP	Anthozoa	Alcyonacea	Keratoisididae	*Isidella*?	1
160304	6596	17	ORH	BT	May-22	AKW	-34.7	171.6	990		LLE	ISI	Anthozoa	Alcyonacea	Keratoisididae	Keratoisididae	1
160306	6596	17	ORH	BT	May-22	AKW	-34.7	171.6	990		BOO	BOO	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*	1
160310	6596	35	ORH	BT	May-22	AKW	-34.7	171.6	955			CAY	Anthozoa	Scleractinia	Caryophylliidae	*Caryophyllia*	3
160311	6596	35	ORH	BT	May-22	AKW	-34.7	171.6	955			PRI	Anthozoa	Alcyonacea	Primnoidae	Primnoidae	3
160309	6596	35	ORH	BT	May-22	AKW	-34.7	171.6	955		GDU	SVA	Anthozoa	Scleractinia	Caryophylliidae	*Solenosmilia variabilis*	1

Appendix C Summary of digital images processed and identified.

This publicly accessible website can be used to search the target species, initial and expert ID species codes: https://marlin.niwa.co.nz/species_codes/ and FMA codes: https://marlin.niwa.co.nz/area_codes/. The fishing method codes are as follows: TWL = Trawling, includes bottom trawl and midwater trawl; BLL = Bottom LongLine; SN = Set Net; BT = Bottom Trawl (single); PRB = Precision Seafood Harvesting Bottom Trawl (also referred to as MHS = Modular Harvest System).

Trip number	Station number	Fishing method	Target species	Event start date	Start obs FMA	Start latitude	Start longitude	Start seabed depth	Phylum	Class	Order	Family	Genus	Species	NIWA Cat. No.	OSD No.	Specimen count	Initial OBS ID Code	Expert ID Code
6333	104	BT	HOK	Jul-21	SEC	-42.9	175.8	587	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	cf. *Dendropathes*		146541		1	COU	DDP
6340	41	BT	ORH	Jul-21	SOE	-42.7	182.1	818	Cnidaria	Anthozoa	Scleractinia	Oculinidae	*Madrepora*	*oculata*			1	ERO	MOC
6340	46	BT	ORH	Jul-21	SOE	-42.7	182.1	843	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Metafannyella*				1	HDF	MEF
6340	46	BT	ORH	Jul-21	SOE	-42.7	182.1	843	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Metafannyella*				0	HDF	MEF
6370	24	BT	ORH	Jul-21	SOE	-42.6	182.6	1384	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	*Paragorgia*				1		PAB
6370	142	BT	SSO	Sep-21	SEC	-44.8	173.3	976	Cnidaria	Anthozoa	Scleractinia	Oculinidae	*Madrepora*	*oculata*			1		MOC
6370	142	BT	SSO	Sep-21	SEC	-44.8	173.3	976	Cnidaria	Anthozoa	Scleractinia	Oculinidae	*Madrepora*	*oculata*			0		MOC
6372	2	BT	SQU	Jul-21	SOU	-48.8	166.5	370	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Desmophyllum*	*dianthus*			1		DDI
6372	2	BT	SQU	Jul-21	SOU	-48.8	166.5	370	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Desmophyllum*	*dianthus*			0		DDI
6372	10	BT	SQU	Jul-21	SOU	-48.7	166.4	353	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*				1		THO
6372	17	BT	SQU	Aug-21	SOU	-48.8	166.5	357	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*				1		THO
6372	33	BT	SQU	Aug-21	SOU	-48.8	166.6	365	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*				1		THO
6372	33	BT	SQU	Aug-21	SOU	-48.8	166.6	365	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*				1		THO
6385	1	BT	ORH	Aug-21	CET	-39.7	167.2	927	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Dendropathes*				1	COB	DDP
6385	11	BT	ORH	Aug-21	CET	-39.7	167.2	840	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*				1	GOC	THO
6385	14	BT	ORH	Aug-21	CET	-39.7	167.2	927	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Lepidisis*				1	GOC	LLE
6385	14	BT	ORH	Aug-21	CET	-39.7	167.2	927	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Lepidisis*				1	GOC	LLE
6385	15	BT	ORH	Aug-21	CET	-39.7	167.2	930	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Dendropathes*				1	COB	DDP

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6385	16	BT	ORH	Aug-21	CET	-39.8	167.2	963	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Parantipathes*				1	COB	PTP
6406	47	BT	SQU	Oct-21	SUB	-49.1	171.9	149	Cnidaria	Anthozoa	Alcyonacea	Isididae					1	COU	ISI
6406	47	BT	SQU	Oct-21	SUB	-49.1	171.9	149	Porifera								1	COU	ONG
6419	34	BT	ORH	Oct-21	SOU	-47	165.8	971	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*				1		BOO
6419	34	BT	ORH	Oct-21	SOU	-47	165.8	971	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*				1		BOO
6419	34	BT	ORH	Oct-21	SOU	-47	165.8	971	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*				0		BOO
6419	34	BT	ORH	Oct-21	SOU	-47	165.8	971	Cnidaria	Anthozoa	Alcyonacea	Isididae					1		ISI
6419	34	BT	ORH	Oct-21	SOU	-47	165.8	971	Cnidaria	Anthozoa	Alcyonacea	Isididae					0		ISI
6419	34	BT	ORH	Oct-21	SOU	-47	165.8	971	Cnidaria	Anthozoa	Alcyonacea	Isididae					0		ISI
6419	39	BT	ORH	Oct-21	SOU	-47	165.8	989	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae					1		PAB
6419	39	BT	ORH	Oct-21	SOU	-47	165.8	989	Cnidaria	Anthozoa	Alcyonacea	Isididae					1		ISI
6419	39	BT	ORH	Oct-21	SOU	-47	165.8	989	Cnidaria	Anthozoa	Alcyonacea	Isididae					1		ISI
6419	66	BT	SSO	Oct-21	SUB	-47.3	178.1	916	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Bathypathes*				1		BTP
6419	66	BT	SSO	Oct-21	SUB	-47.3	178.1	916	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Bathypathes*				0		BTP
6419	66	BT	SSO	Oct-21	SUB	-47.3	178.1	916	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Bathypathes*				0		BTP
6419	66	BT	SSO	Oct-21	SUB	-47.3	178.1	916	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*				1		BOO
6419	66	BT	SSO	Oct-21	SUB	-47.3	178.1	916	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*				1		BOO
6419	118	BT	ORH	Oct-21	SOE	-44.4	185.1	1030	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Solenosmilia*	*variabilis*			1		SVA
6419	118	BT	ORH	Oct-21	SOE	-44.4	185.1	1030	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Solenosmilia*	*variabilis*			1		SVA
6419	118	BT	ORH	Oct-21	SOE	-44.4	185.1	1030	Cnidaria	Anthozoa	Scleractinia	Oculinidae	*Madrepora*	*oculata*			1		MOC
6419	145	BT	SSO	Oct-21	SEC	-45	174.9	935	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Solenosmilia*	*variabilis*			0		SVA
6419	145	BT	SSO	Oct-21	SEC	-45	174.9	935	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Primnoa*				1		PMN
6419	145	BT	SSO	Oct-21	SEC	-45	174.9	935	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Solenosmilia*	*variabilis*			1		SVA
6423	44	BT	ORH	Oct-21	SOE	-44.1	185.5	1080	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Solenosmilia*	*variabilis*			1		SVA

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6427	90	BT	HOK	Nov-21	SOI	-49.7	167.7	517	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Desmophyllum*	*dianthus*			1		DDI
6427	90	BT	HOK	Nov-21	SOI	-49.7	167.7	517	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Desmophyllum*	*dianthus*			0		DDI
6427	90	BT	HOK	Nov-21	SOI	-49.7	167.7	517	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Desmophyllum*	*dianthus*			0		DDI
6432	19	BT	HOK	Oct-21	SOE	-43.7	177.6	494	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*				1		COF
6432	19	BT	HOK	Oct-21	SOE	-43.7	177.6	494	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*				0		COF
6432	19	BT	HOK	Oct-21	SOE	-43.7	177.6	494	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*				0		COF
6432	19	BT	HOK	Oct-21	SOE	-43.7	177.6	494	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*				0		COF
6456	1	SN	SCH	Nov-21	SOU	-46.2	167.1		Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	*Errina*				1		ERR
6456	4	SN	SCH	Nov-21	SOU	-45.8	166.4		Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	*Errina*				0		ERR
6456	4	SN	SCH	Nov-21	SOU	-45.8	166.4		Cnidaria	Hydrozoa	Anthoathecata	Stylasteridae	*Errina*				0		ERR
6458	53	BT	ORH	Dec-21	CHA	-41	169.3	918	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Isidella*				1		ISP
6458	53	BT	ORH	Dec-21	CHA	-41	169.3	918	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Isidella*				0		ISP
6458	53	BT	ORH	Dec-21	CHA	-41	169.3	918	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Isidella*				0		ISP
6458	36	BT	ORH	Nov-21	CHA	-40.7	168.3	988	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Isidella*				1		ISP
6458	42	BT	ORH	Nov-21	CHA	-41.1	168.6	954	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Isidella*				1		ISP
6458	42	BT	ORH	Nov-21	CHA	-41.1	168.6	954	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Isidella*				0		ISP
6458	42	BT	ORH	Nov-21	CHA	-41.1	168.6	954	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Isidella*				0		ISP
6458	42	BT	ORH	Nov-21	CHA	-41.1	168.6	954	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Isidella*				0		ISP
6485	29	MW	RBY	Dec-21	CEE	-37.4	179	260	Cnidaria	Anthozoa	Alcyonacea	Acanthogorgiidae	*Acanthogorgia*		147208	6137	1	GOC	ACC
6486	60	BT	ORH	Jan-22	SOE	-44.2	185.4	1080	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Solenosmilia*	*variabilis*			1		SVA
6486	60	BT	ORH	Jan-22	SOE	-44.2	185.4	1080	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Solenosmilia*	*variabilis*			1		SVA
6486	60	BT	ORH	Jan-22	SOE	-44.2	185.4	1080	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Solenosmilia*	*variabilis*			1		SVA
6486	60	BT	ORH	Jan-22	SOE	-44.2	185.4	1080	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Solenosmilia*	*variabilis*			1		SVA
6486	60	BT	ORH	Jan-22	SOE	-44.2	185.4	1080	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Solenosmilia*	*variabilis*			1		SVA

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6487	79	BT	HOK	Jan-22	SOU	-47.4	169.5	521	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Tokoprymno*				1		TOK
6487	79	BT	HOK	Jan-22	SOU	-47.4	169.5	521	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Tokoprymno*				0		TOK
6491	150	BT	HOK	Feb-22	SEC	-42.9	174.7	664	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Desmophyllum*	*dianthus*			1		DDI
6495	38	BT	ORH	Jan-22	SOE	-42.8	184.7		Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	*Paragorgia*				1	PAB	PAB
6495	38	BT	ORH	Jan-22	SOE	-42.8	184.7		Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	*Paragorgia*				0	PAB	PAB
6495	44	BT	ORH	Jan-22	SOE	-44.1	185.4		Porifera	Hexactinellida	Sceptrulophora	Farreidae	*Farrea*				1	COU	FAR
6497	10	BT	HAK	Dec-21	SUB	-49	166.7	445	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Metafannyella*		147080	5979	1	THO	MEF
6497	10	BT	HAK	Dec-21	SUB	-49	166.7	445	Cnidaria	Anthozoa	Alcyonacea	Acanthogorgiidae	*Acanthogorgia*		147092	5994	1	MTL	ACC
6497	10	BT	HAK	Dec-21	SUB	-49	166.7	445	Cnidaria	Anthozoa	Alcyonacea	Acanthogorgiidae	*Acanthogorgia*		147090	5992	1	HDR	ACC
6497	11	BT	HAK	Dec-21	SUB	-49	166.6	540	Cnidaria	Anthozoa	Corallimorpharia				147082	5981	1	CLM	CLM
6497	12	BT	HAK	Dec-21	SUB	-49	166.7	560	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Desmophyllum*	*dianthus*	147083	5982	1	ERO	DDI
6497	20	BT	HAK	Jan-22	SUB	-49	166.7	550	Cnidaria	Anthozoa	Alcyonacea	Acanthogorgiidae	*Acanthogorgia*		147091	5993	1	MTL	ACC
6497	38	BT	SQU	Jan-22	SOU	-48.8	166.8	250	Cnidaria	Hydrozoa	Leptothecata	Zygophylacidae	*Cryptolaria*	*prima*	147075	5974	1	THO	CRT
6497	60	BT	SWA	Feb-22	SOU	-48.6	167.7	140	Cnidaria	Hydrozoa	Leptothecata	Zygophylacidae	*Cryptolaria*	*prima*	147093	5995	1	THO	CRT
6497	65	BT	SQU	Feb-22	SOU	-47.8	167	145	Annelida	Polychaeta					147074	5973	1	UNI	POL
6497	70	BT	SQU	Feb-22	SOU	-47.7	166.6	170	Cnidaria	Hydrozoa	Leptothecata	Plumulariidae	*Nemertesia*	*pinnatifida*	147096	5998	1	GOC	HDF
6502	43	BT	HOK	Jan-22	SOE	-44.2	181.9	528	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*				1		COF
6502	43	BT	HOK	Jan-22	SOE	-44.2	181.9	528	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*				0		COF
6504	9	MW	BAR	Jan-22	CHA	-40.4	172	177	Cnidaria	Anthozoa	Pennatulacea	Anthoptilidae					1		AGF
6504	9	MW	BAR	Jan-22	CHA	-40.4	172	177	Cnidaria	Anthozoa	Pennatulacea	Anthoptilidae					0		AGF
6504	15	MW	BAR	Jan-22	CHA	-40.6	171.7	186	Cnidaria	Anthozoa	Pennatulacea	Anthoptilidae					70		AGF
6505	54	BT	SQU	Feb-22	SOU	-47.7	166.8	169	Annelida	Polychaeta	Sabellida	Serpulidae	*Salmacina*	*australis*			1	COU	SZS
6505	54	BT	SQU	Feb-22	SOU	-47.7	166.8	169	Porifera								1	COU	ONG
6505	60	BT	SQU	Feb-22	SOU	-47.7	166.6	174	Rock								4	COU	ROK

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6505	60	BT	SQU	Feb-22	SOU	-47.7	166.6	174	Porifera								4	COU	ONG
6505	60	BT	SQU	Feb-22	SOU	-47.7	166.6	174	Annelida	Polychaeta							4	COU	POL
6505	60	BT	SQU	Feb-22	SOU	-47.7	166.6	174	Rock								0	COU	ROK
6505	60	BT	SQU	Feb-22	SOU	-47.7	166.6	174	Porifera								0	COU	ONG
6505	60	BT	SQU	Feb-22	SOU	-47.7	166.6	174	Annelida	Polychaeta							0	COU	POL
6520	11	BLL	SNA	Feb-22	AKE	-35.1	174.4	128	Cnidaria	Anthozoa	Antipatharia	Myriopathidae	*Antipathella*				1	DEN	AHL
6520	11	BLL	SNA	Feb-22	AKE	-35.1	174.4	128	Cnidaria	Anthozoa	Antipatharia	Myriopathidae	*Antipathella*				0	DEN	AHL
6520	11	BLL	SNA	Feb-22	AKE	-35.1	174.4	128	Cnidaria	Anthozoa	Antipatharia	Myriopathidae	*Antipathella*				0	DEN	AHL
6520	11	BLL	SNA	Feb-22	AKE	-35.1	174.4	128	Cnidaria	Anthozoa	Scleractinia	Oculinidae	*Oculina*	*virgosa*			1	STL	OVI
6520	11	BLL	SNA	Feb-22	AKE	-35.1	174.4	128	Cnidaria	Anthozoa	Scleractinia	Oculinidae	*Oculina*	*virgosa*			0	STL	OVI
6520	11	BLL	SNA	Feb-22	AKE	-35.1	174.4	128	Cnidaria	Anthozoa	Scleractinia	Oculinidae	*Oculina*	*virgosa*			0	STL	OVI
6520	11	BLL	SNA	Feb-22	AKE	-35.1	174.4	128	Cnidaria	Anthozoa	Scleractinia	Oculinidae	*Oculina*	*virgosa*			0	STL	OVI
6525	7	PRB	HOK	Mar-22	AKE	-36.7	176.2	412	Cnidaria	Anthozoa	Antipatharia	Schizopathidae					4		COB
6525	36	PRB	SNA	Apr-22	AKE	-36.1	175.6	119	Cnidaria	Anthozoa	Pennatulacea	Anthoptilidae					2		AGF
6530	1	BT	SSO	Feb-22	SOE	-44.5	176.4	700	Cnidaria	Anthozoa	Alcyonacea	Clavulariidae	*Telesto*				1	CBR	TLO
6530	1	BT	SSO	Feb-22	SOE	-44.5	176.4	700	Cnidaria	Anthozoa	Alcyonacea	Isididae					1	CBR	ISI
6530	1	BT	SSO	Feb-22	SOE	-44.5	176.4	700	Cnidaria	Anthozoa	Alcyonacea	Clavulariidae	*Telesto*				0	CBR	TLO
6530	1	BT	SSO	Feb-22	SOE	-44.5	176.4	700	Cnidaria	Anthozoa	Alcyonacea	Isididae					0	CBR	ISI
6530	25	BT	ORH	Mar-22	SOE	-44.5	184.6	720	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Lillipathes*				1	COB	LIL
6530	25	BT	ORH	Mar-22	SOE	-44.5	184.6	720	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Lillipathes*				0	COB	LIL
6530	26	BT	ORH	Mar-22	SOE	-44.4	184.9	650	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*				1	ISI	BOO
6530	26	BT	ORH	Mar-22	SOE	-44.4	184.9	650	Cnidaria	Anthozoa	Alcyonacea	Clavulariidae	*Telesto*				1	ISI	TLO
6530	26	BT	ORH	Mar-22	SOE	-44.4	184.9	650	Cnidaria	Anthozoa	Alcyonacea	Clavulariidae	*Telesto*				0	ISI	TLO
6530	26	BT	ORH	Mar-22	SOE	-44.4	184.9	650	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*				0	ISI	BOO

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6530	26	BT	ORH	Mar-22	SOE	-44.4	184.9	650	Cnidaria	Anthozoa	Alcyonacea	Clavulariidae	*Telesto*				1	ISI	TLO
6530	26	BT	ORH	Mar-22	SOE	-44.4	184.9	650	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*				1	ISI	BOO
6533	48	BT	SQU	Apr-22	SEC	-44.2	175.8	155	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Caryophyllia*				1		CAY
6533	48	BT	SQU	Apr-22	SEC	-44.2	175.8	155	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Caryophyllia*				0		CAY
6533	48	BT	SQU	Apr-22	SEC	-44.2	175.8	155	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Caryophyllia*				0		CAY
6533	54	BT	SQU	Apr-22	SOE	-44.2	176.2		Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*				1		THO
6533	54	BT	SQU	Apr-22	SOE	-44.2	176.2		Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*				0		THO
6533	54	BT	SQU	Apr-22	SOE	-44.2	176.2		Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*				0		THO
6533	55	BT	SQU	Apr-22	SOE	-44.3	176.1	181	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*				1		THO
6533	16	BT	SQU	Mar-22	SOU	-48.8	166.7	202	Cnidaria	Hydrozoa	Leptothecata	Zygophylacidae	*Cryptolaria*				1		CRT
6533	52	BT	SQU	Apr-22	SEC	-44.3	175.9	260	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Goniocorella*	*dumosa*			0		GDU
6533	52	BT	SQU	Apr-22	SEC	-44.3	175.9	260	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Goniocorella*	*dumosa*			1		GDU
6533	52	BT	SQU	Apr-22	SEC	-44.3	175.9	260	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Goniocorella*	*dumosa*			1		GDU
6533	52	BT	SQU	Apr-22	SEC	-44.3	175.9	260	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Goniocorella*	*dumosa*			0		GDU
6533	52	BT	SQU	Apr-22	SEC	-44.3	175.9	260	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Desmophyllum*	*dianthus*			1		DDI
6533	52	BT	SQU	Apr-22	SEC	-44.3	175.9	260	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Desmophyllum*	*dianthus*			0		DDI
6533	52	BT	SQU	Apr-22	SEC	-44.3	175.9	260	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Desmophyllum*	*dianthus*			0		DDI
6533	52	BT	SQU	Apr-22	SEC	-44.3	175.9	260	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Goniocorella*	*dumosa*			1		GDU
6533	52	BT	SQU	Apr-22	SEC	-44.3	175.9	260	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Goniocorella*	*dumosa*			0		GDU
6533	53	BT	SQU	Apr-22	SEC	-44	175.9	215	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*	*knoxi*			3		COF
6533	53	BT	SQU	Apr-22	SEC	-44	175.9	215	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*	*knoxi*			0		COF
6533	53	BT	SQU	Apr-22	SEC	-44	175.9	215	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*	*knoxi*			0		COF
6533	97	BT	SQU	May-22	SOI	-49.6	167.1	225	Cnidaria	Hydrozoa							1		HDR
6533	97	BT	SQU	May-22	SOI	-49.6	167.1	225	Cnidaria	Hydrozoa							0		HDR

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6533	106	BT	SQU	May-22	SOI	-50.5	167.5	161	Porifera						147196	6115	1	COU	ONG
6534	13	MW	SQU	Feb-22	SEC	-43.5	175.1	181	Cnidaria	Anthozoa	Antipatharia	Myriopathidae	*Antipathella*				1	COB	AHL
6534	13	MW	SQU	Feb-22	SEC	-43.5	175.1	181	Cnidaria	Anthozoa	Antipatharia	Myriopathidae	*Antipathella*				0	COB	AHL
6534	13	MW	SQU	Feb-22	SEC	-43.5	175.1	181	Cnidaria	Anthozoa	Antipatharia	Myriopathidae	*Antipathella*				0	COB	AHL
6534	13	MW	SQU	Feb-22	SEC	-43.5	175.1	181	Cnidaria	Anthozoa	Antipatharia	Myriopathidae	*Antipathella*				0	COB	AHL
6534	13	MW	SQU	Feb-22	SEC	-43.5	175.1	181	Cnidaria	Anthozoa	Antipatharia	Myriopathidae	*Antipathella*				0	COB	AHL
6534	13	MW	SQU	Feb-22	SEC	-43.5	175.1	181	Cnidaria	Anthozoa	Antipatharia	Myriopathidae	*Antipathella*				0	COB	AHL
6543	3	BT	ORH	Mar-22	AKW	-34.8	171.6	946	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*				1	BOO	BOO
6543	5	BT	ORH	Mar-22	AKW	-34.7	171.7	988	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Calyptrophora*				1	CTP	CTP
6543	5	BT	ORH	Mar-22	AKW	-34.7	171.7	988	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	*Iridogorgia*		147243	6218	1	IRI	IRI
6543	5	BT	ORH	Mar-22	AKW	-34.7	171.7	988	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	*Iridogorgia*				1	CHR	IRI
6543	10	BT	ORH	Mar-22	AKW	-34.7	171.7	924	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Calyptrophora*				1	CHR	CTP
6543	10	BT	ORH	Mar-22	AKW	-34.7	171.7	924	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	*Chrysogorgia*				1	CHR	CHR
6543	15	BT	ORH	Mar-22	AKW	-34.7	171.6	940	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	*Metallogorgia*		147248	6223	1	MTL	MTL
6543	15	BT	ORH	Mar-22	AKW	-34.7	171.6	940	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	*Metallogorgia*		147248	6223	0	MTL	MTL
6543	19	BT	ORH	Mar-22	AKW	-34.7	171.6	920	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*				0		BOO
6543	19	BT	ORH	Mar-22	AKW	-34.7	171.6	920	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*				0		BOO
6543	19	BT	ORH	Mar-22	AKW	-34.7	171.6	920	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*				1		BOO
6543	19	BT	ORH	Mar-22	AKE	-34.7	171.6	920	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	*Chrysogorgia*				1		CHR
6543	19	BT	ORH	Mar-22	AKE	-34.7	171.6	920	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*				1		BOO
6543	19	BT	ORH	Mar-22	AKE	-34.7	171.6	920	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*				0		BOO
6543	19	BT	ORH	Mar-22	AKE	-34.7	171.6	920	Cnidaria	Anthozoa	Antipatharia	Leiopathidae	*Leiopathes*				1		LEI
6543	19	BT	ORH	Mar-22	AKE	-34.7	171.6	920	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	*Chrysogorgia*				2		CHR
6543	19	BT	ORH	Mar-22	AKE	-34.7	171.6	920	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Isidella*				1		ISP

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6543	19	BT	ORH	Mar-22	AKE	-34.7	171.6	920	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Isidella*				0		ISP
6543	19	BT	ORH	Mar-22	AKE	-34.7	171.6	920	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Isidella*				1		ISP
6543	19	BT	ORH	Mar-22	AKE	-34.7	171.6	920	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Isidella*				0		ISP
6543	19	BT	ORH	Mar-22	AKE	-34.7	171.6	920	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*				1		BOO
6543	19	BT	ORH	Mar-22	AKE	-34.7	171.6	920	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	*Chrysogorgia*				1		CHR
6543	19	BT	ORH	Mar-22	AKE	-34.7	171.6	920	Echinodermata	Ophiuroidea	Euryalida	Gorgonocephalidae	*Gorgonocephalus*				1		GOR
6543	19	BT	ORH	Mar-22	AKE	-34.7	171.6	920	Cnidaria	Anthozoa	Alcyonacea	Chrysogorgiidae	*Iridogorgia*				1		IRI
6543	19	BT	ORH	Mar-22	AKE	-34.7	171.6	920	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Isidella*				1		ISP
6543	19	BT	ORH	Mar-22	AKE	-34.7	171.6	920	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Isidella*				1		ISP
6543	19	BT	ORH	Mar-22	AKE	-34.7	171.6	920	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Isidella*				1		ISP
6543	3	BT	ORH	Mar-22	AKW	-34.8	171.6	946	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*				1	BOO	BOO
6543	3	BT	ORH	Mar-22	AKW	-34.8	171.6	946	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*				1		BOO
6543	3	BT	ORH	Mar-22	AKW	-34.8	171.6	946	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*				1		BOO
6543	15	BT	ORH	Mar-22	AKW	-34.7	171.6	940	Cnidaria	Anthozoa	Alcyonacea	Keratoisididae	*Keratoisis*				1		BOO
6547	2	BT	SQU	Mar-22	SEC	-43.5	175.4	175	Cnidaria	Anthozoa	Antipatharia	Myriopathidae	*Antipathella*				1		AHL
6547	2	BT	SQU	Mar-22	SEC	-43.5	175.4	175	Cnidaria	Anthozoa	Antipatharia	Myriopathidae	*Antipathella*				0		AHL
6547	26	BT	SQU	Mar-22	SOU	-48.6	167.6	140	Cnidaria	Hydrozoa	Leptothecata	Zygophylacidae	*Cryptolaria*				3		CRT
6547	46	BT	SQU	Mar-22	SOU	-48.6	167.8	140	Cnidaria	Hydrozoa	Leptothecata	Zygophylacidae	*Cryptolaria*				4	THO	CRT
6557	1	BT	SQU	Mar-22	SOU	-48	168.5		Cnidaria	Hydrozoa							1	COU	HDR
6557	2	BT	SQU	Mar-22	SOU	-48.2	168.3	138	Bryozoa	Stenolaemata	Cyclostomatida	Cerioporidae	*Tetrocycloecia*	*neozelanica*			1	COU	TNE
6557	4	BT	SQU	Mar-22	SOU	-48	168.6	208	Bryozoa	Stenolaemata	Cyclostomatida	Horneridae	*Hornera*	*foliacea*			1	COZ	HFO
6557	4	BT	SQU	Mar-22	SOU	-48	168.6	208	Cnidaria	Hydrozoa	Leptothecata	Zygophylacidae	*Cryptolaria*				1	GOR	CRT
6557	4	BT	SQU	Mar-22	SOU	-48	168.6	208	Bryozoa	Stenolaemata	Cyclostomatida	Cerioporidae	*Tetrocycloecia*	*neozelanica*			1	CBB	TNE
6557	6	BT	SQU	Mar-22	SOU	-47.8	168.7		Bryozoa	Stenolaemata	Cyclostomatida	Cerioporidae	*Tetrocycloecia*	*neozelanica*			1	CBD	TNE

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6557	14	BT	SQU	Apr-22	SEC	-44	175.9		Cnidaria	Anthozoa	Alcyonacea	Primnoidae					1	GOR	PRI
6557	16	BT	SQU	Apr-22	SOE	-44.3	176		Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*	*knoxi*	147182	6010	1	COU	COF
6557	35	BT	SQU	Apr-22	SOE	-44.1	176.1		Echinodermata	Ophiuroidea	Euryalida	Gorgonocephalidae	*Gorgonocephalus*	*chilensis*	147184	6103	1	GOR	GOR
6560	33	BT	HOK	Apr-22	SOE	-44.3	182.4	530	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*				9	COF	COF
6560	33	BT	HOK	Apr-22	SOE	-44.3	182.4	530	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*				0	COF	COF
6560	54	BT	HOK	Apr-22	SEC	-43.2	174.5	515	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*				0	COF	COF
6560	54	BT	HOK	Apr-22	SEC	-43.2	174.5	515	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*				1	COF	COF
6560	89	BT	HOK	Apr-22	SEC	-43.9	174.6	508	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*				1	COF	COF
6560	89	BT	HOK	Apr-22	SEC	-43.9	174.6	508	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*				1	COF	COF
6560	92	BT	HOK	Apr-22	SEC	-44	174.7	504	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*				1	COF	COF
6560	92	BT	HOK	Apr-22	SEC	-44	174.7	504	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*				0	COF	COF
6560	92	BT	HOK	Apr-22	SEC	-44	174.7	504	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*				1	COF	COF
6560	92	BT	HOK	Apr-22	SEC	-44	174.7	504	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*				1	COF	COF
6560	92	BT	HOK	Apr-22	SEC	-44	174.7	504	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*				0	COF	COF
6560	95	BT	HOK	Apr-22	SEC	-43.8	174.6	512	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*				1	COF	COF
6560	95	BT	HOK	Apr-22	SEC	-43.8	174.6	512	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*				1	COF	COF
6563	5	BLL	BAS	Mar-22	ET	-32.9	166.9	302	Cnidaria	Anthozoa	Antipatharia	Myriopathidae	*Antipathella*				1		AHL
6563	5	BLL	BAS	Mar-22	ET	-32.9	166.9	302	Cnidaria	Anthozoa	Antipatharia	Myriopathidae	*Antipathella*				0		AHL
6563	5	BLL	BAS	Mar-22	ET	-32.9	166.9	302	Cnidaria	Anthozoa	Antipatharia	Myriopathidae	*Antipathella*				0		AHL
6563	6	BLL	BAS	Mar-22	ET	-33.4	167.5	489	Cnidaria	Anthozoa	Zoantharia						1		ZAH
6563	6	BLL	BAS	Mar-22	ET	-33.4	167.5	489	Cnidaria	Anthozoa	Zoantharia						0		ZAH
6563	6	BLL	BAS	Mar-22	ET	-33.4	167.5	489	Cnidaria	Anthozoa	Zoantharia						0		ZAH
6567	25	BT	ORH	Apr-22	SEC	-42.9	173.8	1064	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Solenosmilia*	*variabilis*			1	CBR	SVA
6567	25	BT	ORH	Apr-22	SEC	-42.9	173.8	1064	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Solenosmilia*	*variabilis*			0	CBR	SVA

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6567	25	BT	ORH	Apr-22	SEC	-42.9	173.8	1064	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Solenosmilia*	*variabilis*			0	CBR	SVA
6567	25	BT	ORH	Apr-22	SEC	-42.9	173.8	1064	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Solenosmilia*	*variabilis*			1	CBR	SVA
6567	25	BT	ORH	Apr-22	SEC	-42.9	173.8	1064	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Solenosmilia*	*variabilis*			1	CBR	SVA
6567	25	BT	ORH	Apr-22	SEC	-42.9	173.8	1064	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Solenosmilia*	*variabilis*			1	CBR	SVA
6567	26	BT	ORH	Apr-22	SEC	-42.9	173.8	1121	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Solenosmilia*	*variabilis*			1	CBR	SVA
6567	26	BT	ORH	Apr-22	SEC	-42.9	173.8	1121	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Solenosmilia*	*variabilis*			0	CBR	SVA
6567	26	BT	ORH	Apr-22	SEC	-42.9	173.8	1121	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Solenosmilia*	*variabilis*			0	CBR	SVA
6567	26	BT	ORH	Apr-22	SEC	-42.9	173.8	1121	Cnidaria	Anthozoa							1	CBR	GOC
6567	37	BT	ORH	Apr-22	CEE	-41.8	174.6	693	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Primnoa*		147183	6102	0	GOC	PMN
6567	37	BT	ORH	Apr-22	CEE	-41.8	174.6	693	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Primnoa*		147183	6102	0	GOC	PMN
6567	37	BT	ORH	Apr-22	CEE	-41.8	174.6	693	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Primnoa*		147183	6102	3	GOC	PMN
6567	37	BT	ORH	Apr-22	CEE	-41.8	174.6	693	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Primnoa*		147183	6102	0	GOC	PMN
6567	37	BT	ORH	Apr-22	CEE	-41.8	174.6	693	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Primnoa*		147183	6102	0	GOC	PMN
6567	88	BT	BYX	May-22	CEE	-39.9	178.1	494	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*		147180	6096	1	COB	THO
6567	88	BT	BYX	May-22	CEE	-39.9	178.1	494	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*		147180	6096	0	COB	THO
6567	75	BT	BYX	Apr-22	CEE	-39.6	178.4	240	Cnidaria	Anthozoa	Antipatharia						1		COB
6567	75	BT	BYX	Apr-22	CEE	-39.6	178.4	240	Cnidaria	Anthozoa	Antipatharia	Myriopathidae	*Antipathella*				1		AHL
6567	75	BT	BYX	Apr-22	CEE	-39.6	178.4	240	Cnidaria	Anthozoa	Antipatharia	Myriopathidae	*Antipathella*				0		AHL
6567	76	BT	BYX	Apr-22	CEE	-39.6	178.4	258	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Telopathes*	*tasmaniensis*			0		TEO
6567	76	BT	BYX	Apr-22	CEE	-39.6	178.4	258	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Telopathes*	*tasmaniensis*			1		TEO
6567	76	BT	BYX	Apr-22	CEE	-39.6	178.4	258	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Telopathes*	*tasmaniensis*			0		TLP
6567	76	BT	BYX	Apr-22	CEE	-39.6	178.4	258	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Telopathes*	*tasmaniensis*			0		TLP
6568	53	BT	SQU	May-22	SEC	-44.3	175.9	203	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Goniocorella*	*dumosa*			1		GDU
6570	29	BLL	HAP	May-22	SOU	-46.3	166.8	101	Cnidaria	Hydrozoa							1		HDR

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6578	25	BT	SQU	May-22	SOI	-49.6	167.1	240	Bryozoa	Stenolaemata	Cyclostomatida	Cerioporidae	*Tetrocycloecia*	*neozelanica*			1	CBB	TNE
6578	25	BT	SQU	May-22	SOI	-49.6	167.1	240	Bryozoa	Stenolaemata	Cyclostomatida	Cerioporidae	*Tetrocycloecia*	*neozelanica*			0	CBB	TNE
6578	25	BT	SQU	May-22	SOI	-49.6	167.1	240	Bryozoa	Stenolaemata	Cyclostomatida	Cerioporidae	*Tetrocycloecia*	*neozelanica*			0	CBB	TNE
6578	25	BT	SQU	May-22	SOI	-49.6	167.1	240	Bryozoa	Stenolaemata	Cyclostomatida	Cerioporidae	*Tetrocycloecia*	*neozelanica*			0	CBB	TNE
6578	25	BT	SQU	May-22	SOI	-49.6	167.1	240	Bryozoa	Stenolaemata	Cyclostomatida	Cerioporidae	*Tetrocycloecia*	*neozelanica*			0	CBB	TNE
6578	25	BT	SQU	May-22	SOI	-49.6	167.1	240	Bryozoa	Stenolaemata	Cyclostomatida	Cerioporidae	*Tetrocycloecia*	*neozelanica*			0	CBB	TNE
6578	25	BT	SQU	May-22	SOI	-49.6	167.1	240	Bryozoa	Stenolaemata	Cyclostomatida	Cerioporidae	*Tetrocycloecia*	*neozelanica*			0	CBB	TNE
6578	31	BT	SQU	May-22	SEC	-44.6	172.6	325	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*				1	COF	COF
6580	63	BT	SSO	Jun-22	SEC	-44.8	174.3	915	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	*Paragorgia*		147216	6146	1	PAB	PAB
6580	63	BT	SSO	Jun-22	SEC	-44.8	174.3	915	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	*Paragorgia*		147216	6146	0	PAB	PAB
6580	63	BT	SSO	Jun-22	SEC	-44.8	174.3	915	Cnidaria	Anthozoa	Scleractinia	Caryophylliidae	*Goniocorella*	*dumosa*			1	GDU	GDU
6589	4	BT	CDL	May-22	CEE	-39.9	178.1	474	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*				1		THO
6589	16	BT	BYX	May-22	CEE	-39.6	178.3	743	Cnidaria	Anthozoa	Alcyonacea	Plexauridae					1		PLE
6589	17	BT	BYX	May-22	CEE	-39.6	178.3	709	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Bathypathes*				1		BTP
6589	24	BT	CDL	May-22	CEE	-39.9	178.1	622	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*				0		THO
6589	24	BT	CDL	May-22	CEE	-39.9	178.1	622	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*				0		THO
6589	24	BT	CDL	May-22	CEE	-39.9	178.1	622	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*				1		THO
6589	24	BT	CDL	May-22	CEE	-39.9	178.1	622	Cnidaria	Anthozoa	Scleractinia	Flabellidae					1		CUP
6589	24	BT	CDL	May-22	CEE	-39.9	178.1	622	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*				1		THO
6589	42	BT	CDL	May-22	CEE	-39.6	178.3	745	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Bathypathes*				1		BTP
6589	42	BT	CDL	May-22	CEE	-39.6	178.3	745	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Bathypathes*				0		BTP
6589	42	BT	CDL	May-22	CEE	-39.6	178.3	745	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Bathypathes*				0		BTP
6589	43	BT	CDL	May-22	CEE	-39.6	178.3	765	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Bathypathes*				1		BTP
6589	43	BT	CDL	May-22	CEE	-39.6	178.3	765	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Bathypathes*				0		BTP

Trip number	Station number	Fishing method	Target species	Event start date	Start obs FMA	Start latitude	Start longitude	Start seabed depth	Phylum	Class	Order	Family	Genus	Species	NIWA Cat. No.	OSD No.	Specimen count	Initial OBS ID Code	Expert ID Code
6589	43	BT	CDL	May-22	CEE	-39.6	178.3	765	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Dendropathes*				1		DDP
6589	43	BT	CDL	May-22	CEE	-39.6	178.3	765	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Dendropathes*				0		DDP
6589	43	BT	CDL	May-22	CEE	-39.6	178.3	765	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*				1		THO
6589	44	BT	ORH	May-22	SOE	-42.7	180	1088	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Bathypathes*				1		BTP
6589	47	BT	ORH	May-22	SOE	-42.8	182.2	835	Cnidaria	Anthozoa	Alcyonacea	Acanthogorgiidae	*Acanthogorgia*				1		ACC
6589	47	BT	ORH	May-22	SOE	-42.8	182.2	835	Cnidaria	Anthozoa	Alcyonacea	Acanthogorgiidae	*Acanthogorgia*				0		ACC
6589	47	BT	ORH	May-22	SOE	-42.8	182.2	835	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Parantipathes*				0		PTP
6589	47	BT	ORH	May-22	SOE	-42.8	182.2	835	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Parantipathes*				1		PTP
6589	67	BT	ORH	Jun-22	SOE	-42.7	182.3	1074	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Parantipathes*				1		PTP
6589	67	BT	ORH	Jun-22	SOE	-42.7	182.3	1074	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Parantipathes*				0		PTP
6589	75	BT	ORH	Jun-22	SOE	-42.7	182.3	1050	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*				1		THO
6589	75	BT	ORH	Jun-22	SOE	-42.7	182.3	1050	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*				0		THO
6589	77	BT	ORH	Jun-22	SOE	-42.7	182.4	1160	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*				1		THO
6589	77	BT	ORH	Jun-22	SOE	-42.7	182.4	1160	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Thouarella*				0		THO
6589	87	BT	ORH	Jun-22	SOE	-42.8	182.1	770	Cnidaria	Anthozoa	Alcyonacea	Acanthogorgiidae	*Acanthogorgia*				1		ACC
6592	16	BT	ORH	May-22	SOE	-42.8	182.6	836	Porifera	Hexactinellida	Lyssacinosida	Rossellidae	*Hyalascus*				1	CBR	GLS
6592	51	BT	ORH	Jun-22	SOE	-42.6	182.6	1296	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Bathypathes*				0	BTP	BTP
6592	51	BT	ORH	Jun-22	SOE	-42.6	182.6	1296	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Bathypathes*				1	BTP	BTP
6592	53	BT	ORH	Jun-22	SOE	-42.6	182.7	1340	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	*Paragorgia*				1	PAB	PAB
6592	54	BT	ORH	Jun-22	SOE	-42.6	182.8	1330	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	*Paragorgia*				1	SIA	PAB
6592	60	BT	ORH	Jun-22	SOE	-42.6	182.8	1367	Cnidaria	Anthozoa	Antipatharia	Schizopathidae	*Parantipathes*				1	PTP	PTP
6592	69	BT	ORH	Jun-22	SOE	-42.8	183	894	Porifera	Hexactinellida	Lyssacinosida	Rossellidae	*Hyalascus*				1	SIA	GLS
6592	69	BT	ORH	Jun-22	SOE	-42.8	183	894	Cnidaria	Anthozoa	Scleractinia						1	SIA	CBR
6597	30	BT	ORH	Jun-22	SOE	-42.8	182.1	756	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	*Paragorgia*				0	GOC	PAB

Trip number	Station number	Fishing method	Target species	Event start date	Start obs FMA	Start latitude	Start longitude	Start seabed depth	Phylum	Class	Order	Family	Genus	Species	NIWA Cat. No.	OSD No.	Specimen count	Initial OBS ID Code	Expert ID Code
6597	30	BT	ORH	Jun-22	SOE	-42.8	182.1	756	Cnidaria	Anthozoa	Alcyonacea	Paragorgiidae	*Paragorgia*				1	GOC	PAB
6597	60	BT	ORH	Jun-22	SOE	-42.7	182.2	1200	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Narella*				1	COU	NAR
6597	60	BT	ORH	Jun-22	SOE	-42.7	182.2	1200	Cnidaria	Anthozoa	Alcyonacea	Primnoidae	*Narella*				0	COU	NAR
6606	11	BT	HOK	Jun-22	SEC	-44.1	174.8	511	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*	*knoxi*			8		COF
6606	11	BT	HOK	Jun-22	SEC	-44.1	174.8	511	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*	*knoxi*			0		COF
6606	11	BT	HOK	Jun-22	SEC	-44.1	174.8	511	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*	*knoxi*			1		COF
6606	11	BT	HOK	Jun-22	SEC	-44.1	174.8	511	Cnidaria	Anthozoa	Scleractinia	Flabellidae	*Flabellum*	*knoxi*			0		COF